

2017 Annual Review

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Introduction

The Leverhulme Trust was established by the Will of William Hesketh Lever, one of the great entrepreneurs and philanthropists of the Victorian age.

Since 1925 we have provided grants and scholarships for research and education; today, we are one of the largest all-subject providers of research funding in the UK, distributing approximately £80 million a year.

We award funding across academic disciplines, supporting talented individuals in the arts, humanities, sciences and social sciences to realise their personal vision in research and professional training. As well as substantial grants for research projects, we offer fellowships for researchers throughout their academic career, grants for international collaboration and travel, and support for the fine and performing arts.

Our approach to grant-making is distinctive. Our awards are made in the responsive mode, with the choice of topic and research design left with applicants. We look for work of outstanding merit, which is original, important, and has significance beyond a single field. We particularly value research that crosses disciplinary boundaries or that is willing to take risks in its pursuit of new knowledge or understanding.

*The UK's pre-eminent position
in research comes from an
openness to talent from every
corner of the world. This is
one of our great national assets*

Chairman's Foreword



We were delighted this year to welcome Leena Nair to the Board. Leena is the Chief Human Resources Officer of Unilever and joins a Trust that remains in robust financial health. Grants made in 2017 exceeded £78 million. The volume of applications continues to be high, almost 4,000 each year, and the stock of live awards totals some 2,000.

This year's '£10 million-plus competition' in our triennial sequence of large grants was for Leverhulme Doctoral Scholarships. The Trustees made twelve awards, each worth more than £1 million, to fund a total of 180 doctoral scholarships across the dozen universities which bid successfully. Almost all of these institutions committed additional resources, raising the Trust's own investment by two-thirds as much again, and so demonstrating a firm commitment to the next generation of doctoral students. Scholarship programmes will range across topics including 'the ecological study of the brain', 'mobility as a way of life' and 'quantum biology'.

The Trust-funded Academies' Partnership in Supporting Excellence in Cross-disciplinary Research made its first round of 'APEX' Awards. Our aspiration was to encourage genuinely interdisciplinary discovery-driven projects and we were delighted to see researchers rise to this challenge. Applications saw process engineering combined with public policy, medieval history with astrophysics, and information communication technology with storytelling and sociology. We are grateful to the three national academies for their commitment to this potentially path-breaking initiative and we look forward to the second round of the competition in 2018.

Our Annual Leverhulme Lecture was this year delivered by Sir Paul Nurse, Nobel Prize winner and Director of the Francis Crick Institute, who spoke about 'research and the public good'. Paul's text is available on the Trust website and I commend it to you as a powerful account of the importance of research beyond the academy. Next year's lecture will be given by Mme Christine Lagarde, Managing Director of International Monetary Fund, who will (coincidentally) be speaking in the final few months before the UK's scheduled exit from the European Union.

If she chooses to address this topic, it will be interesting to hear what she has to say, since many of us in the sector think that Brexit will have damaging effects on the UK's hard-won reputation as one of the best countries in the world in which to conduct scientific inquiries across the whole range of the sciences, social sciences and humanities. The UK's pre-eminent position in research comes from an openness to talent from every corner of the world. This is one of our great national assets. There is disturbing early evidence that this is being undermined.

Looking ahead, 2018 promises to be another exciting year, with a third round of Leverhulme Arts Scholarships opening in the spring. These awards support talented young people in the creative and performing arts by providing bursaries and innovative teaching opportunities. The second round of the competition for Leverhulme Research Centres will reach its conclusion in the autumn, and we look forward to funding successful applicants' ambitious plans for establishing centres of research excellence.

We are also celebrating the achievements of Philip Leverhulme Prize winners, with our very first Gala Dinner. Since this particular scheme started in 2001, we have supported over 400 exceptional researchers, across almost all academic disciplines, and it seems fitting that the Trust and its many supporters come together to celebrate the achievements of these outstanding early-mid career academics. Ten former prize winners are featured in the *What Happened Next* section of this Annual Review.

Finally, on behalf of the Board, I would like to thank everyone who has offered their expertise to the Trust during this past year, as a reviewer or adviser, without whom Leverhulme could not function in its unique way. I also want to thank the Trust's own staff, who are remarkable in their dedication, professionalism and spirit. This is another marvellous demonstration of how individuals can voluntarily come together and make an invaluable contribution to the public good by supporting the best that UK and international research has to offer.

Niall FitzGerald KBE DSA
Chairman of the Leverhulme Trust Board

History of the Leverhulme Trust



A committed philanthropist throughout his life, when he died in 1925 Lord Leverhulme left a proportion of his holdings in Lever Brothers to provide ‘scholarships for... research and education’. It was thus that the Leverhulme Trust came into being.

Born in 1851, William Hesketh Lever made his fortune through the manufacture and marketing of soap and cleaning products. In the space of only a few years his company Lever Brothers grew to become a household name and its products, which included Sunlight Soap and Lux, were sold around the world. The title ‘Lord Leverhulme’ was conferred upon Lever in 1917 (‘Hulme’ being the maiden name of his wife, Elizabeth, who had died four years previously). A committed philanthropist from the beginning, on his death in 1925 Lord Leverhulme left a share of his holdings in his company to provide for specific trades charities, and to offer ‘scholarships for... research and education’. The Leverhulme Trust was established to undertake these charitable aims. In 1930, Lever Brothers merged with Margarine Unie to form Unilever – one of the world’s major multinational companies – and the shares held by the Leverhulme Trust became shares in Unilever PLC.

The Trust Board

In making decisions about funding, the Trustees seek the advice of a range of peer reviewers and expert panels or committees who offer an assessment of the academic merit and significance of applications.

Trustees

Mr N W A FitzGerald, KBE FRSA (Chairman)
Sir Iain Anderson, CBE FRSE (until 15 March 2017)
Mr D Baillie
Mr A C Butler
Mr P J P Cescau
Professor K Gull CBE FRS
Mr R Markham
Ms L Nair (from 28 November 2017)
Mr P Polman
Mr C Saul
Ms A Sourry
Mr S Williams

Grants the Trust Offers

Research projects

The Trust offers three major sources of research project funding. All schemes cover funding for research staff and associated research costs. The choice of subject area and approach is always left entirely to the applicants.

Leverhulme Doctoral Scholarships provide £1.05 million over three years to a UK university to fund a total of fifteen doctoral students, with five scholarships offered in each year of the grant. Approximately ten universities are funded in each round.

Research Leadership Awards support researchers with an established university career who wish to build a research team to address a distinct research problem. Between £800,000 and £1 million over four to five years is available.

Leverhulme Doctoral Scholarships and *Research Leadership Awards* are offered triennially on a rotating basis together with *Arts Scholarships* (see below).

Leverhulme Research Centres receive £1 million per annum over a period of between five and ten years to conduct innovative research of the highest intellectual and academic ambition. The Trust's aim is to encourage new approaches that may establish or reshape a field of study and so transform our understanding of a significant contemporary topic. This grant is awarded periodically.

On a smaller scale, *Research Project Grants* provide up to £500,000 over five years; the scheme is open to outline applications at any time.

Fellowships and studentships

The Trust aims to offer funding opportunities to talented researchers at all stages of their career.

Early Career Fellowships provide a bridge into an academic career for researchers with a proven research record, but who have not yet held an established academic post. Fellows should expect to complete a single piece of original, publishable research during their tenure. The scheme provides 50 per cent (up to £25,000 a year) of the salary costs of a three-year academic appointment, with the host institution providing the remaining funds.

Research Fellowships of up to £55,000 over a period of three to twenty-four months are awarded to experienced researchers, particularly those whose day-to-day responsibilities have prevented them from completing a programme of research. Applications are welcomed from established independent scholars as well as those holding posts in higher education institutions.

Major Research Fellowships provide replacement teaching costs to enable well-established academics in the humanities and social sciences to focus for two or three years on a specific piece of significant, original research. The scheme is particularly aimed at researchers whose day-to-day duties have prevented them from completing a programme of research.

Emeritus Fellowships provide funding over up to two years for senior researchers who have retired from an academic post to complete a research project, and prepare the results for publication. The awards offer research expenses of up to £22,000, but do not provide maintenance for the applicant.

For further information about funding schemes offered by the Trust, please visit www.leverhulme.ac.uk

International study and collaboration

Study Abroad Studentships support advanced study or research at a centre of learning in any overseas country, with the exception of the USA, for between twelve and twenty-four months. Applicants need to have been resident in the UK for at least five years, and should be either currently a student, or have been registered as a student in the last eight years. The scheme offers basic maintenance costs of £21,000, a dependent allowance, and travel costs.

International Academic Fellowships enable established researchers to visit overseas research centres, to develop new knowledge, skills and ideas. Up to £45,000 is available for a period of three to twelve months.

Visiting Professorships are awarded to UK institutions that wish to invite an eminent researcher from overseas to enhance the knowledge and skills of academic staff or the student body within the host institution. The scheme covers maintenance, travel expenses and research costs, up to £150,000. Visiting Professorships last for between three and twelve months.

Philip Leverhulme Prizes

Each year, the Trust awards thirty prizes to recognise researchers at an early stage of their career, whose work has already had a significant international impact, and whose future research career is exceptionally promising. Prize winners receive an award of £100,000 over two or three years, which may be used for any research purpose. To be eligible, nominees must hold an academic post in the UK, and must be within ten years of the award of their doctorate on the closing date for nominations. Nominations are accepted for work across eighteen disciplines, with prizes in six of these offered each year.

Arts funding

Arts Scholarships are open to specialist arts training organisations to develop innovative teaching and to provide bursaries for individuals of exceptional talent to develop their skills in the fine and performing arts.



The Royal Conservatoire Scotland (top) and Trinity Laban Conservatoire of Music and Dance both currently hold Arts Scholarships

Director's Report



The Trust's annual schemes continue to offer researchers a wide range of opportunities spanning the academic career.

Our Early Career Fellowships remain heavily oversubscribed. In 2017, more than 700 applications were received and 125 awards made, the most Fellowships and highest success rate that the competition has seen to date. In addition, since each applicant has secured a generous element of matched funding from their prospective host institution, the Trust's commitment of some £11 million was supplemented by a further £9 million from host universities. This sends a clear signal of the value that UK universities place on supporting emerging talent, as these new academics seek to establish independent research careers. As was the case in earlier years, this round of Fellowships also provides further evidence of how the UK benefits from being open to academic researchers from around the globe. More than 50 per cent of those awarded a Leverhulme Trust Early Career Fellowship in 2017 earned their first (and sometimes second) university degree overseas, in countries throughout Europe but also including the USA, Australia, Russia, and China. It is to be hoped that the ramifications of Brexit do not cause the UK to lose its laudable position as a 'destination of choice' for coming generations of talented researchers.

For more established scholars, we were again able to fund in excess of 100 Major Research and Research Fellowships, largely providing valuable research time for hard-pressed academics. Their intriguing projects included such subjects as 'Dark earth: the rewilding of derelict Londinium, 400 CE – 600 CE', 'Petri net reachability conjecture', and 'The function of cynicism at the present time'. We look forward to reading about the outcomes of these research endeavours in due course.

Research Project Grants continue to be both numerous and high quality. Some 158 awards were made in 2017 through this scheme, representing 44 per cent of the Trust's spend, with sums varying from £50,000 for proof of concept projects to over £450,000 for larger-scale programmes of research. Here too the

range of subject matters whets the scholarly appetite: 'Seeing earthworms in the dark', 'Bridge over troubled water – ritual or rubbish found in Roman rivers', and 'The business of women's words: purpose and profit in feminist publishing' were among the topics that were funded during the year.

The Board was pleased to announce that the Trust will be extending its support for the British Academy/Leverhulme Trust Small Grants Scheme for a further five years with an award of £2.5 million. These grants recognise the importance of smaller awards (up to £10,000) for many researchers working in the humanities and the social sciences. They allow the Academy to attract significant matching funds and have, over the years, provided the first step into research which has gone on to shape academic careers and whole fields of study. Working in partnership in this way helps the Trust to fulfil its ambition to provide a comprehensive suite of funding opportunities for talented researchers working in the UK.

This Review includes a full list of those awarded funding by the Trust in its own capacity over the past year (page 81), as well as accounts by twenty successful applicants of their research plans in *Grants in Focus* (page 17). *What Happened Next?* comprises interviews with ten former winners of the Philip Leverhulme Prize, going back to the award's inception in 2001 (page 59). I hope you enjoy reading about their often groundbreaking research outcomes, and subsequent careers.

As ever, I wish to join with the Chairman in offering heartfelt thanks to the Trust's advisers and reviewers, as well as our Trustees and fourteen dedicated, hardworking staff.

Professor Gordon Marshall CBE FBA
Director

Summarised Financial Information

For the year ended 31 December 2017

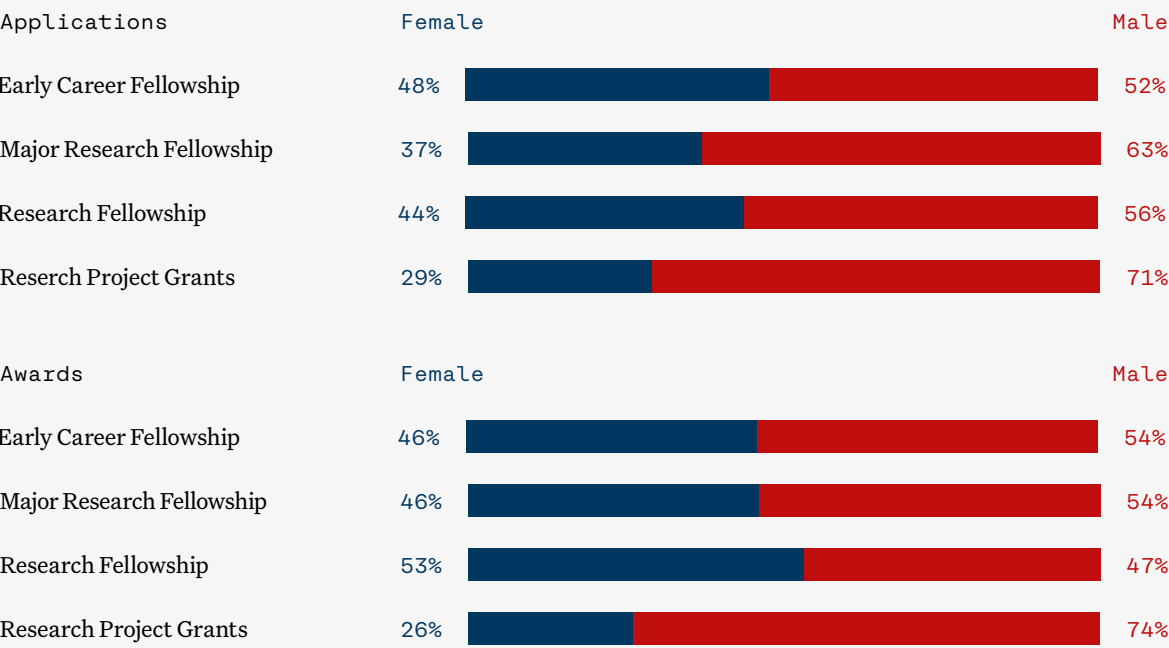
		2017	2016
		£000	£000
Income from	Investment income	99,383	86,707
Expenditure on	Investment management costs	2,218	1,944
	Charitable activities	77,189	78,616
Net income before net gain on investments		19,976	6,147
	Net gains on investments	596,738	318,353
Net income and net movement in funds		616,714	324,500
Statement of funds	Total funds brought forward	2,638,976	2,314,476
	Total funds carried forward	3,255,690	2,638,976

This information is taken from the Leverhulme Trust Annual Report and Financial Statements 2017, which are available to download from the Charity Commission website or on request from the Trust.

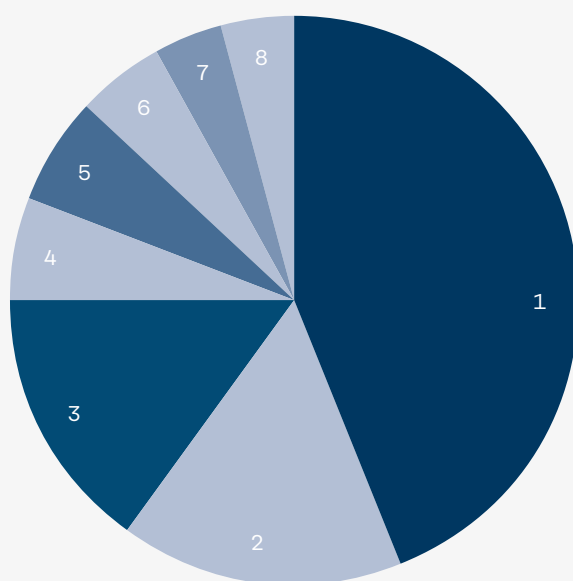
2017 in Numbers

Staff	Institutions funded	Grants awarded
14	84	587
Current grants	Applications received	Peer reviews received
1,858	3,807	13,212

Applications and awards: gender split



Distribution of funds



- 1 Research Project Grants
£34,858,000 44%
- 2 Doctoral Scholarships
£12,600,000 16%
- 3 Early Career Fellowships
£11,592,000 15%
- 4 Major Research Fellowships
£4,853,000 6%
- 5 Research Fellowships
£4,624,000 6%
- 6 Academy Fellowships/Scholarships
£3,760,000 5%
- 7 Philip Leverhulme Prizes
£3,000,000 4%
- 8 Other*
£3,613,000 4%

* Visiting Professorships, Study Abroad Studentships, Emeritus Fellowships; International Academic Fellowships

Applications: success rates

	Applications received	Success rate %
Research Project Grants	930	17
Research Fellowships	731	14
Early Career Fellowships	717	17
Philip Leverhulme Prizes	365	8
Major Research Fellowships	186	17
Emeritus Fellowships	105	35
Study Abroad Studentships	104	23
Visiting Professorships	97	41
Doctoral Scholarships	95	12
International Academic Fellowships	43	30

Grants in Focus

Written by recently awarded grant holders and spanning a range of funding schemes and academic disciplines, our Grants in Focus articles highlight the breadth and significance of research funded by the Trust in 2017

Women, crime and culture: transnational organised crime as an equal opportunity industry

Until now, research into transnational organised crime groups has concentrated on their male participants. Felia Allum's study is redressing the balance by analysing the presence, activities and influence of women within these groups

Transnational organised crime groups (TOCGs), like terrorist cells, have a huge influence on contemporary society, whether through their illicit traffics, money laundering techniques or random victims. Both are, unfortunately, features of the twenty-first century. And, yet we still have very little detailed evidence-based analysis of TOCGs' illegal or legal activities, their recruitment methods, or their multifaceted accomplices across Europe. Many of the existing studies concentrate purely on the male participants within these para-state organisations, ignoring the role of women. As a result, there is a lack of understanding of women's true involvement. It is time to shift our focus and to examine their presence, activities and influence.

The aim of this research project is to look at the roles women play in different TOCGs, European, African and Asian. Often, their roles appear contradictory: are they active agents, neutral accomplices or passive victims? Are they managers, financial advisers or simple companions? If the latter, are they then leaders or victims? Are they included or excluded? Feminine or masculine? Violent or passive? Further, how fundamental are women to the success of TOCGs?

In order to clarify these aspects of women's involvement I will consider the following questions. Why does this gender gap exist? Why do these gender contradictions exist? Why do gender constraints persist over time and space? Why these particular gender differences and this type of stratification in TOCGs? Why does gender *still* matter and make a difference in TOCGs? Have law enforcement agencies underestimated women's roles?

I hope my approach will provide the basis for a new and ground-breaking conceptual framework for understanding the roles of women in TOCGs in a global context. As a woman researcher and using a biographical and autobiographical approach, I want to listen to women and their stories to understand their criminal experiences, involvement and pasts. I will collect the cultural and intersubjective life stories and narratives of TOCGs women in order to reconstruct their involvement and participation between 1990 and 2018 and so answer my research questions.

This study will combine the analysis of historical documents (papers from court cases; newspaper and other reports) with the first-hand accounts of women involved in TOCGs viewed through a cultural lens. I will analyse the women's experience from a variety of angles – bottom up and top down, insider and outsider, formal and informal – to decipher their life stories, motivations, strategic choices and life paths, in order to understand more fully their role within TOCGs.

Nigerian sex workers in Castel
Volturno, Italy, 2016
Photo: Giovanni Izzo





Sensing and presencing rare plants through contemporary drawing practice

Focusing on the plants of the south-western coast of India, Siân Bowen is investigating the relationships between rare plant life, drawing and herbaria

The collection and distribution of plants – once a currency of empires – still has huge social, cultural and political implications today. Thousands of species are identified as endangered or possibly extinct, while bans on the transportation of plant specimens guard against bioprospecting and biopiracy. This, together with significant contemporary interest in drawing in its broadest terms and in the sensory nature of museum objects, opens a clear position for my investigation at the interstices of fine art, botany and plant science, museology and cultural geography.

Historically, drawing has been the key means of scientific description and identification of plants. With digital technologies now occupying this central position, my project asserts that botanical illustrations and specimens are now inspiring contemporary art practices, especially those concerned with themes of ephemerality. The Fellowship is giving me the opportunity to examine in what ways drawing can – not as analytical illustration but rather as a material phenomenon – represent the vulnerabilities and resilience of rare plants. I aim to link the remarkable ephemerality of the natural world to ways in which culture mediates sensation and, in so doing, to enhance our understanding of rare plants' vulnerabilities and resilience.

Taking plants of Kerala, India, (formerly Malabar) as my focus, I am engaging with three distinct but interconnected historical and contemporary sites of knowledge: first, a twelve-volume seventeenth-century illustrated treatise on the region's flora, *Hortus Malabaricus*, and its twenty-first-century English translation; second, historical herbaria in Edinburgh, Liverpool and Oxford that house specimens described in those publications and brought to Britain during the seventeenth, eighteenth and nineteenth centuries; and third, sacred groves surrounding temples in the coastal regions and tropical forests of Kerala, the centuries-old protection of which has ensured the survival of several of the rarest plants discussed in *Hortus Malabaricus*.

Its volumes are remarkable for their fine engravings and in-depth description of the region's plants, including their sensory characteristics, and their uses as medicines, spices and dyes. I have identified some of the rarest plants described in these volumes, at Edinburgh, Oxford and Liverpool herbaria. I have also undertaken my own drawings of preserved examples of these species, reflecting the impact of conservation methods, and systems of storage, classification and labelling. I plan to make field visits to Jawaharlal Nehru Tropical Botanic Garden and Research Institute and to Kerala's sacred groves in order to understand better the status of living plant specimens in relation to site. Through the resulting body of artworks, I aim to reflect how the materiality of drawing can make present the vulnerabilities and resilience of rare plants.

Sky-diving for dinner: the foraging biology of the kingfisher

How does the pied kingfisher both hover and dive? Kristen Crandell is studying its biomechanics and physiology to find out

The foraging flight of the kingfisher is the well-known inspiration for the Japanese Shinkansen high-speed bullet train. The shape of the beak is thought to help reduce aerodynamic and hydrodynamic drag as the bird dives from metres above the water, piercing its surface in pursuit of prey without creating a ripple. While much is known about the engineering principles behind the drag-reducing shape of the front of the bullet train, its biological inspiration remains unstudied.

The foraging style of the pied kingfisher is an extreme form of animal locomotion paradoxically involving both hovering and high-speed diving. The kingfisher hovers over the surface of the sea for extended periods of time. Such hovering is costly, energetically well above that of an Olympic athlete's 100-metre sprint, and kingfishers, being much larger than hummingbirds, are thought to be above the physiological size limit for sustained hovering. The subsequent dive at high velocity encounters large deceleration when hitting the water, similar to a human high dive into a pool of maple syrup. Dives, then, must be performed with precision to avoid damage and successfully capture prey. Nonetheless, kingfishers are a highly successful group of birds – with the pied kingfisher found abundantly across Africa and south-east Asia.

