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# The Leverhulme Trust

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1 Pemberton Row, London EC4A 3BG  
[www.leverhulme.ac.uk](http://www.leverhulme.ac.uk)

## Philip Leverhulme Prizes 2007

*The Leverhulme Trustees are pleased to announce the results of the 2007 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**

### **Astronomy and Astrophysics**

#### **Dr David Alexander**

*Department of Physics, Durham University*

Dr Alexander is a leading international figure in the use of deep X-ray surveys to study the growth of super massive black holes in galaxies, and populations of heavily obscured active galactic nuclei. Dr Alexander works with 'Chandra', the most powerful X-ray telescope ever placed into orbit. This telescope facilitates the most sensitive X-ray observation ever made of the distant Universe. This research will have important consequences for our understanding of the early development of structures in the Universe and of the heating and re-ionisation of the intergalactic gas at very early epochs. Many black holes are deeply hidden by gas and dust and have therefore eluded detection, Dr Alexander's research aims to find these elusive objects.

#### **Dr Philip Best**

*Institute for Astronomy, School of Physics, University of Edinburgh*

A world leader in studying the formation and evolution of galaxies in the Universe, Dr Best has played a major role in advancing our understanding of the connection between galaxies and black holes. His research demonstrates that as a galaxy tries to grow by merging with other galaxies, the growth of a supermassive black hole at its centre regulates the process; gas falls on to this black hole and releases its gravitational energy as radiation. This increases the black hole's mass and makes the galaxy appear active, and the radiation produced is so intense that it drives gas outflows through the galaxy, controlling the way that this, itself, grows.

<http://www.roe.ac.uk/~pnb/>

**Dr Clare Parnell**

*School of Mathematics and Statistics, University of St. Andrews*

An outstanding young solar physicist, Dr Parnell has already made major contributions to solar physics. Her work combines analytical, numerical and interpretative pieces of research. The question of how the solar corona is heated to temperatures in excess of two million degrees has been a long-standing puzzle; Dr Parnell's work on X-ray bright points is now widely accepted as the solution to part of the problem. She has also made a major contribution to advances in solar physics through her work on nanoflares, magnetic-flux recycling times and the study of three-dimensional magnetic reconnection.

<http://www-solar.mcs.st-and.ac.uk/~clare/>

**Dr Will Percival**

*The Institute of Cosmology and Gravitation, University of Portsmouth*

New instruments have been developed in the field of observational cosmology that have allowed the mapping of Big Bang radiation with unprecedented precision. Cosmologists have also been able to chart the positions of hundreds of thousands of galaxies relatively nearby. The two maps should be intimately related to one another and to the geometry and evolution of the entire cosmos. Dr Percival has played a key role in analysing these very complex but potentially exciting observations, and has shown that they fit together remarkably well. He has also demonstrated how this fits in with a theoretical model of the Universe in which only 25% of the energy density can be due to matter, the rest being some exotic form of 'dark energy'.

<http://www.dsg.port.ac.uk/~percivalw/>

**Engineering****Professor Sondipon Adhikari**

*School of Engineering, Swansea University*

Numerical computer simulation codes are used extensively in engineering to predict the performance of many complex engineering systems ranging from civil engineering structures to fluid flow. Professor Adhikari has made a major contribution to this field by the new application of probabilistic engineering mechanics to substantially reduce the many uncertainties associated with such codes. With an impressive publication list and a Chair at Swansea at the age of 31, his work is being applied to a range of industries from helicopter design to wind farming. His research is already having a major impact on an international scale, and he is working closely with a range of world class bodies from Rolls Royce to Lockheed Martin and Los Alamos National Labs.

<http://engweb.swan.ac.uk/~adhikaris>

**Professor Leroy Cronin**

*Department of Chemistry, University of Glasgow*

Professor Cronin's work focuses on engineering molecular architectures using self-assembly at the sub-nano/nano scale. At this scale, which is 80,000 times smaller than the diameter of a human hair, Professor Cronin has found that he

can design new materials atom by atom using a chemical mould which transfers the shape of the 'designed' mould on to some atomic building blocks. By combining this approach with the engineering approach used to fabricate microprocessors, Professor Cronin's research may facilitate the design of molecular computers and machines. This work involves the specific engineering of nano-scale architectures using both top-down (electrical engineering) and bottom-up (molecular self-assembly) approaches.

