The Leverhulme Trust

1 Pemberton Row, London EC4A 3BG
Website: www.leverhulme.ac.uk

Philip Leverhulme Prizes 2005

The Leverhulme Trustees are pleased to announce the results of the 2005 competition for Philip Leverhulme Prizes

The Philip Leverhulme Prizes were established to reward outstanding young scholars of substantial distinction and promise; the Prizes commemorate the late Third Viscount Leverhulme, who died in 2000. The fields of research covered by this year's awards are:

- **Astronomy and Astrophysics**
- **Engineering**
- **Geography**
- **Modern European Languages and Literature**
- **Philosophy and Ethics**

A list of prize winners and brief details of their research achievements follow:

➢ Astronomy and Astrophysics

Dr Katherine M Blundell
Astrophysics, University of Oxford

Dr Blundell has made major contributions to radio astronomy, especially to our understanding of quasars. She combines new observational results (at many wavelengths) with novel and comprehensive theories which present a new way of understanding the evolution of the luminosity, size and spectrum of quasars and their jets. She is now extending this work to 'microquasars' - quasar-like objects in our Galaxy. Her excellent physical understanding throws new light on old problems.

Dr Andrew J Bunker
School of Physics, University of Exeter

Dr Bunker has discovered some of the most distant galaxies in the universe. His team was among the first to find galaxies at redshift 6, using the Hubble Space telescope to look for galaxies which are seen in infrared images but not in the optical and ultraviolet, because of intergalactic absorption by hydrogen at emitted wavelengths less than 0.1 microns. These galaxies pose a challenge to galaxy formation theories and could be important in understanding when and how the intergalactic gas became ionized.

Dr Rob Fender
School of Physics and Astronomy, University of Southampton

Rob Fender has made outstanding contributions to our understanding of the high-energy processes occurring when matter falls on to neutron stars and black holes. He has combined radio and X-ray observations to show that this infall is almost always accompanied by powerful outflows, often in the form of relativistic jets. In some regimes this outflow is the dominant process. This work has changed our view of how black holes grow in mass, and how these powerful systems radiate.

Dr Sheila Rowan
Department of Physics and Astronomy, University of Glasgow

Dr Rowan has had a major impact on the design and construction of gravitational wave detectors. In particular her work on the suspension of the test masses has led to a technique that is now state of the art and is the design of choice throughout the world. She has played a central role in the development of gravitational wave detectors.

Dr Stephen J Smartt
Department of Physics and Astronomy, Queen's University of Belfast

Dr Smartt has led an international effort to understand how the most massive stars in the Universe live, evolve and die in spectacular supernovae explosions. He has devised an ingenious way of finding Hubble Space telescope images of these stars just before they explode, so that, hopefully, we can better understand why they do so. This is immensely important to the fields of stellar, galaxy and chemical evolution.

Dr Steven M Tobias
Department of Applied Mathematics, University of Leeds

All are familiar with the three states of matter, namely solids, liquids and gases; but most of the universe is in a fourth state of matter, the so-called plasma state. This behaves quite differently from a normal gas since it interacts in subtle and complex ways with a magnetic field. What Steven Tobias has done is to develop profound new theories and explanations for such an interaction, and, in particular for the ways in which magnetic fields are generated in the hidden interior of the Sun by dynamo action. In addition, he has made important advances in understanding how magnetic fields interact with turbulent flows in the Sun's surface.

http://www.maths.leeds.ac.uk/~smt/

➢ Engineering

Dr Ian Eames
Department of Mechanical Engineering, University College London

Dr Eames' research in fundamental fluid mechanics has advanced the understanding of the interactions between a fluid and its boundaries. His work on inviscid fluids has generated new concepts and methodologies that others are now employing. His work

on drift allowed the amount of material in the fluid carried in the wake of a solid particle to be calculated accurately for the first time. He has also demonstrated how his theoretical work can be applied to a wide range of complex flow conditions in practical situations, and his work on medical absorbants has considerable promise for the future. Although his main advances have been theoretical he has backed up his findings with carefully constructed experiments.