This project will examine the biomechanics and physiology of the kingfisher dive, illuminating how hovering is achieved in a large bird, and the specifics of precise water entry. High-speed videography will enable us to track the motion of wild birds to learn how the bird controls the aerodynamics and hydrodynamics of foraging. Multiple synchronised high-speed cameras coupled with technology similar to that used by animation studios will allow us to digitally measure and reconstruct the motion of the wings and body of the bird in three dimensions. This level of detail will reveal the specific motion patterns the birds use to control hovering and diving.

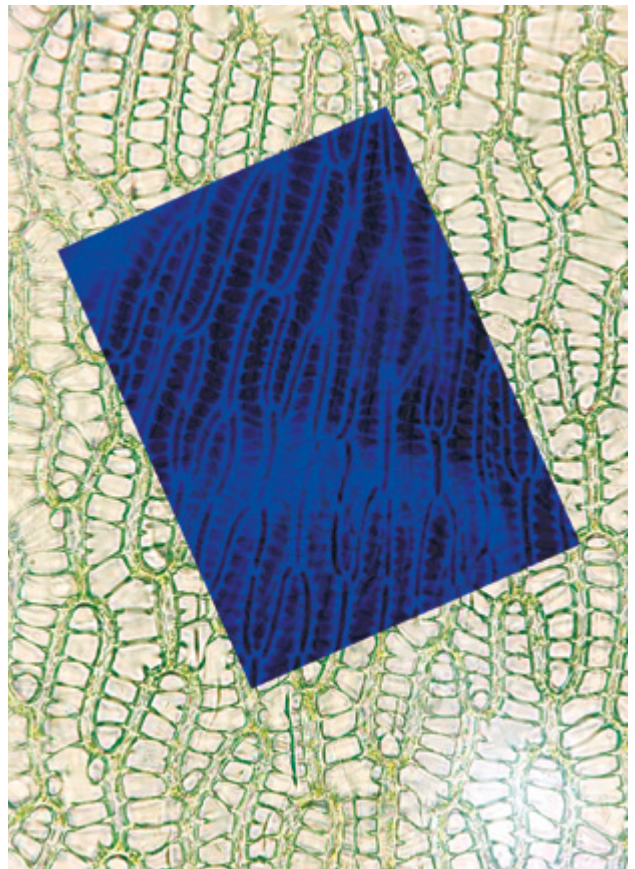
We will also sample longer periods of activity, to construct an energetic framework for how difficult dives fit into the ecology of the animals. Birds will be given tiny waterproof backpacks containing GPS units and accelerometers (much like a smartphone), enabling us to measure the relative frequency and repeatability of dives over several weeks, and the timing of these dives relative to external factors such as wind and weather.

By combining detailed biomechanical approaches with broader-scale physiological measurements, this work will further our understanding of an unusual but highly successful flight strategy.

Opposite

Pied kingfisher, hovering.
Photo: Andy & Gill Swash,
WorldWildlifeImages.com





Ecosystem engineering – from cells to landscape: how do sphagnum mosses alter their environment?

John Doonan and team
are investigating how
cellular adaptations
might enable these
tiny plants to retain
water and so dominate
large areas in cool
wet climates

Sphagnum is a key feature of many peatlands. This group of mosses is probably responsible for more accumulated biomass than any other plant genus on Earth. They act as ecosystem engineers, altering the environment to their own advantage, both managing the water supply and storing carbon. This project aims to find out how they achieve this, by using the latest techniques in genetics and imaging to investigate sphagnum's basic biology.

Unlike the more or less uniform cells of many other lower plant leaflets, mature sphagnum leaves contain large, dead, transparent hyaline cells that hold water within a network of small, living photosynthetic cells. The hyaline cells have intriguing similarities to the waterpipe-like xylem cells of higher plants and seem to help sphagnum retain water: the plant can hold at least twenty times its own biomass in water. On the other hand, some species can survive repeated desiccation. The unusual configuration of cells may explain the genus's adaptive success within its watery environment. The development of these hyaline cells, their physiology and their contribution to water management remain obscure.

There seems to be significant diversity in water-holding capacity, although it isn't known if this is genetically controlled. Some strains display remarkable resilience to drying out and can recover full photosynthetic ability within seconds or minutes of re-wetting. An automated phenotyping platform recently installed at the National Plant Phenomics Centre can measure water use of up to 2,000 individual plants and record physiological changes, enabling large-scale screening of genetically diverse populations collected from different sites.

Our chosen sites include upland blanket bog and lowland raised bogs in Wales, Ireland, and the Pennines in England. Some of these bogs are naturally regenerating after traditional small-scale peat cutting, while others are being actively restored after commercial extraction or to repair the effects of earlier industrial pollution. In addition, we are collaborating with colleagues in the Baltic countries, which contain about 25 per cent of European peatlands, to develop imaging methods to map the surface water content of moss in situ in the bogs.

Thus, the project will compare basic cellular traits in different species of sphagnum to understand their water handling strategies. Photophysiological phenotyping techniques will be combined with molecular genetics and genomics to dissect the relationship between water holding ability and resilience to environmental stresses. A deeper understanding of the resilience and sensitivity of different sphagnum species should assist both with better management practices and restoration strategies to conserve and sustainably exploit these valuable habitats.

Top left

Restored sphagnum peatland:
Sluggan bog, Co Antrim

Top right

Microscopic close-up of sphagnum
leaf structure

Bottom right

Sphagnum papillosum

Bottom left

Automated assessment of water
use by sphagnum, National Plant
Phenotyping Centre, IBERS,
Aberystwyth University

Bridge over troubled water: ritual or rubbish found in Roman rivers

Rings, figurines and hairpins – Hella Eckardt and team are investigating how and why Roman objects so often collect together at river crossings

Roman objects have frequently been discovered close to bridges and river crossings. For example, thousands of coins have been retrieved from the River Liri at Minturnae in Italy, the Mosel at Trier in Germany and the Thames in London. Despite hints in classical sources that Roman bridges had symbolic, religious and ritual meaning, such finds have usually been assumed to be the result of accidental loss or rubbish deposits revealed by riverine erosion.

Our project will challenge this assumption and will explore where, how and why these objects were deposited there. By looking at the types of objects found and their exact contexts, we aim to ascertain whether they were ritual in nature or mere rubbish, providing for the first time a coherent discussion of such deposits during the Roman period. We will also examine the role of landscape features, e.g. confluences and springheads, in determining their depositional context, and compare assemblages from rivers to those from springs and lakes, as it appears that different kinds of objects were deposited in flowing and standing water during antiquity.

As well as completing a systematic survey of Roman period riverine deposits in Britain and on the Continent, we will undertake a detailed case study of some 3,000 objects found on the bed of the River Tees at Piercebridge, County Durham. Dating mostly from the second and third centuries CE, they were recovered by two divers close to the remains of a Roman bridge and to the site of a third-century fort and small settlement, together with 40kg of Roman pottery and 10kg of animal bone. Piercebridge is located on Dere Street, a major Roman road running north from York to Hadrian's Wall and eventually the Antonine Wall. Analysis of these objects, which include military equipment, harness fittings and jewellery, should give us insight into the identities of those responsible for their deposition. Objects such as finger rings or small statues of deities may have been the offerings of soldiers, praying for a safe return from their travels, for example. But what about objects such as hairpins that are usually associated with women – did the river have wider significance to the local population? We will complement our analysis of the material culture from the river Tees with study of its landscape context using borehole data and geomorphological techniques.

Overall, the project aims to further understanding of riverine assemblages in the Roman period and to develop criteria for distinguishing between those that potentially had a ritual origin and those that represent eroded rubbish deposits.

A fragment of an iron finger ring with
an intaglio depicting a satyr from the
River Tees at Piercebridge
Photo: Philippa Walton





Sculpting in the tradition of the Old Masters

A training in figurative sculpture will enable Poppy Field to create beautiful public monuments and memorials in bronze

Since the Renaissance, the discourse surrounding Western thought has imbued material objects with the ability to prolong and preserve human memory far beyond an individual's existence. My aspiration is to contribute to the United Kingdom's exceptional legacy of figurative memorials and monuments

The Study Abroad Studentship will enable me to complete my training in figurative sculpture at the Florence Academy of Art (FAA). Here students work exclusively from life under natural north light in the tradition of the Old Masters. Drawing classes are based upon the nineteenth-century teachings of Jean-Léon Gérôme at the École des Beaux-Arts in Paris; the sculpture curriculum is derived from texts written by Édouard Lantéri, who taught at the National Art Training School in London (later the Royal College of Art) from 1880 to 1917, and delivered by Robert Bodem through his pedagogical concept of 'drawing in space'. This final year of study will be an opportunity to translate, rather than copy, nature in a way that is artistically beautiful and anatomically accurate.

My Study Abroad Studentship will focus on three sculptures. The first is a three-quarter life-size reclining female figure, the second a life-size seated male torso and the third a life-size standing female figure. In addition, I will continue to work on portraits as well as take evening classes in anatomy, *ecorché* sculpture and life drawing. As a graduate of the advanced sculpture programme, I look forward to working in the round across a variety of scales, composing reclining figures, comparing and understanding visual foreshortening, developing internal structures even when not visible, and, perhaps most importantly for the creation of monuments and memorials, learning to cast in bronze.

Bronze, largely rejected in the twentieth century, remains one of most distinguished sculptural mediums. This can be explained by its heritage, almost indestructible quality, and formal characteristics.

Memorialising can be a highly contentious field and, historically, monuments have often served to validate particular political, historical, cultural and social perspectives; assigning singular memory and meaning to complex events has the potential to create entirely new sites of conflict. However, I trust that my earlier studies at the Courtauld Institute of Art have equipped me to make critical judgements in relation to heritage, inscription, medium, location, interaction and purpose.

I firmly believe in the continuing significance of bronze figurative sculpture for public works. It is a privilege to have the opportunity to further my technical ability so that I might one day realise my ambition of collaborating with public bodies in the creation of monuments and memorials.

Poppy Field at work on a life-size standing male torso, completed during her second year of study

Charting coral reef futures

How are coral reef ecosystems changing?
Nick Graham is quantifying differences in how their species function and in the benefits that humans derive from them

My research tackles large-scale issues related to the pressures faced by coral reef ecosystems. This has included investigating how climate change-driven loss in coral cover influences reef fish assemblages, how fishing influences the ecosystem, and how differing types of management can chart a way towards a more sustainable future.

This research and that of many others has highlighted that the types and abundances of corals and fish are changing dramatically on coral reefs. These changes in composition are due to the differential susceptibility and recovery potential of species to climate change and other human impacts such as fishing and nutrient inputs. The scientific community is rushing to understand this large-scale reorganisation of species.

My Philip Leverhulme Prize will help me to study changes to coral reefs across the Indian Ocean, that represent large gradients in climate change impacts and human use. I already have an understanding of the changes in species make-up in many of these locations, and will now move towards quantifying differences in how the ecosystems function and how the benefits people derive from coral reefs (e.g. fisheries, tourism, shoreline protection) are changing.

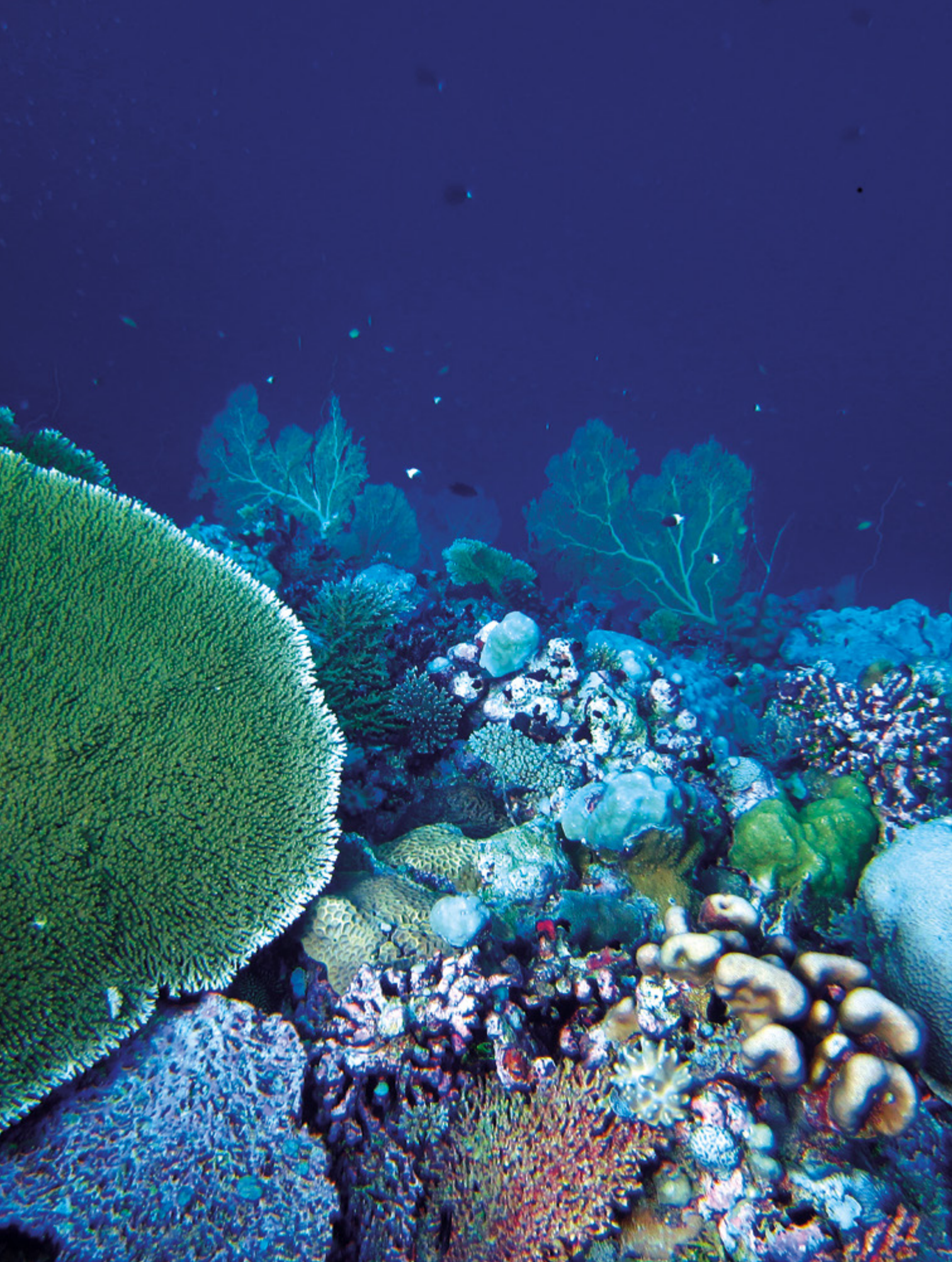
I will quantify differences in ecosystem function in two ways. Firstly, I will link changes in species composition to changes in functions, based on the specific characteristics (or 'traits') that species have. These characteristics may include diet, body size, mouth size, swimming speed, and home range. Secondly, I will measure the magnitude of key ecosystem functions, and identify the species performing the functions. This may involve filming fish feeding on algae, measuring coral growth rates, and assessing predator success rates.

I will assess how benefits to people are likely to change using a range of proxies. I will estimate the benefits to fisheries based on the amount of fish surveyed on reefs underwater and through a fish productivity model. For coastal protection, I will use a model of wave energy at different locations. Tourism benefits will be based on attributes known to be important to tourist satisfaction, such as the presence of iconic marine organisms (e.g. sharks) and high coral cover. Interviews with stakeholders will compare if these proxies capture differences in benefits perceived by people.

Collectively, this research, funded by a Philip Leverhulme Prize, will enable me and my research group to gain a better understanding of how coral reefs in the Indian Ocean are changing, how this influences the way they function, and the benefits derived from reefs by people.

Opposite

A diverse coral reef drop-off
in the central Indian Ocean





Red gold: a global environmental anthropology of palm oil

Pauline Hellerman's research focuses on the ubiquitous commodity in whose story the Leverhulme Trust itself plays a bit part

Palm oil is everywhere: in the food we eat, the cosmetics we use, in detergents, candles and biofuel. Today, over half of all supermarket products contain palm oil, and our appetite for it seems insatiable – between 1995 and 2015 global consumption quadrupled, surpassing 60 million tons. In the media, too, palm oil appears everywhere: in discussions around the health benefits and hazards of different vegetable oils; in alarmist campaigns against the rapid expansion of palm oil cultivation and the forest and orangutan habitat loss it causes, countered by sophisticated PR campaigns by the palm oil industry; in the current stand-off between the EU and Malaysia over the EU's ban of palm oil imports for biofuel production; and in enthusiastic speculation on the potential of blockchain (digital encryption of information) as a mechanism to ensure sustainable production. Academic interest in palm oil is also booming, with dozens of recent research projects on the environmental and social impact of rapid oil palm plantation cultivation. These studies are hugely enhancing our understanding of the palm oil boom, in particular its local ramifications, but so far there is no overall account of the global phenomenon that is palm oil; it presents a glaring omission in the 'one commodity' genre that has become so popular since Kurlansky's bestseller *Cod*.

It is this kind of book – albeit rooted in environmental anthropology – that I will be researching and writing during my Leverhulme fellowship. I will look at the historical ecology of the oil palm in West Africa; local beliefs, knowledge and practices around it; the discovery of palm oil as an industrial lubricant in the nineteenth century and the subsequent trade boom when colourful 'oil-palm ruffians' bought vast quantities of palm oil – then entirely derived from semi-wild oil palm groves in West Africa – and big fortunes were made, including, of course, Lord Leverhulme's. I will also examine global agri-business complexes from plantation to consumer, such as Unilever's production of Wall's ice cream but also small-scale global trade networks in unrefined red palm oil supplying the West African diaspora; and at the socio-ecological impact of vast scale oil palm cultivation, its contested media representation and the ongoing quest for 'sustainable' palm oil production, from boycott to certification and blockchain schemes. In this multi-faceted, tangible way I hope to capture human entanglements with nature in all their diversity, and what 'the Anthropocene' actually means for us all.

Forest cleared for an oil palm plantation in Okomu Reserve, Nigeria, c. 2002

Hidden texts of the Andes: deciphering the *kipu* of Peru

Colour, ply direction,
type of animal fibre
and a secret
manuscript will help
Sabine Hyland's team
decode the Inka
writing system of
knotted cords

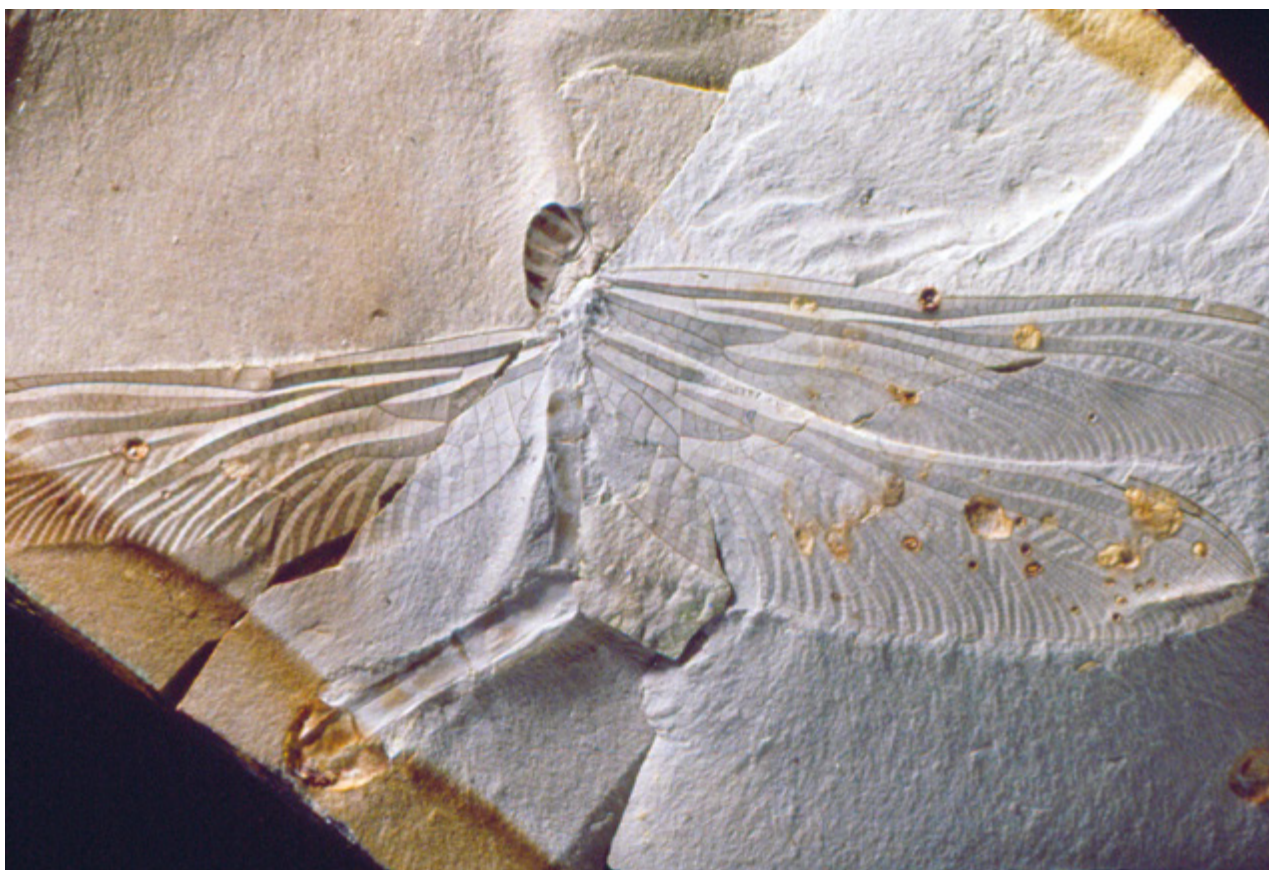
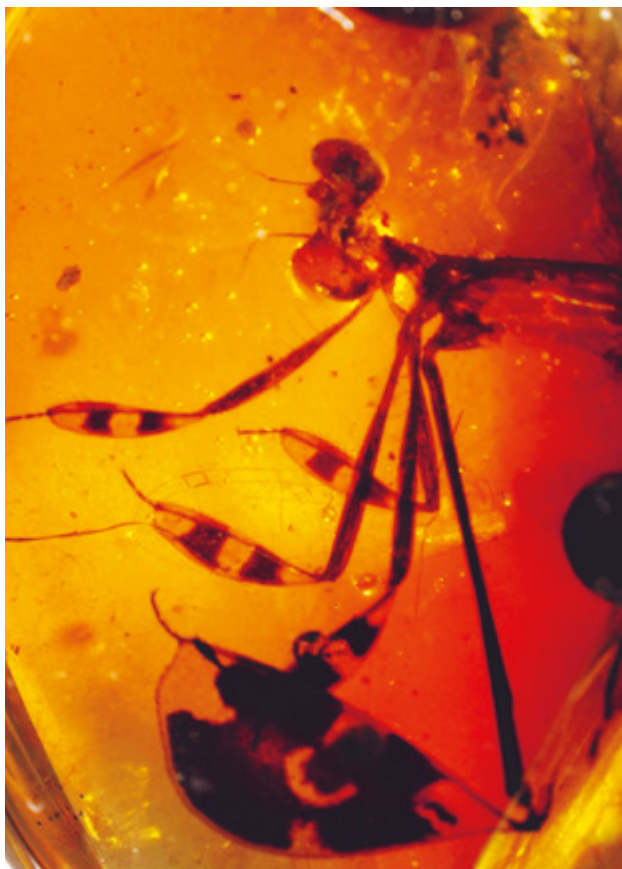
What if we could read the Inkas' own accounts of their history as well as Spanish chroniclers'? The Inka writing system of knotted cords – *kipu* – recorded histories and other information, yet remains undeciphered. My research has uncovered Peruvian villages where *kipu* were used within living memory, providing vital insights into how they functioned. This project aims to further *kipu* decipherment by analysing this ethnographic data using linguistic, historical, and anthropological methodologies. Deciphering the 800-plus extant *kipu* would revolutionise our understanding of Andean civilisation, providing an insider view of practices such as human sacrifice and mummy veneration.

