

2019 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 £100 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.

Chairman's Foreword

I am pleased to report that the Leverhulme Trust continues to thrive, despite the currently uncertain environment for research in the United Kingdom created by this country's decision to leave the European Union. The quality of proposals submitted for consideration remains high. The healthy financial position enjoyed by the Trust ensures that the Board is able to fund all of the high-quality work that it wishes to support. This Annual Review contains details of the Trust's many grant-making activities and includes examples of the research ventures we have launched during 2019. The headline figures are that, during the year, the Trust processed 3,663 new requests for funds, and made 659 grants, worth approximately £93 million in total.

We continue to support researchers throughout the academic life-course. Studentships for doctoral work are available via the Trust's Doctoral Scholarship competition and can also be attached to our Project Grants. Early Career Fellowships then enable postdoctoral researchers to move into their first established academic posts. Other schemes develop new Research Leaders, provide Research Fellowships for mid-career and senior academics, and we maintain our highly valued Emeritus Fellowship Scheme for the many scholars who still have good work ahead of them beyond the age of formal retirement.

Some of these grants are modest in size. However, we also support a network of seven large Research Centres, each funded to the tune of £10 million.

We think that the growth in the volume and variety of Leverhulme grants over the years tells a wonderful story of a successful philanthropic venture. What all of these different types and sizes of grants have in common is that they are rooted in the bold vision of a man who died in 1925. William Lever asked his trustees to invest in scholarship of the highest possible quality, to support projects that bring together talented researchers who share a passion for an original and ambitious idea, and to give the freedom without further intervention to pursue that idea to its conclusion. Our academic advisers often tell the Board

We at Leverhulme believe that the UK must continue to welcome talent from everywhere and to provide a supportive environment for everyone to push at the boundaries of intellectual thinking



that Leverhulme is unusual in its willingness to support open-ended projects with outcomes that are uncertain, except, perhaps, in the long-term. That is because we need only concern ourselves with the quality of the research that we fund – so we endeavour simply to support excellence wherever we find it.

Highlights of 2019 include our Research Leadership Award competition, which led to fifteen grants each worth approximately £1 million, supporting programmes of work on subjects as diverse as black holes, Anabaptism, Sumatran manuscripts, and microfluidics. The Trust again celebrated the achievements of thirty Philip Leverhulme Prize-winners, each of whom received £100,000 in recognition of their outstanding scholarship and to advance their research. Professor Sir Martin Rees, the Astronomer Royal, presented the prizes at our annual Gala Dinner. His entertaining and uplifting celebratory address is published on the Trust's website. Also on our website is a sound recording of the Annual Leverhulme Lecture, delivered this year by the distinguished physicist and broadcaster Professor Jim Al-Khalili, who treated a large and appreciative audience to his own insights into 'The Artificial Intelligence Revolution: Hopes, Fears and Opportunities.'

Much of the work that is described in this report has taken place in British universities, but has been conducted by multitalented and multinational individuals and teams who have been attracted by this country's inclusiveness, and a truly liberal academic research environment. Now that Britain seems irrevocably to be exiting from the European Union, it is important to ensure that our internationally competitive position as a home for world-leading researchers is protected, indeed strengthened. We welcome the Government's commitment to increase funding for research and look forward to seeing the detailed proposals. It is essential, in our view, that these continue to underpin this country's position as a destination for the finest research talent from around the world. This will also require a smoothly

operating and positively communicated visa regime. We at Leverhulme believe that the UK must continue to welcome talent from everywhere and to provide a supportive environment for everyone to push at the boundaries of intellectual thinking.

In closing, and on behalf of the Board, I wish again to thank everyone who has contributed to the Trust's success during the year, including our many peer reviewers, panel members and other advisers, both academic and financial. We depend upon a large and international community of enthusiastic supporters, without which the Trust could not function, and to whom we are unhesitatingly grateful. And of course, most important of all, is the exceptional work done by Gordon Marshall and his small team, whose commitment and enthusiasm for the mission of Leverhulme knows no bounds ... thank you.

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 DSA (Chairman)
Mr D Baillie
Mr A C Butler
Mr P J P Cescau
Professor K Gull CBE FRS
Mr R H P Markham
Ms L Nair
Mr P G J M Polman
Mr C Saul
Ms A Sourry
Mr S G 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. Up to £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*.

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. These grants are awarded periodically.

Research Project Grants provide up to £500,000 over five years for researchers to undertake an innovative and original research project; 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 Philip Leverhulme Prizes

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 three 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.

Leverhulme International Professorships help maintain the UK's international standing as a desirable research destination that is open to talented individuals from all countries. Awarded to UK universities seeking to recruit excellent research leaders of any nationality, currently working outside the UK, in order to fill strategically important positions in this country. Up to £5 million for staff salaries and associated costs over five years.

Each year, the Trust awards up to 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.

Director's Report



I am pleased to report that 2019 was another successful year for the Trust.

Our grant-making programmes ran smoothly and to timetable. As usual, application numbers were slightly up for some schemes and slightly down for others. The volume and pattern of applications to the Trust are shaped mainly by the same sectoral influences as affect the UK Research Councils (including the impending deadline for Research Excellence submissions) but numbers overall remain high. Leverhulme is clearly a highly valued funder in the research landscape.

The quality of proposals reaching the Trust also remains high. For example, the number of excellent bids into the competitions for Philip Leverhulme Prizes, Research Leadership Awards and Major Research Fellowships has made the selection of grant winners this year especially difficult. Forced to choose one example to illustrate the overall strength of the grant-making side of the Trust, I would point to the Philip Leverhulme Prizes, for which the numbers nominated continue to rise, despite universities being restricted to three bids per category. The quality and depth of the proposals makes the selection of winners a truly challenging task.

Innovation in grant making has continued apace. The new Leverhulme International Professorship scheme should send a clear signal that the UK remains open to talented researchers in all subjects and from all countries. We hope to be able to announce the first appointments late in 2020.

Looking to the future, I anticipate that the Trust may face significant challenges arising from the increasingly segmented market for higher education in the UK, as universities diverge from the common business model that has dominated the past half-century. Some are focused increasingly on teaching and seem to be withdrawing steadily from research activities. Others are undertaking mainly close-to-market 'translational' or applied research, and moving away from fundamental 'discovery' studies of the

kind that most appeal to the Trust. The reduction in opportunities for sabbatical leave is generating increased demand for 'funded-fellowships' across the sector. Then there is Brexit. For how long will the attractions of working in the UK's world-leading universities continue to trump the possible cultural costs of this country's repositioning of itself in the international order?

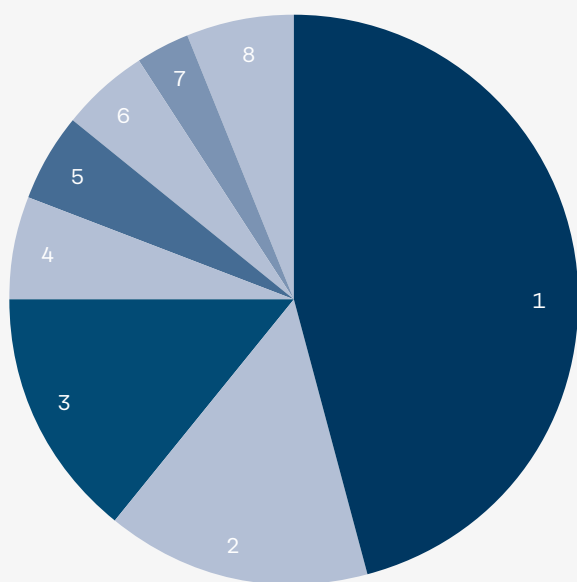
These are significant uncertainties. Possible implications for the Trust range from increasing pressure on our responsive-mode curiosity-driven funding space, as research funding elsewhere emphasises utilitarian considerations, through to a decline in the quality of proposals that we receive, because talented researchers are less attracted to the UK as a place to live and work. The Board is determined to do all it can to resist these pressures and to preserve the UK as a destination of choice for all researchers – whatever their national origins.

Meanwhile, my colleagues and I in the office wish to underline the closing remarks of the Chairman, by thanking the many hundreds of peer reviewers, panel members and other advisers, whose work is vital to the flexible approach and light bureaucratic touch that has come to be associated with Leverhulme. Please continue to lend us your support. It is hugely appreciated.

Professor Gordon Marshall CBE FBA
Director

2019 in Numbers

Distribution of funds



- 1 Research Project Grants
£43,241,000 46%
 - 2 Research Leadership Awards
£14,285,000 15%
 - 3 Early Career Fellowships
£13,206,000 14%
 - 4 Research Fellowships
£5,756,000 6%
 - 5 Academy Fellowships/Scholarships
£4,948,000 6%
 - 6 Major Research Fellowships
£4,659,000 5%
 - 7 Philip Leverhulme Prizes
£3,000,000 3%
 - 8 Other*
£4,435,000 5%
- * Visiting Professorships, Study Abroad Studentships, Emeritus Fellowships and International Academic Fellowships.

Applications: success rates

| | Applications received | Success rate % |
|------------------------------------|-----------------------|----------------|
| Research Project Grants | 798 | 24 |
| Early Career Fellowships | 675 | 21 |
| Research Fellowships | 657 | 18 |
| Philip Leverhulme Prizes | 379 | 8 |
| Major Research Fellowships | 169 | 20 |
| Visiting Professorships | 126 | 37 |
| Study Abroad Studentships | 108 | 31 |
| Emeritus Fellowships | 83 | 40 |
| International Academic Fellowships | 36 | 39 |

Summarised Financial Information

For the year ended 31 December 2019

| | | 2019 | 2018 |
|---|-----------------------------|-----------|-----------|
| | | £000 | £000 |
| Income from | Investment income | 111,487 | 109,626 |
| Expenditure on | Investment management costs | 6,456 | 4,699 |
| | Charitable activities | 91,125 | 108,759 |
| Net income before net gain on investments | | 13,906 | (3,832) |
| | Net gains on investments | 324,594 | (73,872) |
| Net income and net movement in funds | | 338,500 | (77,704) |
| Statement of funds | Total funds brought forward | 3,177,986 | 3,255,690 |
| | Total funds carried forward | 3,516,486 | 3,177,986 |

This information is taken from the Leverhulme Trust Annual Report and Financial Statements 2019, which are available to download from the Charity Commission website or on request from the Trust.

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 2019

Using glaciers to identify, monitor and predict volcanic activity

Iestyn Barr's ground-breaking project will bring together an interdisciplinary team of glaciologists, remote-sensing experts and volcanologists to develop a new, unique and cost-effective method for the global-scale monitoring and prediction of volcanic activity and its consequences

Volcanic eruptions threaten life, infrastructure and wellbeing. The best way to minimise and prepare for these impacts is to directly monitor volcanoes and make early predictions of imminent activity. Unfortunately, because of costs and logistical challenges, most volcanoes are not directly and continuously monitored, making eruptions notoriously difficult to predict, and leaving us susceptible to unexpected eruptions. For this reason, there is considerable interest in devising new, innovative and cost-effective ways of monitoring volcanoes and pre-empting their eruptions. In this study, we will test the potential of glaciers as a source of this information.

Many active volcanoes globally are occupied by glaciers and many infamous eruptions have involved the melting of glacial ice – the 1980 eruption of Mount St Helens (USA), the 1985 eruption of Nevado del Ruiz (Colombia) and the 2010 eruption of Eyjafjallajökull (Iceland), to name but a few. These glaciers are often seen as problematic, since they exacerbate volcanic hazards (e.g. by melting and thereby causing flooding) and can limit, or prevent, field-based volcano monitoring.

However, glaciers can also be useful. In particular, because glaciers often respond to volcanic unrest in observable ways – by fracturing, melting, accelerating and/or advancing – they are potential indicators of past, ongoing and/or imminent volcanic activity. For example, glacier advance and acceleration at Volcán Peteroa (Chile) in 1991 and 2010 was an early warning of an imminent explosion; and in 2009 glacier melt at Mount Redoubt (Alaska) was an early indicator of an eruption. Despite such examples, the potential of glaciers as indicators of past, present and imminent volcanic activity has yet to be fully tested or exploited. This is something we will address in this study. Specifically, we will use variations in glacier behaviour (dimensions and dynamics) to identify and monitor past, ongoing or imminent periods of volcanic activity. In so doing, the project aims to develop a new, cost-effective and unique method of monitoring ice-covered volcanoes worldwide and provide a new predictive tool of volcanic activity and its potential impacts.

The project team consists of Dr Iestyn Barr, Dr Elias Symeonakis (MMU), Prof Benjamin Edwards (Dickinson College), and Dr Matteo Spagnolo (University of Aberdeen).

Opposite

Glacial crevasses, fissures and melt pits, formed in 2006 above active subglacial vents at Fourpeaked Mountain, Alaska.

Photograph: C. A. Neal.

Image courtesy of Alaska Volcano Observatory / U.S. Geological Survey.