Dr Andrea C Ferrari
Department of Engineering, University of Cambridge

Dr Ferrari's work is in the field of amorphous and diamond-like carbons. Carbon exhibits an exciting range of properties in its various forms: from ultra-hard, insulating diamond-like carbon as thin films and coatings, through graphitic carbon sheets rolled up into nanotubes, with directional conductivity and ultra high axial stiffness, to non-crystalline or amorphous carbons. Exploitation of these properties, in sectors as diverse as heavy engineering, automotive, IT and telecommunications, requires both an understanding of the structure property-relationships and effective means of production, characterisation and quality control. Dr Ferrari has modelled and correlated results from Raman spectroscopy, X-Ray reflectivity and Brillouin scattering to provide rapid assessment of structure and properties of nanometre-scale carbon materials – his models and techniques are now used in academic and industrial labs world-wide. Dr Ferrari's future plans include the exploitation of the non-linear optical properties of nanotubes to develop low cost photonic devices for use in applications including optical communications, biomedical instruments and chemical analysis.

Dr Clemens Kaminski
Department of Chemical Engineering, University of Cambridge

Dr. Kaminski has gained recognition for the development of fast chemical imaging techniques based on laser induced fluorescence spectroscopy. The techniques can measure the production of reactive species at high spatial and temporal resolution and he has been able to track the evolution of fast chemical processes in real time. Kaminski's techniques are used, for example, in the development of next generation aeroengine technology, in the development of industrial and biomedical sensors, and in the study of molecular interacions inside living cells.

http://www.cheng.cam.ac.uk/research/groups/laser/

Dr Molly M Stevens
Department of Materials, Imperial College London

Within the interdisciplinary world of medical technology, two highly topical themes dominate current thinking, nanobiotechnology and tissue engineering. The former is concerned with the applications of nanoscience, that is the scientific phenomena that occur in the supramolecular size range of around 100 nanometres, to medicine and biotechnology. The latter is concerned with the techniques that encourage diseased tissue to regenerate through the manipulation of cell behaviour. Dr Stevens has, within 5 years of gaining her PhD, made a significant contribution to both of these

areas and is rapidly becoming a recognised leader of research in the nanotechnology of regenerative medicine. In particular she has been working on the design of systems that are able to generate large quantities of bone, intended to significantly improve the quality of life for patients with traumatic injury or tumour resection, and on the patterning of human cells onto porous substrates in order to optimise signalling processes during tissue engineering. Her work has won wide recognition including her selection as one of the only two European researchers in MIT's Technology Review list of the top 100 innovators under the age of 35.

Dr Sebastian Uchitel
Department of Computing, Imperial College London

The traditional engineering approach to the design of complex systems has been to build a mathematical model of the system and to analyse it, in order to find faults and to understand its operation. Unfortunately this approach is difficult and rarely cost effective for complex software systems. Dr Uchitel has, however, developed a new approach to this problem. It uses automated techniques for both building and analysing such models in an incremental manner, thus providing a powerful design tool. His work is well-known internationally and is already providing a major contribution to the problems of design of large-scale complex software systems.

http://www.imperial.ac.uk/people/s.uchitel

➢ Geography

Dr Klaus Dodds
Department of Geography, Royal Holloway, University of London

Klaus Dodds had made an outstanding contribution to political geography and 'critical geopolitics'. His work ranges from historical investigations of British policy towards the South Atlantic and Antarctica in the post-war period, to studies of 'popular geopolitics' in the news media and film. He pioneered the study of geopolitical issues focused on Antarctica and southern Latin America, and this work has also had a substantial impact within the foreign policy communities of several countries, including the UK.