This project has two parts: the first focuses on analysing hybrid *kipu*-alphabetic texts known as '*kipu* boards'. A technology developed in the sixteenth century, each wooden board lists the names of the villagers with a multicoloured *kipu* cord next to each name recording that individual's ritual responsibilities. I have photographs of the only three *kipu* boards known still to exist, and will supervise a doctoral student in the search for correspondences between features of the cords, such as colour and ply direction, and characteristics of the names, such as gender and lineage affiliation. I also have photographs of a sixty-page, secret ritual manuscript, The Entablo, from a village whose inhabitants used *kipu* boards until the 1950s. Written in Spanish and Quechua, The Entablo describes in detail the boards' role in village ritual life and I will work with a postdoctoral research assistant to produce a critical edition.

The second part of the project focuses on sacred *kipu* epistles from a small Andean community known as Collata. Villagers in Collata guard two Inka-style *kipu* in a chest with 100-plus colonial manuscripts. Until recently, the elders showed these *kipu* only to male villagers, telling them that these *kipu* were narrative epistles written by local leaders about a rebellion on behalf of an Inka pretender to the throne in the eighteenth century. These are the first *kipu* ever identified as either narrative or epistolary. Instead of knots they use a vibrant array of colours and six different animal fibres (vicuña, alpaca, guanaco, deer, llama, and viscacha) to convey meaning. Their complexity suggests that they are logosyllabic. I will continue my study of these texts, both through research in the Archive of the Indies (in Seville, Spain), and also by visiting other villages in the Collata region of the Andes, which may guard similar treasures. A greater understanding of how phonetic highland *kipu* functioned will potentially open up other *kipu* to decipherment.

A *kipu* from the Andean village of San Juan de Collata may contain information about the village's history





Well preserved: creatures of the Cretaceous that crept, crawled and flew at opposite ends of the ancient Eurasian continent

Ed Jarzembowski is identifying ancient species of insect fossilised in amber from northern Myanmar and rocks from southern English wetland deposits

Amber – fossilised tree resin – is valued by scientists for the extinct plants and animals it often contains, trapped in its once sticky ooze and now exquisitely preserved. Burmese amber (amber from remote northern Myanmar, sometimes called burmite or even birmite) contains the greatest diversity of insects known from the Cretaceous period, dating from the latter part of the age of the dinosaurs, some 100 million years ago. Absolute (radiometric) dating of the mudstone containing the burmite, undertaken only five years ago, showed it was 98 million years old. But the fossil resin had clearly become separated from the original wood and was sometimes bored by shellfish (bivalves) before being buried, indicating that it was even older than the enclosing mudstone, perhaps by several million years.

All the major divisions of living insects (orders) are represented in Burmese amber, beetles (Order Coleoptera) being one of the most diverse, but the majority of species are yet to be identified. My project therefore aims to document the archaic species present (archostematan beetles). Today, these animals are often seen as rare ‘living fossils’, clinging on despite the global loss of primaeval woodland and the evolution of more modern beetles. But the Myanmar fauna has already produced some forms not seen today, showing that archaic beetles were a thriving part of the mid-Cretaceous terrestrial revolution which saw the rise of the flowering plants.

The amber record is inevitably biased towards smaller species. None of the larger species, such as the notocupedin archostematans, is available in amber for scientific study. These big beetles are, however, relatively common in Cretaceous wetland deposits such as those currently being dug in the south of England for making bricks. Thus these ‘rock’ fossils are complementing amber inclusions from the opposite ends of the ancient Eurasian continent to reveal the bigger picture.

A surprising discovery (because of their comparatively large size) is the number of dragonflies preserved in Burmese amber, especially small damselflies, many of which are being studied for the first time. These flying predators were flourishing in the Cretaceous alongside flying reptiles and the burgeoning birds. Often incompletely embedded in amber, the dragonflies’ showy fossils are also complemented by wetland rock specimens as their young larval stages would have lived in water.

Amber is rare in the south of England, but as I write, reports are coming in of amber with insect inclusions having been found in Cretaceous coal (ancient peat) in another part of Myanmar: there could be more exciting finds!

Top left

Amber inclusions revealed in fluorescent light. Photo: Chenyang Cai/Fred Clouter

Top right

Male damselfly in Burmese amber

Bottom

Extinct dragonfly in mudstone from the Weald of southern England

Historiography of anatomy in northern Europe and the Atlantic world, from c. 1650 to c. 1800

The various types of writing on anatomical practice that emerged in northern Europe during the seventeenth and eighteenth centuries form the focus of Catherine Jones's research at the University of Leiden

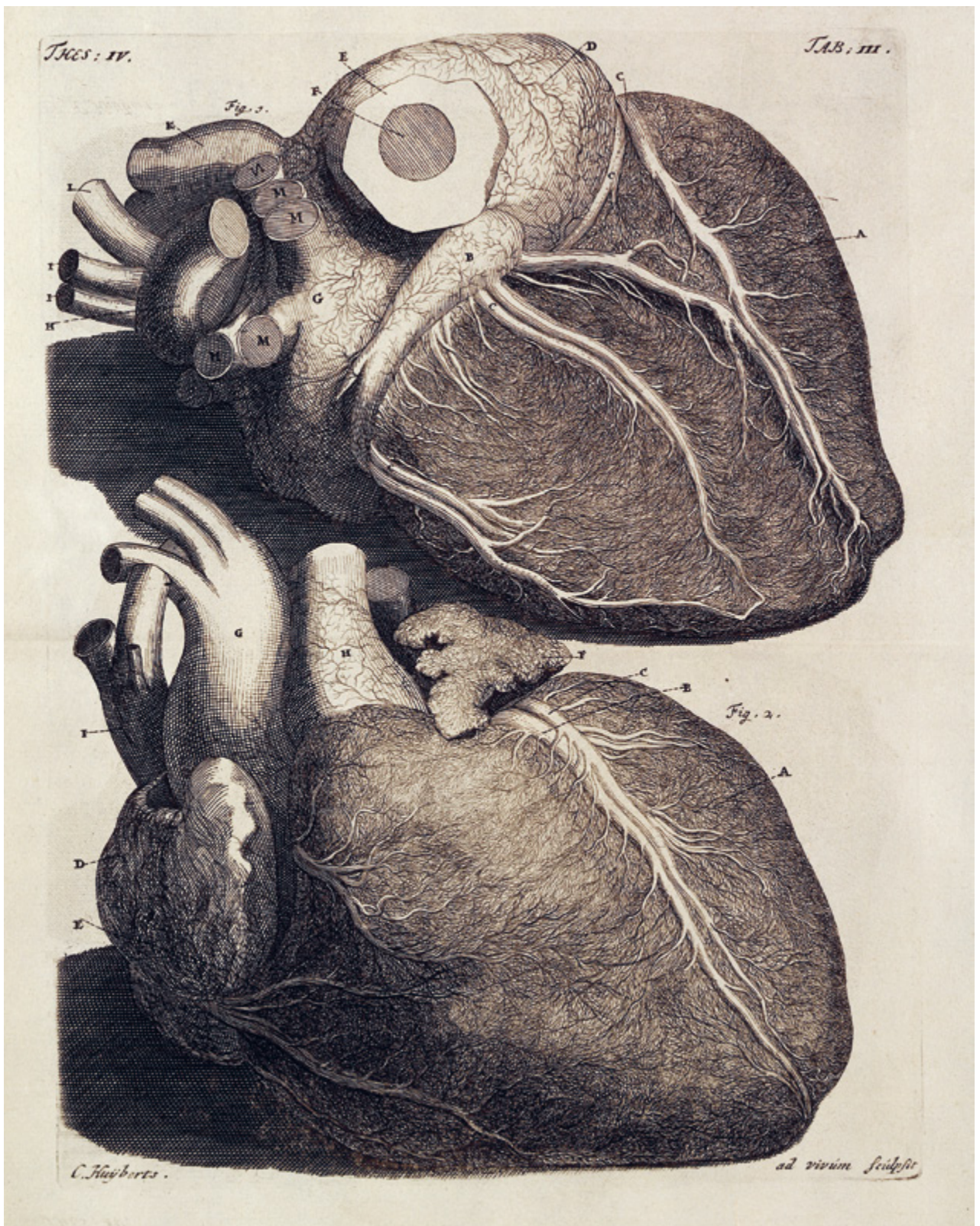
As the holder of a Leverhulme International Academic Fellowship at the Scaliger Institute, Leiden University, I will examine the development of different genres of writing on anatomical practice, history and instruction in northern Europe and the wider Atlantic world, and the relationship of such writing to Enlightenment philosophies about human nature. Anatomical demonstrations were an integral part of university training for physicians in Europe in the early modern period. Focusing on the anatomy theatres of Leiden, Edinburgh and Moscow, my primary sources will include travel journals, memoirs, letters, biographies, lectures and institutional histories.

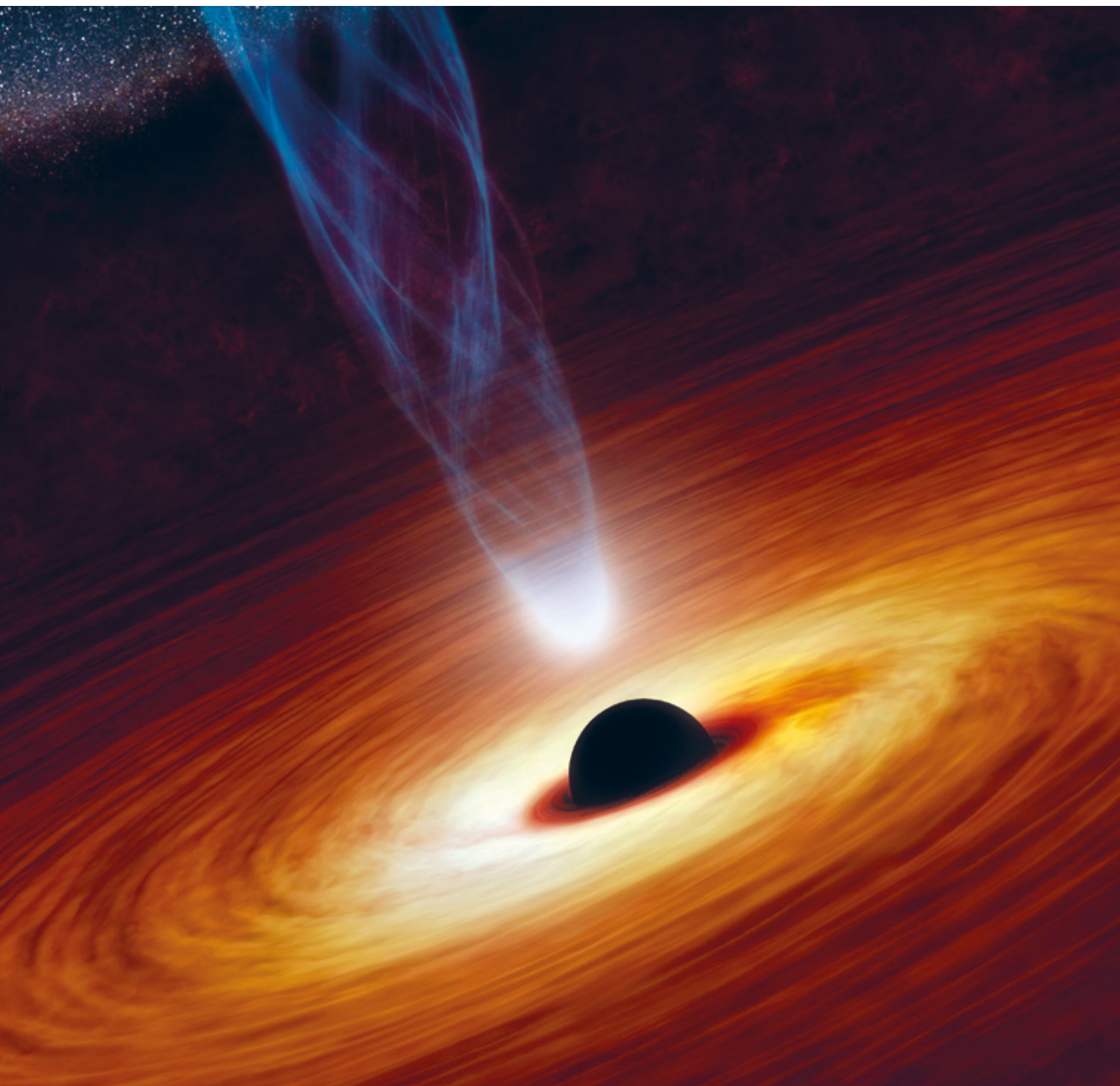
An anatomy theatre began functioning in Leiden in 1593, and clinical medical teaching was established in 1636. The study of nature was pursued more actively in Leiden than in any other European university in the late sixteenth and early seventeenth centuries; and during Franciscus de le Boë Sylvius's tenure of a chair in medicine at Leiden, practical activities such as anatomies, dissections, experimentation and clinical teaching reached an even higher level. Leiden became a major competitor to Padua as an international centre for medical education, attracting students from a wide variety of regions and nations. Interest in the Leiden anatomy theatre was such that, from 1669, catalogues were printed each year describing the rarities on view. Visitors included Peter the Great, who, seeing the potential for Russia of anatomy as a basis for surgery, established the first Russian anatomy theatre in Moscow, next to the hospital founded in 1706, under the supervision of the Leiden-educated Dutch physician Nicolaus Bidloo. Peter subsequently instructed his personal physician, Robert Areskine, a Scot educated in Utrecht, to purchase the entire collection of preparations of the celebrated Amsterdam anatomist Frederick Ruysch; the collection became part of the Tsar's Kunstkamera or natural history museum in St Petersburg.

Drawing on a range of texts in Dutch, English, French, Latin and Russian held at Leiden University, I will examine the impact of writing on anatomical practice on Enlightenment philosophies of human nature. I will pay particular attention to the interest in the anatomical past of prominent medical practitioners and educators, such as Sylvius, Robert Sibbald, Archibald Pitcairne, Herman Boerhaave, Alexander Monro (primus), and Nicolaus Bidloo. I will also consider how the interplay of ideas and genres in writing on anatomical practice contributed to the emergence – in the context of a new Enlightenment sociability and the concept of a public it generated – of the modern field of medical ethics.

Opposite

Frederik Ruysch, *Thesaurus animalium primus* [...] / *Het eerste cabinet der dieren* (1710); botanical preparations
Courtesy of the Wellcome Collection





Investigation into loop quantum gravity

Daniel Martinez is in pursuit of a theory to explain black holes and the origins of the Universe

Physicists have sought a quantum theory of gravity since Einstein established the founding principles in 1905 and 1915. Whilst quantum mechanics describes the small world of particles, in the cosmological regime, general relativity has repeatedly given us accurate predictions, recently with the measurement of gravitational waves. Why, then, seek to merge these theories?

Historically, unification has led to revolution: Newton unified gravity and mechanics, laying the foundations of modern physics; Maxwell unified electricity and magnetism transforming our understanding of light. It is known that our two current theories cannot describe the early universe or even black holes appropriately so the hope is that unification will again lead to startling results.

String theory has long dominated the search for a solution, but its predicted supersymmetric particles are still missing. My Studentship enables me to work in Marseille with Professor Carlo Rovelli on an alternative approach, known as 'loop quantum gravity' (LQG).

LQG starts with general relativity's description of the universe as a malleable and compressible space-time, and quantises it. When we quantise light, a picture of discrete particulate photons emerges; the same procedure applied to general relativity yields particulate spacetime. This is the difference between a ball pit and a pool: far away they may look the same, but on closer inspection the water is continuous, whilst the ball pit is made of individual balls. LQG says that our universe, which seems continuous, is really tiny chunks of quantum spacetime!

One prediction that has tentatively emerged is that the universe can only be compressed down to the Planck length, around 10^{-35} ; any less than this length makes no physical sense. The implication is that just as a star compressed enough will exert an outward pressure and explode, so will any so-called singularity. This implies that the universe never had a Big Bang, but rather a Quantum Bounce and black holes may in fact explode into 'white holes', spitting out all their matter and not allowing anything to enter. Computing how long this white hole transition may take will be the focus of the work done in Marseille.

This idea may provide a first empirical test for LQG, and perhaps answer the astronomical problem of so-called fast radio bursts (short unexplained energy pulses). These hypotheses suggest that the world we know once collapsed, causing complete destruction bouncing back out to its current state. If true, then the universe will exist, and has existed, forever. Our luck is to live at a time stable enough to breed life able to understand this.

Loop quantum gravity suggests that there may be a chance for long-lived black holes to explode out into white holes

Image: Artist concept, NASA
PIA16695; NASA/JPL-Caltech

Arabic poetry of the Crusades-era Mediterranean: sacred violence and profane love

The Pearl of the Palace and the Annals of the Age is an anthology compiled by Saladin's secretary Imad al-Din al-Isfahani. Nathaniel Miller is examining its poems to illuminate the aesthetic and cultural sensibilities of medieval Sunnism

In 1060, Arab Sicily was invaded by the Normans. Sicily's Arab Muslims belonged to a large religious and linguistic community, stretching from Spain to the Indus. While relocating to escape non-Muslim rule was an option open to members of the elite and endorsed by Islamic religious scholars, it is difficult to characterise popular or unofficial reaction to the Normans' arrival. The Islamic world of the eleventh and twelfth centuries was in fact increasingly subject to occupation: in 1085 the Spanish reconquered Toledo, and in 1099, the Crusaders took Jerusalem.

One way to gauge contemporary sentiments is through poetry. For example, one Sicilian poet, Ibn Hamdis, who fled to Spain and then North Africa, composed panegyrics for any leader who could potentially lead the jihad to retake Sicily. Umar ibn Bishrun, on the other hand, chose to remain, and praised the Norman leader Roger II, describing the beauty of his palaces and calling him 'the king of the Caesars'.

Even poets who chose to flee 'the Franks' often displayed contradictory attitudes. Al-Adib al-Qaysarani fled Caesarea (in present-day Israel) for the court of Nur al-Din al-Zangi in Damascus. In his poetry, he promised that Nur al-Din would 'purify Jerusalem with flowing blood'. At the same time, he composed delicate verses about Christian women:

*Among the chaste virgins of the churches,
there is one like a gazelle, adorned with shy reticence.
She prostrates herself before icons;
if there were any justice,
the icons would bow down before her.*

The main source for such poetry is the seventeen-volume anthology *The Pearl of the Palace and the Annals of the Age*, compiled by Imad al-Din al-Isfahani (d. 1201), a prominent secretary of Saladin. Imad al-Din preserved the work of more than a thousand poets, members mostly of the vast cadre of minor bureaucrats and religious scholars, who also constituted the poems' main readership.

This overwhelmingly Sunni cultured class was concerned with more than religion and the counter-Crusade, and they evidently possessed a higher tolerance for sophisticated, complex, and ambivalent poetry than they did for religious heterodoxy. In this regard, *The Pearl of the Palace* sheds light on an enduring aspect of medieval Sunnism, not merely as a set of legal doctrines, but as an aesthetic and cultural sensibility formed in no small part through Mediterranean encounters between Christian Europe and the Islamic Near East. My study, therefore, will examine how the anthology's poems construct Sunnism as an affective stance, cultivated in *belles lettres*, rather than merely a theological or political position.

13th or 14th-century candlestick base
from Iraq or Syria. Muslim rulers from
Spain to Iran were depicted in the
same uniform pose: seated, drinking,
and listening to counsel or poetry.
Edward C. Moore Collection, Bequest
of Edward C. Moore, 1891





Taking liberties: ideals of freedom in contemporary South Africa

What does it mean to be free? Graham Mort is exploring this key question through creative writing in English, Xhosa and Afrikaans with students at the University of the Western Cape

In their 2014 general election, only one in three 'born free' South Africans registered to vote. There was, and is, a growing sense that South Africa is becoming a 'failed state' despite its economic wealth, and despite having the most liberal constitution in sub-Saharan Africa. What has happened to Nelson Mandela's vision of *ubuntu*, of shared humanity, living space and power?

Taking liberties continues an exploration of personal, social and political liberty through creative writing practice that began in Uganda in 2001 and has continued through subsequent projects in Africa and Kurdistan. At its heart is the relationship between the political concept of liberty and our sense of personal freedom. The project will be situated at the University of the Western Cape (UWC), an institution with a linguistically and culturally diverse community of students, who form a generation of first-time attendees, following the dismantling of apartheid.

In 2015, Lancaster University and UWC staged the second *Writing for liberty* conference in Cape Town. The event brought together writers, theorists and critics to share their understanding of how authors have confronted oppression and contributed to human liberty. Our debates were often hard fought, reaching down into a historical sense of partition and powerlessness. My project will build upon that legacy, engaging with students at UWC and building on my earlier multilingual work there in Xhosa, Afrikaans and English. We'll build a new website, featuring the writing of students and community members, and acting as a showcase and resource for other researchers and teachers.

This project will be an exploration of original writing in new configurations, both individual (in English) and collaborative (in Xhosa, Afrikaans and English). It will show how language inhabits more than one place of meaning at once: an exercise in ambiguity, counterpoint, contradiction and multivalence. All that will be enacted through the subtleties and sleights of tongue that form the basis of research through creative writing practice. But perhaps it is only by embracing polyphony, by sharing the intermeshing narratives of self and history, that we can begin to understand the countervailing forces that co-exist in contemporary South Africa and that will influence its emergent participants and leaders.

How does the one-humped Arabian camel survive in the desert without drinking?

David Murphy is working with scientists in North Africa and the Middle East to understand a hormone-mediated dialogue between the dromedary camel's brain and kidney

Desertification, exacerbated by climate change, represents one of the greatest environmental challenges of our times. These global phenomena will impact on the resource security of many of the world's most vulnerable communities. Yet there is one domesticated mammal – the 'ship of the desert', the single-humped Arabian dromedary camel (*Camelus dromedarius*) – that is able to thrive in the hot, arid habitat of the North African and Arabian deserts, and in doing so provide a reliable source of life's necessities. Finding out how the camel does this can help us also understand how other animals may be able to adapt to deserts and climate change.

Crucially, the camel can survive on very little water. One of the ways that this is achieved is through water conservation mediated by the actions of a hormone called antidiuretic hormone (also known as arginine vasopressin, AVP). AVP is made by neurones in the hypothalamo-neurohypophyseal system (HNS) within the brain; it then travels through the blood stream to the kidney where it promotes water reabsorption. This system is particularly efficient in camels: they produce a low volume of highly concentrated urine, especially during periods of dehydration.

We want to understand the physiological and genomic mechanisms that mediate this brain-kidney dialogue. Using camel samples obtained from colleagues in the United Arab Emirates, we will describe, at the molecular level, the response of the dromedary HNS and kidney to chronic dehydration.

With collaborators in Algeria and Malaysia, we have sequenced the genome of an Algerian camel. Based on this unique resource, we will now ask how global gene expression changes in the camel brain and kidney in response to chronic dehydration.

Firstly, using highly efficient and cost-effective state-of-the-art methods that enable us to analyse the expression of all the camel's genes simultaneously, we will ask how dehydration affects gene expression in the HNS and the kidney. Secondly, we will ask how dehydration affects the production of hormones by the HNS. Then we will analyse both these datasets using unbiased mathematical methods that will identify those nodal genes that are central hubs in the regulatory gene network, and that we think are key to the survival of the animal.

We are in a unique position to then test the specific molecular functions of these genes as we have developed methods that allow us to manipulate their activity within intact conscious model organisms, namely rats. We will therefore be able to examine how altering the activity of a specific gene affects the physiology of the rat in terms of its response to dehydrating cues.