An unorthodox revolutionary: the life of Daniel Guérin, 1904–1988

David Berry's archival research will result in the first comprehensive biography of Daniel Guérin, a maverick of the French Left for over 50 years who constantly challenged received ideas from a radical, ethical standpoint

An activist and an engaged writer, Daniel Guérin campaigned tirelessly in a number of fields more usually separated, and also published widely, making a significant contribution in several fields, from the analysis of fascism and the historiography of the French Revolution to the history of the European and American labour movements; from Marxist and anarchist theory to homosexual liberation; from French colonialism to Black Power, to French nuclear tests in the Pacific.

Always an anti-Stalinist revolutionary, a prominent figure on the left of the Popular Front, he was also committed (much earlier than most) to anti-colonialism and to (homo)sexual liberation. He counted François Mauriac, Simone Weil, C.L.R. James, Richard Wright and George Padmore among his personal friends; he met and corresponded with Trotsky; he was invited to dinner 'en tête à tête' with Ho Chi Minh; he knew Malcolm X and Stokely Carmichael. Sartre judged Guérin's reinterpretation of the French Revolution to be "one of the only contributions by contemporary Marxists to have enriched historical studies"; the Martinican poet and politician Aimé Césaire paid tribute to his work on decolonisation; Chomsky considers Guérin's writings on anarchism to be of great importance to the development of contemporary socialist thought; and the leading gay activist Pierre Hahn believed his own generation of homosexuals owed more to Guérin than to any other.

I would argue that Guérin was one of the most interesting and innovative figures on the Left in France from 1930 onwards. However, although his work in particular fields is known to specialists in those fields (e.g. scholars of French anti-colonialism), few are aware of the breadth of his work or activism and he has remained neglected by academia. Similarly, although he inspired generations of anti-colonialists, gay activists and revolutionaries dissatisfied with both the Communist and Socialist Parties or with 'traditional' anarchism, he was largely marginalised by a mainstream Left disturbed by his persistent non-conformism and the impossibility of fitting him in any ideological pigeonholes. This Fellowship will enable me to complete the archival research necessary for the first book-length biography of this important figure and, in the process, help recover the history of an unorthodox current in the French Left: libertarian, internationalist and focused as much on individual disalienation as on social revolution.

Top

Guérin (centre) and fellow Socialist Party members selling the party newspaper, *Le Populaire*, in the winter of 1936. Both images reproduced by kind permission of Bibliothèque de Documentation Internationale Contemporaine.

Bottom

A lorry about to depart Paris in February 1939, with supplies collected by the Parti Socialiste Ouvrier et Paysan (the Workers' and Peasants' Socialist Party, of which Guérin was a prominent member) destined for the Spanish Republicans fleeing Franco across the Pyrenees. Guérin is pictured leaning on the bonnet of the lorry.

Dispersal of hominins across Asia

Our earliest expansions into Asia and interactions with other ancient humans will have required several desert crossings; Paul Breeze aims to identify when and where these happened, helping to refine discussions of our global history

Our understanding of early human history has been radically rewritten by recent archaeological and genetic discoveries. We now know that by 300,000 years ago our own species had evolved in Africa and that on our subsequent journeys across Asia we interbred successfully with at least two other ancient human species (or hominins) – the Neanderthals and the enigmatic Denisovans. When and how did new opportunities for our species to spread into and across Asia occur? How did this influence the routes we took in this spread? When and where might ancient human paramours have met? These are questions I will be investigating during my Early Career Fellowship.

For much of prehistory the Asian deserts were formidable barriers to our global expansion, separating our ancestral African heartland from Asia – where Neanderthals and Denisovans were living – and dividing these hominins from each other. However, through my recent studies it is becoming increasingly clear that deserts were also important drivers of past human movements. Such research has shown that climate change periodically transformed parts of the Arabian and Saharan deserts into grasslands hosting savannah animals – including hippos and elephants – and allowed humans to move through them. However, our understanding of the extents, routes and timings of ancient human movements across Asia, and when different deserts here could be crossed, remains poor.

Knowing whether, when and where networks of lakes and rivers might have allowed hominins to cross the Asian deserts, expand their ranges, and potentially meet, would improve this understanding. Using techniques I developed during my doctorate at King's College London, I will identify ancient rivers and lakes in deserts from satellite imagery and examine how they relate to patterns in the archaeological, climate and fossil records. My Fellowship commenced with collaborative fieldwork with the Max Plank Institute for the Science of Human History, exploring the deserts of Mongolia. During this expedition we located and analysed new ancient lake deposits and archaeological sites, which will help improve our understanding of the environmental and human history of these deserts.

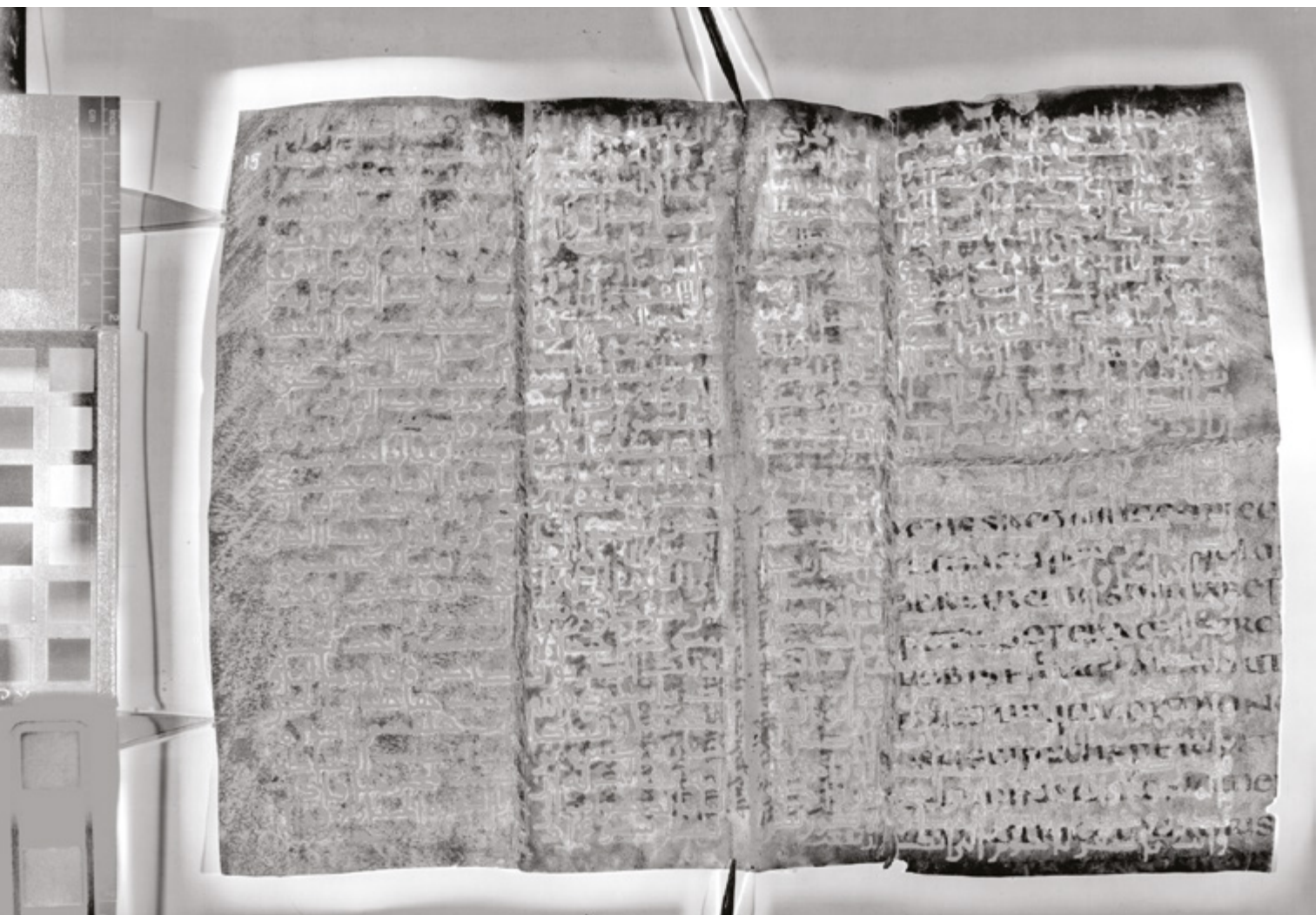
Opposite

Paul Breeze surveying an ancient lake in the Arabian desert using a high-precision GPS

© Palaeodeserts.

Photograph: Richard Jennings.





From eastern deserts to western isles: the Latin manuscripts of Saint Catherine's Monastery, Sinai

Having identified an important tranche of early medieval Latin material in the remote Holy Monastery of St Catherine's Sinai, Michelle Brown will now complete the world's first catalogue of the manuscripts, helping to construct a more complete picture of contact between the early medieval West and the Near East

Opposite

This cutting-edge digital image shows one of the monastery's many-layered palimpsested manuscripts – for parchment is at a premium in the middle of the Wilderness. The image was produced as part of the Sinai Palimpsest Project and from this example Michelle can demonstrate that scribes from Rome, c. 600, and Northumbria, mid-eighth century, were working at the monastery, as their work is sandwiched between that of local Sinaite scribes.

My work on the cultural history of early medieval Britain and Ireland, along with that of other innovative scholars, has increasingly pointed to the likelihood of direct contact with the Near East – a phenomenon previously precluded by historians, who have traditionally asserted that there was no such contact from the demise of the western Roman Empire in the fifth century until the Crusades. The resulting picture has been one of post-colonialism and conflict. However, I was invited to visit the Holy Monastery of St Catherine's Sinai – a rare opportunity for direct scholarly access – in order to see if I could identify Latin materials in its library and catalogue any such Latin New Finds on behalf of the monastic community.

I was able to identify several volumes in Latin and some 39 envelopes of fragments bearing Latin script which, along with my searches in the archives and my work on the high-level digitisation of the palimpsested materials from the monastery, yield portions of some 55 manuscripts to date. The material evidence demonstrates the presence of books and personnel from Gregory the Great's Rome, c. 600, and has led me to reconstruct that influential pope's interaction with the East. There are also two eighth-century Anglo-Saxon scribes who were working at the monastery.

Around two thirds of Sinai's books are in Greek; many of the rest are Christian Arabic texts; and others are in Syriac, Georgian and Slavic. Some are Greek-Arabic bilinguals for use by Arab Christians and Greek monks raised in Muslim territories (such as Syria, Egypt and Sinai itself) who spoke Arabic as their first language and Greek as their second. The newly discovered Latin manuscripts will now form an important and highly significant addition to this corpus. The archives also yield significant and unexpected evidence relating to Sinai's international relations following the Crusades, up to the eighteenth century, and include material such as the earliest extant letter of introduction and safe passage on behalf of medieval pilgrims.

I have already catalogued the Latin palimpsests for the St Catherine's Monastery International Palimpsest Project and it is now time to pull together all of the Latin manuscript materials from the monastery in a single catalogue prefaced by a substantial historical introduction in which the circumstances of cross-cultural interaction are explored and contextualised.

Living inside a box: performance adaptations in turtles

Turtles' shells are without a doubt the defining characteristic that separates them from all other vertebrates; Jonathan Codd's project will expand our understanding of the adaptations and trade-offs for life inside a box

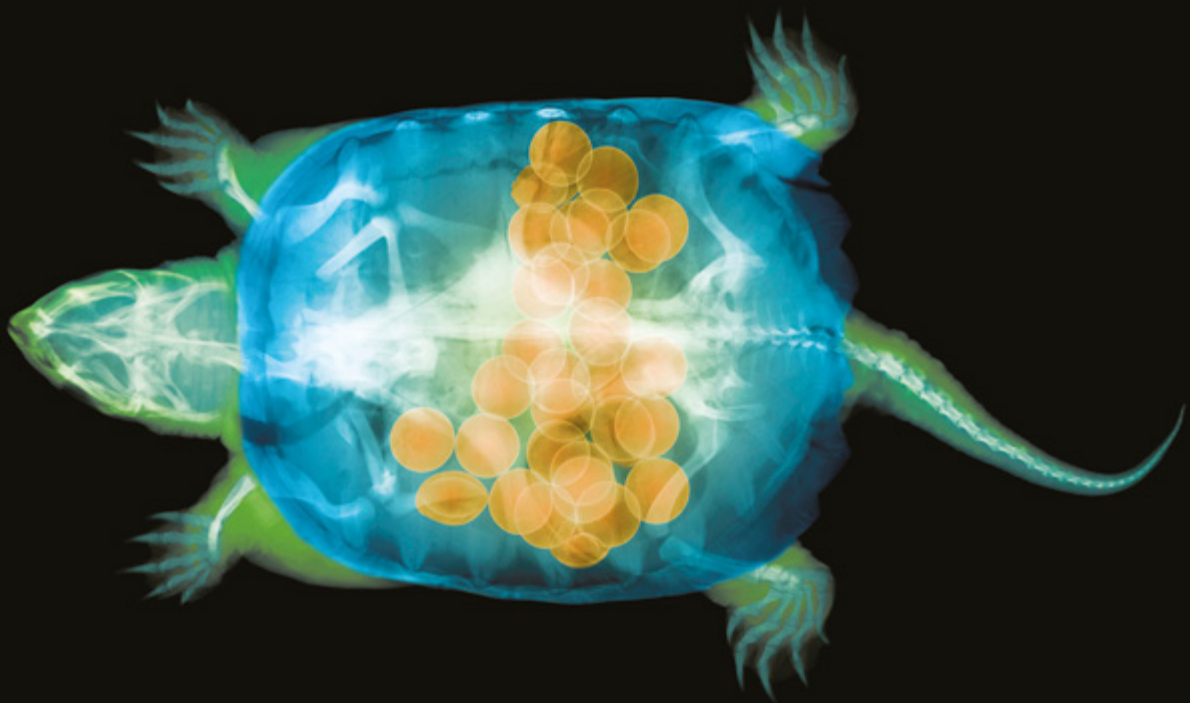
Turtles are one of the most iconic and ancient reptile groups. Although they are often thought of as being 'primitive', turtles have perhaps the most derived morphology found among living amniotes: their bony shell. The turtle shell is intriguing as it doesn't originate from the skin but rather forms from integration of the ribs and vertebrae. Their shells would appear to constrain their lives; however, turtles inhabit a range of both aquatic and terrestrial habitats and many species effectively move between both. Female turtles are also able to successfully carry developing eggs inside their shells.

