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# The Leverhulme Trust

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1 Pemberton Row, London EC4A 3BG

Website: [www.leverhulme.org.uk](http://www.leverhulme.org.uk)

## Philip Leverhulme Prizes 2003

*The Leverhulme Trustees are pleased to announce the results of the 2003 competition for Philip Leverhulme Prizes*

The Philip Leverhulme Prizes were established to reward outstanding young scholars of substantial distinction and promise, and 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**
- **Classics**
- **Engineering**
- **Geography**
- **Philosophy and Ethics**

A list of prize winners and brief details about their achievements follow.

➤ **Astronomy and Astrophysics**

**Dr Matthew R Bate**

*School of Physics, University of Exeter*

Matthew Bate has made fundamental contributions to our ideas about how stars and planets form out of huge interstellar gas clouds. His work has changed the way astronomers think about this process. By means of extremely large computer calculations, followed up by careful analysis, he has shown how these clouds collapse to form clusters of many stars, which continue to interact in complex ways. These processes explain the relative numbers of low and high-mass stars, and suggest that there may be many objects whose masses are too low to become stars, but greater than those of planets. Most of the newly-formed stars are surrounded by discs of matter, much of which collapses in turn to form planets. Bate's work allows us to see how the interaction of planets and discs produces planetary systems like the ones now observed around many stars.

<http://www.astro.ex.ac.uk/people/mbate>

**Dr Greg L Bryan**

*Department of Astrophysics, University of Oxford*

Dr Greg Bryan has played a crucial role in developing a technique called "Adaptive Mesh Refinement" or AMR for short, which has allowed him and his astrophysical colleagues to simulate the birth of the first stars in the Universe on computers. To find how the "Dark Ages" came to an end, and what kind of structures and stars formed first, has long been a goal of theoretical astronomy. Before the

development of AMR this goal lay out of reach. Dr Bryan's work has brought it into sight and suggests that the very first stars were extremely massive and luminous . We can now go out and look for them.

**Dr Willem J G de Blok**

*Department of Physics and Astronomy, Cardiff University*

Dark matter is a well-established component of the Universe on large scales. However, little is known about its properties, particularly its distribution on galactic scales. Dr de Blok has shown that Low Surface Brightness (LSB) galaxies are dominated by dark matter broadly distributed over their disks. This is at variance with the prediction of current dark matter theories. Observations of dark matter in LSB galaxies are crucial to a fundamental understanding of the crucial role of dark matter in galaxy evolution. Dr de Blok is spearheading extensive international observing programmes aimed at deriving the dark matter properties of all types of spiral galaxies.

**Dr Louise K Harra**

*Mullard Space Science Laboratory, University College London*

Louise Harra is an outstanding solar physicist who has used observations from space satellites to transform our understanding of the Sun's outer atmosphere or corona. On the largest scales she has discovered the origin of huge ejections of mass and, on the smallest, the properties of tiny brightenings called microflares, which may be implicated in one of astronomy's major puzzles, namely how the corona is heated to such high temperatures of a few million degrees. She has also elucidated the nature of the "transition region" between the million-degree corona and the cooler surface layers by showing that it consists of a series of intricate loop structures that are continually forming and vanishing in dynamic ways.

**Dr Gordon I Ogilvie**

*Institute of Astronomy, University of Cambridge*

Dr Gordon Ogilvie has made fundamental theoretical studies of a widely observed phenomenon in astrophysics - the discs that form around some central object. These discs may arise, for example, as protoplanetary discs around young stars, as accretion discs around compact stars in close binary systems, or as discs around black holes at the centres of active galaxies. Dr Ogilvie has shown that such discs may often be distorted by tidal or radiative effects, and he has formulated methods by which the great complexity of these three-dimensional nonlinear systems can be reduced to manageable proportions. His work makes possible a deep understanding of many types of problem. One of the important successes of his work has been to account for the effects of tides within discs on the eccentricities of planets embedded within those discs - a result of great topical significance in the current search for extrasolar planets.

<http://www.ast.cam.ac.uk/~gogilvie/>

## ➤ Classics

### **Dr Rebecca E Flemming**

*Department of Classics, King's College London*

Since moving from law into the study of the ancient world Dr Flemming has virtually created a new area of study, working systematically with major medical texts (and especially the immense corpus of the works of Galen) to explore the history of gender in the period of the Roman empire. The fruits of this have been not only a very important book on the subject ("*Medicine and the Making of Roman Women*") but also a series of significant articles, based on a close and theoretically sophisticated reading of the texts. She is not, however, simply a historian of ancient medicine. She has demonstrated the same analytical power and historical acuteness in her assessment of texts in the *Corpus Iuris* on prostitution, and it is to the legal tradition that she now wishes to turn her attention in her exposition of the place of women in the world of imperial Rome.