The homeostatic masterpiece that is the dromedary camel is an ideal model for understanding the genomic and physiological basis of the remarkable adaptations that enable mammals to survive in arid regions
Photo: SIYAMA9, istockphoto.com





From 2D to 4D: Ireland's medieval crosses in time, motion and environment

Viewpoint, weather
and distance, depth
of carving, light
conditions and scale
– Heather Pulliam
is studying how
each affects the
viewer's response to
ancient monuments
in a landscape

Ringed stone crosses standing in lush green fields have come to epitomise Ireland and Celtic culture. Little monumental sculpture survives from the period: these early medieval crosses carved with images of biblical, mythical and historical figures serve as rare, fragile witnesses to the beliefs and values of the people of northern Europe, c. 700–1100. A millennium of ice, wind and rain has eroded the carvings, so academics have largely concentrated on recording and identifying imagery, stylistic influences and inscriptions with an emphasis upon clarity, objectivity, precision and consistency. It never rains in this Ireland and the viewer's eye is a disembodied lens.

My project aims to resituate these crosses in the living world through an investigation of time, motion and environment. Using digital images, the 3D models produced by the ongoing EU 3D-Icons project and drone footage, I plan to investigate how changing viewpoints, weather and distances elicit a series of encounters with a polymorphic, animated object. In particular, I will explore how the depth of carving, different lighting conditions, scale and the varied gestures and glances of the sculpted figures dictate the viewer's response.

In the Temptation of Adam panel at Monasterboice, Eve breaks free from the pictorial frame, her frank gaze and proffered apple provocatively jutting into the viewer's 'personal space'. The encounter is intimate, even uncanny: Eve looks back – but only if you are standing in the right spot. Kneeling in front of the 4.5m cross, you must crane your neck to look at the image of Christ in Judgement positioned on the central cross-head: Christ's adjudicating stare encompasses the damned and saved; the living and dead – but also the modern scholar and medieval monk.

My approach, termed phenomenological due to its emphasis upon experiential, embodied perception, is particularly suited to the Irish crosses, situated in dynamic landscapes, up to 5.2 metres high and with every surface covered in imagery. While the environs have transformed over the centuries, the changing weather and light and varied distances from which the crosses can be viewed are still preserved at Monasterboice – at least for the moment. High crosses at Kells, Durrow and Clonmacnoise have been moved into shelters in recent years due to conservation concerns. My project may inform future conservation and display, and will also serve as a record of the poetic and ephemeral qualities of the crosses in an animated landscape. Taking account of my project's emphasis upon time and motion, a primary output will be an e-book illustrated by moving images.

Top

Cross of the Scriptures (replica),
round tower and River Shannon at
Clonmacnoise on a sunny morning

Bottom

Clonmacnoise on a foggy afternoon

‘The painters are in’ – the art history of menstruation since 1950

Camilla Røstvik is investigating the role of visual culture in changing public attitudes towards periods over the past seventy years

What can visual culture tell us about menstruation? The euphemism ‘the painters are in’, the title of my project, avoids stating the facts of menstruation, but has also been a call to arms for artists working in both industry and the art world from 1950 to the present – for example, Jen and Rob Lewis, Catherine Elwes, Susan Hiller, Sarah Maple, Chella Quint, Judy Chicago, and Carolee Schneemann. Through interviews, archival research, and art historical analysis I aim to provide an alternative history of menstruation, exploring the role of visual culture in the creation of public attitudes. As part of the turn towards a culture where periods are less taboo (2015 was deemed ‘the year of the period’ by TIME magazine and BuzzFeed!), the project also participates in this cultural change.

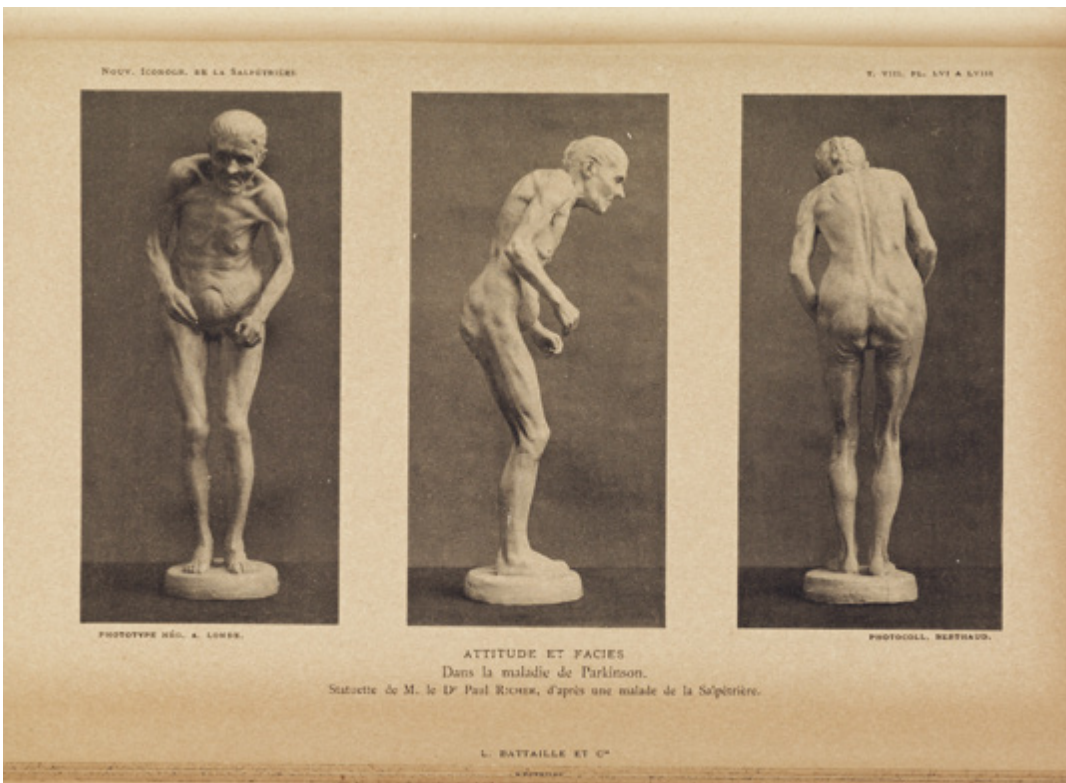
Menstrual art, advertisements and activism are currently receiving unprecedented media coverage. In 2015 drummer Kiran Gandhi ran ‘freebleeding’ through London Marathon, while artist Sara Levy painted US presidential candidate Donald Trump in her own menstrual blood, and poet/artist Rupri Kaur was censored on Instagram for a self-portrait that included a red stain. The coverage of these ‘viral’ moments in menstrual culture, however, is often superficial and sensationalist, and does not take into account the longer history dating back to the 1950s where the relationship between menstrual art practice and wider visual culture started. After all, menstrual culture did not start in 2015! There are clear contemporary links between menstruation and women’s mental and physical health, and the project will analyse how visual culture has shaped the taboos and ideas surrounding menstruation now, at a time when this discourse is rapidly changing.

Menstruation is visual by nature. As soon as the first cycle (menarche) begins, menstruators learn to hide their bright red and brown blood. From school-age, this secret is kept wrapped up in ‘silent’ paper, ‘discreet’ packaging, pink boxes and expensive products. Artists have dealt with the shame and visual nature of menstruation by exploding the assertion that periods are shameful at all. By painting and creating with menstrual blood and themes, artists create an alternative vision of menstruation. At the same time, non-reusable menstrual product advertisers are inspired by ‘third-wave’ feminists to engage their customers (Always, THINX, DearKates, Clue, etc.) By conducting a historical exploration of menstrual art and advertising since 1950, I hope to present the changing nature of attitudes towards periods, and also to understand why these are changing right now.

Opposite

Pink Parachute. Menstrual designer:
Jen Lewis; photographer Rob Lewis
© 2018 Beauty in Blood





The ‘scientific artworks’ of Doctor Jean-Martin Charcot and the Salpêtrière School

Science and art: are they poles apart?
Natasha Ruiz-Gómez examines an exceptional group of pathological images and sculptures from the nineteenth century created by talented doctor-artists

Top

Jean-Martin Charcot demonstrating hysteria in a hypnotised patient at the Salpêtrière. Etching by A Lurat, 1888, after P A A Brouillet, 1887
Courtesy of the Wellcome Library, London

Bottom

‘Posture and facies in Parkinson’s Disease. Statuette by Dr Paul Richer, after a patient at the Salpêtrière’. Illustrated in Paul Richer and Henry Meige, ‘Etude morphologique sur la Maladie de Parkinson’, Nouvelle iconographie de la Salpêtrière 8 (1895): plates LVI–LVIII
Courtesy of the Wellcome Library, London

In what ways can the history of art inform our understanding of medical imagery? My book probes the creative possibilities and inherent tensions between science and art, examining pathological drawings, photographs and sculptures created by clinicians who deliberately combined scientific analysis and artistic expression. As head of the medical service at Paris’s Hôpital de la Salpêtrière for more than thirty years, Doctor Jean-Martin Charcot (1825–93) nurtured the artistic sensibilities of the many doctors who worked under him. The artworks of what came to be known as the Salpêtrière School demonstrate not only the selective and interpretive processes inherent to any artistic practice, but also an active engagement with the history of art and contemporary artistic discourses, even as these clinicians professed dedication to absolute objectivity.

Doctor Paul Richer (1849–1933), one of the most important members of the Salpêtrière School, created a series of sculptures of pathology described by a contemporary as ‘scientific artworks’. This phrase indicates the purposive collapse of the objective (scientific) and subjective (artistic) binary in Richer’s sculptures and can be applied also to the myriad illustrations of nervous pathology that emerged from the Salpêtrière. The influence of these artworks and their makers is far wider than has hitherto been acknowledged. For example, Richer subsequently became professor of anatomy at the École des Beaux-Arts – arguably the most important school of fine arts in the world at the time – where he spent two decades propagating his Salpêtrière medical training among generations of artists.

The Research Fellowship will allow me to complete my book on the ‘scientific artworks’ of Charcot and the Salpêtrière School. It is based on extensive archival research, first-hand visual analysis of objects that have languished in storage for decades, and unpublished and largely unknown medical albums from the so-called Musée Charcot, the Salpêtrière’s museum of pathological anatomy. I am interested in probing how the intersection of art and medical science was exploited by the Salpêtrière School, what new possibilities arose from working within this space, and how these clinicians negotiated its tensions. Can the term ‘objectivity’ accommodate the artistic mentality and techniques deployed at the Salpêtrière? My book will also explore the limits of the categories we use to describe medical and artistic imagery; for example, can we use the term ‘portraiture’ to describe the photographs, drawings and sculptures of patients – clearly identifiable, but also intended to represent a ‘type’? By questioning and expanding conventional interpretations of medical imagery, I hope that my study will push the fields of both medical and art history in new directions.

An evaluation of historical and contemporary arguments about lowering the voting age

Demands to reduce the voting age in the UK are at the forefront of current political discussion. Jonathan Tonge's timely project offers evidence to inform the debate

All the political parties at Westminster, with the (important) exceptions of the Conservatives and Democratic Unionists, support lowering the voting age. In 2014, 16 and 17 year olds voted in the Scottish Independence referendum, and they now also vote in Scottish Parliament and local council elections. Wales has plans to follow. In 2015, the House of Commons Political and Constitutional Reform Committee recommended an inquiry into the voting age for Westminster elections.

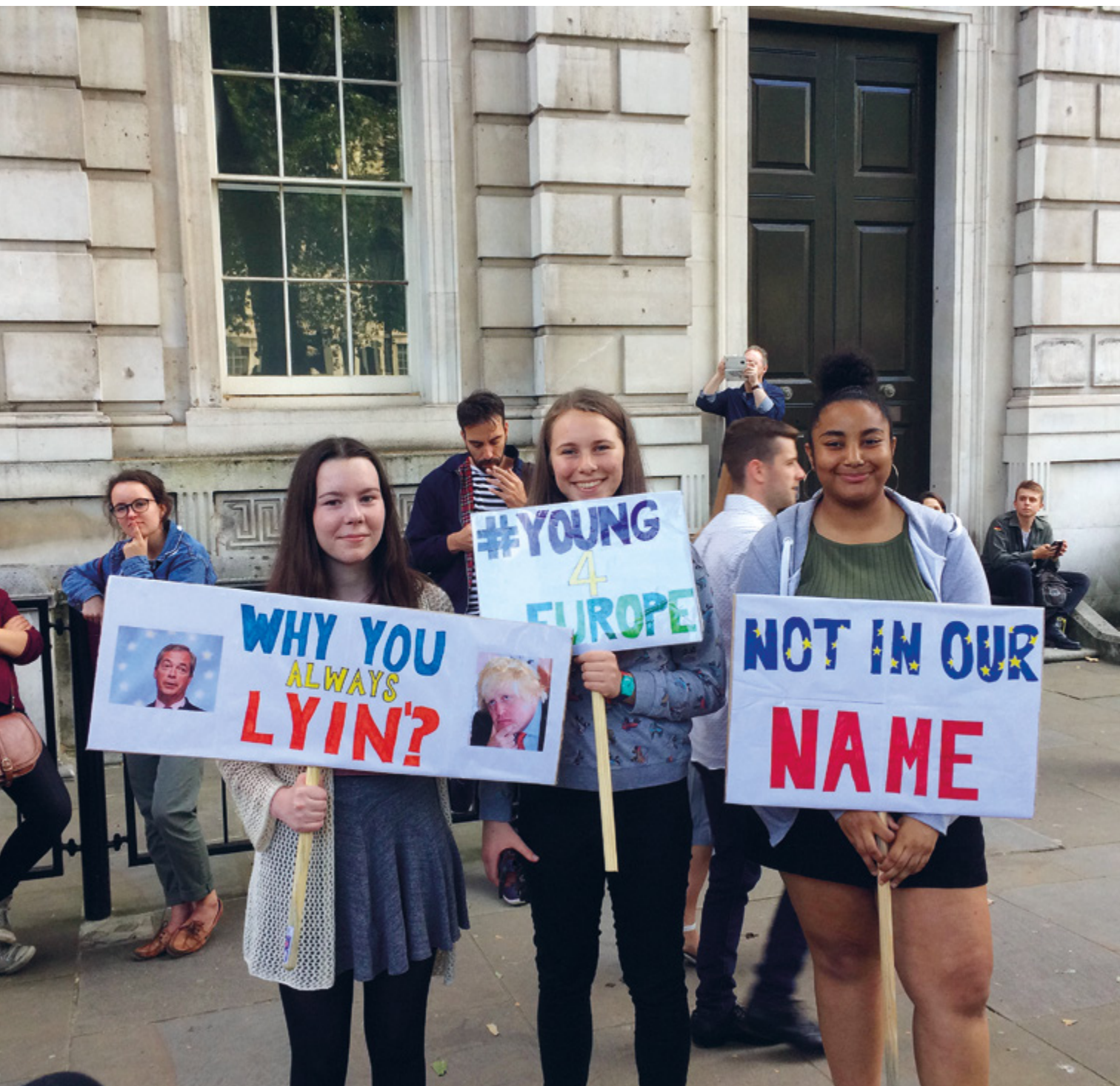
However, as demonstrated during the recent House of Commons debate on whether to lower the voting age across the UK, supporters and opponents of votes at 16 often draw on narrow, repetitive, and speculative arguments to promote their case. There is a need for proper, evidence-based, analysis of the emergent politics of youth enfranchisement across the UK.

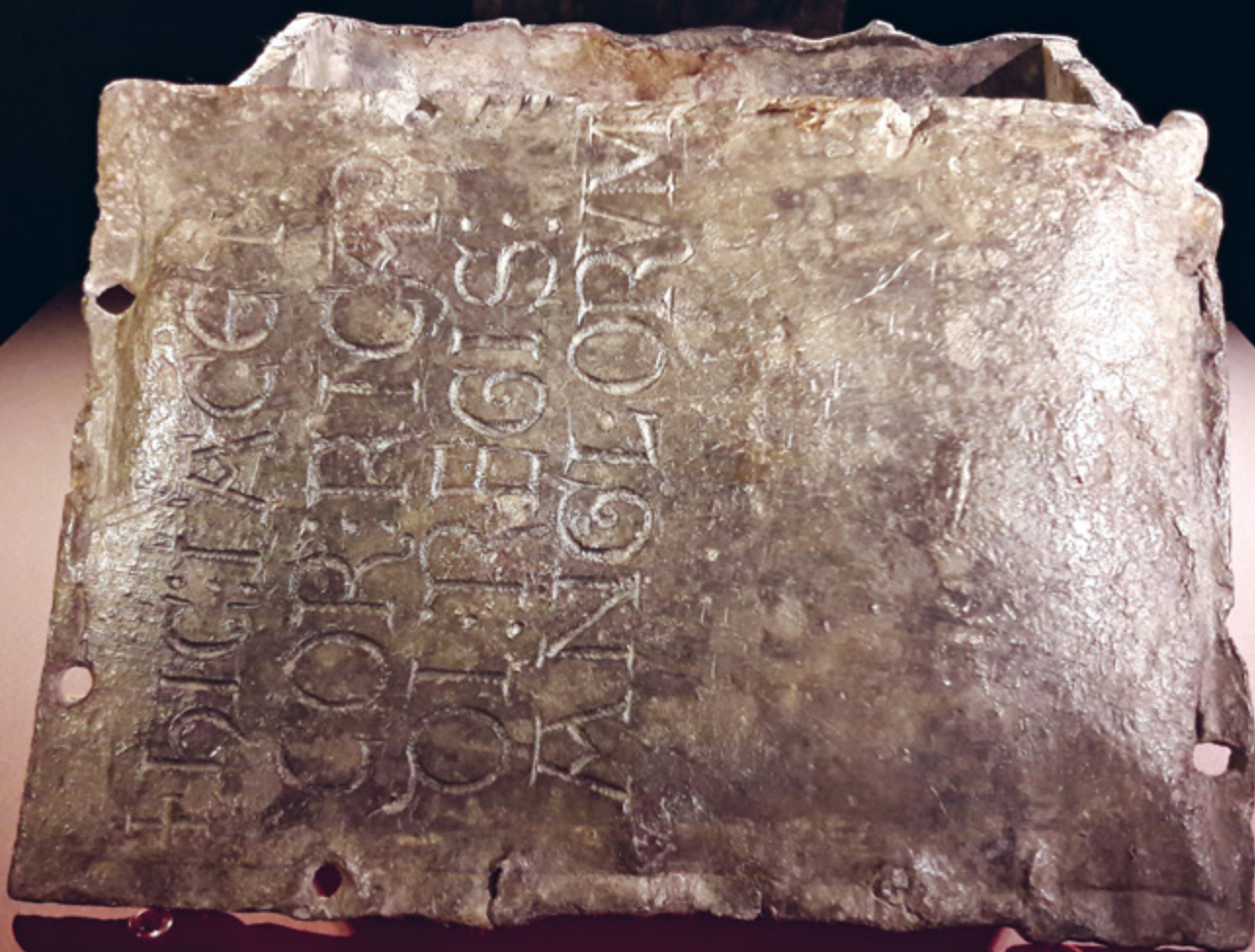
Our project will analyse historical and contemporary debates concerning voting age reform, youth democratic participation, and attendant rights and responsibility of youth and adult citizenship. It will compare arguments used when the UK lowered the voting age from 21 to 18 in 1969 – the first state in the world to do so – to those now deployed. The international context to the debate will be considered via comparative analysis of the impact upon youth political engagement in the (few) countries where votes at 16 are allowed.

The research will analyse the positions of political parties and their arguments as to how broader youth democratic participation and civic engagement might be developed via a change to the voting age. The project will then measure attitudes towards lowering the voting age among 18+ voters and 16 and 17 year olds, including testing the views of those partially franchised (in Scotland) and non-franchised (elsewhere in the UK).

Voting age reform needs to be considered in the broader context of when a society believes that children – as citizens under the age of 18 are defined by the United Nations – should acquire rights and responsibilities. Whether a 16 year old should be prohibited from serving on a jury, standing as a candidate in an election, driving, or buying an alcoholic drink, yet allowed to vote, needs serious consideration. Our research will encourage an evidenced-based approach to voting age reform. It has clear policy making and public benefit, informing and enriching the growing political debate surrounding votes at 16 and youth transitions to adulthood in the UK.

Summer 2016: 16 and 17 year-olds
were not allowed to vote in the recent
EU referendum
Photo: Andrew Mycock





A diplomatic edition of the letters and charters of King Richard I

Nicholas Vincent's study of more than 1,000 documents relating to Richard I will hugely enrich our understanding of his reign and legacy

Richard I 'the Lionheart', king of England from 1189 to 1199, is one of the best known figures of medieval history, instantly recognisable as Crusader, ruling a Plantagenet empire that stretched from Scotland to the Pyrenees. Yet until now the history of Richard's reign has been written chiefly from narrative sources – the chroniclers – who reported Richard's deeds. I hope to broaden and deepen this narrative approach by assessing the written mandates, the letters and charters, by which Richard governed his far-flung estates.

These documents span a vast array of topics, from law via high finance to warfare and religious patronage. Some, less than 100 words long, deal with loans made to the King and his followers on crusade. Others, the size of small table cloths, list in detail the property and possessions of the monasteries and cathedral churches of England and northern France. Already I have located and photographed more than a thousand such documents, scattered across 300 archives in England, France, and elsewhere. My Fellowship will enable me to edit and annotate them, and to write an introductory volume explaining their significance.

Among the questions that they should help us to address will be the King's patronage: the identities of those closest to royal favour, and the extent to which their friendship was rewarded. Richard has traditionally been presented as a mighty warrior but as an incompetent manager both of money and of men. Is this reputation deserved?

Since his charters are dated, and in many cases carry the names of up to twenty or thirty witnesses, they also enable us to trace the movements of the King and his court on an almost day by day basis. Collectively, they point towards an entirely new history of Richard's reign.

And then there is the question of posterity. According to the standard histories, having bankrupted England in pursuit of foreign adventures, Richard then died in 1199 leaving King John as his cash-strapped and generally despicable successor. Yet to what extent were the problems of John's government the legacy of Richard rather than the newly minted record of a tyrant king? Here too Richard's charters have a great deal to tell us both of the evolution of law and government, and of the processes from which Magna Carta was born. The outcome will be an edition, following on from that of the charters of Richard's father, Henry II, which I hope will be used by all interested in the history of the Middle Ages.

The lead coffer in which Richard's heart was buried in Rouen Cathedral, rediscovered there in 1838 with parts of the heart still remaining



What Happened Next: Philip Leverhulme Prize

In this series of interviews, ten past winners of the Philip Leverhulme Prize tell us ‘what happened next’, explaining the role the award played in the progress of their subsequent research and careers

Interviews by Dr Carolyn Allen

Philip, Third Viscount Leverhulme and grandson of the Trust's founder c. 1950, in whose honour the prize was named



PRIZE
WINNER
2001

Professor Gill Valentine

Provost and Deputy Vice-Chancellor
University of Sheffield

Lauded for her pioneering research on young lesbians, gay men and D/deaf people, Gill Valentine now helps to make equality and diversity practical realities as a leading member of her university's executive board



Deaf LGBT v.2 painted by Nancy Rourke © 2012

*The prize liberated
me from the hamster
wheel that you can
sometimes be trapped
on as an academic:
chase a grant, deliver
on that grant, chase
the next grant*

Professor Gill Valentine was recently confirmed as Provost and Deputy Vice-Chancellor at the University of Sheffield, taking an outstanding career full circle. Nominated for an inaugural Philip Leverhulme Prize when she was a Professor of Geography at Sheffield, the award was the springboard to the office she now holds. Her pioneering research has advanced understanding of the contemporary realities of marginalised and socially excluded groups; work that has helped to shape government policy and strategy and was recognised with the highly prestigious Murchison Award for contributions to geographical science in 2015. At Sheffield, Gill is helping to put that policy into practice, championing equality not only through her ongoing research, but also as the chair of the Equality & Diversity Committee for the University and in her role representing LGBT staff. Her colleagues give her credit for the University's high ranking in Stonewall's Workplace Equality Index and in November 2017 she was recognised with an *Excellence in Diversity Award* in the category of Diversity Champion in the Education Sector.