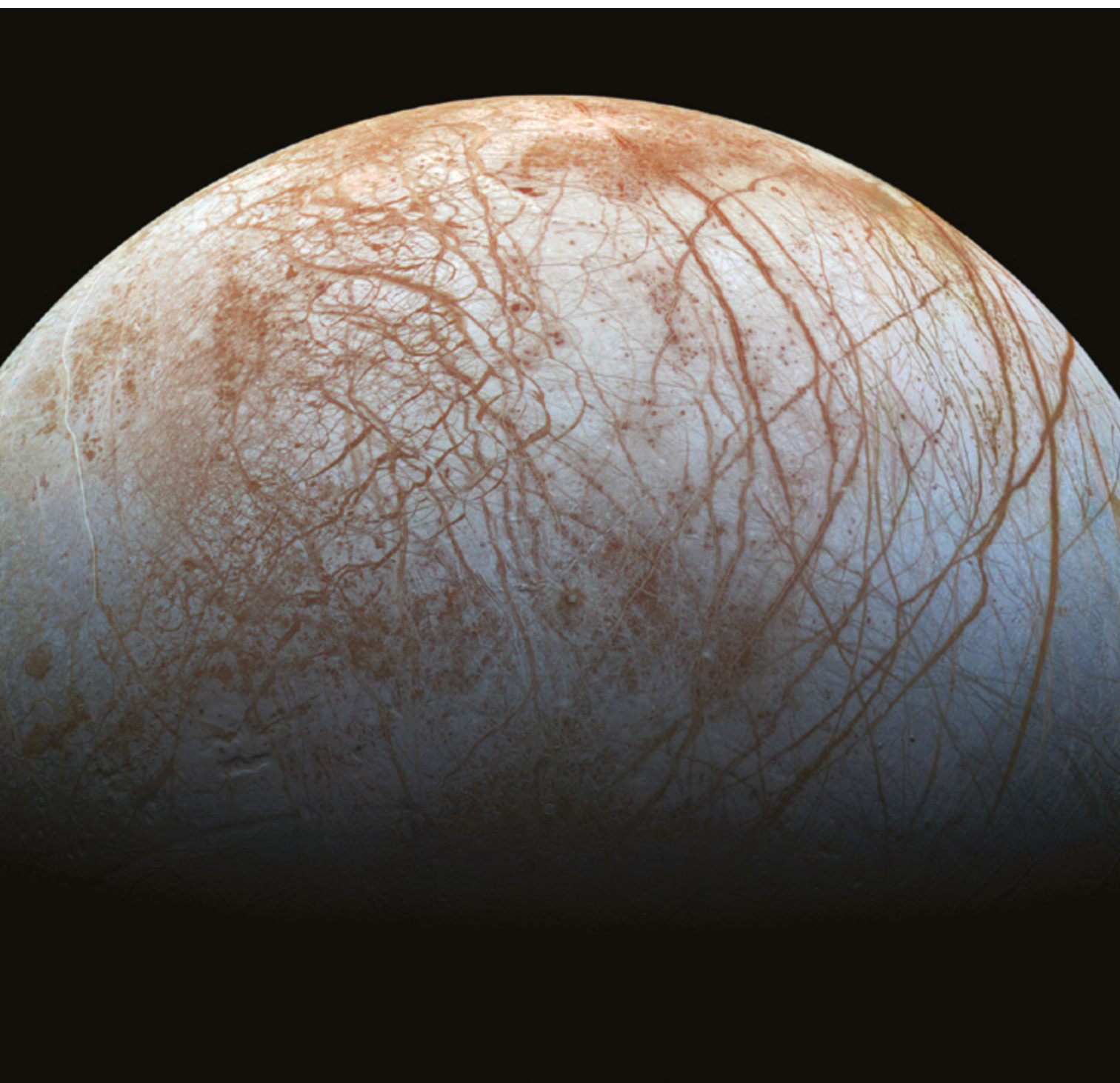
Turtle shells have dramatically affected their biology. Incorporation of the ribs into the turtle shell means that the ribs are immobile and cannot be used to breathe; in their place, the abdominal muscles have taken on the primary breathing functions. The way turtles locomote is also strikingly different. Unlike any other vertebrate, because the carapace is fused to the shell, the shoulder blades are inside their rib cage, meaning the body of a turtle is inflexible with the exception of the neck and tail. A turtle's famously slow locomotion is therefore primarily dependent on movement of the limbs. Turtles also routinely transverse between aquatic and terrestrial environments and the variation in the degree to which their shells help with this can also provide insight into how selection pressures on locomotor performance are influenced by functional demands.

Turtles lay eggs and this confers one particular constraint that applies only to females, in that all of these eggs must be held within the confined space inside the shell (see image). The principle issue with developing eggs internally is the physical space restriction for the lungs to inflate meaning their ability to breathe, and therefore locomotor performance, may be reduced.

In our project we will use physiological, biomechanical and biologging techniques to provide important insight into three fundamental aspects of turtle biology affected by their shells; the way that they breathe, how they reproduce and how they move.

Coloured X-ray image of a female snapping turtle showing the eggs held within the shell © Ted Kinsman.





Searching for life on Europa

Using unique Europa-like salts from hypersaline springs in the Canadian High Arctic, Claire Cousins and her team will employ a range of cutting-edge geochemical and organic analyses to investigate how biology leaves its mark in such materials

The question of whether life currently exists beyond Earth is of huge scientific and human significance. A vast liquid water ocean is known to exist beneath the crust of the icy moon Europa, which orbits the planet Jupiter in the outer reaches of our solar system. The presence of this extraterrestrial ocean world prioritises this moon for future robotic astrobiological exploration. Later this decade, two fly-by missions – NASA’s Europa Clipper and ESA’s JUPiter ICy moons Explorer (JUICE) – will lay the reconnaissance groundwork for future landed life-detection missions currently in development.

While the potentially habitable ocean itself exists, largely inaccessibly, beneath tens of km of solid ice, delivery of ocean fluids to the surface via ‘cryovolcanism’ means we can study this ocean via observable and accessible materials extruded onto the moon’s surface. However, our understanding of how evidence of life (biosignatures) can manifest in these surface deposits is in its infancy. Successfully detecting extraterrestrial life will require multiple, independent lines of evidence and a deep understanding of how European materials behave during spacecraft analysis. This is an interdisciplinary problem that can only be addressed by working at the interface of geochemistry, biology and technology development.

We will use unique, naturally occurring material from cold mineral springs in the Arctic to investigate how and where to search for evidence of microbial life on Europa. Axel Heiberg Island is located in Nunavut, Canada, and hosts a series of perennially cold ($< 0^{\circ}\text{C}$), hypersaline springs that precipitate salt deposits of the sort observed on Europa’s surface. These springs serve as analogues to the alien conditions on Europa. We will use these unique materials to investigate what microbial biosignatures are captured by these salts, which specific types of salt mineral they are preserved in and, finally, how they can be detected using spacecraft instruments currently in development by NASA.

Opposite

Europa, imaged by the Galileo spacecraft in the late 1990s. Dark streaks across the surface of the moon’s icy crust contain salt minerals that can reveal crucial information about the ocean beneath.
NASA/JPL-Caltech/SETI Institute.

Inferring prehistoric population changes

Using computational techniques that have transformed how we handle archaeological records, Enrico Crema reveals previously unknown episodes of population changes and reconstructs how people in the past engaged in social learning

Behind any episode of population change, there are a multitude of decisions and events that occur at the individual level. Surviving (or succumbing to) an epidemic disease or famine, choosing to have more (or fewer) children, or deciding to migrate to a new land, are examples of such individual-scale processes that, once aggregated, drive the rise and fall in human populations. As an archaeologist, I am interested in uncovering the causes and the implications of population changes that occurred in prehistory. Discerning whether a population collapse was the result of a devastating increase in mortality or a successful response resulting in an outward migration can help us understand how humans in the past coped or failed to cope with major social, economic and environmental pressures.

Identifying possible behavioural processes behind population changes is a daunting task that requires painstaking analyses of many lines of evidence. But there is an additional challenge unique to prehistorians. How can we even reconstruct past population changes when we don't have any written records? Archaeologists have long been using a variety of measures to indirectly infer past population changes, from simple counts of settlement sites to more complex models based on the age-at-death distribution in skeletal assemblages. Each of these measures is indirect and biased to some extent; some are conditioned by how archaeologists choose to excavate specific sites, others are affected by how physical processes promote the preservation of certain types of artefacts over others.

My work as a computational and quantitative archaeologist overcomes these challenges by finding new ways to utilise the massive amount of data archaeologists have collected over the last century. This task requires the development of bespoke statistical analyses, but also some creative solutions such as the use of computer simulations for building theoretical expectations or evaluating the robustness of the methods we want to employ by testing them on 'simulated' archaeological datasets.

I am using these new methods to investigate some major population fluctuations that occurred in prehistoric Japan. During the Jōmon period Japanese islands were inhabited by communities of sedentary hunter-gatherers with sophisticated material culture, including ceramic figurines with intricate designs. We have some archaeological evidence suggesting that there was an increase in population size about 5,500 years ago, followed a few centuries later by an abrupt decline. I aim to improve our knowledge and understanding of what happened during this transformative moment.

Opposite

土偶 Dogū (clay figurine). Like most figurines found at Jōmon sites, this one is broken at the waist, perhaps deliberately. Archaeologists conjecture that such figurines were used in ancient practices to ensure fertility.





Rewriting clay

Through the study of three key sets of ceramic objects drawn from prehistoric, modern and contemporary periods, and the creation of a new body of clay artworks, Katie Cuddon's project explores the historic lineage of clay as a material for recording and holding information and how it could shape new directions for contemporary art and ceramic practice

Since its earliest use, the capacity of clay to record and preserve marks has been exploited by makers. Marks scratched or incised into the surface of unfired, 'raw' clay are transformed through the process of firing (or accidental burning) into a near-permanent written or drawn record. More recently, the invention of coloured glazes allowed passages of written text to be fused to the clay surface. But the history of using clay as a substance for recording and transmitting intellectual information is less appreciated than its role as a substance for making containers of physical material. Craftspeople, artists, historians, archaeologists and anthropologists often connect clay with the manufacture of vessels or figurines: objects that reveal their 'meaning' in a very different way from a written text.

If the dominant narrative of clay concerns its capacity to create vessels which have enabled humans to survive and flourish, a counter-narrative of clay used as a material to make containers of 'information' is equally significant. From the earliest times, clay has been used to record intellectual information, be it inventories of goods, extended texts or what appear to us today as cryptic symbols and undecipherable marks found on clay discs found in Minoan archaeology. Clay's durability in its baked form allows us to consider the relationship between an immaterial intellectual thought and the physical material within which it is embodied.

Through the creation of a new body of clay artworks and through the study of three groups of ceramic objects drawn from prehistoric, modern and contemporary periods, whose primary purpose was to convey meaning through marks made on the clay surface, I will explore the fascinating relationship between clay, text and language.

My Fellowship takes place at a moment when clay is being widely used again within contemporary art practice. Yet at the same time there is critical debate about the sustainability and value of making 'permanent' artworks. The proliferation of information we experience every day is such that it can only be stored digitally and perhaps therefore lacks any guarantee of longevity. The quantity of information that can be stored on a clay surface is strictly limited requiring a level of selectivity that is in opposition to the big data zeitgeist. Within this context I see my exploration, based in a creative, practice-led methodology, as timely in its potential to shape new and relevant directions for contemporary art and ceramic practice.

Opposite

Cool Speech, 2013

Painted ceramic, plaster,
wood. Private collection.

Photograph: Fernando Maquieira.