### **Dr Thomas Harrison**

*School of Greek, Latin and Ancient History, University of St Andrews*

Thomas Harrison has remarkable intellectual energy and a capacity to bring a new perspective to the reading of ancient historians, particularly Herodotus. Original and creative in his approach to old problems, he has an acute eye for Greek religious attitudes and the different ways in which literary and political activity was shaped by religious views. His range of publications is already wide, and he is making a significant impact on the field; his ability to tackle large themes with gusto as well as learning makes him an illuminating guide to ancient conceptions of history, and his ideas for further work are full of promise.

### **Dr John T Ma**

*Corpus Christi College, University of Oxford*

Dr Ma is a highly distinctive voice. Imaginative historical insight, command of epigraphical technicalities, and a responsible marriage of theoretical sensitivity with respect for empirical data have come together to produce a body of work which all concerned with the history of the Greek world after Alexander the Great recognize to be of outstanding importance. In particular "*Antiochus III and the Cities of Western Asia Minor*" places issues surrounding the delicate negotiation of power and weakness between cities and Kings (issues at the heart of the synchronic and diachronic analysis of the entire era) in a systematic and methodologically conscious context. The result is a discourse which almost magically manages both to respect the differing traditions of Anglo-Saxon and continental scholarship (with each of which Dr Ma is culturally quite at home) and then to subvert them in a persuasive and fruitful fashion: performative utterance meets Greek inscriptions - and the upshot is a new way of doing Hellenistic history.

### **Dr Llewelyn W G Morgan**

*Brasenose College, University of Oxford*

Dr Llewelyn Morgan is the author of a brilliant reinterpretation of Virgil's *Georgics*, showing how the poet exploited his readers' knowledge of cosmological thought, Orphic mystery cults, and the allegorical interpretation

of literature to provide an unexpected message of redemption for a society shattered by the cataclysm of civil war. The same sensitivity to the tensions and anxieties of a world in crisis is manifest in his seminal articles on the historian Asinius Pollio and on the Hercules episode in Virgil's *Aeneid*. An eloquent champion of classical studies, whether for school audiences or in the pages of the *Times Literary Supplement*, Dr Llewelyn Morgan has also very fruitfully explored the use of Cicero and Virgil in seventeenth-century England, and is now developing a new research theme on the meaning of the metres of Latin poetry.

**Dr Andrew I Wilson**

*Institute of Archaeology, University of Oxford*

Dr Andrew Wilson receives a Philip Leverhulme Prize for his outstanding contribution to the field of Roman archaeology. His specialty is ancient hydraulic technology, but he uses this special expertise as a basis for forays of an altogether broader kind, employing archaeological evidence to test models and theories in key areas of social and economic history. Dr Wilson himself successfully combines the roles of field archaeologist and historian, and in doing so is significantly changing our perceptions of, and understanding of, ancient economies and societies.

<http://users.ox.ac.uk/~corp0057>

➤ **Engineering**

**Dr Alessandro Astolfi**

*Department of Electrical and Electronic Engineering, Imperial College*

Dr Astolfi is the UK's leading practitioner of differential geometric methods in non-linear control systems. He had made significant contributions to both the descriptions of and to an understanding of non-linear systems whilst a doctoral student, when he solved for the first time the establishment of a controller which satisfied the so-called H-infinity criteria for non-linear systems. Since that time he has established an international reputation in overcoming some of the traditional stumbling blocks to a wider adoption of non-linear methods. Dr Astolfi's outstanding ability to combine attractive theoretic understanding together with a sharp grasp of useful applications has lead to a number of important applications in power controllers, robotics and the linkage of robotic activity with visual feedback.

<http://www.ps.ic.ac.uk/~astolfi/AA>

**Dr Vikram S Deshpande**

*Engineering Department, University of Cambridge*

Dr Deshpande has made outstanding contributions in the general area of micromechanics of materials. He has developed a simple way of describing the complex elastic-plastic behaviour of industrially important metal foams, and he is an international authority on the new class of "lattice materials". He has also made major contributions in predicting the growth of fatigue cracks, and in

understanding the macroscopic behaviour of metals on account of the generation and motion of individual dislocations.