Society has changed considerably – as has the study of geography – in the fifteen years since Gill took up her Leverhulme award. At that time there was a growing body of geographical work on gender and the experiences of minority ethnic groups, but little on vulnerable young people and social exclusion. The prize allowed Gill to consolidate her research on young lesbians, gay men and D/deaf people, helping to establish credibility for studies addressing a wider diversity of marginalised groups. 'Back then it wasn't quite as accepted in academia, but I think the prize helped to give recognition and legitimacy to work on social issues of this type,' Gill explains. The current emphasis on interdisciplinary collaborative research and international research agendas is also relatively new, and again the prize put Gill ahead of the curve: enabling her to build networks at international conferences and interdisciplinary events that would otherwise have been beyond her budget. In 2004, Gill moved to the University of Leeds to take up the Directorship of the Leeds Social Science Institute – developing the strategy for the social sciences across six faculties – but returned to the Department of Geography at Sheffield in 2012, after accepting the position of Pro-Vice-Chancellor for the Faculty of Social Sciences. Although she didn't recognise it at the time, Gill says that the prize launched her on that career trajectory by allowing her to develop the wider platform and skill set suited first to leadership roles in research, then as head of a faculty, and ultimately to the office of Deputy Vice-Chancellor: 'The prize liberated me from the hamster wheel that you can sometimes be trapped on as an academic: chase a grant, deliver on that grant, chase the next grant. Sometimes I think that blocks people from developing interdisciplinary connections; thinking more broadly about their research; or having time to engage with the wider university'.

Gill's connection with the Philip Leverhulme Prize has come full circle, too; she has been a member of the prize panel and has also seen a promising student, whom she mentored, go on to win her own Philip Leverhulme Prize. 'To go from being a prize winner to supporting someone who then becomes a prize winner, I like that sense of closing the loop,' she says.



PRIZE
WINNER
2001

Professor Miles Ogborn

Professor of Geography
Queen Mary University of London

The research for Miles Ogborn's latest groundbreaking book – *Freedom of Speech: Talk and Slavery in the Anglo-Caribbean world* – began sixteen years ago with a scoping trip funded by his Philip Leverhulme Prize



*What makes this money
so transformative is that
it is given with the trust
that you will do
something important
with it, without having
to say in advance what
that will be*

Old Cudjoe making peace, engraving,
frontispiece to *The History of the
Maroons*, Longman & Rees (1803).
Captain Cudjoe led the Maroons of
Jamaica in a war against the British.
In 1738, Cudjoe and the British
representative, Colonel Guthrie,
signed a treaty (and exchanged hats
as a sign of friendship) which made
the Maroons the first nation/people
to be granted independence from a
colonising European power
© John Carter Brown Library, Box
1894, Brown University, Providence,
R.I. 02912

Professor Miles Ogborn uses the tools of human geography to study the making of the modern world. By analysing the changing forms of power across both space and time, he unveils rich tapestries of different histories in different places that challenge the dogma of the ‘march of modernity’. Awarded an inaugural Philip Leverhulme Prize for his interdisciplinary perspective on the forces shaping Britain at the local and national level, Miles moved his focus to a global scale. Then a Reader at Queen Mary University of London, he used the prize funds to release him from teaching and administrative duties, and to focus on two very different books.

Global Lives (2008) provides an engaging introduction to global history: it explores Britain’s changing relationships with the rest of the world between 1550 and 1800. Through the biographies of forty-two people who lived at the time – the famous and the obscure, rulers and revolutionaries, the enslaved and the free – Miles breathes life into themes such as the development of trade routes, the spreading of settlement, and the forging of empires. In doing so, he presents a refreshing and timely perspective on globalisation, revealing it as a kaleidoscope of many processes, networks and patterns, each shaped by the actions and interactions of people, whether trying to prosecute their own projects, or just trying to get by.

The other book, *Indian Ink* (2007), is a pioneering analysis of how the written word shaped authority on a global scale. Aimed at a more specialist audience, it explores the role of writing and print in establishing the global trading network and immense political power of the English East India Company.

Alongside these two projects, Miles also carried out some archival research in Jamaica and Barbados: a scoping exercise for what were just the beginnings of a project on slavery in the Caribbean. ‘I just wanted to go and have a look to see what was there – whether the materials existed that would make the idea feasible,’ he explains, ‘and that isn’t something I could have got funding for any other way’. His ideas evolved and crystallised over the years, but the notes made on his fieldtrips formed the basis of another groundbreaking book, this time addressing the previously neglected role of the spoken word in the global geographies of power.

Completed with the support of a Leverhulme Trust Major Fellowship (2015–2017) and only recently submitted, *Freedom of Speech* explores how different forms of talk – from evidence giving in court to discussions of the plants that grew on the islands – reveal the power relations of slavery and empire. The book’s detailed investigations of who could speak, where they could speak, and how they could speak in the slave societies of the Caribbean demonstrate a troubled and contradictory history of ideas and practices of ‘the freedom of speech’. For Miles, the making of *Freedom of Speech* is the most important story of his prize, helping to highlight the special nature of the award: ‘I would say that it’s the most important bit of funding that I’ve had since I got support for my PhD,’ he reflects, ‘and what makes this money so transformative is that it is given with the trust that you will do something important with it, without having to say in advance what that will be.’



PRIZE
WINNER
2004

Professor Jens Marklof

Professor of Mathematical Physics
University of Bristol

Jens Marklof convened a who's who of mathematicians and together they brainstormed how their ideas could address topical problems – with unpredictable results



What makes the prize so special is that it allows the unexpected to happen

Jens is standing in an orchard where the trees are planted on exact gridpoints. How far you can see between the trees is analogous to Lorentz's problem: how far can a gas molecule travel before colliding with one of the atoms in a two-dimensional crystal? The problem's resolution helps to explain how randomness arises at a microscopic level and the effect that this has on large-scale particle dynamics

'The most amazing and spectacular discoveries often happen quite unexpectedly,' says Professor Jens Marklof. 'Sometimes something new can be created just by bringing the right people together.' Jens used the funds from the first year of his Philip Leverhulme prize to attract the 'right people' to the University of Bristol; the key players responsible for exciting new developments in the mathematics at the core of his prize-winning research. In the summer of 2006, they attended a series of quite unconventional workshops: each lecturing for up to two hours to explain their most recent results to five to ten other distinguished mathematicians; the group then brainstormed how these new ideas could be used to address a number of topical problems. The format worked extremely well, Jens says, providing a catalyst for new ideas and collaborations on many of the chosen topics. But the most exciting outcome of the programme was on a topic he hadn't expected to address.

Jens was talking between sessions with Andreas Strombergsson, a former postdoctoral fellow at Bristol who had recently moved to Uppsala University, when the pair realised that some of the new mathematics discussed could solve a puzzle in statistical mechanics posed by the Dutch physicist Hendrik Lorentz more than a century before. They were able to prove their hunch correct, presenting the solution in a highly influential joint paper published in 2010. This important breakthrough underpinned a five-year European Research Council Advanced Grant, awarded to Jens in 2012, and was cited in his election as a Fellow of the Royal Society in 2015. Another significant – and unanticipated – outcome of the prize was the attraction of new talent to the mathematics department at Bristol. Soon after the series, two attendees joined Jens in the ergodic theory group, supported by RCUK Fellowships: Alexander Gorodnik, then a postdoctoral fellow at Caltech, who led one of the workshops, is now a professor in the group; and Corinna Ulcigrai, who had recently completed her PhD at Princeton, is also now a professor in the group and is a current Philip Leverhulme Prize holder.

According to Jens, the outstanding success of the workshop series, exceeding even his high expectations, is a tribute to the nature of the Leverhulme Prize. 'I think that what makes the prize so special is that it allows the unexpected to happen,' he says. In his case, he says that the formula for serendipity was a combination of the award's flexibility and its prestige. Applying for a grant would have delayed the process by at least a year but with access to flexible funds, Jens could seize the moment, holding the workshops within a matter of months. The prestige associated with the prize was important not least for the weight it carried with those he invited to join him in his quest. 'I'm still absolutely impressed by the list of participants that I was able to bring to Bristol,' he says. The list was a who's who of distinguished mathematicians from around the world, including Fields Medal winner and 'one of mathematics' all-time greats, Professor Gregory Margulis from Yale. 'Actually the recognition that comes with the award should not be underestimated,' Jens adds: 'As a young academic, having a Philip Leverhulme Prize really helps you to stand out.'

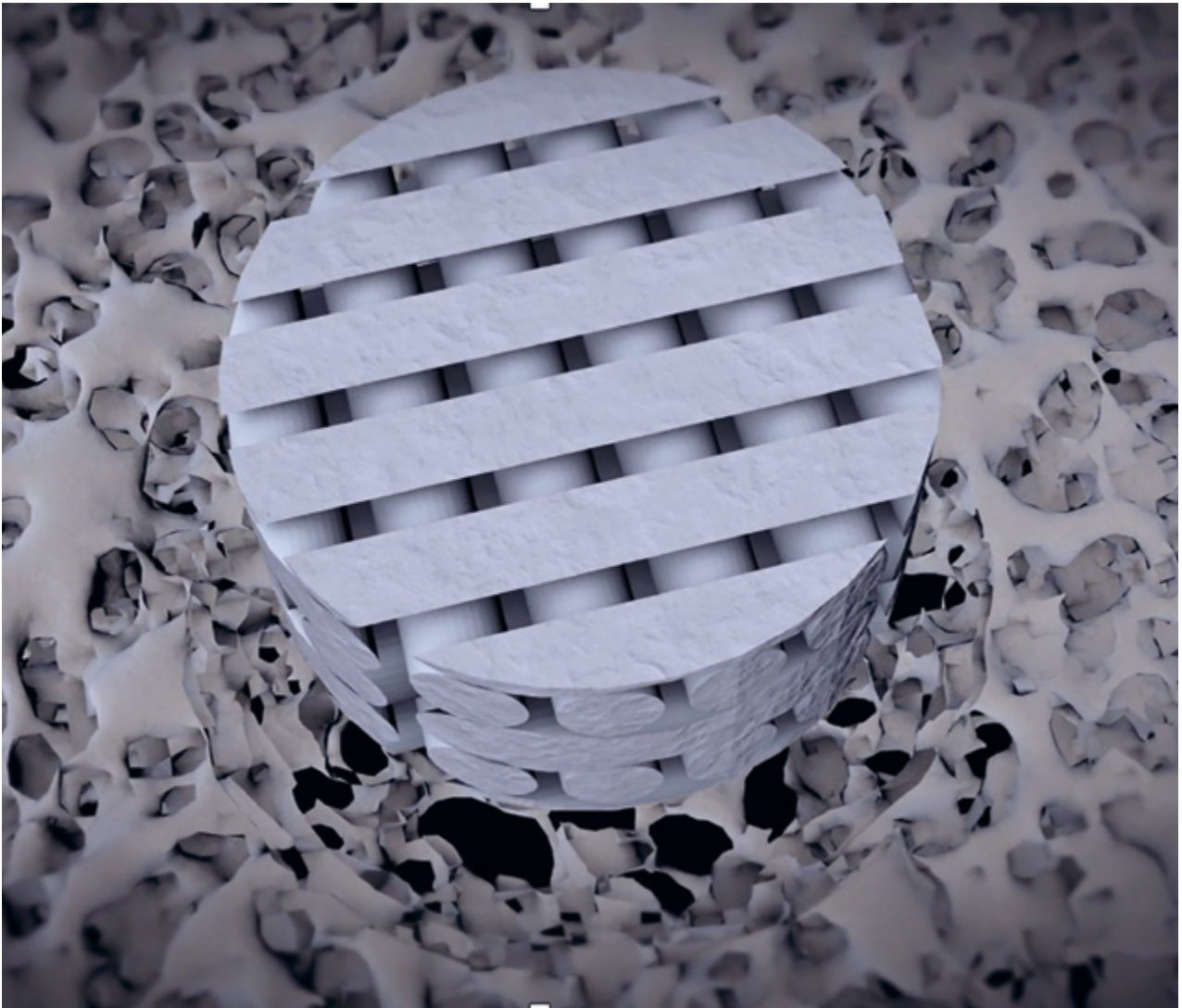


PRIZE
WINNER
2007

Professor Julian Jones

Professor of Biomaterials
Imperial College London

Julian Jones's Philip Leverhulme Prize funding helped him to develop a bouncy form of glass that could fundamentally change the way damaged bones and cartilage are treated



The prize was very important for this exploratory work because we could try five different things without applying for five different grants

Every year, some 2 million people undergo transplants to repair bones affected by disease or trauma. Current best practice involves not one but two procedures: the first to remove healthy bone, usually from the hip; the second to repair the original injury. But a glass implant, developed by Professor Julian Jones of Imperial College London, is set to revolutionise this treatment.

The device is made from Bioglass, originally developed by Professor Larry Hench to help heal the bones of veterans wounded in the Vietnam War. This biocompatible silica-based material not only bonds tightly with bone, it also helps it to regenerate faster and biodegrades over time. For decades, Bioglass was only available in powder form, limiting its medical applications – melting the powder, in the traditional way glass is made, destroys its bioactive properties. After joining Larry as a graduate student in 1999, Julian developed a sol-gel chemistry process for Bioglass, which assembles the silica particles into networks from a solution at room temperature. The resulting gel can be ‘foamed’ to produce a scaffold with a three-dimensional honeycomb-like structure similar to the inner layer of bone. These scaffolds retain all the amazing bioactivity of the original powder but still have a serious limitation: made of glass, they are brittle and would shatter under load.

Julian used his 2007 Philip Leverhulme Prize to explore ways of bringing flexibility to his scaffolds without losing any of their useful properties. The conventional engineering approach would be to make a composite, with the hard reinforcing material protected inside a soft polymer matrix. But that would restrict the access of bone cells to the scaffold’s bioactive component. Julian’s idea was to develop hybrid materials of polymers and silica, using his sol-gel process, so that the two components would ‘grow’ together at the finest scale. Enabled by the prize’s ‘pot of flexible money’, he created the first bioactive scaffolds capable of sharing load in bone defects. ‘The prize was very important for this exploratory work because we could try five different things without applying for five different grants,’ he says. Julian’s proof of concept led to an EPSRC Challenging Engineering Award for £1 million, and to the development of ‘Bouncy Bioglass’: a material whose mechanical properties can range from those of a flexible gel to those of a glass depending on the ratio of polymer to silica. Bouncy Bioglass can be foamed to produce biodegradable regenerative scaffolds capable of bearing the load, even in bones under great stress such as hips. It can also be made into ‘ink’ for 3D printing, offering the prospect of bespoke implants, with dimensions and pore architectures specific for each patient. By fine-tuning the polymer content, the team produced Bouncy Bioglass with the shock-absorbing and load-bearing qualities of cartilage – the connective tissue found in joints and between vertebrae in the spine. This artificial cartilage also has a surprising regenerative activity, stimulating stem cells to produce high quality cartilage rather than the scar tissue that is usually formed when surgeons attempt to repair tears. ‘We were hoping for beneficial cell behaviour – because of the heritage of Bioglass,’ Julian says ‘but we hadn’t expected they would behave this well!’ Work is in progress to take these cartilage-like scaffolds through to clinical application, promising to bring back the bounce to stiff knees and spines.

Simulation of 3D-printed Bouncy Bioglass, about to be inserted into cancerous bone



PRIZE
WINNER
2009

Ms Nell Catchpole

Leadership Programme Leader
Guildhall School of Music and Drama

Musician and social anthropologist Nell Catchpole returned to the Suffolk countryside of her childhood to create *Sonic Stories*



Performance or paper? Art or activism? Nell Catchpole's presentation at the Reflective Conservatoire Conference 2018, Sound Artist as Activist: *Sonic Stories from East Suffolk*, questioned boundaries and conventions in her inimitable style.

A classically trained violinist with a degree in social anthropology, Nell is drawn to highly collaborative creative projects that cross disciplines, genres and styles. Her 2009 Philip Leverhulme Prize recognised some of the extraordinary outcomes of her collaborative work across theatre, dance, and music. Yet, despite her apparent success, Nell felt a lack of creative training was holding her back. In all of her collaborations, she had been enabling the visions of others; the prize was an opportunity to develop her own artistic voice. 'I suppose that was important to me because, I feel as an artist, I want to reflect or challenge what's happening in the world that feels pertinent to me,' she says.

At first, Nell thought her goal was to produce shows or pieces of work exploring memory. That concept led her back to the landscapes of her childhood in east Suffolk – to places that held strong memories – where she began collecting and making sounds: not really knowing what she was doing or why. With hindsight, she thinks she should have sought more critical advice at the start but, true to her nature, she charged in on her own. Nell says it took some time to ask herself the right questions, and to get the help from others that would guide her towards those questions. Gradually though, she began to realise that what she was actually doing was as much a form of practical research as it was the making of an artistic product. And that what was important to her – what she needed to reflect and challenge – was how we relate to the natural environment, particularly in the context of the current environmental crisis. As she developed her 'voice' she was surprised to find that social anthropology became an integral part of her methodology and – perhaps more surprisingly – her own music making did not.

Sonic Stories was created with sound recordist Seth Scott: a collage of sounds captured in the wilds of Suffolk. Some are played back exactly as they happened; others Nell worked with in order to tell a story in sound. Far from a therapeutic listening experience, Nell uses voice-over text to unsettle and challenge cultural assumptions, particularly the way we see ourselves as separate from nature in Western culture. A senior tutor at the Guildhall School of Music, Nell has found that the process of establishing her own practice has influenced her teaching and has shifted the creative balance of her collaborative work. For example, in a recent project with long-time collaborator, choreographer Hofesh Shechter – *Untouchable* created for the Royal Ballet – Nell co-composed the music, for the first time playing an equal role in the creative process. 'The prize forced me to work alone,' she says 'to face up to myself in a way I feel I can now emerge from. But I had to go there to really understand what I was about, what my practice was about, before I could return to my collaborations.'

The prize forced me to work alone... to really understand what I was about, what my practice was about

In Sonic Stories from East Suffolk, Nell stripped away the tools of her trade, bar the recording equipment, instead working with the material that she found in the natural environment



PRIZE
WINNER
2009

Professor Mercedes Maroto-Valer

Robert M Buchan Chair in Sustainable Energy Engineering
Heriot-Watt University

Mining the atmosphere for jet fuel: exploring innovative ways to capture and recycle the carbon dioxide emitted from fossil fuels, Mercedes Marota-Valer may have found a formula for sustainable air travel



By giving us the initial flexibility to leapfrog into a specific area, the prize was also helping us learn how to leap into pioneering research

Reducing atmospheric carbon dioxide is one of the greatest challenges of our time. With timescales of transition to less polluting sources measured in decades, it is crucial that we mitigate emissions from the fossil fuels we still use. One promising strategy is carbon capture and storage (CCS): collecting carbon dioxide emissions from fossil fuel power plants and industrial facilities and storing it out of harm's way. When Professor Mercedes Maroto-Valer was awarded her 2009 Philip Leverhulme Prize, she led a team of scientists and engineers at Nottingham University exploring potential CCS technologies. The prize recognised her important contributions to understanding the chemistry of carbon dioxide and the conditions favouring its safe long-term storage, understanding which also gave her the idea for her 'lock it in rock' process, that recycles carbon dioxide by mineralising it to produce a geologically stable brick-like product. With the support of her prize, Mercedes turned her attention to the ultimate in carbon recycling: harnessing solar energy to convert carbon dioxide and water into fuel. The flexibility and freedom provided by the award helped her to leapfrog her team into this extremely challenging area.

In 2012, Mercedes relocated her team – and prize – to take up the first Robert Buchan Chair in Sustainable Energy Engineering at Heriot-Watt University: an institution geared towards driving innovation from discovery to application. The move enabled an even broader interdisciplinary approach, providing access to the expertise for addressing wider societal barriers to the uptake of new innovations, alongside the technological issues. Over the course of the award, Mercedes' team significantly advanced the development of the novel catalysts and reactors needed for a solar fuel future, and secured a substantial EPSRC grant to continue this work. The prize-funded research also took the team in a surprising new direction that offers a step-change in low carbon jet fuel production. With no alternative fuel sources with sufficient energy density to fly a plane, and heavy batteries currently impracticable, reducing the carbon footprint of the aviation sector presents a seemingly intractable problem. Mercedes could see that by applying some of the knowledge developed during the Leverhulme prize to this very specific sector, the new technologies could be genuine game changers. The innovative process she developed produces a fuel of the exact same specifications as the fossil fuels currently used, but from a feedstock that combines waste biomass with carbon captured from other carbon dioxide producing industries. Once again the team found themselves in uncharted territory, but using a challenge-led approach – developed during the prize years – they quickly identified the skills that they had, and those they needed to acquire, to be confident of making a transformative contribution. This was one of unexpected legacies of the award, Mercedes says: 'I didn't realise the long-term benefits at the time, but by giving us the initial flexibility to leapfrog into a specific area, the prize was also helping us learn how to leap into pioneering research.' The esteem associated with the prize is another enduring legacy, she adds, helping to attract further support, including a 2016 European Research Council Advanced Award of €3 million for the development of 'smart rocks': the team's latest innovative initiative.

Engines on a Boeing 747 jumbo jet
Photo: Steve Allen Travel
Photography/Alamy Stock Photo



PRIZE
WINNER
2010

Dr Santanu Das

Reader in English Literature
King's College London

What was the experience of the Indian soldiers who fought for Britain in the First World War and the families they left behind? Santanu Das visited archives across India and Europe to find out



*As a young academic,
I hadn't done much
public engagement...
but I think the award
was a wonderful boost
to my confidence*

Between 1914 and 1918, over a million men left India to fight Britain's war. Seventy thousand would never return – yet this sacrifice was soon forgotten. Recruited from some of the poorest regions, most could not write; their voices are absent in the diaries, poems and memoirs that whitewash our First World War remembrance. But traces remain, scattered across the world in objects, images, music and recorded speech. Dr Santanu Das has been looking beyond traditional historical sources to recover stories of how it must have felt for the Indian soldiers and the families they left behind.

An English scholar, Santanu's research draws on his literary training. 'I think that sometimes historians confine themselves to a set of materials and a particular way of studying them,' he explains, 'whereas I like to feast on whatever I can get my hands on – be it textual, aural or visual – examining each item in close detail, then exploring the dialogues between them.' Santanu used his 2010 Philip Leverhulme Prize to carry out intensive archival research across Europe and India, uncovering a wealth of material. In a small archive in Chandernagore, he found the bloodstained glasses that once belonged to Private Jogendra Sen; they were returned to Jogendra's mother after he was killed in action in France in 1916. By chance, when Santanu was giving a talk in Leeds, someone in the audience recognised Jogendra's name, having seen it on the university war memorial nearby. With the help of local researchers, Santanu confirmed that this was indeed the same Jogendra. He had come to Leeds in 1910 to study electrical engineering; and after graduating in 1913, had started a promising career at Leeds Corporation Electric Lighting. Soon after the war broke out, however, he enlisted in the Leeds 'Pals' Battalion – one of the first to volunteer and the only non-white. Although by far the most educated of the 'Pals', Jogendra could not join up as an officer, or rise up the ranks: leadership was restricted to whites. Now one of the University's most celebrated alumni, his story made local, national and international news, his glasses both a poignant witness to his final moments and a powerful testament to a remarkable life.