<http://www.chem.gla.ac.uk/staff/lee/>

### **Dr Julian Jones**

*Department of Materials, Imperial College London*

Dr Jones is rapidly gaining a strong reputation for the development of biologically active synthetic materials that can be used as templates for the regeneration of bone. These bioactive glasses have a hierarchical structure that is similar to that of bone, containing networks of porosity at micro- and nano-scales. The glass can bond chemically to new bone and then dissolves over a period of time, leaving a fully developed bone structure. Dr Jones has also been instrumental in developing new three-dimensional imaging techniques that allow the processes of bone formation and scaffold dissolution to be monitored quantitatively. These new developments are key to the successful clinical use of bone tissue engineering methodologies for the treatment of disease and injury in the musculoskeletal system.

### **Dr Jeremy O'Brien**

*Department of Electrical and Electronic Engineering, University of Bristol*

Dr O'Brien has made outstanding progress in the new field of quantum information technology, and hopes to make possible the reduction of the computer chip to a single atom and to increase the speed of computing potential through utilising tiny particles of light, called photons, instead of electrons. Having made a major breakthrough by engineering a phosphorus-in-silicon quantum computer element, Dr O'Brien has the potential to be the first person in the world to make an ultra-fast quantum computer.

### **Dr Frantisek Stepanek**

*Chemical Engineering, Imperial College London*

Dr Stepanek has developed novel computer tools that accurately predict the microstructure of pharmaceutical tablets and detergent powders, which permit the evaluation of the rate of dissolution (take-up) of the active ingredients. These tools considerably reduce the need for tedious and expensive experimentation, and greatly diminish the time for newly-discovered medicines to reach the patient. Moreover, the additional application of this research to engineering-scale systems is leading to smaller and more efficient processing units and to a reduction in the loss of expensive chemicals.

<http://www.imperial.ac.uk/people/f.stepanek>

## Geography

### **Dr Harriet Bulkeley**

*Department of Geography, University of Durham*

Dr Bulkeley is one of the most promising researchers in the lively research world of sustainability politics. She has written extensively on the role of local government in trying to cope with climate change, especially the capacity for mitigating carbon emissions. Her work emphasises the difficulties faced by local government due to national regulations and financing restrictions. These make it awkward to adopt practices geared towards reducing climate change and carbon emissions at the local level. She is at the threshold of offering a vision of governance for climate change that links the various scales of governmental action, and incorporates social justice and new participatory mechanisms and financing arrangements. This timely research may lead to new forms of local governance in Europe over the coming decade.

### **Dr Steven Cummins**

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

Dr Cummins is an accomplished scholar who works at the cutting edge of health geography. His pioneering work has focused on the intersections between place, diet and health through a focus on the effects that a neighbourhood can have on health inequalities as well as the existence of so-called 'food deserts'. He has developed new methodological innovations in his research through quasi-experimental studies, and he has made a significant contribution to the formulation of health policies both nationally and internationally.

<http://www.geog.qmul.ac.uk/staff/cummins.html>

### **Dr Joseph Holden**

*School of Geography, University of Leeds*

Dr Holden conducts research at the interface between hill-slope hydrology, geomorphology and ecology, with a particular emphasis on peatlands. He has made significant contributions to our understanding of carbon cycling in peat environments, in particular, his ground-breaking work on peat hydrology. He has, at the same time, contributed notable advances to measurement techniques for working in these challenging environments. He also participates in a wide range of work concerned with understanding the implications of environmental change, and developing approaches to manage this change, particularly by adopting multidisciplinary, integrated approaches at the river basin scale.

### **Dr Robert Mayhew**

*School of Geographical Sciences, University of Bristol*

Dr Mayhew has conducted outstanding research on the history of geography and landscape representation in the early modern period. His work is resolutely interdisciplinary and has shaped emerging debates in cultural and historical geography, intellectual, literary and scientific history. His latest research, on the nexus between the history of book publishing and the history of geographical

thought in early-modern England, has great potential to stimulate new interdisciplinary conversations.