<http://www-mech.eng.cam.ac.uk/profiles/vsd/>

**Professor Jason M Reese**

*Department of Mechanical Engineering, Strathclyde University*

Professor Reese has undertaken pioneering research on non-equilibrium fluid flows involving compressibility, real gas of the fluid and the effects of solid particle and moving structures on the flow. Work on gas dynamics at very small scales will underpin new designs of fluid systems using micromechanical systems; which are increasingly being applied to active aerodynamic control and in vivo pulmonary monitoring. He has developed novel modelling methods from fundamental principles so that these techniques can reliably and more rapidly be disseminated in many branches of engineering and bioengineering.

<http://www.mecheng.strath.ac.uk/staffmember.asp?name=Reese,J>

**Dr Florin Udrea**

*Engineering Department, University of Cambridge*

Dr Florin Udrea has an international reputation in the area of power semiconductor devices and integrated circuits. This area of electronics accounts for around 15% of all semiconductor and integrated circuit products worldwide. His most impressive impact has been in high voltage devices and smart sensors research which would have a role in pollution monitoring and sustainable technology. His aim is to develop 'saving energy' semiconductor devices which not only would have a practical impact on energy reduction strategies in Europe and the development of more clean technologies, but also would make for more efficient devices used by everyone in home and office. He has published a prodigious number of clearly accessible publications, and also has 18 patents for distinctive inventions.

**Dr Amy B Zavatsky**

*Department of Engineering Science, University of Oxford*

Dr Zavatsky specialises in the biomechanics of the knee joint and its associated ligaments. Her approach of combining *in vitro* experimentation, *in vivo* testing and theoretical modelling to solve orthopaedic engineering problems has led to her gaining an international reputation in her field. Dr Zavatsky's modelling work has illustrated how ligament fibres are sequentially recruited to resist forces at the knee. This modelling approach has been taken up elsewhere in modelling the ankle joint. Dr Zavatsky has developed equipment for mechanical testing of knee joints and knee replacements. This technology is being adopted by a number of suppliers of prostheses and by orthopaedic surgeons. Dr Zavatsky has been closely involved in applying her work to the design of rehabilitation exercises for patients with knee ligament injury and spinal cord injury. Her work thus covers the whole range from modelling to remediation.

<http://www.eng.ox.ac.uk/~kneabz/>

## ➤ **Geography**

### **Dr Andy Baker**

*School of Geography, Earth and Environmental Sciences, University of Birmingham*

Dr Andy Baker's research is focused on environmental issues of pollution and climate change, and in particular on how the fluorescence of natural substances can bring new understanding to these issues within an interdisciplinary team. His most significant contribution has been through a series of collaborative papers over the last decade, in *Nature* and other journals, which have demonstrated beyond doubt that layers in stalagmites that can be identified from their luminescent properties are annual increments of growth which vary in width in response to climate. This has provided an important new standard method for dating cave deposits and reconstructing former climates for NW Europe, back to 83,000 years before present.

### **Dr Alison Blunt**

*Department of Geography, Queen Mary, University of London*

Alison Blunt is a feminist geographer whose research on the historical and cultural geographies of British imperialism is internationally renowned. She began her career by investigating the relationship between travel, gender and British imperialism, with particular reference to the travel writer and explorer of West Africa Mary Kingsley. Her more recent research has focused on India and has explored a variety of themes, including colonial violence and the domestic spaces of British colonial elites in the 19th century India, and the complex world of the Anglo-Indian community. Her work is based on a detailed knowledge of colonial archives but is also conceptually ambitious and theoretically sophisticated.

### **Professor Daniel F L Dorling**

*Department of Geography, University of Sheffield*

Professor Dorling has secured an international reputation for his meticulous statistical documentation of the changing economic, political and health geographies of Britain. He has developed a suite of innovative cartographic techniques to analyse and disseminate quantitative information about human affairs. His work has an important policy edge, drawing attention to the kinds of intervention required to manage inequalities in housing, health and wealth.

<http://www.shef.ac.uk/geography/staff/index.html>

### **Dr Andrew Jordan**

*School of Environmental Sciences, University of East Anglia*

Andrew Jordan has pioneered the study of how British environmental policy moved from the national to the European level. His work also introduces and extends the theory and practice of government operating on many scales from global to local in the design and conduct of environmental protection. His new work looks at new approaches to regulation combining market mechanisms such as taxes and levies, voluntary business agreements, and a more participatory style of accountable and precautionary regulation operating across Europe as a whole.