During the final year of his prize, Santanu contributed to various projects planned for the upcoming First World War centennial commemorations including *Whose Remembrance?* – a film produced by the Imperial War Museum – and the BBC documentary, *The World's War: Forgotten Soldiers of Empire*. In 2014, Santanu was in the spotlight, raising awareness of India's war experience through public talks, television, radio and print – opportunities he doubts he would have embraced with such enthusiasm were it not for the prize: 'I probably would have run away from most of it,' he admits. 'As a young academic, I hadn't done much public engagement before but I think the award was a wonderful boost to my confidence'. As we mark the final year of the war, Santanu continues to challenge the colour of our remembrance through his research, teaching and outreach. He recently accepted a Senior Research Fellowship at All Souls College, Oxford, and his monograph, *India, Empire and the First World War: Literature, Images and Songs*, is in press.

Glasses and portrait of Private
Jogendra Sen, found in an
archive in Chandernagore, India

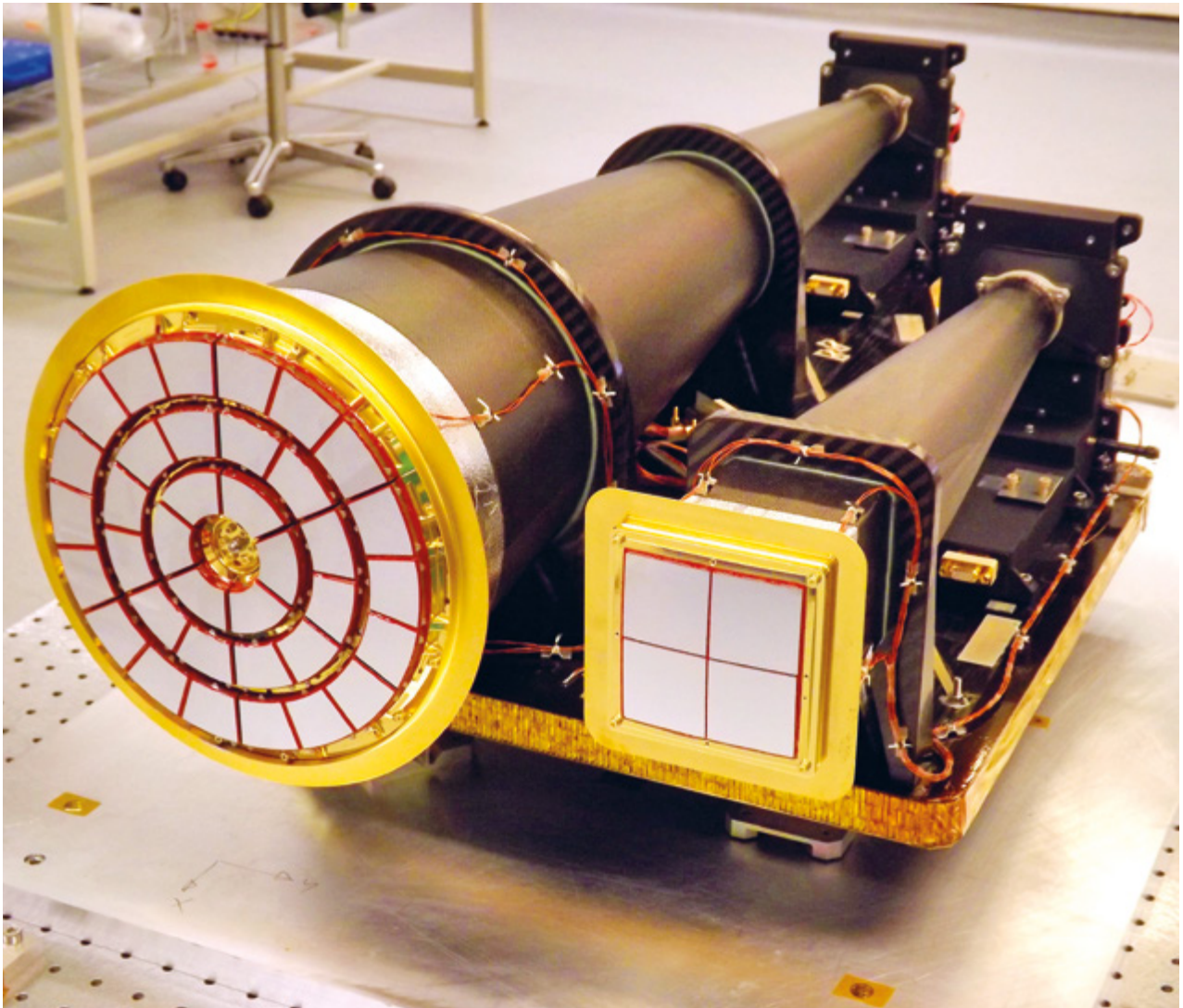


PRIZE
WINNER
2011

Professor Emma Bunce

Professor of Planetary Physics
University of Leicester

What is Mercury like? In 2025 Emma Bunce will be among the first to receive data that promises to transform our knowledge of this puzzling planet



Having the freedom to decide how to spend the prize money has made an enormous difference to the science that we will be able to do

In October 2018, BepiColombo's twin satellites start their seven-year journey to Mercury, the mysterious world closest to the Sun. The least explored planet in our solar system, Mercury's harsh environment makes it a technically challenging destination. Surface temperatures rise above a metal-melting 400 degrees centigrade by day, whilst on the night side they plunge to minus 180. The first space missions to reach Mercury revealed a surprisingly dynamic planet. The discovery that such a small planet has a global magnetic field went against all expectations. It is much weaker than Earth's but the resulting magnetosphere does provide some protection from the intense solar wind. Mercury's chemical composition is puzzling, too. MESSENGER, which orbited from 2011 to 2015, found volatiles including sulphur, chlorine, sodium and potassium that seem out of place on a planet so close to the Sun. A joint European-Japanese mission laden with state-of-the-art technology, BepiColombo will allow scientists to study Mercury's enigmatic nature in unprecedented detail.

Emma Bunce is the principal investigator on the Mercury imaging X-ray spectrometer (MIXS), one of the main instruments to be deployed on BepiColombo. The spectrometer will identify Mercury's chemical composition on the day side of the planet by measuring the fluorescent X-rays that its surface elements emit when bombarded by energetic X-rays from the Sun. Designed to withstand extreme temperatures, the instrument is the culmination of over two decades of work by a technical team originally led by Professor George Fraser. When George died suddenly in May 2014, Emma found herself leading the MIXS team through the last critical stages in the project: a challenge made all the more difficult by the loss of a colleague and friend. One of her first tasks was to share the news that to meet the deadline for delivery the following May the team would have to ramp up an already demanding schedule.

As the technical preparations hurtled forward, one of Emma's students, Simon Lindsay, was completing his PhD analysing the source of a background signal recorded by MESSENGER's X-ray spectrometer on the night side of Mercury. He had found evidence that this 'background' may be the result of an interaction between electrons accelerated from Mercury's magnetosphere and elements on its surface – a process analogous to that driving auroral emissions in Earth's ionosphere. This raised the tantalising possibility that MIXS could be used to study the structure of Mercury's magnetosphere. Emma used funds from her 2011 Philip Leverhulme Prize to employ Simon to continue his investigation and build a programme relating to the upcoming mission. Since confirmed and published, his discovery has opened up an entirely new area of science investigation for the MIXS instrument team on the night side of Mercury, exploring the structure of Mercury's magnetic environment and its interaction with the solar winds. The programme has been incredibly successful, Emma says: 'Having the prize money, and more importantly the freedom to decide how to spend it, has made an enormous difference to the science that we will be able to do'. It will be 2025 before Emma and her team are finally rewarded with MIXS data from Mercury but it will be worth the wait, she says: 'Being the first to see measurements from another world! It's a huge honour and extremely exciting'.

The Mercury Imaging X-ray
Spectrometer (MIXS) Flight Model
as delivered to the European Space
Agency in May 2015
Photo: University of Leicester
Portrait: *The Telegraph*



PRIZE
WINNER
2012

Dr Sadiah Qureshi

Senior Lecturer in Modern History
University of Birmingham

Interested in the role extinction myths played in the dispossession of indigenous peoples, Sadiah Qureshi headed to Australia. There, she was drawn to tell a wider story linking historical debates about the extinction of peoples, flora and fauna with our contemporary concerns about biodiversity loss and climate change



Hope, the blue whale skeleton, in the Hintze Hall, Natural History Museum, London. With fewer than 530 individuals left alive, the blue whale is on the brink of extinction
Photo: Ian Thraves/Alamy Stock

While debate rages about current biodiversity loss – how serious its impact, how much we are to blame, whether we can (or indeed should) reverse the trend – no one questions that species die and become extinct. Yet that idea is relatively new. It wasn't until the early nineteenth century that endemic extinction was accepted as a reality of the natural world. Dr Sadiya Qureshi, a lecturer at the University of Birmingham, is interested in the history of extinction and how the concept was quickly appropriated to explain the demise of peoples, languages and cultures as well. How did the strange idea come about that indigenous peoples – often subjected to extreme violence by colonists – were 'dying out'? Sadiya's 2012 Philip Leverhulme Prize project proposed to explore the role that extinction narratives play in dispossessing indigenous peoples within settler communities. The prize enabled research trips to national and international archives to gather material for a monograph on human extinction; but during her extensive field trip in Australia, the project took an even more ambitious turn.

From September to December 2016, Sadiya explored national archives in Melbourne, Sydney, Hobart and Canberra; the herbarium at the Royal Botanical Garden and archives at the Mitchell Library in Sydney; and attended a conference on settler colonialism in Wollongong. She looked at materials relating to the emergence of reservations for Aboriginal peoples; to the extinction – or not – of species such as the Tasmanian tiger and the Wollemi pine; and to the establishment of protected areas around the Great Barrier Reef, one of the most important, yet endangered, reef systems in the world. As she worked, she saw the connections between debates about the extinction of peoples, flora and fauna and contemporary concerns about biodiversity loss and climate change. There was a much bigger story to write – and for a much broader audience. That story, provisionally entitled *Vanished: Episodes in the History of Extinction*, is currently under contract with Allen Lane, an imprint of Penguin Press, and Sadiya could not be more excited: 'It has always been my dream to publish my research for a broader audience and Allen Lane is my dream publisher. I still can't quite believe that my book will be branded with that iconic orange spine and black and white bird,' she says.

Vanished will be the first history of extinction to explore episodes of biological, ecological, human, cultural and linguistic extinction together. While debates over anthropogenic climate change and species loss are familiar, the book's recognition of humans as both the agents and the subjects of extinction brings a fresh perspective. Importantly, it will also explore extinction as a human idea: as the way we make sense of biological, ecological and cultural loss. 'It will be such a different book to the one I imagined,' Sadiya says. 'The prize gave me the intellectual freedom to explore the bigger story and the confidence to believe that I could tell it.' Every year we lose many unique forms of life: some we never knew; others we have mourned, such as the magnificent giant tortoise, Lonesome George, who died in 2012, the last of his kind. Ultimately, *Vanished* will be a call for interspecies justice.

The prize gave me the intellectual freedom to explore the bigger story and the confidence to believe that I could tell it



PRIZE
WINNER
2016

Professor Nick Vaughan-Williams

Professor of International Security
University of Warwick

Are Europeans *really* anti-migrant? To find out, Nick Vaughan-Williams is analysing 300,000 words of transcript, the answers to open-ended questions put to participants in eleven cities affected by the ‘migrant crisis’



Recent polls of European opinion depict a startlingly xenophobic response to the so-called ‘migrant crisis’. A 2015 Eurobarometer survey, for example, found that 90 per cent of EU citizens want tougher borders to keep migrants out. At first shocked by this statistic, Nick Vaughan-Williams was less surprised when he saw the specific question asked: ‘Should additional measures be taken to fight illegal migration?’ Leading questions such as this have led to problematic but much publicised ‘findings’ in other polls too, he says. Take the survey by the Pew Research Center in 2016, which found that the refugee crisis and the threat of terrorism are ‘very much related to one another in the minds of many Europeans’ based on a question which itself very much related the concepts of ‘refugees’ and ‘terrorism’. Widely reported – and misreported – this perceived association between security threats and refugees has dominated mainstream media and policy debates.

The need for an alternative approach to public experiences and understandings of the ‘migrant crisis’ was the starting point for ‘Border Narratives’, Nick’s Philip Leverhulme Prize project: ‘I wanted to explore what would happen if we asked more open-ended and less leading questions,’ he says. ‘Might we be able to dig a little deeper? And would we get different answers if we didn’t frame questions in terms of security?’ Assisted by Dr Georg Löffmann – a postdoctoral fellow at Warwick hired with support from the prize – Nick designed and conducted an ambitious and innovative programme of participative research, including in-depth focus groups in eleven cities affected in different ways by the ‘migrant crisis’: Thessaloniki, Munich, Berlin, Cologne, Barcelona, Cadiz, Miskolc, Budapest, Nottingham, Coventry and London. Painstaking analysis of the 300,000 words of transcript generated is ongoing, but initial findings paint a more nuanced picture of citizens’ concerns and demands than those suggested by public opinion polls.

While hostile views were commonplace, so too were expressions of support for migrants and calls for governments to do more to protect them. Participants rarely linked migration and international terrorism. Nor did they see tougher border security measures by the EU as an effective solution to the challenge of migration. Instead, one message emerged loud and clear. Participants across all countries, educational backgrounds and political persuasions wanted better access to more objective, authoritative information about migration. In written evidence submitted to the House of Lords in November 2017, Nick and Georg highlighted the severity of the knowledge gap that they had found, noting that categories such as ‘refugee’, ‘asylum seeker’, ‘economic migrant’ and ‘illegal migrant’ were a major source of confusion. Nick has also shared the project’s early findings in numerous forums, including keynote lectures in Canada, Germany, and across the UK; and articles in *Political Geography* and *The Conversation*, co-authored with Georg. In the final year of the prize, Nick plans to write a monograph on the ‘Border Narratives’ findings and Georg will be taking up a Leverhulme Early Career Fellowship on a related project. ‘I think that will be one of the outstanding outcomes of my Leverhulme prize,’ Nick says: ‘As well as propelling my own research to the next level, it’s given an early career scholar their first break.’

As well as propelling my own research to the next level, the prize has given an early career scholar their first break

Wall at the Bayernkaserne asylum seeker reception centre, Munich, Germany

Grants Awarded

Find listings for all grants made by the Trust during 2017. Details are given for each of the funding schemes across Science, Humanities and Social Sciences.

Doctoral Scholarships

Institutions receive £1.5m to fund fifteen PhD students over three years.

University of Aberdeen
Professor Judith Masthoff
Centre for doctoral training in sustainable production of chemicals and materials

University of Birmingham
Professor Robert MacKenzie
The forest edge: emergent properties and contested spaces

Durham University
Professor Philip Steinberg
Interdisciplinary understanding for a changing Arctic

Imperial College London
Professor Oscar Ces
Leverhulme Doctoral Scholarship programme in cellular bionics

King's College London
Professor Wyn Bowen
Interrogating visions of a post-western world: interdisciplinary and interregional perspectives

Lancaster University
Professor Richard Harper
Leverhulme Doctoral Scholarships programme in material social futures

Newcastle University
Professor Daniel Nettle
Behaviour informatics and the multimodal study of behaviour

University of Oxford
Professor Karen O'Brien
Publication beyond print: Oxford University Leverhulme doctoral centre

Queen Mary, University of London
Professor Engin Isin
Mobile people: mobility as a way of life

University of Surrey
Professor John Joe McFadden
Quantum biology doctoral training centre

University of Sussex
Professor Jamie Ward
From sensation and perception to awareness: an interdisciplinary Doctoral Scholarship programme

University College London
Professor Gabriella Vigliocco
Leverhulme doctoral training programme for the ecological study of the brain (Ecological Brain)

Research Project Grants

Sciences

Dr Christophe Aissa
University of Liverpool
Cubene: synthesis beyond strain
£53,719

Dr Nick Aldred
Newcastle University
Going back to basics: reverse engineering the adhesive of the sea anemone Aiptasia pallida
£309,990

Professor Harry Anderson
University of Oxford
Synthesis of new allotropes of carbon: cyclocarbon catenanes
£269,701

Professor Richard Baines
University of Manchester
Is cryptochrome a magnetoreceptor?
£178,248

Professor Declan Bates
University of Warwick
Towards a comprehensive theory of feedback control for chemical reaction networks
£144,099

Dr Karl Bates
University of Liverpool
Bones in motion: a new integrated experimental-computational approach to understanding the evolution of human locomotion
£249,045

Dr Claudia Blindauer
University of Warwick
A quantitative framework linking extracellular zinc speciation and cell uptake
£342,867

Dr Will Branford
Imperial College London
Sculpting and training the artificial spin ice network
£216,470

Dr Kate Britton
University of Aberdeen
Integrative approaches to Late Pleistocene herbivore ecology, ranging and diet
£260,519

Dr Stephen Brusatte
University of Edinburgh
Dissecting an evolutionary transition: how ancient crocs went from land to water
£234,982

Dr Michael Bryant
University of Leeds
Bio-inspired functional poro-elastic materials
£280,028

Dr Julio Cesar Bueno de Andrade
University of Exeter
Moments of L-functions in function fields and random matrix theory
£282,167

Professor Nigel Burroughs
University of Warwick
Mechano-sensing of a molecular machine
£360,478



<p>Dr Martin Cann Durham University <i>How cyanobacteria detect carbon dioxide: molecular events in the global carbon cycle</i> £168,508</p>	<p>Dr Caroline Dessent University of York <i>Illuminating sunscreens: New approaches to a molecular understanding of photoprotection</i> £185,339</p>	<p>Dr Katsuichiro Goda University of Bristol <i>Global earthquake resilience for natural-engineering social interacting systems</i> £191,403</p>	<p>Professor Stefan Howorka University College London <i>New chemical tools to probe lipid bilayer thickness in live cells</i> £149,186</p>
<p>Dr Bin Cheng University of Surrey <i>Mathematical analysis of 'near resonance' in the physical world of finiteness</i> £280,880</p>	<p>Professor Kishan Dholakia University of St Andrews <i>Making the most of interference: new metrology applications of laser speckle</i> £178,395</p>	<p>Dr Richard Grainger University of Birmingham <i>Controlled release of reactive di- and triatomic molecules</i> £235,447</p>	<p>Dr Abusaleh Jabir Oxford Brookes University <i>Monitor: a self-reparable memristive gas sensor array</i> £234,992</p>
<p>Dr Vijay Chudasama University College London <i>Understanding how the microenvironment of a protein can dictate the course of bioconjugation</i> £154,274</p>	<p>Professor Darren Dixon Department of Chemistry, University of Oxford <i>A new light on chiral amine synthesis</i> £176,408</p>	<p>Dr Duncan Greig University College London <i>Identification and analysis of speciation genes in yeast</i> £251,767</p>	<p>Dr Robert Jack University of Bath <i>A self-consistent coarse-graining method for soft-matter systems</i> £272,762</p>
<p>Dr Lyubov Chumakova University of Edinburgh <i>Dynamic self-organisation of stochastic intracellular transport</i> £234,122</p>	<p>Professor John Doonan Aberystwyth University <i>The cellular basis of ecosystem engineering by sphagnum peatmoss</i> £257,956</p>	<p>Dr Randa Herzallah Aston University <i>Control of behavioural dynamics</i> £180,078</p>	<p>Professor Jaroslaw Kedra University of Aberdeen <i>The geometry of conjugation invariant norms on groups</i> £233,793</p>
<p>Dr Edmund Cussen University of Strathclyde <i>Dynamic correlations in new frustrated magnetic materials and new magnetic states of matter</i> £258,473</p>	<p>Dr Agapi Emmanouilidou University College London <i>Exotic forms of matter in molecules driven by free-electron lasers</i> £180,939</p>	<p>Dr Constanze Hesse University of Aberdeen <i>Handle with care: material properties in vision and action control</i> £200,344</p>	<p>Professor Keith Jones University of Southampton <i>Understanding meiotic drive: how Mendel's law is cheated in oocytes</i> £171,337</p>
<p>Professor Gideon Davies University of York <i>Discovery, dissection and exploitation of sulfoquinavose metabolism</i> £245, 571</p>	<p>Professor Boris Gaensicke University of Warwick <i>Evolved planetary systems: a unique window into the composition of other worlds</i> £159,772</p>	<p>Dr Robert Hindges King's College London <i>Defining the molecular diversity of specific synaptic interactions</i> £207,172</p>	<p>Professor Jane Kaye University of Oxford <i>Biomodifying technologies: governing converging research in the life sciences</i> £340,240</p>
<p>Professor Ilan Davis University of Oxford <i>Elucidating the functions of mRNA stability regulation in synaptic plasticity</i> £244,770</p>	<p>Dr Malte Christian Gather University of St Andrews <i>Lighting up the brain: organic LEDs as light sources for optogenetics</i> £328,203</p>	<p>Professor Mark Hodson University of York <i>Seeing earthworms in the dark</i> £107,574</p>	<p>Dr Charlotte Kestner University of Central Lancashire <i>Measurability and generalised measurability through fields and Fraisse amalgams</i> £144,570</p>
	<p>Dr Julien Gautrot Queen Mary, University of London <i>2D composites with controlled nano-mechanics for the culture of stem cells on liquid carriers</i> £245,677</p>	<p>Professor Michael Holdsworth University of Nottingham <i>Why did a unique oxygen-sensing mechanism evolve in land plants?</i> £161,911</p>	<p>Professor Syma Khalid University of Southampton <i>Combining quantum and classical methods to study bacterial membrane enzymes</i> £126,931</p>
		<p>Professor Peter W H Holland University of Oxford <i>Extreme molecular evolution in an extreme environment: homeobox genes gone awry</i> £179,630</p>	

Research Project Grants

Dr Istvan Kiss
University of Sussex
Bayesian inference and approximations of high-dimensional network models
£301,665

Professor Stefan Krause
University of Birmingham
Plastic rivers: fate and transport of microplastics in rivers
£284,974

Professor Mark Leake
University of York
Probing the shape of DNA by twisting, pulling and 'seeing' single molecules
£245,669

Dr Steven Lind
University of Manchester
Predicting leaping liquids: increasing our understanding of the Kaye effect
£95,440

Dr Jan Lindstrom
University of Glasgow
Evolutionary ecology and dynamics of pharyngeal microbial communities in humans
£131,509

Dr Crispin Little
University of Leeds
Macroevolution in Boreal Ocean Jurassic-Cretaceous methane seep communities
£191,157

Dr Louis Y P Luk
Cardiff University
Designing multifunctional organocatalytic artificial enzymes
£179,600

Dr Emma McCabe
University of Kent
Ferroelectricity: new mechanisms and materials by combined experiment and theory
£96,975

Professor Peter McClintock
University of Lancaster
Conduction and selectivity between monovalent ions within the potassium channel
£275,830

Dr Alistair McCormick
University of Edinburgh
Surpassing evolution to enhance photosynthesis using algal CO₂ superchargers
£349,148

Dr James McCutcheon
University of Leicester
Neural and peripheral generation of a specific appetite for protein
£194,257

Dr William McGeown
University of Strathclyde
An investigation of the neural bases of hypnosis and suggestibility
£144,243

Dr Abbie C McLaughlin
University of Aberdeen
Investigation of novel hexagonal perovskite oxide ion conductors
£149,398

Professor Fiona Meldrum
University of Leeds
An imaging approach to understanding confinement effects on crystallisation
£259,876

Dr Katherine Messenger
University of Warwick
Syntactic priming as implicit learning: comparing second and first language speakers
£241,910

Professor Thomas Mock
University of East Anglia
Molecular underpinnings of adaptive evolution in diatoms of polar oceans
£236,623

Dr Lisa Mol
University of the West of England
Ballistic damage of stone heritage structures in conflict areas
£199,745

Professor Pat Monaghan
University of Glasgow
Mechanisms underlying the growth-lifespan trade-off
£258,973

Dr Antonio Moro
Northumbria University
Dressing methods and complexity reduction for integrable networks models
£248,176