Geographies of alienation: class, affect and politics in post-industrial towns

Jay Emery's project investigates working-class senses of alienation in three post-industrial towns – Grimsby, Rotherham and Mansfield – examining how these feelings intersect with place, gender, race and other forms of (dis)identification

Alienation has recently been used as an explanatory descriptor underpinning various democratic outcomes and phenomena, from the rise of populist (far)right-wing governments and radicalisations to urban violence and increased opioid and psychoactive drug use. In the UK context, alienation has been used to label a collective emotional condition entrenched in post-industrial towns. In media, political and academic discourses these places are claimed to have been 'left behind' following traumatic historical processes of deindustrialisation, with most post-industrial economic and cultural renewal taking place in major cities. However, post-industrial towns have received little analytic focus and class-based alienations are often treated as axiomatic, ahistorical and overly white. Such accounts belie the intergenerational and intersectional contingencies of post-industrial urbanisms and how these are lived by working-class people.

Through a comparative and relational analysis of place and class, my aim is to develop historically informed understandings of alienated life in post-industrial towns. I want to reveal how working-class senses of alienation are affectively, temporally and geographically constituted across genders, ethnicities and sexualities in these places. Moving away from generalising assumptions of post-industrial towns, the project will also draw out the differences and commonalities between the three locations.

Each town has its own complex historical geography of industrial decline, migration, social deprivation and forms of identity. Grimsby has low ethnic diversity, is geographically isolated in a coastal location and has historical relationships to the fishing industry. Close to the major city of Sheffield, Rotherham was once a centre of steel manufacturing and coal mining, it is more ethnically diverse than both Mansfield and Grimsby and has received recent media exposure surrounding racial tensions within the town's working-class population. Mansfield has experienced recent migration from Eastern Europe, has a traumatic lived history of deindustrialisation related to the Miners' Strike 1984–1985 and is notable for recent electoral results, voting in its first ever Conservative Member of Parliament and being in the top ten 'Leave' voting constituencies in the Brexit referendum.

I will be conducting three months of ethnographic fieldwork in each of the towns. Methods will include psychosocial life-history interviews and participant observation, investigating how memory mediates and conditions senses of alienation. The ethnographic fieldwork will be foregrounded by archival research, which will enrich understandings of the historical and intergenerational aspects of urban life.



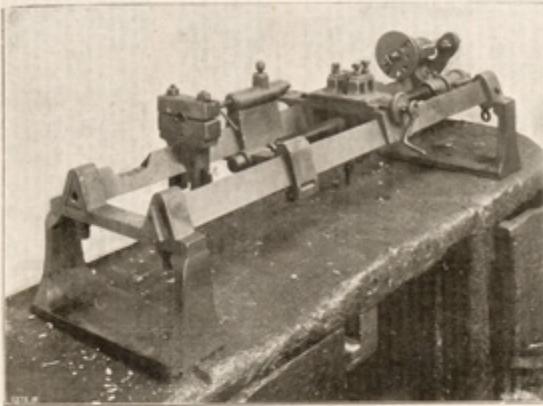


FIG. 1. THE ORIGINAL SCREW-CUTTING LATHE.

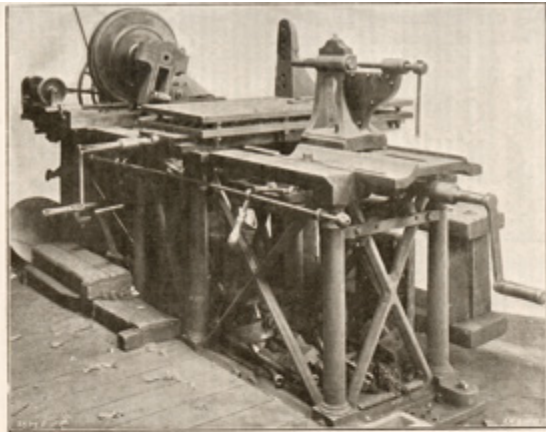


FIG. 5. BORING AND MILLING LATHE WITH SELF-ACTING FEEDS.

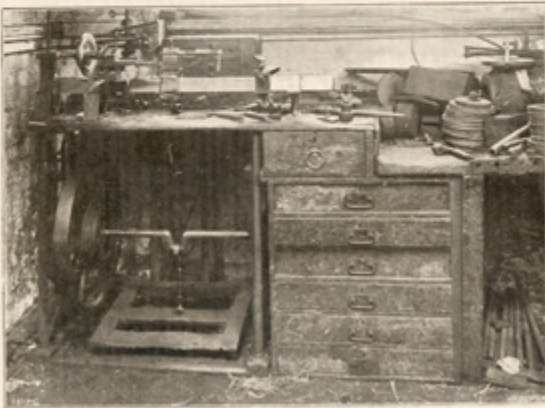


FIG. 2. FOOT LATHE FROM HENRY MAUDSLAY'S PRIVATE WORKSHOP.

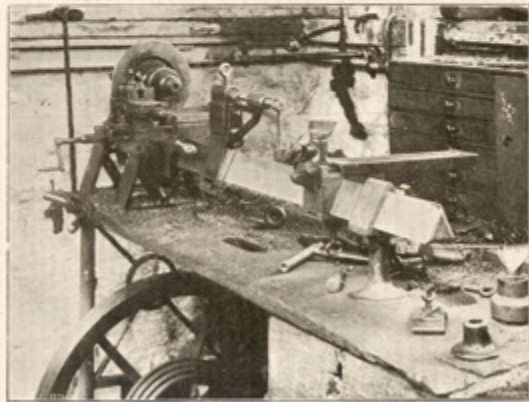


FIG. 3. DETAIL OF LATHE SHOWN IN FIG. 2.

Turning the screw: literature, technology and culture

John Gardner's interdisciplinary project analyses how engineering and literature have engaged, from the invention of the screw-cutting lathe in 1798 until the Great Exhibition of 1851 when the results of experimentation, replication and standardisation were showcased

Twenty years ago, I stopped working in Engineering to study English Literature. Connections between the two fields have fascinated me since.

My project examines how engineers and writers engaged in promoting innovation and economy. Romanticism is often defined against machines, but the opposite was also true. The 1798 *Lyrical Ballads* by Wordsworth and Coleridge were seen as 'experiments' with form and genre at a time when innovations like Maudsley's screw-cutting lathe emerged, allowing accurate parts to be made at different locations.

This was momentous. It was the birth of standardisation, allowing mass-production. New thread forms and standards that arise in the period determine pitches and tolerances – the very things found in poetic rhythms, meters and forms. As Humphrey Jennings writes: "The history of poetry is itself a history of mechanisation and specialisation." Both fields aim for economy. Thomas Fenwick observed: Machines should "consist of no more moving parts than are absolutely necessary." My argument is that literary forms and standards influenced engineering and, in turn, engineering influenced literature.

Percy Shelley and Thomas Love Peacock are often perceived as airy literary figures, yet Shelley tried to create a steamship and Peacock is responsible for the first steamers to India. Politics, steamboats and poetry get tangled up in Shelley's notebooks. He brings 'Science, Poetry, and Thought' together. These words are from Shelley's poem, 'The Mask of Anarchy', which reacts to the Peterloo massacre in August 16, 1819, when government troops attacked peaceful protesters. Shelley's future combines scientific and literary intelligence.

In the Romantic period poets could become engineers, and mechanics wanted to have literature. This fellowship will enable me to analyse links between engineering and literary cultures.

Opposite

A page showing the early machine tools manufactured by Henry Maudslay. Fig.1 – Original screw-cutting lathe; Fig.5 – Boring and milling lathe; Fig. 2 – Foot lathe, Henry Maudslay's private workshop; Fig.3 – Detail of lathe. 'Engineering', 18th January, 1901. This image was reproduced by kind permission of London Borough of Lambeth, Archives Department. Ref: Cuttings File 64.

Unravelling the ecology of mites on bumblebees

The study of bumblebee mites is hampered by poorly resolved taxonomy and an increasing loss of experts; Dave Goulson and his team will comprehensively research early literature and compile a systematic review of these minute creatures

Bumblebees are amongst the most ecologically and economically important pollinators in the temperate northern hemisphere. A group of large, furry and often colourful bees, the sight and sound of foraging bumblebees in our gardens, parks and meadows is a quintessential part of the British summer. I have spent the last 25 years doing research on these fascinating organisms.

One aspect of their biology has been almost entirely neglected in recent decades, and that is the role that mites play in the bumblebee life cycle. Members of the public often observe mites (relatives of ticks and spiders) living on bumblebees. Queen bumblebees frequently emerge from hibernation with clusters of large mites clinging to them. These particular, large and hence easily observed, mites belong to the genus *Parasitellus* and in fact we know that they are not feeding on the bee. They are hitch-hiking, biding their time until she builds a nest in which they will feed and breed. They consume other mites, which may themselves be harmful to the bees and so they might be considered beneficial, but on the other hand the female mites also eat the bees' pollen. Their net impact on colony health is entirely unknown, yet this one genus, *Parasitellus*, is perhaps the best-studied of all the mites associated with bumblebees. Fascinatingly, other much smaller mites hitch-hike on the backs of the *Parasitellus* mites.

In total, up to 110 mite species have been found either on or in adult bumblebees, or within their nests. The uncertainty over how many species of mite are involved reflects two things: firstly, the taxonomy of these mites is poorly understood so they are often misidentified; and secondly, we know nothing about the ecology of most of these species, so we aren't sure which ones have been found in bumblebee nests by chance and which ones are actually associated symbiotically/biologically with the bees.

In this project we will fill some of the vast gaps in our knowledge. We intend to conduct a detailed review of mite literature and construct a pictorial/photographic key to their identification, backed up by molecular markers. We will then carry out experiments to see what impact infestation by different mite species has on the health of bumblebee colonies. Overall, we would like to kick-start a new era of research into the fascinating interactions between bumblebees and their many associated mites.

Bumblebee with phoretic mites attached © Dave Goulson.





Riders' rights: freedom, identity and authenticity in grassroots activism

Building on previous research analysing non-specialist political discourse, Mathew Humphrey's project will examine the connection between conceptions of identity, authenticity and personal freedom in motorcycle Riders' Rights Organisations

Riders' Rights Organisations (RROs), campaigning organisations that work on behalf of motorcyclists, have existed for several decades; indeed, the British Motorcyclists Federation celebrates its 60th anniversary this year. The 1960s to the present day has seen the creation and development of riders' rights movements across the world – in Europe and the USA in particular, although developing nations have also seen political activism channelled through motorcycle clubs in recent years, including the promotion of women's rights in India through the 'Bikerini' women's motorcycle collective, and the 'Female Bikers Initiative' in Nigeria. RROs provide a window into two contemporary bases of political mobilisation that are poorly understood: self-chosen identity and 'self-authenticating' consumption activity. Political identities have typically been associated with production functions (labour movements), gender, or with forms of national or ethnic identity. Consumer behaviour has been seen, broadly, as apolitical. RROs show a clear tendency for the politicisation of a self-chosen, consumption-based identity. Nobody is born to be a biker, yet that identity is capable of mobilising people to give up time, money and personal freedom in the service of a 'greater' cause.

This project will examine the ideologies of RROs and look at how the discourses employed relate to the mobilisation of their members, through interviews with RRO leadership and lay membership and analysis of RRO published material. While the discourse of RROs is relatively broad, the dominant theme is 'freedom' and the threats to that freedom from national governments, international administrations and multinational corporations. Symbolically, in 1972 the US National Custom Cycle Association changed its name to ABATE – 'A Brotherhood Against Totalitarian Enactments' – deploying the ubiquitous eagle as the symbol of biker freedom.

Freedom is a concept that has been analysed extensively in political philosophy, but we know less about how non-specialists view it, as they are much less likely to record their views. Recent analysis of learner comments from a 'massive open online course' by myself and co-researchers has shown that non-specialists often frame their conceptions of freedom through direct personal experience. For many it is not only the case that 'the personal is political', but also that 'the political is personal'. This project will continue this research into the interpenetration of political concepts and everyday life, looking at how ideas of freedom relate to the political mobilisation of biker identities.

The 1927 Palestine earthquake: environment, disasters and British colonialism

In 1927 an earthquake shook Palestine, killing hundreds and destroying buildings across the territory; Sarah Irving's project tracks the events surrounding the earthquake and how they tested developmentalist discourses of environmental and political control

We usually think of history as being about people and what they do. For a long time that meant kings and wars. Even with developments such as social or subaltern histories which go beyond the doings of elite men, we still focus on human beings, even seeing ourselves as the drivers of events. But, as fields such as environmental, medical or animal history are increasingly showing, non-human actors – be they microbes, domestic animals, weather patterns or geographies – can have huge impacts on human societies which are often beyond our control.

My new project combines approaches from environmental history, particularly as it relates to natural disasters and colonial history. Most work in this field looks at Indian natural disasters; I will be applying some of the resulting insights to the situation in Palestine in 1927. What happens when a major event like an earthquake, beyond human control, interrupts a situation already rendered tense by colonialism and competing nationalisms?