<http://www.uea.ac.uk/env/faculty/jordanaj.htm>

**Dr Eric Neumayer**

*Department of Geography and Environment, London School of Economics*

Dr Eric Neumayer is a young researcher with an astounding track record of publication: over the past four years, over thirty major papers in leading refereed journals, applying rigorous economic analysis to questions of international trade, development, aid and environment. He has a clear plan to develop this work and take it in exciting new directions.

<http://www.lse.ac.uk/Depts/geography/Eric1.htm>

➤ **Philosophy and Ethics**

**Dr Peter S Adamson**

*Philosophy Department, King's College London*

Dr Adamson is a student of ancient Greek and medieval philosophy. His particular interests are Neoplatonism and Arabic philosophy. Adamson's publications have focused on al-Kindī and other founders of the Islamic tradition in philosophy. His work has broken new ground by showing these figures to be of philosophical as well as historical importance. Until now it has been generally supposed that these early Islamic philosophers did little more than transmit Greek texts, but Adamson has shown them to be philosophical innovators in their own right. His first book, *The Arabic Plotinus*, was published in 2002.

**Dr Katherine Hawley**

*School of Philosophical and Anthropological Studies, University of St Andrews*

Katherine Hawley is an outstanding research metaphysician and a leading scholarly authority on the long-standing philosophical debates concerning the concept of persistence. Her 2001 book, *How Things Persist*, has been internationally recognised not only as a masterly and comprehensive exposition of the long-running debate between traditional endurantist and perdurantist conceptions of the matter but as crucially advancing the issues by its development of a whole new way of construing persistence, based on an ontology of instantaneous stages, and by the powerful case it makes that the resulting view solves many of the problems confronted by its two rivals. This innovative work is characterised by exemplary lucidity and accuracy of formulation and is widely regarded as a model of metaphysical writing.

<http://www.st-andrews.ac.uk/~kjh5/>

**Dr Samir Okasha**

*Department of Philosophy, University of Bristol*

Dr Okasha works on a topic that's important not only in the philosophy of biology but also in biology as such. Namely, the "units of selection" problem: given that evolution works by natural selection, just what is being selected? Genes? Individuals? Groups? Different answers lead to different predictions--about sex

ratios, for instance. Until fairly recently, group selection was out of favour with biologists. Today, it's a serious scientific hypothesis again. But it involves problematic conceptual issues, as well as factual ones.

Dr Okasha has already written several influential papers on these questions. He's the first person, for example, to look closely at the statistical method of "contextual analysis" in relation to group selection, and to show that its implications are different from what's generally been thought. The award of the Prize will enable him to work full-time on a comprehensive book on these important issues. His already-high international reputation is vouched for by his referees, all world-leading philosophers of biology.

**Dr Michael Ridge**

*School of Philosophy, Psychology and Language Sciences, University of Edinburgh*

Dr Michael Ridge has been awarded a Leverhulme Prize for his original work in ethics. In debate about reparations for past injustice he has argued for 'giving the dead their due': reparation is owed to those who were wronged, rather than (directly) to their descendants, notwithstanding that the dead no longer exist. He has defended a non-cognitive approach across a range of topics in meta-ethics and moral psychology. Modesty is not a matter of what we believe about ourselves, but what we care about. Intentions are a kind of desire, rather than belief. Moral judgements express practical attitudes: and problems for this expressivism can be answered if one shows how these judgements at the same time express certain (non-moral) beliefs.

[www.michaelridge.com](http://www.michaelridge.com)

**Dr Jennifer M Saul**

*Department of Philosophy, University of Sheffield*

Dr Jennifer Mather Saul made her reputation with a short, startling paper in which she showed that one of the central and most widely discussed problems in the philosophy of language over the past century, which had always been taken to concern the semantics of sentences ascribing beliefs and other mental states, is in fact far more general. Since then she has deepened and extended this insight in a series of papers that question the standard methodology for treating linguistic intuitions. In addition to making one of the most original and distinctive contributions of any philosopher of language of her generation worldwide, she has extended her work into feminist philosophy.

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The Leverhulme Trust was established in 1925 under the Will of the first Lord Leverhulme - William Hesketh Lever - the entrepreneur and philanthropist who established Lever Brothers in the late nineteenth century. The Trust provides some £25million each year to promote research of originality and significance principally in the university sector across a full span of disciplines. For further information about the Trust, please see [www.leverhulme.org.uk](http://www.leverhulme.org.uk)

Philip Leverhulme Prizes are awarded annually. Nomination materials for the 2004 round will be available from after 1 January 2004.