Dr Georgina H Endfield
School of Geography, University of Nottingham

Dr Endfield has produced consistently high class scholarship in a range of approaches to historical climatology, community resilience and vulnerability to changing climatic conditions, and on the capacity for social cohesion to be strained or to cope with environmental stress. Her work is relevant, not just for review, where she has made a significant contribution, but also for the modern age in many stressed societies.

Dr Sarah L Holloway
Department of Geography, Loughborough University

Sarah Holloway has played a pioneering role in bringing the field of children's geographies into the mainstream of the discipline, as well as making integral

contributions to feminist geography. With her theoretically sophisticated, yet strongly empirically grounded and policy-relevant research, she has been a path-breaker in researching socially marginalised groups, not only in relation to children, youth and women, but most recently in her work on gypsy travellers. She is currently expanding this focus on social diversity to include research on alcohol consumption in deprived, ethnically diverse neighbourhoods.

Professor Martin R Jones
Institute of Geography and Earth Sciences, University of Wales Aberystwyth

Martin Jones has conducted outstanding research in economic and political geography. His many publications build on regulation theory and have profound implications for policy formulation in regional governance, regional labour markets and welfare reform. He has gained international recognition as a result of his ability to link these research strands in innovative ways to produce new geographical knowledge.

http://www.aber.ac.uk/iges/staff/jonesmartin.shtml

Dr Rachel H Pain
Department of Geography, University of Durham

Rachel Pain is a social geographer. Her research explores the relationships between crime, fear, locality and social exclusion. Employing feminist and other critical perspectives, she has contributed to debates around gender, space and violence; ageing, ageism and fear of crime; children and stranger danger; youth in relation to community safety and constructions of youth justice; and the possibilities of intergenerational practice. She is presently analysing fear as a metanarrative in the war on terror. Her current research with Muslim and white young people connects ideas about fear and global relations with grounded accounts of the insecurities arising from local contexts and identities in everyday life. In pursuing these interests she has been at the forefront of developments in qualitative research and participatory action research approaches.

http://www.dur.ac.uk/geography/staff/geogstaffhidden/?mode=staff&id=352

Dr Kevin G Ward
Geography, School of Environment and Development, The University of Manchester

Kevin Ward has already had a major impact on the fields of urban geography and economic geography. In urban geography, he has mainly worked on the politics of urban and regional development and governance. He has revealed the changing way in which UK cities are governed and how this affects ideas of citizenship, social inclusion and inequalities. In economic geography, he has focused on the restructuring of labour markets and on the emergence of new forms of employment relationships, in particular the expansion of temporary staffing and its impact on work-life balances.

http://www.sed.manchester.ac.uk/geography/staff/ward_kevin.htm

➢ Modern European Languages and Literature

Dr Mark R Darlow
Department of French, University of Nottingham

Mark Darlow has staked out a distinctive area of expertise in late 18th-century French studies: in music, dramaturgy and the *opéra comique*. He is the author of the first full-length study of Nicolas-Etienne Framery, a polymath opera librettist, parodist and critic who was editor of the earliest musical periodical in French history. Dr Darlow's pioneering monograph draws on substantial archival and documentary research to establish the significance of Framery's contributions to lyric theatre, to explain the role of French *opéra comique* in the development of musical taste, and to throw light on the central importance of parody in musical theatre of the period. He is currently working on the interrelation of politics and aesthetics in the culture of the French Revolution, and is researching a book on the administration of the Théâtre de l'Opéra-Comique in the 1790s.

Professor Charles Forsdick
School of Modern Languages, University of Liverpool

Professor Forsdick's research into French colonial and post-colonial culture and thought is not only innovative, but profound and already highly influential. His publications are prodigious in their extent as well as their scope and depth, and he is one of the very few English scholars to be accepted unquestioningly as a luminary in French scholarship. His forthcoming work, notably on the Haitian rebel Toussaint Louverture promises to create an even greater stir than the work on the traveller Victor Segalen, for which he won widespread recognition.