Palestine is usually thought of in terms of political turmoil, but it is also an active earthquake zone, sitting at one end of the African Rift Valley. Just after 3pm on July 11, 1927 an earthquake measuring 6.3 on the Richter scale struck, with an epicentre north of the Dead Sea, near the city of Jericho. Almost 300 people were killed and there was serious damage to several cities, especially Nablus, and to the Dome of the Rock and al-Aqsa Mosque.

I intend to take the earthquake as a point of departure, following the reactions and responses over the days and weeks that followed. In India, colonial administrations took advantage of disasters to strengthen their control, so I will be looking at the police, as well as at departments such as Public Works and Antiquities which dealt with physical damage. I will also be investigating how different communities, whether defined ethnically or geographically, responded. This links to the involvement of international relief organisations and questions such as who received what support, how and when. These histories also extend into nationalist narratives and normative claims made on the basis of acts in the wake of the earthquake. Finally, I will be looking at the social and political aftershocks: how the earthquake has been remembered and mythologised, and how it still feeds into fears and conspiracy theories about the current situation in Palestine/Israel.

Opposite

A house in Nablus, Palestine, reduced to a mere shell by the earthquake of July 11, 1927 (LC-DIG-matpc-03041, Library of Congress Prints and Photographs Division).

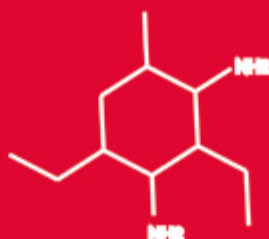
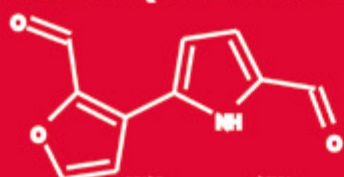


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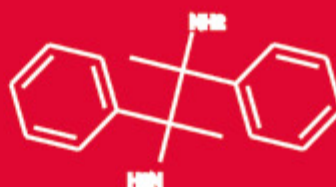
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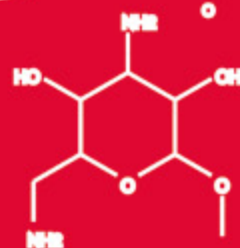
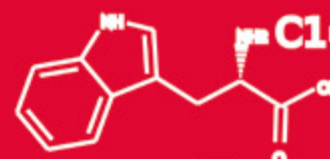


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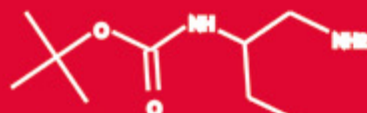
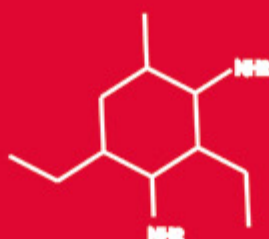
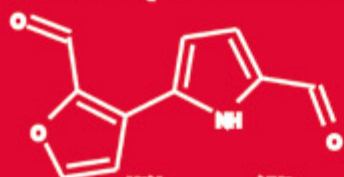
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Chemical space explorer: searching for new materials

Kim Jelfs' research focuses on the development of computer software and approaches that assist in the discovery of materials built from building blocks of organic molecules

New materials can transform our lives: just think of materials such as batteries that are getting smaller, enabling miniaturised devices with increased power. As we face problems such as resource scarcity with continuing population growth and climate change, new materials offer us the hope of efficient ways to generate renewable energy, or a material to filter clean water for a sustainable future, or a room temperature superconductor that would transform our ability to store and transport energy. The number of possible materials out there is so vast that we hope that there is an 'ideal' material for each of society's needs – the problem is, how do we find them?

Discovering new materials is difficult for two key reasons: firstly, the search space is enormous. I work on materials built from organic molecular building blocks (molecules containing only light atoms such as carbon, hydrogen, nitrogen and oxygen), and even conservative estimates suggest that there are more than 10^{60} possible molecules – more than there are atoms in our solar system. Mankind has only ever made a tiny fraction of these molecules. How do we search this space and find the 'needles in the haystack' that are the materials with sought-after properties? The second problem is one of complexity – you can't design a material in the way that you can a building. Atoms don't assemble like bricks, they often assemble in unpredictable ways and this also affects their properties in ways that are hard for us to control.

It can take a year to make and test materials in the laboratory, so computational direction can save a lot of time and money and allow us to screen a much larger range of possibilities. The use of artificial intelligence techniques also holds the potential for us to make 'giant leaps' into new classes of materials, that we may be less likely to discover without automated processes. We will also consider, not just discovering materials with great properties, but how you can actually make them in the lab. I will use the funding to assist in making our software efficient and usable by others, to provide more computer resources and to allow us to test our predictions using automated robotic synthesis.

Opposite

Chemical space is almost unimaginably large: how then do we find the building blocks that can form new materials that can transform our lives?

Moral rules, social science and forms of order in prison

Alison Liebling's project seeks to describe the 'moral rules' that support survival, cooperation and human flourishing in prisons and beyond

Counter-intuitively, because prisoners are often morally 'excluded', going to prison wakes up the moral imagination. There are good reasons for this. Prisoners talk with passion and clarity about 'things that matter'. Existential questions become hard to avoid. There is a moral intensity to prison life, which is linked to the fact that they are places full of power and deprivation. Prisoners understand, at a deep level, that what they experience as unfair practices in prison are 'morally inappropriate', but also that the presence rather than absence of 'values' in otherwise depriving prison environments helps them to live. They become expert witnesses on what it takes to survive and flourish, or conversely, on the very precise ways in which humiliation, unfairness, distrust and fear lead to despair, rage and moral collapse. The aim of this project is to clarify the role of 'moral rules' in human survival and well-being. Humans are *beings to whom things matter*. Because of the prison's unique characteristics, and as a result of Appreciative Inquiry, which explores the most life-sustaining aspects of experience, it has been possible to identify both *what matters* and measure the moral differences between survivable and non-survivable prison environments. We can see, with unusual empirical clarity, that order, survival and growth depend largely on what goes on *between people*.

The project has 3 components: (i) a contemporary history of order, disorder and attempted recovery in prisons in England and Wales, based on several completed research projects and a detailed analysis of national moral quality data in prisons over the last 15 years and their relationship with outcomes such as violence and suicide; (ii) a theoretical synthesis, drawing on a rapidly growing body of moral and philosophical literature, fusing the rich empirical insights in (i) with conceptual reflection on 'the moral' and its significance both in prisons specifically and in human well-being more generally; and (iii) a methodological 'manifesto', showing how the empirical, the normative and the conceptual interweave. I will describe how 'person-centred social science' and 'ethnography-led measurement' work, and how Appreciative Inquiry has been fundamental to their development. Through these methods we find that human beings 'shrink and contract' when they are treated with indifference, carelessness or brutality; they survive, or grow and flourish, when they are treated decently: the 'is' and the 'ought' are fused. In prisons, paradoxically, an intense engagement with conflicting values – power, authority and safety, *and* humanity, agency and opportunity – is both possible and necessary.

Opposite

Wandsworth Prison

© Andy Aitchison/Prison Reform Trust.



石井美樹子
久木田直江
【訳】

マージェリー・ケンプの書

イギリス最古の自伝



The Book of Margery Kempe

慶應義塾大学出版会

Naoë Kukita Yoshikawa, Leverhulme Visiting Professor

An expert on medieval spirituality and women's visionary writing, Professor Naoë Kukita Yoshikawa will collaborate with Swansea University to pursue developments in the global knowledge economy

In a world that appears to be increasingly intent on putting up international academic boundaries rather than dismantling them, the Department of English and Creative Writing at Swansea University has been delighted to welcome Professor Naoë Kukita Yoshikawa of Shizuoka University, Japan, to its ranks as a Leverhulme Visiting Professor. As an internationally renowned Japanese expert on medieval spirituality and women's visionary writing, Naoë has, amongst other things, translated into Japanese from the original Middle English the now canonical female-authored text, *The Book of Margery Kempe*, written by the English laywoman, Margery Kempe, in 1336–1338. She is also currently working (with Dr Anne Mouron) on an edition of the Middle English translation of a thirteenth-century visionary text written by the German nun, Mechthild of Hackeborn (d. 1298) entitled *The Boke of Gostely Grace*, also important in England during the same period as Margery Kempe was operating.

Naoë's Visiting Professorship, therefore, enhances and develops the department's enthusiastic participation in the global knowledge economy: particularly in terms of how the fields of medieval women's spirituality and visionary writings may be researched, taught and communicated beyond Eurocentric contexts in the twenty-first century. As part of her activities, she will present a series of masterclasses for students and staff on her editing and translating activities for a non-Anglophone readership in the area of medieval women's writing. She is also currently leading a number of extra-curricular sessions on the writing of early Japanese women, texts rarely encountered within academic contexts in the West, but which often resonate loudly with those that are readily encountered. This type of comparative reading raises important questions about literary canonicity and why and how some writers get to be included and others are erased.

As a medievalist myself, working on medieval gender, sexuality, women's writing and visionary texts, I have known Naoë since 1997, with our paths destined to cross many times via often serendipitous co-ventures over the intervening years. Our present research collaboration forming the core of Naoë's visit traces and explores overlooked influences of continental visionary women in medieval English writing, especially *The Book of Margery Kempe*. We both hope this Leverhulme Visiting Professorship will lead to a never more pressing international dialogue concerning the deeper influence of women's writing upon those international literary canons from which it has most often been excluded, the reasons for such exclusion and the mechanisms by which it is effected.

Opposite

Cover of the Japanese translation of *The Book of Margery Kemp*; translated by N. Kukita Yoshikawa and M. Ishii.

Unlocking evidence for Antarctic sea ice evolution from a novel biological archive

Erin McClymont's project will exploit a novel biological archive of Antarctic sea ice conditions, using preserved sequences of regurgitated seabird stomach oils spanning the last 31,000 years

The sea ice that surrounds Antarctica is an important part of the climate system, affecting the transfer of heat and gases (including carbon dioxide) between the oceans and the atmosphere. Antarctic ecosystems are also closely associated with the distribution and properties of the sea ice, e.g. whether the sea ice pack is thick and continuous, or interrupted by open waters ('polynyas'). Antarctic ecosystems are vulnerable to a projected decline in sea ice this century, but there is a wide range of modelled sea ice responses to future warming. This uncertain future reflects both model uncertainties and the limited measurements of sea ice and Antarctic ecosystems extending beyond the last ~50 years.

The geological record is an important archive which sets recent environmental trends into a longer-term context and allows us to investigate the drivers and impacts of changes in sea ice. Marine sediments from the Southern Ocean have shown that ~20,000 years ago, during the last ice age, Antarctic sea ice extent was double that of today. However, these records are sparsely distributed. Whilst marine sediments allow us to examine the base of the Antarctic marine food chain (e.g. selected primary producers and grazers), they are unable to illuminate broader ecosystem changes, including the behaviour of predators such as seabirds.

In this project, I will develop a new approach for reconstructing sea ice and its ecosystems, by turning to novel archives generated by an Antarctic seabird: the snow petrel (*Pagodroma nivea*). The snow petrel nests in nooks and crannies above the Antarctic ice sheet during spring and summer, feeding year-round within the sea ice pack. Over time, regurgitated stomach oils accumulate at the nest, preserving a record of snow petrel diet, which includes krill, squid and fish. By analysing the geochemistry and DNA of these deposits ('mumiyo'), snow petrel diet can be reconstructed. As prey availability is influenced by sea ice conditions, sea ice evolution can then be determined.

We will also analyse DNA to investigate the size, structure and connectivity of snow petrel colonies through time, testing an existing hypothesis that sea ice evolution influenced snow petrel evolution. Finally, we will apply species distribution modelling to past Antarctic environments for the first time, to investigate the relationships between sea ice, prey and snow petrel distributions. In combination, the findings will offer a new opportunity to reconstruct past sea ice environments and to better understand sea ice impacts on the Antarctic ecosystem.

Opposite

A snow petrel (*Pagodroma nivea*) nesting above the Antarctic ice sheet. Geochemical and DNA analysis of regurgitated stomach oils will allow us to reconstruct past snow petrel diet and, in turn, a new history of Antarctic sea ice.

© Fred Oliver/naturepl.com





Capital of the world: New York City and the end of the twentieth century

While popular discourse on globalisation's impact on the US fixates on economic decline in the 'heartland', Sarah Miller-Davenport will show that it was New York and other large cities that both fuelled globalisation and felt its greatest effects

"Wall Street is a disaster area" – so declared a real estate lawyer in a 1974 *New York Times* story on the pitiful state of lower Manhattan. During an era marked by accelerating globalisation, the centre of the global finance industry was staring down a bleak future. Some eight million square feet of financial district office space sat empty, brokerage houses were shuttering at a rate of more than one per day, and the surrounding city was hurtling towards a full-blown fiscal crisis. The World Trade Center had been inaugurated in 1973 as a beacon of global capitalism with a mandate to lease only to international firms. A year later, much of the Twin Towers went unoccupied and the remaining offices were mostly home to decidedly provincial tenants, from state and city agencies to small businesses serving local office workers. As one nearby building owner complained, "even a tailor can get space there – and he doesn't have to come from Hong Kong".