Dr Daniel Mulvihill
University of Glasgow
Fundamental mechanical behaviour of nano and micro structured interfaces
£281,479

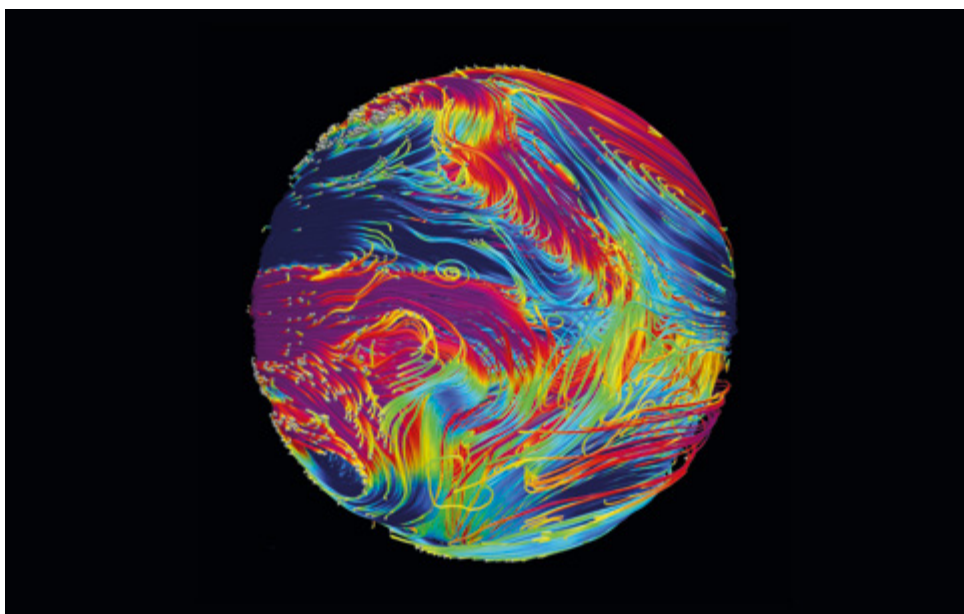
Professor David Murphy
University of Bristol
How does the one-humped Arabian camel survive in the desert without drinking?
£318,415

Dr Marko Nardini
Durham University
Learning to perceive and act under uncertainty
£258,151

Professor Geoffrey Nash
University of Exeter
Biomimetic swimming using surface acoustic waves
£227,368



<p>Dr Dianne Newbury Oxford Brookes University <i>Speaking backwards – sdrawkcaB gnikaepS</i> £232,412</p> <p>Dr Ioannis Nezis University of Warwick <i>What is the function of a cytoplasm-eating related protein in the nucleus?</i> £206,436</p> <p>Professor Christoph Ortner University of Warwick <i>The nature of interatomic forces in metallic systems</i> £385,475</p> <p>Dr Catherine O'Sullivan Imperial College London <i>Fundamental analysis of the influence of structure on clay behaviour</i> £84,542</p> <p>Dr Alessandro Pandini Brunel University <i>An integrated computational- experimental method to redesign protein dynamics</i> £230,247</p>	<p>Dr Catherine Parr University of Liverpool <i>Community assembly in old- growth tropical forest</i> £237,850</p> <p>Professor Robert Pawlak University of Exeter <i>Optogenetic reprogramming of the anxiety circuit</i> £273,355</p> <p>Dr Richard Payne University of York <i>Peatlands and climate change: linking the past with the future</i> £133,239</p> <p>Professor Tony Payne University of Bristol <i>Glacial melt and water security in Central Asia</i> £169,648</p> <p>Professor Chris Perry University of Exeter <i>Predicting the significance of fish carbonates to the marine carbonate cycle</i> £156,413</p>	<p>Professor Kim Plunkett University of Oxford <i>Language-mediated attention in infancy</i> £42,099</p> <p>Dr Barry Porter Lancaster University <i>The emergent self-aware data centre: autonomous software landscaping at scale</i> £252,890</p> <p>Professor Alban Potherat Coventry University <i>The non-linear states of convection in the Earth core</i> £297,852</p> <p>Professor Stephen D Price University College London <i>Studies of radical-surface chemistry of relevance to the interstellar medium</i> £177,961</p> <p>Professor Christopher Reynolds University of Essex <i>Using novel computational modelling approaches to address biased agonism at the adenosine A1 receptor</i> £274,306</p>	<p>Dr David Rippin University of York <i>Archival polar photography – unearthing the forgotten record of glacier change</i> £316,607</p> <p>Dr Carol Robinson University of East Anglia <i>Marine bacterioplankton respiration: a critical unknown in global carbon budgets</i> £223,320</p> <p>Dr Tamara Rogers Newcastle University <i>Modelling inhomogeneous magnetohydrodynamics (MHD) in hot Jupiter atmospheres</i> £220,233</p> <p>Dr Misha Rudnev University of Bristol <i>Geometry, combinatorics and algebra of sum-products</i> £176,247</p> <p>Professor Alfred William Rutherford Imperial College London <i>Reconstructing the origin and evolution of oxygenic photosynthesis</i> £289,600</p> <p>Professor Michael Ruzhansky Imperial College London <i>Analysis on frame decompositions</i> £250,438</p> <p>Dr Christopher Serpell University of Kent <i>Hierarchical and emergent assembly through the marriage of DNA and peptides</i> £147,102</p> <p>Dr Tom Sheppard University College London <i>An iterative approach to the synthesis of polyols</i> £117,764</p>
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Professor Peter Slater
University of Birmingham
Exploring carbonate incorporation in 'oxide' materials: the hidden dopant
£84,760

Professor Alison Smith
University of Cambridge
Snow algae – are they the most abundant photosynthetic organisms in terrestrial Antarctica?
£303,714

Dr Paul Smith
University of Nottingham
Mobilization of lipophilic compounds from white fat: a role for voltage-gated Ca²⁺ influx?
£164,089

Dr Michail Stamatakis
University College London
From molecules to chemical reactors by boosting kinetic Monte-Carlo
£274,554

Professor Alexander Strohmaier
University of Leeds
Mathematical analysis of Casimir interactions
£174,962

Dr Patrick Sturt
University of Edinburgh
Integration of information in reading
£125,468

Dr Junwang Tang
University College London
Feasibility of continuous solar driven renewable fuel synthesis by a flow cell assembly
£292,257

Dr Colin Tosh
Newcastle University
Predator-prey and prey-prey interactions driven by predator visual attention
£226,555

Professor Mark Van Rossum
University of Edinburgh
Energy-limited neural plasticity: learning with minimal changes
£179,632

Dr Chris Venditti
University of Reading
The dynamics of extinction through time
£184,456

Dr Ross Waller
University of Cambridge
Reinventing the nucleus: dinoflagellates provide a model for histone-independent mechanisms of nuclear genome maintenance and function
£237,188

Dr Craig Walling
University of Edinburgh
Testing the evolutionary basis of the longevity response to dietary restriction
£287,841

Professor David Whitmore
University College London
Can individual cells in culture tell the time of year?
£183,372

Professor Sivaramesh Wigneshweraraj
Imperial College London
Molecular analysis of a bacterial metabolic break
£199,425

Dr Gerald Williams
University of Essex
Searching for gems in the landscape of cyclically presented groups
£177,486

Professor Matthew Wing
University College London
Search for dark photons and investigation of QCD using novel accelerator scheme
£318,272

Professor Dominic Wright
University of Cambridge
Main group pyridyl chiral reporter (py-CR) reagents
£164,397

Dr Alison Yao
University of Strathclyde
Control and applications of structured light and chiral molecules
£286,825

Dr Anthony Yeates
Durham University
A variational approach to self-organisation in conducting fluids
£156,445

Professor Semir Zeki
University College London
Social influences on aesthetic judgements and their neural basis
£279,869

Dr Xiaolei Zhang
Queen's University Belfast
Atomic-level investigation on developing optimal pathways for liquid biofuels
£198,363

Dr Gan Zheng
Loughborough University
Massive signal and data cooperation for densified wireless networks
£199,163



Humanities

Dr Simon Blockley

Royal Holloway,

University of London

Unravelling the pattern, impacts and drivers of early modern human dispersals from Africa

£466,516

Professor Kimberley

Brownlee

University of Warwick

Investigating the ethics and politics of sociability

£235,213

Professor Gregory Currie

University of York

Learning from fiction: a philosophical and psychological study

£342,223

Dr Hella Eckardt

University of Reading

Bridge over troubled water – ritual or rubbish found in Roman rivers

£154,945

Professor Robert Garner

University of Leicester

The Oxford Group and the emergence of animal rights: an intellectual history

£117,123

Professor Christopher Gerrard

Durham University

Risk and resilience in Europe: exploring historic responses to earthquakes

£284,330

Professor John Gowlett

University of Liverpool

Palaeoanthropological research in Kilombe Caldera, Kenya

£284,127

Dr William Derek Hamilton

University of Glasgow

Setting artefacts free: an independent chronology for British Iron Age brooches

£257,648

Dr Oliver Harris

University of Leicester

Beyond the Three Age System: mapping a history of materials 3000–600 BCE

£221,898

Professor Martin Jones

University of Cambridge

Crops, pollinators and people: the long-term dynamics of a critical symbiosis

£414,882

Dr Thomas Kjeldsen

University of Bath

Mobilising historical flood data in support of modern flood risk assessments: the city of Bath

£121,788

Dr Victoria Moul

King's College London

Latin poetry in English manuscript verse miscellanies, c. 1550–1700

£447,381

Dr Zahra Newby

University of Warwick

Materiality and meaning in Greek festival culture of the Roman Imperial period

£311,352

Professor Patricia Owens

University of Sussex

Women and the history of international thought

£286,503

Dr Christopher Pallant

Canterbury Christ Church

University

A history of Smallfilms Animation Studio: from a barn, to Bagpuss and beyond

£118,155

Professor Martin Pickering

University of Edinburgh

Predictive processing during interaction in language and music

£115,310

Dr Leendert Plug

University of Leeds

Speech tempo perception and missing sounds

£195,101

Dr Tamara Rathcke

University of Kent

Does language have groove? Sensorimotor synchronisation for the study of linguistic rhythm

£203,349

Professor Christopher Scull

University College London

Lordship and landscape in East Anglia CE 400–800

£264,372

Professor Louise Sylvester

University of Westminster

Technical language and semantic shift in Middle English

£175,798

Dr Jo Verhoeven

City, University of London

Measuring asymmetry in the articulation of English speech sounds.

£238,015

Professor Li Wei

University College London

Early childhood bilingualism: effects on brain structure and function

£305,748



Social Sciences

Professor Nickie Charles
University of Warwick
Shaping inter-species connectedness: training cultures and the emergence of new forms of human-animal relations
£216,127

Professor Gordon Cumming
Cardiff University
Mobilising support for military-humanitarian intervention: beyond two-level games
£90,842

Professor Kavita Datta
Queen Mary,
University of London
'Disciplining' the remittance marketplace? The financialisation of small and medium size money transfer operators (MTOs) after the financial crisis in London
£91,715

Professor Abby Ghobadian
University of Reading
Towards developing an empirically driven descriptive theory focusing on the formative phase of breakthrough technologies
£122,648

Professor Nick Hanley
University of St Andrews
Biodiversity offset markets for wetland conservation
£108,282

Dr Eleanore Hargreaves
University College London
A longitudinal study of primary children's journey at the 'bottom' of the class
£258,077

Professor Janet Hunter
London School of Economics and Political Science
Money markets and trade in early industrialisation: Britain and Japan, 1760–1860
£188,488

Dr Keith Hyams
University of Warwick
Anthropogenic global catastrophic risk: the challenge of governance
£189,985

Dr Sabine Hyland
University of St Andrews
Hidden texts of the Andes: deciphering the khipus (cord writing) of Peru
£251,902

Professor Vasso Ioannidou
Lancaster University
On the public disclosure of individual bank supervisory assessments
£105,555

Dr Margaretta Jolly
University of Sussex
The business of women's words: purpose and profit in feminist publishing
£411,351

Dr Chris Jones
Aston University
Tax havens and emerging market multinational enterprises
£121,590

Professor Ben Lupton
Manchester Metropolitan University
Understanding blame in work organizations – a philosophical interpretation
£55,597

Professor Duncan McVicar
Queen's University Belfast
Zero hours contracts: characteristics, prevalence and impacts on workers
£125,276

Professor John Mohan
University of Birmingham
Community-level perspectives on post-war change in the British voluntary sector
£329,252

Professor Anna Morcom
Royal Holloway,
University of London
Music, money and power: an economic anthropology of music
£299,904

Dr Heather Rolfe
National Institute of Economic and Social Research
Evidence and perceptions in the post-Brexit immigration debate
£120,906

Professor Fiona Ross
University of Reading
Women in type: a social history of women's role in type-drawing offices, 1910–90
£196,845

Dr Steven Stanley
Cardiff University
Beyond personal wellbeing: mapping the social production of mindfulness in England and Wales
£214,376

Professor Joachim Stoeber
University of Kent
Development of childhood perfectionism: early indicators and parental factors
£298,259

Professor Jonathan Tonge
University of Liverpool
An evaluation of historical and contemporary debates on lowering the voting age
£119,740

Professor Richard Teye
University of Exeter
The age of promises: manifestos, election addresses and political representation
£151,179

Professor Jonathan C K Wells
University College London
Age at marriage and human capital outcomes in mothers and offspring in Nepal
£324,480



Visiting Professorships

Science

Dr Afshin Anssari-Benam
University of Portsmouth
Visitor – Professor Gerhard
A Holzapfel
£39,640

Professor Stavroula Balabani
University College London
Visitor – Professor Renato
Machado Cotta
£73,200

Professor Charles Batty
University of Oxford
Visitor – Professor Yuri
Tomilov
£37,795

Professor Nicholas Butterfield
University of Cambridge
Visitor –
Professor David Catling
£55,850

Dr Joao Cabral
Imperial College London
Visitor – Professor Rodney
Priestley
£30,629

Dr Colm Connaughton
University of Warwick
Visitor – Professor Francisco
Rodrigues
£76,472

**Professor Marc-Olivier
Coppens**
University College London
Visitor – Professor Alexander
Neimark
£39,141

Professor John S O Evans
Durham University
Visitor – Professor Patrick
Woodward
£39,912

Professor Sunetra Gupta
University of Oxford
Visitor – Dr Sylvain Gandon
£57,637

Dr Ilia Leitch
Kew Royal Botanic Gardens
Visitor – Professor Jonathan
Wendel
£45,899

Dr Steven Longmore
Liverpool John Moores
University
Visitor – Professor Johan
Knapen
£18,420

Professor James Marshall
University of Sheffield
Visitor – Dr Andrew Barron
£72,016

Dr Vitaly Moroz
Swansea University
Visitor – Professor
Friedemann Brock
£73,812

Dr Navonil Mustafee
University of Exeter
Visitor – Professor Paul
Fishwick
£13,692

Dr Vijay Nagarajan
University of Edinburgh
Visitor – Professor Daniel
Sorin
£24,395

Dr Friederike Otto
University of Oxford
Visitor – Dr Maisa Rojas
£25,280

Dr Tony Prave
University of St Andrews
Visitor – Professor Timothy
Lyons
£40,105

Professor Rosalind Rickaby
University of Oxford
Visitor – Professor Katsumi
Matsumoto
£70,522

Dr Felix Schulze
University College London
Visitor – Professor Mariel
Saez
£20,050

Dr Sergey Sergeyev
Aston University
Visitor – Dr Andrei Fotiadi
£69,300

Humanities

Professor Tamar Garb
University College London
Visitor – Professor Deborah
Posel
£88,560

Professor Colin D H Jones
Queen Mary,
University of London
Visitor – Professor Jean-
Jacques Courtine
£50,900

Dr Mark Knight
Lancaster University
Visitor – Professor Colin
Jager
£48,039

Dr Antonio Lázaro-Reboll
University of Kent
Visitor – Professor Susana
de la Sierra Moron
£21,139

Dr Jairo Lugo-Ocando
University of Leeds
Visitor – Professor Federico
Subervi
£22,130

Dr Alex Marlow-Mann
University of Kent
Visitor – Professor Vito
Zagarrio
£18,479

Professor Steven Mithen
University of Reading
Visitor – Professor Guiyun
Jin
£80,035

Dr William O'Reilly
University of Cambridge
Visitor – Professor László
Kontler
£68,680

Professor Giorgio Riello
University of Warwick
Visitor – Professor Miki
Sugiura Nishiyama
£48,780

Dr Tony Street
University of Cambridge
Visitor – Professor Asad
Ahmed
£65,600

Professor Magnus Williamson
Newcastle University
Visitor – Dr Kerry McCarthy
£27,298

Social Sciences

**Professor Sir Richard W
Blundell**
University College London
Visitor – Professor Francois
Maniquet
£10,550

Professor Annette Jackle
University of Essex
Visitor – Professor
Christopher R Bollinger
£53,711

Professor Yadvinder Malhi
University of Oxford
Visitor – Professor Brian
Enquist
£23,400

Professor Kay Tisdall
University of Edinburgh
Visitor – Professor I Rizzini
£11,313

Dr Nicola Wake
Northumbria University
Visitor – Professor Warren
Brookbanks
£5,244

Philip Leverhulme Prizes

Prize Winners receive £100,000, to be used for any purpose that will advance their research.

Biological Sciences

Dr Tom Baden

School of Life Sciences,
University of Sussex

Dr Katie Field

Faculty of Biological Sciences,
University of Leeds

Professor Nick Graham

Lancaster Environment Centre,
Lancaster University

Dr Kayla King

Department of Zoology,
University of Oxford

Dr Andrea Migliano

UCL Anthropology,
University College London

History

Dr Andrew Arsan

Faculty of History,
University of Cambridge

Dr Toby Green

Department of History
and Department of Spanish,
Portuguese & Latin
American Studies,
King's College London

Dr David Motadel

Department of International
History,
London School of Economics
and Political Science

Dr Lucie Ryzova

Department of History,
University of Birmingham

Dr Alice Taylor

Department of History, King's
College London

Law

Professor Pinar Akman

School of Law,
University of Leeds

Dr Ana Aliverti

School of Law,
University of Warwick

Professor Fiona de Londras

Birmingham Law School,
University of Birmingham

Professor Rosie Harding

Birmingham Law School,
University of Birmingham

Professor Jeff King

UCL Faculty of Laws,
University College London

Mathematics and Statistics

Dr Anders Hansen

Department of Applied
Mathematics and
Theoretical Physics,
University of Cambridge

Dr Oscar Randal-Williams

Department of Pure
Mathematics and
Mathematical Statistics,
University of Cambridge

Dr Carola-Bibiane Schönlieb

Department of Applied
Mathematics and
Theoretical Physics,
University of Cambridge

Professor Dominic Vella

Mathematical Institute,
University of Oxford

Dr Hendrik Weber

Mathematics Institute,
University of Warwick

Philosophy and Theology

Dr Naomi Appleton

School of Divinity,
University of Edinburgh

Dr Joel Cabrita

Faculty of Divinity,
University of Cambridge

Dr John Michael

Department of Philosophy,
University of Warwick

Professor Ian Phillips

Department of Philosophy,
University of Birmingham

Dr Bryan W Roberts

Department of Philosophy,
Logic and Scientific Method,
London School of Economics
and Political Science

Sociology and Social Policy

Dr David Clifford

Department of Social Statistics
and Demography,
University of Southampton

Dr Des Fitzgerald

School of Social Sciences,
Cardiff University

Dr Suzanne Hall

Department of Sociology,
London School of Economics
and Political Science

Dr Alice Mah

Department of Sociology,
University of Warwick

Dr Maria do Mar Pereira

Department of Sociology,
University of Warwick



Early Career Fellowships

In 2017 Early Career Fellowships provided 50 per cent of the salary costs of a three-year research position, up to £24,000 a year, with the host university providing the balance. Research expenses of £6,000 a year were also available.

Sciences

Dr Joanna Baker

University of Reading

Natural selection from genotypes to phenotypes

Mr Denis Bandurin

University of Manchester

Electron hydrodynamics in graphene, fundamentals and applications

Dr Tom Bishop

University of Liverpool

Stay warm and pass the salt: thermal and chemical constraints on biodiversity

Dr B Helen Burgess

University of St Andrews

Vortex scaling and universality far from equilibrium

Dr Ajay Chandra

Imperial College London

Renormalisation and statistical behaviour of singular stochastic PDE

Dr Franck Courbon

University of Cambridge

Extending and characterising the capability of hardware data-extraction techniques

Dr Kristen Crandell

Bangor University

Sky-diving for dinner: the foraging biology of the pied kingfisher

Dr Volker Deringer

University of Cambridge

In silico design of amorphous functional materials

Mr Michael Dicker

University of Bristol

Autocatalytic fuel systems to power a new generation of machines

Dr Emily Draper

University of Glasgow

Aligning self-assembled materials for wearable electronics

Dr Michele Ducceschi

University of Edinburgh

The acoustics of early and modern double basses: a physics-based investigation

Dr Kirsty Dunn

Lancaster University

Mapping the origins of early social processing

Dr Kristaps Ermanis

University of Cambridge

Reaction invention and smart catalyst design from computation and experiment

Dr Ines Hahn

University of Manchester

Coordinating microtubule dynamics during neuronal development and ageing

Mr Christopher Halcrow

University of Leeds

Scattering skyrmions – hunting for surprises in the Skyrme model

Dr Thomas Halliday

University of Birmingham

Quantifying bias in fossil evolutionary trees: the origin of placental mammals

Dr Ardern Hulme-Beaman

University of Liverpool

From wolf to dog: reconstructing their role in early human societies

Dr Matthew Jenner

University of Warwick

Mapping protein-protein interactions in modular polyketide synthases

Dr Angeliki Katsenou

University of Bristol

Perceptual video analysis for deep compression

Dr Charlotte Kirchhelle

University of Oxford

From edge to organ: the role of cell geometry in plant morphogenesis

Dr Chunyi Li

University of Warwick

Birational geometry, Bogomolov inequalities and Bridgeland stability

Dr Emma Liu

University of Cambridge

Sulphide saturation in mafic magmas: implications for sulphur and metal outgassing

Dr Rair Macedo

University of Glasgow

Advanced magnetic media for next generation THz multifunctional devices

Dr James Neenan

University of Oxford

Invading the water: inner ear evolution in convergent aquatic tetrapods

Dr Amlan Kumar Pal

University of St Andrews

Photochemical self-assembly of light harvesting chromophores to form discrete supramolecules

Dr Ubaid Ali Qadri

University of Cambridge

Optimising ignition in unsteady reacting flows

Dr Thomas Ranner

University of Leeds

A numerical analysis and simulation framework for biological locomotion insights

Dr Reuben Rideaux

University of Cambridge

Perceiving in depth: the intersection of minds and machines

Dr Hatef Sadeghi

Lancaster University

Quantum and phonon interference in molecular-scale thermoelectric materials

Dr Marta Shahbazi Alonso

University of Cambridge

Manipulating stem cell potential: functional impact on the architecture of embryonic and adult epithelial tissues

Dr Sergii Strelchuk

University of Cambridge

Quantum algorithms and entanglement structure for emerging quantum computers

Dr Ziri Younsi

University College London

New frontiers in black hole physics: polarised scattering radiation transport

Humanities

Dr Niall Allsopp

University of Exeter

Writing ritual experience in early modern England

Dr Ciaran Arthur

Queen's University Belfast

Obscurity and textual concealment in early medieval England

Dr Josefine Baark

University of Warwick

Reassessing transcultural techne: miniature mechanised aesthetics, 1730–1830

Dr Hjoerdis Becker-Lindenthal

University of Cambridge

Kierkegaard's reception of Johannes Tauler. Rheno-Flemish mysticism and its existential reinterpretation