<http://www.ggy.bris.ac.uk/personal/RobertMayhew/index.html>

**Dr Andrew Shepherd**

*Institute of Geography, University of Edinburgh*

Dr Shepherd's research uses satellite remote sensing to advance our understanding of the motion of large ice sheets, such as those in Greenland and Antarctica. Using sophisticated quantitative techniques, he has been able to provide continental-scale information on the rate and pattern of ice sheet melt over periods of several years. As a result, he is an authority on how large ice sheets are responding to and influencing global environments, and is making major contributions to our understanding of global environmental change more generally.

<http://www.geos.ed.ac.uk/homes/ashepher>

**Dr Jemma Wadham**

*Bristol Glaciology Centre, School Geographical Sciences, University of Bristol*

Dr Wadham's research is concerned with biogeochemical processes within Arctic glaciers. She has made significant contributions to our understanding of the hydrology of these systems, their response to climate warming, and their contribution to chemical erosion and global carbon cycling. Her work on microbial life within Arctic glaciers is particularly ground-breaking, revealing that dynamic and diverse ecosystems are present and are acting as significant sources of greenhouse gases in the atmosphere.

**Modern European Languages and Literature**

**Dr Matthew Bevis**

*Department of English and Related Literature, University of York*

Dr Bevis has carried out research in a range of fields of English literature, some of which are unusual and engaging in themselves. Others, though more mainstream, have provided fresh juxtapositions, such as Tennyson and James Joyce, or more generally, poetry and prose, or nineteenth- and twentieth-century literature. His forthcoming OUP monograph, *The Art of Eloquence: Byron, Dickens, Tennyson, Joyce*, concerns the influence of speech-making practices on both Victorian and modernist literature. Dr Bevis has also written a substantial literary biography of Tennyson and edited a volume of essays on the critic William Empson. His next major project is on humour in Victorian poetry.

**Dr Rodrigo Cacho**

*Department of Spanish and Portuguese, Clare College Cambridge*

In his research on Spanish Golden Age Literature, which includes Spain's national narrative Don Quixote, Dr Cacho has already made a significant contribution to knowledge in the relatively under-researched area of literary relations between Spain and Italy at this time. His future plans are as ambitious and as promising as his achievements to date. He plans to co-edit a massive critical edition on selected works of Quevedo, and to work on the first

monograph on the mock-epic in Golden Age Spain. The latter will illuminate the crucial role this played in the subversion of the literary canon and in broadening the scope of Baroque aesthetics. Dr Cacho's richly deserved international reputation is set to go from strength to strength.

**Dr Emma Gilby**

*Department of French, University of Cambridge*

Emma Gilby's combination of meticulous scholarship and cutting-edge criticism has produced an authoritative challenge to received views of the major figures of the seventeenth-century French literary-historical canon. Her monograph, *Sublime Worlds: Early Modern French Literature*, is a powerful exploration of the ramifications of a key concept of the period. Within a broad interdisciplinary context, her critical method is to combine imaginative conceptual frameworks with securely grounded close readings of texts. Her future research will centre on seventeenth-century theories of indifference and free will.

**Dr Nicholas McDowell**

*Department of English, University of Exeter*

Dr McDowell is a young and highly acclaimed scholar. His track record is impressive and his editorship and co-editorship of volume VI of the *Oxford Complete Works of John Milton* and of the *Oxford Handbook to Milton* are testament to the considerable enterprise of his work and the respect in which it is held. He is one of the very best current Renaissance scholars and one of the most important Miltonists on the international scene. His work is genuinely innovative and insightful.

<http://www.sall.ex.ac.uk/english/content/view/221/3/>

**Dr Sandra Pott**

*German Department, King's College London*

Known for her strong philological talent, Dr Pott's research on the relation of intellectual and literary history marks an important approach for cultural history. Her numerous publications have secured her an excellent reputation at an early age. She has been active in promoting interdisciplinary networking on the Early Modern period through teaching and establishing links with leading political scientists, philosophers, theologians and historians. She now plans to set up an international research group to examine the processes of internationalisation in literature and science from the 1600s to present day, with a view to then reflect on current and future such processes.