The New York of the mid-1970s was not a city that appeared destined to grasp the title of 'Capital of the World'. It is difficult to imagine, some four decades later, that New York was ever in danger of sliding into global irrelevance. But historical actors at the time were not so sure. My project highlights the contingency of New York's reinvention as a 'global city' in the wake of its 1975 fiscal crisis. In turn, it also challenges narratives of late-twentieth-century globalisation as a purely structural, and unstoppable, external force. In contrast to this line of scholarship, I will examine the people, policies and ideologies that shaped globalisation toward specific ends and in a particular context. I aim to show that New York's claim to be the world's leading centre for both financial capitalism and global culture in the late-twentieth century was neither inevitable nor uncontested. Rather, it was actively transformed by a range of actors, from municipal officials to business leaders to museums to hospitality associations, who promoted world integration as a solution to local problems – and whose efforts to enrich New York through foreign capital had profound consequences for its mostly working-class and low-income residents.

The conservation value of regenerating forest for endangered primates in Peru

Lucy Millington's study will evaluate regenerating forests as a suitable habitat for multiple neotropical primate species and include a case study of two endangered species – woolly monkeys and spider monkeys – by collecting behavioural, spatial and habitat characteristic data

Deforestation is leading to wide-scale loss of tropical forest biodiversity. However, areas that were previously cleared for logging and agriculture can become vital habitats for endangered species as forests regenerate and anthropogenic threats cease. Such forests are fast becoming crucial refuges for many species across the tropics and urgently require attention, both for scientific study and protection from further degradation as they may be key to climate change mitigation and the survival of many endangered flora and fauna species.

Seed dispersal is a vital mechanism for forest regeneration and fruit-eating primates often play a key ecological role in dispersing larger seeds than many other taxa can, making them essential to tropical forest regeneration. To conserve these primate species, we need to first understand what their habitat requirements are and how they utilise these spaces.

My research will take me to the Peruvian Amazon, in the Madre de Dios region of southeastern Peru. It will take place across four study sites, each representing different land-uses, ranging from undisturbed forest, through regenerating forest to a sustainably managed Brazil nut concession.

My aim is to understand whether these areas represent vital habitats for the resident primate community by measuring plant and primate diversity and abundance. I will also conduct detailed behavioural studies of the two most endangered primate species (woolly monkeys and spider monkeys), both of which are sensitive to habitat disturbance, to understand how they coexist in degraded habitats. Understanding the response of primate communities to these land-use practices and their role in seed dispersal is vital to understanding how to design and manage future land-use developments and landscape-level conservation initiatives for primates across southwestern Amazonia.

This study is important as it uses multiple approaches to investigate the physical changes of habitats following habitat modification and the way in which a primate community responds to those changes. These data will be used to create predictive models that predict species distribution across a wide area and therefore contribute to broad-scale management planning.

My Leverhulme Study Abroad Studentship will allow me to carry out this research as part of my PhD degree at Manchester Metropolitan University in collaboration with la Universidad Peruana Cayetano Heredia, Rainforest Expeditions and the CREES Foundation. Collaboration with la Universidad Peruana Cayetano Heredia will allow me to work with a variety of students and researchers, receive training in Neotropical plant identification and use their herbarium.

Opposite

A day in the field.

Photograph: Jonathan Freeman.





Decoding dark DNA

Could the unique genomic environment of 'dark chromosomes' foster the evolution of extremely mutated regions of DNA? John Mulley and his team will isolate and sequence the dark chromosomes of several species and so reveal the processes underlying their formation

How do we know that a gene has been lost? All currently available genome sequences contain gaps and any gene encoded by this missing sequence will necessarily be absent from the genome assembly. Such instances of gene 'loss' complicate analyses and hinder our understanding of genome structure, function and evolution. Recently, it has become apparent that many 'lost' genes are nothing of the sort, but instead are hyper-mutated, with such strange sequence composition that current DNA sequencing technologies cannot cope with them.

These types of sequences have been reported from birds and desert rodents such as sandrats and gerbils, although their significance is unknown. Could they have some sort of adaptive advantage, or are they just an accident of metabolism? Whilst researching these strange genomic regions in the gerbil genome, I stumbled across old reports of another unusual phenomenon – dark chromosomes. To visualise chromosomes under the microscope, we stain them with dyes; various regions of DNA stain differently, depending on whether they are open and accessible (so-called euchromatin, which is thought to contain most genes) or dense and inaccessible (heterochromatin, which is typically gene-poor). In gerbils and their relatives, there are chromosomes that are entirely dark and so would appear to be composed entirely of heterochromatin. I'd like to know what these dark chromosomes are, what they are composed of and where they came from. Most especially I'd like to know if there is a link between these chromosomes and the hyper-mutated regions we previously identified. In this project I will apply cutting-edge DNA sequencing technologies to isolated chromosomes and provide fundamental insights into this unique genomic phenomenon. As a result, we'll know which genes are encoded by these dark chromosomes and be able to reconstruct their evolutionary history.

Although these chromosomes have been known for decades, no one has yet attempted to apply modern genetic tools to them and gerbils are seemingly the only species in which they appear. Understanding these chromosomes will improve our understanding of 'non-standard' genomes and genomic regions, something which is increasingly important as our knowledge of the limitations of standard genome sequencing approaches grows.

Opposite

A Mongolian gerbil (*Meriones unguiculatus*) and a fat sandrat (*Psammomys obesus*), two species with 'dark chromosomes'. Photograph: John Mulley.

Daguerreotyped on my heart: African American visual and textual resistance in the British Isles, 1835–1895

Based on her excavation of hundreds of original sources, Hannah-Rose Murray will reframe adaptive resistance to examine visual and textual cultures employed by formerly enslaved African Americans

During the nineteenth century, scores of formerly enslaved African Americans travelled to the British Isles to educate the public on US slavery. Many individuals sought temporary reprieve from American soil, others permanent; some raised money to free themselves or enslaved family members and others sought work with varying degrees of success. Black women and men lectured in large cities and tiny fishing villages, wrote and published narratives, stayed with influential reformers and ensured millions of words were written about them in the newspapers. British audiences read vociferously about their lives through slave narratives or pamphlets, watched anti-slavery panoramas unfold, or purchased photographs or ‘daguerreotypes’ of them. Activists inspired poetry, songs, woodcuts, pamphlets, children’s literature, wax models, religious remonstrances, along with hundreds of editorials and letters to the press. From the *John O’Groat Journal* to the *Royal Cornwall Gazette*, Victorian Britons followed the movements of Black Americans from the 1830s until decades after slavery had been abolished in the United States in 1865, often cramming into tiny churches or town halls to curb an insatiable appetite for details about American slavery.

This Fellowship will allow me to investigate the purpose of some of these transatlantic missions, specifically focusing on why and how African Americans used visual and textual cultures such as photography, dramatic reproductions and illustrations in narratives to educate transatlantic audiences about US slavery. Why did formerly enslaved individual J.C. Thompson display two grand paintings during one of his lectures, one representing him enslaved and the other as a free man? Why did Moses Roper construct copies of the brutal paraphernalia of enslavement, such as whips and chains, and why did he choose to wear them down a London street? And how did Henry ‘Box’ Brown perform in a play on the Victorian stage, based upon his own personal and traumatic memories of enslavement? I will use African American visual testimony to explore these questions and analyse how they invested such performances with a sense of the ‘heart’, in other words, the emotion and trauma of their past: when Roper walked down that London street, he pushed himself almost to breaking point as he carried the burden of his traumatic memories, in order to challenge racism and misconceptions about slavery.

Opposite

*Narrative of the Adventures and
Escape of Moses Roper, from
American Slavery* by Moses Roper.



Moses Roper.

1840.

NARRATIVE
OF THE
ADVENTURES AND ESCAPE
OF
MOSES ROPER,
FROM
AMERICAN SLAVERY.

WITH AN APPENDIX,
CONTAINING A LIST OF PLACES VISITED BY THE AUTHOR IN
GREAT BRITAIN AND IRELAND AND THE BRITISH ISLES;
AND OTHER MATTER.

THIRTY-SIXTH THOUSAND.

(ENTERED AT STATIONERS' HALL.)

BERWICK-UPON-TWEED:
PUBLISHED FOR THE AUTHOR, AND PRINTED
AT THE WARDER OFFICE.
MDCCCXLVIII.

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Identity, interaction and exchange in medieval England

Elizabeth Anne New's project will employ new technologies and interdisciplinary approaches to investigate the form and function of medieval seals and test existing theories about them

Medieval seals – matrices made of a hard material into which a design has been engraved, and impressions made by them in soft material – acted in a similar way to modern signatures, credit cards and logos, and were as familiar a part of everyday life as these things are to us. Seals conveyed far more than signing your name or swiping a card, however, for these small but powerful parcels of image and text identified and represented men and women from nobles to artisans to peasants, as well as offices, institutions and groups. They presented carefully constructed messages about status, power, wealth, occupation, family, humour, piety and connections from the very local to the international.

Identity, interaction and exchange in medieval England will draw on a range of research methods to explore the ways in which people, especially from the under-investigated middling and lower levels of society, used seals as a means of identification and representation. As well as using traditional archival and archaeological material, my research will incorporate the forensic analysis of hand and fingerprints in wax undertaken by the AHRC-funded *Imprint project*, which has raised new questions about administration, law and interpersonal dynamics. *Identity, interaction and exchange* will further explore the materiality of seals and what this can reveal about trade, commerce, technology and agency. For this, I will be collaborating with Dr Stuart Black at the University of Reading, who will analyse samples of inorganic pigments in sealing wax, and with the Carlsberg Foundation funded *ArcHives* project (led by Professor Matthew Collins, Universities of Cambridge and Copenhagen), which aims to reveal the sources of wax for seals, as well as information about medieval bee populations and local environments. I am also looking forward to the results of Dr Alexandra Sapoznik's *Bees in the medieval world* Leverhulme project.

Through careful investigation of seals and sealing practices, *Identity, interaction and exchange* aims to push the boundaries of what can be discovered about men and women below the elites, how individuals and groups in medieval England (re)presented themselves in the different contexts of social, cultural, economic and legal exchange and what this can tell us about the creation and concept of identity. Through my collaboration with scientific colleagues, it also has 'real world' potential, enabling medieval history to contribute to modern science and technology.

Imprint project: www.imprintseals.org

Opposite

A selection of medieval sealed documents, twelfth – fifteenth centuries.

Photograph © E.A. New.

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West Yorkshire Archives Service.

The fabric of macroevolution: discovering evolution's rules for sculpting the natural world

Ciara O'Donovan and Mark Pagel are using a new statistical model they developed to try to discover the rules that evolution by natural selection used to move life from single cells to the complex forms of life we see today

Since the very first cell came together from a collection of inorganic components billions of years ago, life has diversified into a vast array of forms. This biodiversity has arisen as a product of evolution, a continually acting process that has shaped and honed life on Earth. Our project seeks to ask how evolution works, whether its behaviour is different now compared to in the past or if it matters whether what's evolving is the colour of a daffodil, the trunk of an elephant or the size of a bacterium.

Darwin's view was that life evolved by a gradual process that he described as 'descent with modification'; new species arise from older ancestral ones by gradually modifying their form. When we look into the past at the history of life we see much that would satisfy Darwin: for instance, chimpanzees and their evolutionary cousins the gorillas are not that different in appearance in spite of being separated by millions of years of evolution. But we also see what appear to be instances of abrupt or 'pulsed' change when a species seems almost to leap towards some new form, and critical periods when a species' ability to evolve itself seems to change and they either speed up or slow down in their evolution.

Our project will put these observations on a more grounded scientific footing by applying our new statistical model to phylogenetic trees – which record the ancestral to descendant relationships among species in a way similar to a family tree, but for thousands of species over hundreds of millions of years rather than a few generations. The model can detect the gradual change Darwin envisaged, but also the pulsed changes that defy a gradualistic account – for instance, the closest living relative to an elephant is a small creature called the rock hyrax. How common are such events? It can also measure a species' capacity to evolve and test; given the current pressures from climate change and other human-driven ecological challenges, how likely it is that a species can respond to these pressures and survive.

Our work, whilst focused on the natural world, is not limited to it. Life's tapestry, including culture and technology, is rich, varied and continually evolving – your smartphone is just the latest in a lineage of communication devices that stretch back to markings carved into the walls of caves ten thousand or more years ago – giving us endless opportunities to study evolution's fabrics and how it weaves them.





Subject to design: social science in the home

Barbara Penner
explores how social
scientific research
has influenced the
design of American
homes and housing
in the twentieth and
twenty-first centuries

When we are asked to think about or to describe home environments, we still often speak of them as spaces defined by individual self-expression, taste and fashion. Yet home lives and houses are actually shaped by external forces as much as personal preferences.

Exploring disciplines from home economics to ergonomics and techniques from cyclegraphs to biofeedback, *Subject to design* lays out the various means by which domestic lives have been studied and to what ends. Whatever the motives, *Subject to design* argues that, far from neutrally meeting or fulfilling existing user needs and desires, these studies often end up by shaping those needs and desires in the first place. In redesigning houses and domestic technologies, subjects are themselves redesigned.