<p>Dr Diana Berruezo-Sánchez University of Oxford <i>Revaluating minorities: black slaves' poetry in sixteenth- and seventeenth-century Spain</i></p>	<p>Dr Niall Geraghty School of Advanced Study, University of London <i>A sign of contradiction: religion and revolution in the work of León Ferrari</i></p>	<p>Dr Alexander Hutton King's College London <i>In search of provincial England: place and regional identity, 1918–2018</i></p>	<p>Dr Roisín Laing Durham University <i>The savage-child and nineteenth-century evolutionism: an Australian perspective</i></p>
<p>Dr Kate Boehme University of Leicester <i>Princely states in British India: rethinking the economics of empire, 1857–1947</i></p>	<p>Dr Maria Giulia Genghini King's College London <i>Jesuit re-invention of scriptural commentary in the new world (JDUEO)</i></p>	<p>Dr Marko Ilic University College London <i>Contemporary art and activism in the Post-Yugoslav space</i></p>	<p>Dr Yvonne Liao University of Oxford <i>Dissonant empires: musical venues in China's treaty ports, 1880s–1940s</i></p>
<p>Dr Emma Butcher University of Leicester <i>War and the culture of childhood in the nineteenth century</i></p>	<p>Dr Calbert Graham University of Cambridge <i>Unmasking origin: automated native language identification by L2 speech analysis</i></p>	<p>Dr Grazia Ingravalle Brunel University London <i>Whose film heritage? Postcolonial perspectives on film archives and museums</i></p>	<p>Dr Gregory Lippiatt University of East Anglia <i>The crusading diaspora: French baronial government in the Mediterranean, 1204–1287</i></p>
<p>Dr Benjamin Cartlidge University of Liverpool <i>The voices of Athenaeus: between quotation culture and cognitive narratology</i></p>	<p>Dr Andrew Green University of Glasgow <i>Sonic trajectories of censorship in Mexico</i></p>	<p>Dr Kyle Jasmin Birkbeck, University of London <i>Thinking and talking space: abstract auditory concepts in language and the brain</i></p>	<p>Dr Emma Loftus University of Cambridge <i>Coastal origins: earliest human occupation of the shoreline</i></p>
<p>Dr Emily Cock Cardiff University <i>Fragile faces: disfigurement in Britain and its colonies, 1600–1850</i></p>	<p>Dr Jerome Greenfield King's College London <i>The transformation of the French state, 1789–1870</i></p>	<p>Dr Ceren Kabukcu University of Liverpool <i>Before farming: prehistoric plant use in the Taurus-Zagros arc of Southwest Asia</i></p>	<p>Dr Hane Maung University of Manchester <i>Suicide, disorder, and causal judgements: a philosophical investigation</i></p>
<p>Dr Richard Cole University College London <i>Bureaucracy and Old Norse literature</i></p>	<p>Dr Devyani Gupta University of Leeds <i>The domestic and global history of British Indian opium, c. 1800–1930</i></p>	<p>Dr Zubin Kanga Royal Holloway, University of London <i>Collaborative strategies in new works exploring musician–technology Interactions</i></p>	<p>Dr Innes McCartney Bournemouth University <i>Echoes from the deep: modern reflections on our maritime past</i></p>
<p>Dr Andrew Cooper University College London <i>The road not taken: Kant and organised systems</i></p>	<p>Dr Monica Hellstrom Durham University <i>State communications under Diocletian: a sociological approach</i></p>	<p>Dr Jonathan Kasstan Queen Mary, University of London <i>Universals of grammatical change in language obsolescence</i></p>	<p>Dr Fraser McNair University of Leeds <i>The changing authority of kings and bishops: France, c. 900–1100</i></p>
<p>Dr Christopher Cotter University of Edinburgh <i>A comparative study of unbelief in Northern Ireland and Scotland</i></p>	<p>Dr Diarmuid Hester University of Cambridge <i>Culture and waste in New York City: ephemera, realia, rejectamenta</i></p>	<p>Dr Eugenia Kelbert University of East Anglia <i>Translation and cross-lingual stylistic transfer</i></p>	<p>Dr Nathaniel Miller University of Cambridge <i>The poetics of Sunnism: Arabic literary networks in the Crusades-era Mediterranean</i></p>
<p>Dr Nicholas Stefan Drofiak University of Warwick <i>Performing indigenous identities, memory and belonging in the Russian far north</i></p>	<p>Dr Simon Hewitt University of Leeds <i>Nothing of consequence? An investigation of a neglected position in logic</i></p>	<p>Dr David Kennerley Queen Mary, University of London <i>A sonic history of Chartism: music, sound and politics in Britain, c. 1838–1848</i></p>	<p>Dr Benjamin Molineaux Ress University of Edinburgh <i>Digital methods in new world language change: words and sounds in older Mapudungun</i></p>
<p>Dr Luca Fenoglio University of Leicester <i>'A head for a tooth': violence in fascist Italy's path to a Mediterranean empire</i></p>	<p>Dr Pamela Hunt University of Oxford <i>Going out into the world: mobilities in postsocialist Chinese literature</i></p>		

<p>Dr Michelle Nicholson Sanz Royal Central School of Speech and Drama <i>Making waves: assessing contemporary collaborative performances of water</i></p>	<p>Dr Heidi Stoner Durham University <i>Sculpture in the early medieval Irish Sea, c. 800–1000: interlacing traditions</i></p>	<p>Dr Sean Willcock Birkbeck, University of London <i>Aesthetics in extremis: the rise of Victorian violence</i></p>	<p>Dr Elizaveta Fouksman University of Oxford <i>Moral logics of labour, income and (re)distribution: a southern African case</i></p>
<p>Dr Karl O’Hanlon University of Leeds <i>Poets and office: twentieth- century poetry and public life</i></p>	<p>Dr Lizzie Swarbrick University of Edinburgh <i>The art and architecture of Roslin church</i></p>	<p>Dr Junqing Wu University of Cambridge <i>Buddhist clerics in late- imperial China: literary image and social reality</i></p>	<p>Dr Morteza Hashemi University of Edinburgh <i>Integration through blood donation: post-secular implications of British Shia immigrants’ civic engagement</i></p>
<p>Dr Olena Palko Birkbeck, University of London <i>Contested minorities: a transnational history of the Polish-Soviet borderlands, 1918–1939</i></p>	<p>Dr Helena Taylor University of Exeter <i>Savantes and Salonnières: women and classics in early modern France</i></p>	<p>Social Sciences</p>	<p>Dr Rachel Humphris University of Birmingham <i>Welcoming cities: understanding sanctuary in securitised states</i></p>
<p>Dr Olga Petri University of Cambridge <i>Beastly St. Petersburg: humans and other animals in imperial Russia</i></p>	<p>Dr Laura Tisdall Queen Mary, University of London <i>Adolescents’ conceptions of adulthood in Britain, c. 1950–present day</i></p>	<p>Dr Joanna Allan Durham University <i>Powering conflict and resistance: experiences and representations of energy</i></p>	<p>Dr Saba Hussain University of Warwick <i>(Re)constructions of teacher identities under the counter-terrorism agenda: a governmentality perspective</i></p>
<p>Dr Harriet Phillips Queen Mary, University of London <i>Common knowledge: inventing popular culture in early modern England</i></p>	<p>Dr Mara van der Lugt University of St Andrews <i>The theodicean turn: pessimism and the problem of evil in the early enlightenment</i></p>	<p>Dr Grigori Asmolov King’s College London <i>Participatory warfare: the role of ICTs in modern conflicts</i></p>	<p>Dr Gillian Kennedy King’s College London <i>New diaspora networks? Changing patterns of political engagement among Egyptians</i></p>
<p>Dr Naomi Pullin University of Cambridge <i>Female foes: conflict, dispute and identity in the early modern British Atlantic</i></p>	<p>Dr Romans Vaters University of Cambridge <i>Nationalist anti-Zionism in Israel: the making of a dissident ideology</i></p>	<p>Dr Samuel Burgum University of Sheffield <i>Re-taking the alpha territory: squatting and London’s housing crisis</i></p>	<p>Dr Nikolas Kirby University of Oxford <i>Trust, distrust and the legitimacy of government</i></p>
<p>Aaron Rosenberg King’s College London <i>Imagined populations: collective life and literary form</i></p>	<p>Dr James West Northumbria University <i>Black media architecture: race, journalism and the built environment in Chicago</i></p>	<p>Dr Sydney Calkin Durham University <i>Abortion access beyond the nation-state: changing geographies of reproduction</i></p>	<p>Dr Eszter Kovacs University of Cambridge <i>Contesting the marginality of rural areas: the future of land in Eastern Europe</i></p>
<p>Dr Camilla Røstvik University of St Andrews <i>‘The painters are in’ – The art history of menstruation since 1950</i></p>	<p>Dr Thomas White University of Oxford <i>Written in trees: horticulture and applied philosophy in the late middle ages</i></p>	<p>Dr Eray Cayli London School of Economics and Political Science <i>Catastrophe, urban renewal, and architectural activism in contemporary Turkey</i></p>	<p>Dr Scott Lavery University of Sheffield <i>Capitalising on the European crisis: new geographies of economic power in the EU</i></p>
<p>Dr Neal Shasore University of Liverpool <i>Civic centre: architecture and the municipal project in Britain, 1919–1979</i></p>	<p>Dr Tom Wilkinson School of Advanced Study, University of London <i>Image economies</i></p>	<p>Dr Spela Drnovsek Zorko University of Warwick <i>Toward a diasporic postsocialism: race, migration, and genealogies of encounter</i></p>	<p>Dr Sabina Lawreniuk Royal Holloway, University of London <i>Moral geographies of work and activism in Cambodian garment supply chains</i></p>
		<p>Dr Casper Laing Ebbensgaard Queen Mary, University of London <i>Luminous Verticality: the changing geographies of East London at night</i></p>	

Dr Georg Löffmann
University of Warwick
The enemy inside the gates: anti-elite hostility and the political agency of the 'everyday' in Europe and the USA

Dr C Laura Lovin
University of Strathclyde
Rethinking education: young migrants, citizenship, and inclusive communities

Dr Elisa Lopez Lucia
University of Portsmouth
The politics of knowledge: security politics and the 'remaking' of West Africa

Dr Edyta Materka
Queen Mary,
University of London
Peasant struggles in the age of disaster capitalism

Dr Marco Meyer
University of York
Where credit is due: the credit system from the perspective of global justice

Dr Elizabeth Morrow
King's College London
Brexit and voice: the impact of the Referendum on right-wing activism

Dr Burcu Ozcelik
University of Cambridge
Resurgence or resilience? Religious nationalism, democracy and violence

Dr Robtel Neajai Pailey
University of Oxford
The socio-economic development implications of race-based citizenship in Liberia

Dr Jon Schubert
Brunel University London
The afterlives of oil-backed infrastructures in an Angolan port city

Dr Miranda Sheild Johansson
University College London
Becoming a tax payer: fiscal expansion and economic subjectivities in Bolivia

Dr Maurice Stierl
University of Warwick
The EU's contested forms of border governance in the Mediterranean Sea

Dr Thomas Swann
Loughborough University
Participatory constitutions: intercultural communication and political consensus

Dr Lisa Tilley
Queen Mary,
University of London
Race, intimacy, and extraction on an internal frontier

Ms Susanne Verheul
University of Oxford
Performing professionalism: law, order, and repression within state institutions

Dr Gabrielle Watson
University of Oxford
Keywords: criminal justice discourse and institutional performance



Major Research Fellowships

Humanities

Professor John M G Barclay
Durham University
Reciprocity and co-interest at the roots of the Christian tradition
£86,669

Professor Eugenio Biagini
University of Cambridge
Religious minorities and national identity in southern Ireland since 1912
£178,036

Dr Clare Chambers
University of Cambridge
Intact: the political philosophy of the unmodified body
£197,265

Professor Gregory Charles Dart
University College London
Charles Lamb and romanticism
£159,766

Professor Christopher Eyre
University of Liverpool
Peopling ancient Egypt: an ethnography of pharaonic Egypt
£130,650

Professor John Foot
University of Bristol
Blood and power: a history of Italian fascism, 1915–1945 and beyond
£104,805

Professor Andrew George
SOAS, University of London
The drunken gods: a new study of ancient Mesopotamian mythology
£187,885

Professor Simon Goldhill
University of Cambridge
Playing god with time
£114,548

Professor Helen Graham
Royal Holloway, University of London
Franco's prisons, 1936–1976
£181,669

Professor Josephine Guy
University of Nottingham
Oscar Wilde's development as a successful West End dramatist
£110,467

Dr Mark Jary
Roehampton University
Nothing is said: linguistics without the saying implicating distinction
£106,220

Professor John Andrew Lippitt
University of Hertfordshire
Love's forgiveness
£92,235

Professor Kate Lowe
Queen Mary, University of London
An unsettling presence: sub-Saharan Africa in Renaissance Italy
£120,041

Professor Teresa Morgan
University of Oxford
The invention of faith: Christian pistis/fides and the Roman empire c. 100–500
£161,559

Dr James Palmer
University of St Andrews
Science and belief in the making of early medieval Europe
£165,353

Dr Kathryn Rudy
University of St Andrews
Measuring medieval users' responses to manuscripts: new technological approaches
£174,784

Professor Stella Sandford
Kingston University
Sex division in natural history
£141,484

Professor Alison Shell
University College London
Drama and the British counter-reformation: Catholic college plays in context
£154,990

Professor Alexandra Shepard
University of Glasgow
Childcare, family and economy in England, 1660–1815
£149,143

Professor Roland Smith
University of Oxford
The Greek East under Rome: a visual history
£167,629

Professor Nicholas Vincent
University of East Anglia
A diplomatic edition of the letters and charters of King Richard I
£95,645

Dr Alexandra Wilson
Oxford Brookes University
Opera wars: culture, accessibility and identity in Britain, 1900–2020
£156,204



Social sciences

Dr Felia Allum

University of Bath

Women, crime and culture: transnational organized crime as an equal opportunity industry

£171,566

Professor Kenneth Armstrong

University of Cambridge

The Brexit effect: convergence, divergence and variation in UK regulatory policy

£173,536

Dr Gary Boyd

Queen's University Belfast

Architecture and the face of coal: mining and modern Britain

£155,569

Dr Alex Bremner

University of Edinburgh

Edwardian baroque architecture and imperialism in Britain and the British world

£140,033

Professor Ben Clift

University of Warwick

The OBR and the politics of UK growth amidst Brexit, uncertainty and austerity

£162,755

Professor Sionaidh

Douglas-Scott

Queen Mary,

University of London

Brexit and British constitutional unsettlement

£172,987

Professor Sondra Hausner

University of Oxford

Renouncing the world: Hindu politics and ascetic life in independent India

£113,441

Professor Clare Holdsworth

Keele University

The social life of busyness in an age of de-acceleration

£152,657

Professor Lindsay Paterson

University of Edinburgh

Education and society in Scotland

£139,322

Professor Corey Ross

University of Birmingham

Blue revolution: fisheries, development and environment in the twentieth century

£179,312

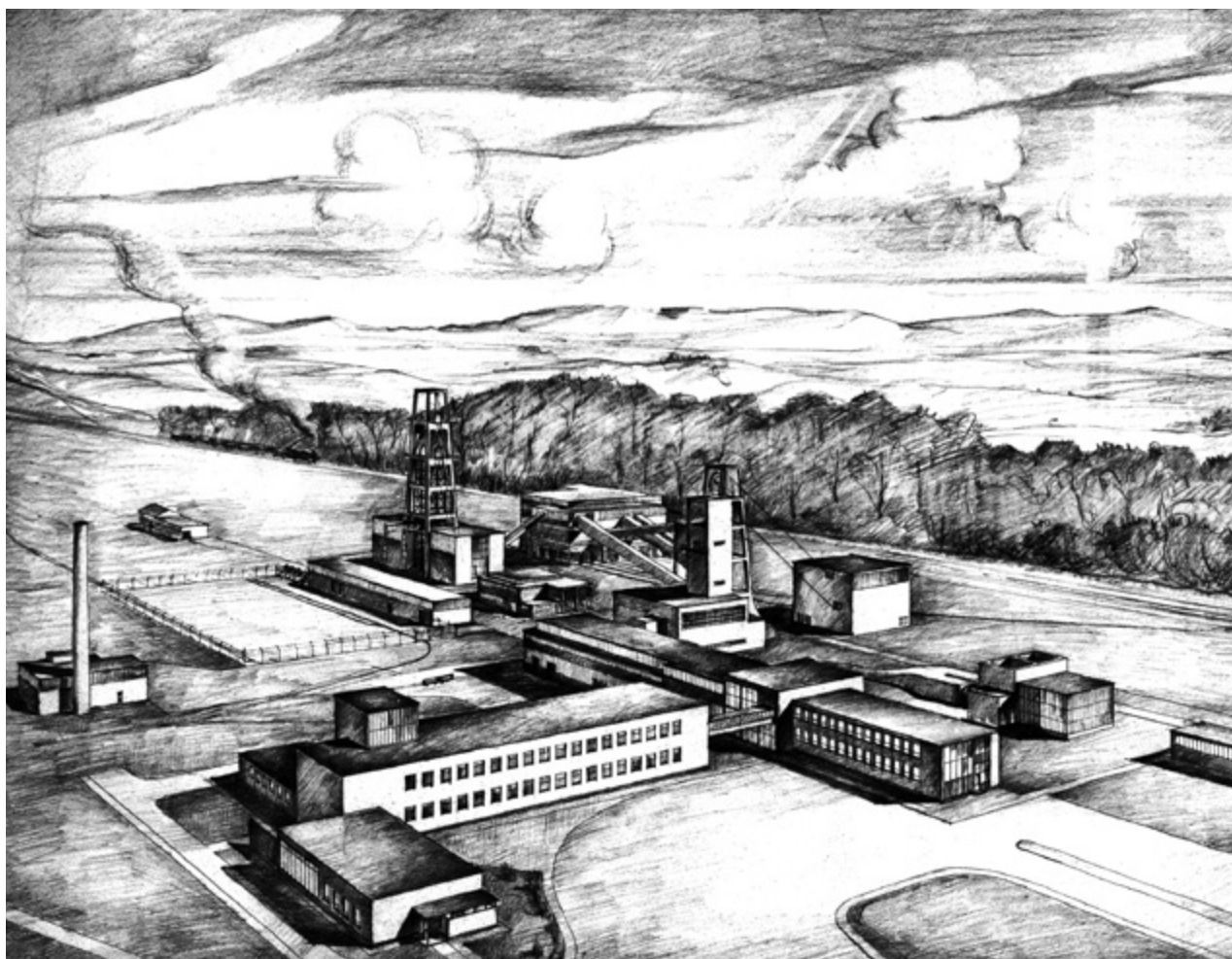
Dr Pauline von Hellermann

Goldsmiths,

University of London

Red gold: a global environmental anthropology of palm oil

£154,542



Research Fellowships

Sciences

Dr Ruth Baker

University of Oxford

Efficient computational methods for testing biological hypotheses
£47,412

Professor Paul Bates

University of Bristol

Development of the next generation of global flood inundation models
£47,693

Professor Caucher Birkar

University of Cambridge

Higher dimensional algebraic geometry
£14,440

Dr Codina Cotar

University College London

Long-memory reinforcement mechanisms with applications in physics and biology
£49,985

Professor Richard Craster

Imperial College London

Elastic metamaterials and metasurfaces
£47,317

Dr Arwyn Edwards

Aberystwyth University

From cryo to bryo: could fungi from 'snowball Earth' colonise land?
£49,288

Dr Ik Siong Heng

University of Glasgow

Exploring new frontiers in gravitational wave astronomy
£26,412

Dr Marc Holderied

University of Bristol

Discovery of a novel ultrasound hearing organ in Neuropterans
£36,963

Professor Sotaro Kita

University of Warwick

Impact of audience on imperative pointing gestures by infants
£47,812

Dr Ranko Lazic

University of Warwick

Petri net reachability conjecture
£48,106

Professor Colin Macpherson

Durham University

Fingerprinting interaction of magma and carbonate
£49,714

Dr Felix Ng

University of Sheffield

Unravelling self-organising polar ice-stream networks
£46,880

Professor Amalia Patane

University of Nottingham

Probing spin- and charge-quanta in novel two-dimensional van der Waals crystals
£45,879

Dr Malgorzata Pilot

University of Lincoln

Consequences of alien sex: investigating the adaptive value of hybridisation
£49,897

Dr Alison Ramage

University of Strathclyde

Preconditioning for novel data assimilation problems
£43,428

Dr Bob Schroeder

University College London

Conducting polymer fibres for thermoelectric fabrics
£49,950

Professor Alexander Scott

University of Oxford

Interactions between local and global graph structure
£48,958

Professor Douglas Yu

University of East Anglia

Connecting Earth observation to biodiversity and ecosystem services
£49,608

Humanities

Professor Sanja Bahun

University of Essex

Home and modernism
£48,316

Dr Teresa Bejan

University of Oxford

Acknowledging equality
£49,992

Mr Julian Bell

Independent scholar

The natures of nature: four seventeenth-century approaches to the outward world
£9,734

Professor Bettina Bildhauer

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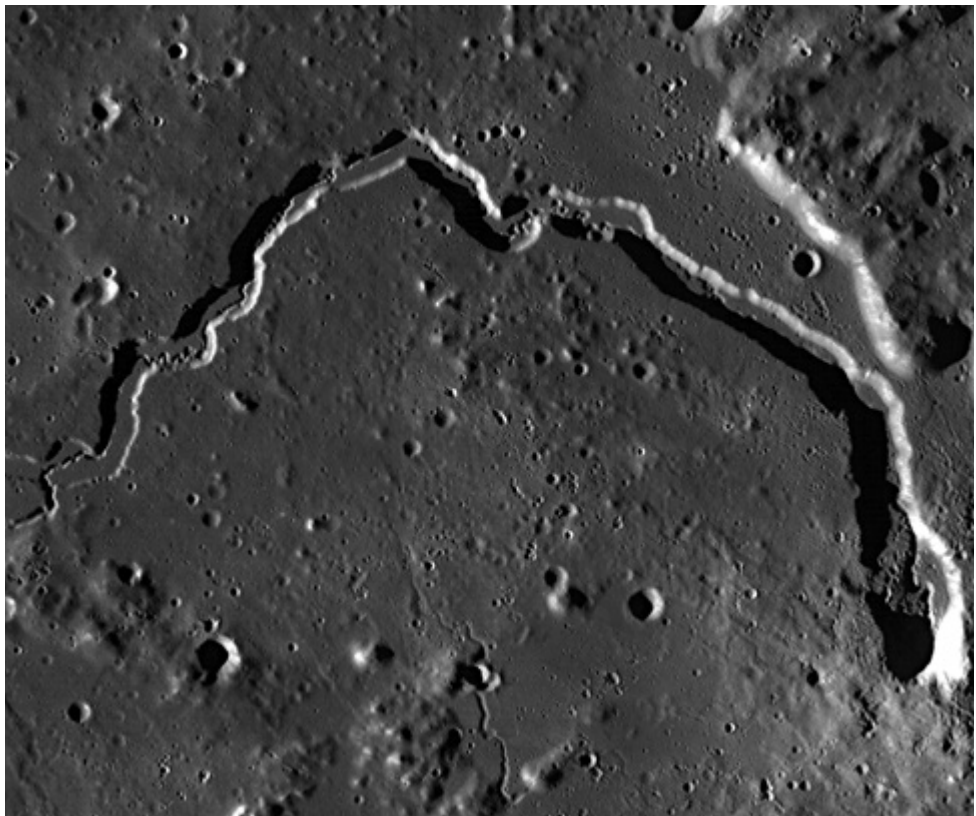
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Bas-relief wall slabs depicting the god Ninurta
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Bilston Glen Colliery. Drawing of new model colliery by
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Rima Schröteri, the largest of the Moon's sinuous rilles,
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Dora Gordine and Richard Hare at home in Dorich
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All-age group of male African elephants, Boteti River,
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