**Dr Richard Scholar**

*Oriel College, University of Oxford*

Richard Scholar has established a reputation as a ground-breaking Early Modernist who moves with conceptual and critical ease across the boundaries of centuries, languages and disciplines. His profoundly original work has caught the imagination of the international scholarly community as well as the national literary press. His monograph *The Je-Ne-Sais-Quoi in Early Modern Europe* has been very widely reviewed and is being translated into French. His current research project focuses on Montaigne and free thinking as a literary

mode, and will help to move the current debate on Montaigne's work into new territory through a reinterpretation of the *Essais*.

<http://www.mod-langs.ox.ac.uk/staff/indivstaff.php?personid=194&subfac=fr>

## **Philosophy and Ethics**

### **Professor Hannes Leitgeb**

*Department of Philosophy, University of Bristol*

Professor Leitgeb has rapidly become one of the world's leading exponents of the applications of logical and mathematical methods in philosophy. He is known for his papers on formal theories of truth and semantic paradoxes and for his book *Inference on the Low Level*. In the latter, he analyses the logic and reliability of the unconscious inferences made in everyday life and connects them with the cognitive science of neural networks. He has also published on epistemology, philosophy of language, philosophy of science and the history of philosophy. He is renowned for his ability to express a vague philosophical discussion in the form of a precise mathematical problem, and in this way, to solve the problem and to explain the significance of the solution with absolute lucidity. Professor Leitgeb is currently investigating the use of techniques from mathematical logic to analyse the structure of lived experience.

<http://www.bris.ac.uk/philosophy/department/staff/hl.html>

### **Professor Christian List**

*Department of Government and Centre for Philosophy of Natural and Social Science, London School of Economics and Political Science*

Professor List's research brings together political science, philosophy and economic theory in exciting and original ways. At the forefront of advances in social choice theory, he has already made a lasting impact in the new research field of 'judgement aggregation'. The literature on the aggregation of preferences is vast; however, less attention has been paid to the aggregation of judgements. He aims to remedy this through developing a model combining axiomatic social choice theory with a logical representation of propositions. His work in this field has thus enabled him to make notable contributions to more established areas of research, such as group agency and democratic theory, where the theory of 'judgement aggregation' is central to the issue of whether democratic groups can rely on deliberation to make decisions.

### **Dr Oliver Pooley**

*Oriel College, Oxford University*

Dr Pooley has made important contributions to the philosophy of spacetime, and is considered to be "one of the most accomplished and promising young philosophers of science in the world". He has developed a sophisticated defence of spacetime substantivalism against modern versions of the view that it implies distinctions without differences, and in conjunction with Harvey Brown he has argued for a dynamical grounding for Minkowskian spacetime. In his future work he will extend these insights and also examine the implications of relativity for the philosophy of time. This will be an important contribution to the metaphysics of identity, and will address issues such as the issue of how to view the nature of 'enduring' objects.

**Professor Duncan Pritchard**

*Department of Philosophy, University of Edinburgh*

In his book *Epistemic Luck* Professor Pritchard develops existing theory - what distinguishes knowledge from true belief is that in the case of one who knows something, the truth of his belief is not a matter of luck - and he concludes that claims to knowledge are always open to question, and our situation is one of 'epistemic angst'. Duncan Pritchard's current research will focus on what he calls 'epistemic value', the question of what it is that makes knowledge valuable, especially as compared with true belief. This builds on his previous research since it would appear that the distinctive value of knowledge must derive from its intrinsic nature, and thus from the fact it is a state of mind whose truth is not a matter of luck. However, it remains to be explained what the connections are here, and it is this that Duncan Pritchard aims to elucidate.

<http://www.philosophy.ed.ac.uk/staff/DuncanPritchard.htm>

**Dr Alison Stone**

*Institute for Philosophy and Public Policy, Lancaster University*

Dr Stone is widely known and respected for her work on both German idealism and feminist philosophy. Her diverse publications contribute to her overarching re-examination of our deeply rooted understanding of nature as distinct from, and as opposed to, culture. *Petrified Intelligence: Nature in Hegel's Philosophy* provides a lucid analysis of Hegel's philosophy of nature and reveals its relevance to contemporary ecological debate. *Luce Irigaray and the Philosophy of Sexual Difference* advances recent argument as to whether or not sexual difference is natural. Dr Stone's research is exceptional for its incisive treatment of an important theme, about which she still has much to say.

<http://www.lancs.ac.uk/fass/philosophy/profiles/188/>