The role played by social scientific research has not gone unremarked by users on the one hand and designers on the other. *Subject to design* considers how various groups have challenged and fought against their supposed subjection. Users have refused to follow or have undone ‘expert’ recommendations about domestic living arrangements, devising research and design techniques that respect their own ways of living. Meanwhile, designers, caught between the demand to satisfy users’ needs and their goal of professional autonomy, have attempted to counter the ‘tyranny’ of social scientific techniques with other qualities (such as empathy) and methods (such as role play), that restore social value to their practice.

Hence, even as this project traces the story of how modern home dwellers have been ‘subject to design’ – trained through domestic practices, objects and spaces – it also considers the moments when these efforts failed or were playfully subverted. The story of mass consumerism, the home, the modern interior and the design profession’s working practices is not complete without a full reckoning of these techniques and efforts which, in turn, open up new possibilities for practice – a self-reflective and hopeful contribution to the field of housing design.

Opposite

Oxygen studies of woman ironing,
Cornell University, c. 1940s.
Source: New York State College of
Home Economics records, 23-2-749.
Division of Rare and Manuscript
Collections, Cornell University
Library, Cornell University, Ithaca, NY.

Investigating quantum properties of biomolecules on a chip

Aspects of the underlying mechanism of photosynthesis, that have been optimised by billions of years of evolution, are still unclear; Luca Sapienza investigates such fundamental processes with the aim of reverse-engineering natural biological architectures and using them as models for the design of novel quantum and energy-harvesting devices

It is well established that quantum mechanics explains the structure and physical-chemical properties of molecules that make up living organisms. What remains puzzling is whether quantum phenomena affect the way biomolecules function. Progress in quantum science and technology has allowed researchers to explore elusive quantum effects in atoms, ions, semiconductor nanostructures and, more recently, in biomolecules. Despite the requirement of relatively high temperatures and condensed-phase operation, there is growing evidence that photosynthetic complexes isolated from plants, algae and some bacteria could benefit from quantum processes. There is experimental evidence that quantum effects can be relevant for the primary steps of photosynthesis, when light-gathering biomolecules absorb photons and chemical energy conversion is initiated, but questions have been raised about how quantum phenomena affect the energy transfer and conversion.

Quantum biology is a highly interdisciplinary research field that needs a cross-boundary approach to advance understanding. Throughout my Fellowship I will be working with experts in nanofabrication, quantum optics, single-molecule biology and energy harvesting to tackle current limitations and to investigate ways to move our scientific understanding of this controversial field forward. We will study the optical properties of single biomolecules, placed within on-chip nanofabricated photonic devices, to unveil subtle quantum mechanical processes. The prospects are exciting; the development of quantum biology has the promise to change our understanding of processes supporting life on Earth and to expand our knowledge of quantum phenomena occurring in complex molecular systems.

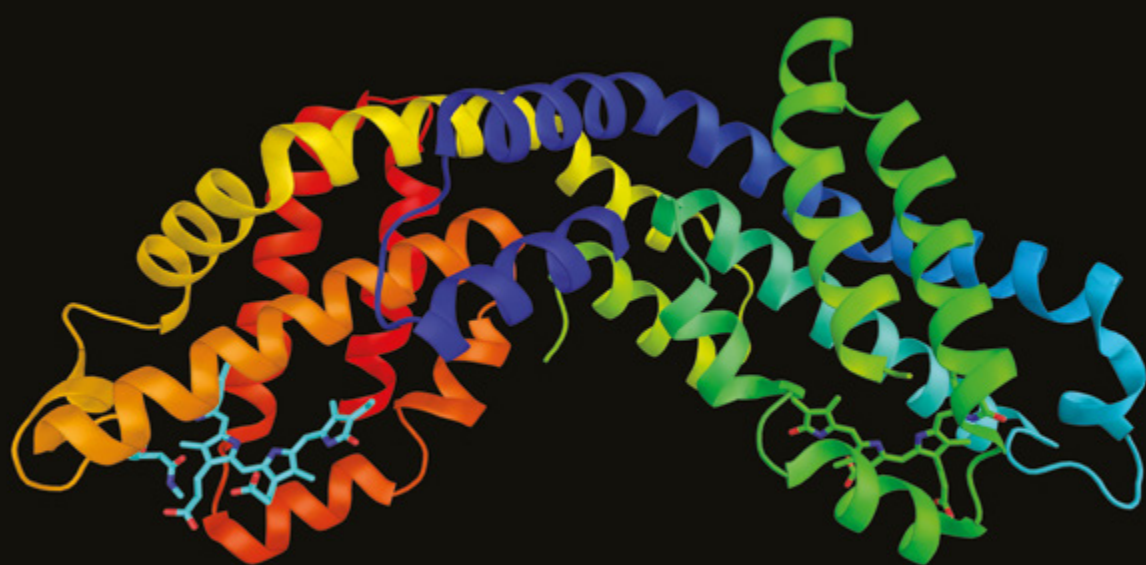
Some of the questions we will be addressing include: does quantum mechanics allow biological systems to perform tasks that either cannot be done classically or would be otherwise done less efficiently? Has evolution used quantum mechanics to gain an advantage over classical mechanical processes? If so, how? And can we take advantage of this for quantum information processing and energy harvesting?

By understanding the quantum coherence of individual biological complexes that have been optimised by evolution, we can reverse-engineer biological architectures and use them as models for the design of energy-harvesting devices with enhanced performances, and quantum photonic devices with enhanced coherence that can be sustained even in disordered, room-temperature systems. These would represent major breakthroughs in photovoltaic and quantum information technology.

Opposite

Allophycocyanin, a protein from the light-harvesting phycobiliprotein family, an accessory pigment to chlorophyll responsible for the absorption of light in algae.

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[illegible]

الاعداؤ وتخليص من البلا

قاتل الداعي بذل الامر من جميع

المهجات اذا اردت ان يكون

فتنہ و حتم یوں میں تم اکتبے

سین عالی لطیف والا کتب الا وانت صایم فی بیت قد نخرته بعود

مذرفیه سے وحشی الک فوراً منسک فاذا فرغت من الکتابۃ تلفہ فی

حریر بھیا دلیر ہے فی قصۃ او حدید کی حرکت الہیہ وایاک ان تلبی اذا

انت جنب وان اردته للسلطان فاكبت يوم الجمعة لا صلح سر الا اني

يوم الخميس رابع الايام والاربع والاربعين واكثر في حمار رحا

وہی کہتے ہیں کہ وہ ایک روز اپنے دوستوں کے ساتھ ایک مکان میں بیٹھ کر

وكانت له أيام جود وفضل وكثرة كفاور وأغسل يوم الاثنين برقى

وہبیرہ

A sorcerer's handbook: medieval Arabic magic in context

Emily Selove's project approaches a text of medieval Arabic magic in a boundary-breaking fashion, challenging our definitions of 'West' and 'East' and of science and literature

This project will focus on a collection of magical texts attributed to an influential medieval scholar of the Arabic language, Sirāj al-Dīn al-Sakkākī (d. 1229 CE). In producing an edition and translation of his neglected book of magic, accompanied by a volume of essays, we will do more than illuminate the world of medieval Arabic occult literature; we will also show the connections between the so-called East and West, and between the disciplines of science, literature and religion, complicating our picture of the 'rational West' and remembering its Arabo-Islamic intellectual heritage.

Kitāb al-Shāmil (The Book of the Complete) is a technical manual containing a mixed collection of magical recipes and rituals. It includes instructions for creating talismans, for controlling jinn and devils, for causing sickness, for curing such magically caused afflictions and for calling upon the power of each of the planets. The power of God and phrases from the Qur'an are frequently invoked, but the texts in this collection claim to originate from famous Greek thinkers like Ptolemy and Hippocrates. Such Arabic texts concerned with astrological matters as well as the hidden properties of objects in the natural world were influential on European literary and scientific traditions. The translation of the title as *The Book of the Complete* is informed by a reading of the compiler's introduction, which refers to the "perfect" scholars of the ancient world on which it purports to base its information, hence, "The book of the Perfect/Complete person"; it is possible that the title is a play on the similarly titled eleventh-century book of magic *al-Shāmil fī al-baḥr al-kāmil* (Complete book of the Perfect Sea) by al-Ṭabasī.

Previous research on Sakkākī tends to centre on his influential book on language, *Miftāḥ al-'ulūm* (The Key to the Sciences), often ignoring his reputation as a magician. Nevertheless, early biographical literature describes his life as a magician in the Mongol court, crediting him with the power to, for example, strike cranes down in mid flight with a magical inscription. Both Sakkākī's linguistic and magical interests show his fascination with the power of language and these interests will inform the literary style of translation of Sakkākī's mysterious grimoire.

Opposite

Instructions for creating a talisman.
John Rylands Library MS 372 [404]
© The University of Manchester.

Russian domestic phenomena

Peter Taggart seeks to explore the lasting impacts of socialism on Russian protesters against pension reform, taking an original approach to protest politics research by exploring the extent to which nostalgia for the paternalistic Soviet state influenced the decision to demonstrate

The MA Russian Studies programme at the Aleksanteri Institute, University of Helsinki, will allow me to further investigate the processes and phenomena which impact Russia. I developed a keen interest in the ways in which civil society groups and protest movements have emerged in the country during my undergraduate degree. Studying at state universities in Tver' and Kazan also afforded me opportunities to speak with Russians about their experiences of life in the country. My thesis project will be a reflection of these discussions by examining Russian protest movements from a nostalgia studies perspective.

Mainstream discourses on Russia typically concern security, with remarkably little focus on domestic politics and civil society in the country. To gain a real insight into Russia and understand the country requires a more nuanced approach, which the MA programme will provide. The course is a multidisciplinary programme which examines Russia from a variety of perspectives and its close geographic position to Russia will be ideal for conducting face-to-face interviews as part of my thesis research – a study of the impact of nostalgia in contemporary Russian protest movements.

Throughout 2018, thousands of Russians from Vladivostok to Moscow protested plans by the Russian state to raise the state pension age (for men from 60 to 65 and for women from 55 to 60). Despite an attempt to bury this story by announcing the reforms on the first day of the FIFA 2018 World Cup, waves of protest took place from summer through to November. Russia is not immune to bouts of political protest (despite Vladimir Putin's regime becoming increasingly repressive) yet these demonstrations were unprecedented in their scale and longevity. While the coverage of protests was framed by the pension changes, it is clear that a general sense of dissatisfaction with Russia's ruling elite has been present within Russian popular protests in recent years. My project will seek to examine the impact nostalgia for the Soviet era had on fuelling such protests in the country.

Babushkas ride the tram, Samara.
Photograph: Peter Taggart.



What Happened Next

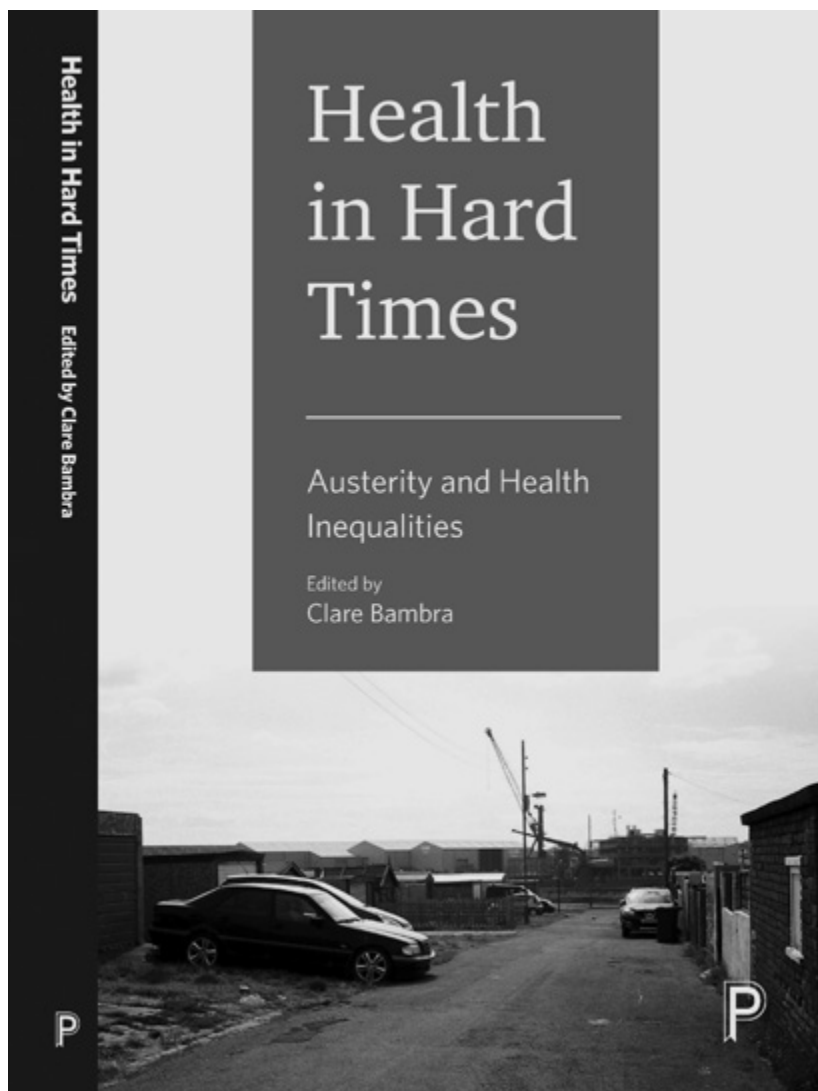
With our Research Leadership Awards, we invest in research leaders of the future by providing them with five years support for the team they need to tackle a distinctive research problem; as the 2019 Research Leaders make a start on their exciting projects, we celebrate six winners from the first two rounds of the scheme.