Dr Tim Kendall
Department of English, University of Bristol

Dr Kendall has demonstrated distinctive scholarship in the field of modern poetry in English. His existing publications show that he works with discrimination and tact in an area often beset with cultural, critical and theoretical divisions. His forthcoming work on war poetry is very likely to cement his scholarly reputation as a fine critic and an intelligent communicator in a significant area of modern literary culture.

Dr Jonathan J Long
School of Modern Languages and Culture, University of Durham

Dr Jonathan Long is among this country's leading younger scholars working on post-1945 German literature. Within this large field he is recognized internationally as an authority in two areas. One is the postwar Austrian novel, particularly the voluminous oeuvre of Thomas Bernhard. He was thus the obvious person to provide the chapter on postwar fiction in the forthcoming Camden house "History of Austrian Literature 1918-2000". His other specialism is W G Sebald, now seen as a major and exciting writer, on whom he has edited a collection of essays and is preparing a monograph.

Work on Sebald has led Dr Long to address intermedial questions, especially concerning the relation between literature and photography, in which his thoughtful and subtle work is breaking new ground.

➢ Philosophy and Ethics

Dr Emma Borg
Philosophy Department, University of Reading

Emma Borg is a leading contemporary proponent of traditional formal semantics against the increasingly widespread view that the traditional approach can accommodate only a part of a complex array of contextual and psychological factors which contribute to determining the truth-conditions of an utterance. Her book, "Minimal Semantics", argues with exemplary clarity and power not only that traditional semantics can handle the kinds of data that have been supposed to show that it is unsustainable but that it is better placed than more recent trends to accommodate the hypothesis of the modularity of our language processing abilities. Dr Borg's research articles include important contributions to a wide variety of very actively debated issues in contemporary philosophy of language and linguistics, including metaphor, demonstratives, and the vexed issue of 'hidden constituents'.

http://www.rdg.ac.uk/AcaDepts/ld/Philos/borg/borg.htm

Dr Ursula Coope
Philosophy Department, Birkbeck College, University of London

Dr Ursula Coope's book, "Time for Aristotle", has been described as 'the most insightful, penetrating account of Aristotle's theory of time written over the past two hundred years.' Her work on this topic has gained her an international reputation, and she is widely known and respected in her field; but whether she is addressing questions in ancient or contemporary philosophy, she is a thinker of rare skill and originality. The Leverhulme prize will enable her to focus on a new project about agency.

Dr James Ladyman
Department of Philosophy, University of Bristol

James Ladyman is best known for his work on structural realism, in which he defends a realistic view of scientific theories by construing them as claims about structures. His innovation, the ontic version of structural realisms, has been widely discussed as a solution to various problems in philosophy of science and, in particular, to philosophers of physics. His book "Understanding Philosophy of Science", which appeared in 2002, has become the standard textbook for many introductory philosophy of science courses but has also shaped the way professionals think about the field.

Dr Tim Lewens
Department of History and Philosophy of Science, University of Cambridge

Dr Tim Lewens works in the philosophy of biology and bioethics. In his highly praised monograph "Organisms and Artifacts: Design in Nature and Elsewhere" he discusses the concept of biological function, comparing it with the design of artifacts and assessing its significance for the understanding of living organisms. In his writings in bioethics he discusses somewhat sceptically the presumption, characteristic of those who have embraced the conception of 'genethics', that genetic discoveries have some special ethical significance. He is now working on a book about Darwin, in which he aims to assess the philosophical significance of Darwin's work.

http://www.hps.cam.ac.uk/dept/lewens.html

Professor Daniel P Nolan
Department of Philosophy, University of St Andrews

Daniel Nolan is recognized as one of the brightest young metaphysicians in the world, whose incisive interventions have advanced many debates. He has already published two books, and is particularly known for his work on theories of possible worlds and on consistently extending them to impossible worlds as a way of understanding conditional statements. He is currently studying the prospects for treating various areas of discourse as depending on useful fictions; he plans to make a comparison of philosophy with natural science in their methodologies.