Interviews by Dr Carolyn Allen

Professor Clare Bambra



Government health warning: inequality kills



*I think what made
the big difference was
that the project never
felt prescriptive ... I
never expected that
we would end up with
three monographs.
That wasn't in the
plan at all*

Stockton-on-Tees is Britain's most divided town. In Stockton town centre men can expect to die younger – on average 19 years younger – than those in the richer, leafier ward of Hartburn: although just two miles apart, you could be comparing the UK and Senegal. While studies of health inequalities in Britain – such as the infamous North–South divide – demonstrate the impact of wealth on health, a more local lens brings place into sharper relief. Why poorer places are also unhealthy places is not as obvious as health interventions encouraging people to make better food choices would suggest. Although studies show that health behaviours contribute to the gap, there is mounting evidence that places are unhealthy too. With her 2012 Research Leadership Award, Professor Clare Bambra, first at Durham and then at Newcastle University, worked with two postdoctoral researchers and four PhD students to examine the complex interconnected causes of health inequalities in Stockton-on-Tees: qualitatively, quantitatively and historically. With increasing concern amongst the health community about the likely effects of austerity on already disadvantaged groups, the study also explored whether we really were 'all in it together' as Prime Minister, David Cameron claimed.

Longitudinal household surveys, led by Dr Jon Warren and Durham colleague, Dr Adetayo Kasim, confirmed the significant gap in physical and mental health between Stockton's least and most deprived neighbourhoods and helped tease apart the social, material and behavioural causes. Drawing on those findings Clare's book *Health divides: where you live can kill you* (Policy Press 2016), highly commended in the 2017 British Medical Association book awards, argues that place and people's material circumstances – and the policies that shape them – matter most, not health behaviours. Beneath the facts and figures, qualitative research led by Dr Kayleigh Garthwaite found worrying evidence that austerity was widening the health gap; with mothers and those already dealing with mental health problems bearing the brunt. During her ethnographic study at a Trussell Trust food bank in Stockton town centre, Kayleigh learned who was using the food bank and why. Her book, *Hunger Pains: Life inside foodbank Britain* (Policy Press 2016), winner of the British Academy's 2017 Peter Townsend Prize, reveals how material circumstances – not a lack of awareness of the importance and constitution of a healthy diet – dictated their food choices. And for many, it was government austerity measures that dictated those material circumstances.

In all, the project produced an impressive 25 papers, 10 book chapters and five books including Jon's *Industrial Teeside Lives and Legacies, a Post-industrial Geography* (Palgrave 2018), exploring the long-term influences of post-industrial legacies on health in the Stockton region. *Health in Hard Times: Austerity and Health Inequalities* (Policy Press 2019), an edited volume, brings the team's work together, collectively demonstrating how politics shapes the relations between health and place. The team's findings also received significant media coverage and were presented in evidence to a range of government bodies. Clare is now a Fellow of the Academy of Social Sciences – evidence of her international eminence in interdisciplinary health inequalities research – but it's her team's success of which she is most proud. All four students went into related jobs on graduation and both Kayleigh and Jon gained enviable tenured posts, an outcome Clare attributes not least to the single-authored publications enabled by the grant: "I think what made the big difference was that the project never felt prescriptive. So, for example, Kayleigh took my very vague idea for some ethnographic research and made it her own. I never expected that we would end up with three monographs. That wasn't in the plan at all."

Professor Matthew Baylis



Seeing into the future of infectious disease



The award allowed me to study a range of approaches and diseases and that was key – that broadening of my research interests and expertise has been hugely beneficial to my career

Debbie first seemed unwell on September 16, 2007. A week later the prized Highland cow was destroyed by government vets: the first animal to fall victim to bluetongue in Britain. Farmers were soon braced for a serious outbreak of this midge-borne disease: five cows had succumbed and the virus was circulating in the British midge population. Originating in Africa, bluetongue had established in southern Europe over the past two decades, wreaking havoc among livestock farmers there. The virus affects all ruminants but its impacts are worst in sheep, with up to 70% death rates recorded in infected flocks. A government report on the future of infectious diseases, commissioned in 2005, highlighted bluetongue as a particular cause for concern. The pattern of its spread was strong evidence that climate change was driving vector-borne diseases into new regions, the authors warned: by 2030 the UK would be at measurable risk. In August 2006, just months after the report was published, bluetongue emerged in northern Europe. The outbreak affected tens of thousands of farms, causing the deaths of millions of animals: the speed and scale of its spread caught scientists off guard, raising doubts about the role of climate change. “It took me by surprise – me and really any expert in that area,” Professor Matthew Baylis, one of the report’s authors admits: “How could we have got it so wrong? It made me realise that we didn’t have the knowledge and tools to make these predictions.”

Matthew’s 2007 Research Leadership Award supported the creation of the Liverpool University Climate and Infectious Diseases of Animals (LUCINDA) group: a unique interdisciplinary research team dedicated to understanding the impact of climate on the spread of a variety of vector-borne diseases, affecting livestock, wildlife and humans. Bluetongue was one of the team’s priorities and – collaborating with climate experts – Dr Hélène Guis worked on integrating a disease model for bluetongue with state-of-the-art climate models. She confirmed that its emergence could indeed be explained by climate change and found that disease risk will continue to increase in Europe until at least 2050. Modelling bluetongue’s spread between farms, Dr Joanne Turner found that limiting animal shows and farm-to-farm movements slowed it down, demonstrating that although midge dispersal plays an essential role, the movement of animals is important too. The team then combined these two approaches, now with substantial support from the BBSRC, to create the first model of the spread of a disease that enables prediction of future outbreaks and how best to control them. Featuring as the cover story in *Nature Climate Change* in January 2019, the model’s simulations show that outbreaks the UK might expect once in every 20 years, at present-day temperatures, could become annual events by 2070. The model also allowed the team to explain why the 2007 UK outbreak was much less serious than initially feared: a fortunate combination of geographic location, below-average temperatures and animal movement restrictions (already in place to control a foot and mouth outbreak) all helped to limit its spread.

The LUCINDA team continues to develop and refine methods to predict the spread of diseases – from bluetongue to Ebola – but much of Matthew’s time is currently dedicated to HORN: an £8m GCRF-funded programme that aims to increase local capacity for research into human and animal disease in the Horn of Africa. Winning this prestigious bid was a less predictable but nevertheless direct outcome of his Leverhulme project, he argues: “The award allowed me to study a range of approaches and diseases and that was key – that broadening of my research interests and expertise has been hugely beneficial to my career.”



Trial communities: the past, present and future of African science



*I think what made
the grant so critical
for all our careers
was its open nature ...
That kind of freedom
is something to be
preserved like a rare
blossom*

Opposite

Global Health in an Unequal World: Ethics Case Studies from Africa, published by the Wellcome Trust in 2016, assembles a collection of fictionalised case studies based on some of the many ethical dilemmas witnessed during the *Trial communities* project. The stories are brought to life with colourful illustrations by Johnson Ondiek, an artist who is also a practising African clinical researcher. This practical handbook is designed to initiate and guide the difficult conversations needed to foster shared goals, more equal relationships and better science for all those working in transnational health research.

© Johnson A. Ondiek

Once one of East Africa's leading research institutions, Kenya's Division of Vector-Borne Diseases in Kisumu is a shadow of its former glory. Broken equipment sits gathering dust and the secretary plays 'Solitaire' on an ageing computer to fill the time. Without resources to purchase even basic reagents, there is little for the staff to do. This is hardly the future Kenyan scientists saw for their country's oldest medical research institution when they took the helm from British colonial scientific officers in 1963. But it is the present experienced in many of the field stations, universities and hospitals across sub-Saharan Africa. The dream of African-led science for Africans was short-lived, stifled by governments unable – sometimes unwilling – to invest. Since the 1990s, getting research done has relied on attracting transnational collaborations, with foreign funders and scientists often setting the agendas. Yet, when Paul Wenzel Geissler proposed his 2007 Research Leadership project, *Trial communities*, few social scientists had looked at how such unequal partnerships work in practice: "Health research in Africa operates across vast economic and political inequalities but there was little thought given to how that affects the social life of these places – the relationships between northern and southern scientists, as they are euphemistically called, or between scientists and non-scientists – even less to the role the historical ups and downs of science in Africa play in that," he says.

Wenzel, then a lecturer in social anthropology at the London School of Hygiene and Tropical Medicine, gathered an interdisciplinary team to study the social life and post-colonial history of a range of world-leading medical science and public health institutions. Starting out from ethnographic observation of scientific practice and social interactions in African field sites alongside conventional documentary-based historical research, members of the group experimented with novel interdisciplinary methods to tease out the relations between present and past. Drawing on innovative sources including memories and material remains, they established a new way of studying the contemporary history of science in Africa. In parallel, research focusing more on the day-to-day social life at each site shed a welcome light on the realities of the present. When the group presented fictional case studies that highlighted some of the everyday social, political and ethical challenges facing those working in North–South collaborations – or the importance of thinking about the past in these research environments – the opportunity to openly discuss such issues was embraced with unexpected enthusiasm. "Local scientists in particular would say 'finally we can talk about these things in a new way!'" It was more than we had hoped for or dared to expect," Wenzel remembers. "It started conversations that allowed us to see not just what frictions, tensions and conflicts exist in these stations but also positive potentials and successful modes of collaboration, which don't immediately meet the eye."

Widely recognised for opening up enquiry into science in Africa, and gaining recognition both for its cutting-edge interdisciplinary scholarship and its contributions to policy relevant discussions, the grant helped shape the careers of all involved: Wenzel is professor of social anthropology at the University of Oslo and the five postdoctoral researchers it supported are well-established scholars with whom he continues to collaborate. "I think what made the grant so critical for all our careers was its open nature. It allowed me to attract a really exciting team – people with the best ideas rather than those that necessarily fitted my original proposal – and allowed them to take those ideas forward. That kind of freedom is something to be preserved like a rare blossom because it's something that is increasingly vanishing for academics today."

Professor Jenny Read



Making movies for mantids



*I remember when
he told me ‘they’ve
started striking!’ It
was a seriously good
moment ... A bottle
of champagne at the
next team meeting
moment*

Dapper though praying mantises look in their colourful shades, Professor Jenny Read hadn’t expected them to inspire a new trend in the invertebrate community. A vision scientist at Newcastle University, she used the tiny glasses to explore how insects see in 3D. We tend to take our 3D vision or stereopsis for granted, but it’s one of nature’s great feats of engineering. Our brains line up the images collected by each eye, using the disparities between them to triangulate how far away objects are. It takes a network of neurons so complex that invertebrates weren’t thought to have the brains to see in 3D. Until 1983, when Samuel Rossel, then a postdoctoral researcher at the University of Zurich, used prisms to trick mantises into striking at prey that wasn’t in range. The experiment proved mantises use stereopsis to judge depth; discovering how they achieve this with such little processing power was the aim of Jenny’s 2012 Research Leadership Award.

The grant supported three talented postdoctoral researchers, bringing expertise in animal behaviour, insect neuroscience and computational modelling to the little-studied mantises. Behavioural ecologist Vivek Nityananda took on the first – somewhat unconventional – challenge of creating an insect ‘cinema’ to display virtual 3D prey. Unfortunately, that proved much harder than expected. It seemed no matter how Vivek tweaked the stereoscopic displays and the filters in the glasses, his audience remained steadfastly unmoved by their movie experience. After nine months Jenny was feeling ‘a little bit panicky’, she admits: “It did go through my mind that I’d put quite a lot of trust in the work of one guy ... one lab ... back in the eighties. If anything was wrong with that research, maybe we’re doomed.” Professor Rossel, by then retired, helped allay Jenny’s fears by sending videos of the original experiments and even the custom-built mantis stand he’d used. But it was still a huge relief when Vivek eventually found the winning combination. “I remember when he told me ‘they’ve started striking!’ It was a seriously good moment,” Jenny says: “A bottle of champagne at the next team meeting moment.”

Using their insect ‘cinema’ to present more sophisticated stereoscopic illusions, the team could finally explore how mantis 3D vision works. Comparing the insects’ 3D skills with those of student volunteers, they discovered that mantis stereopsis works in a fundamentally different way to ours. Humans (and most machines) compare images from each eye in fine detail, looking for small differences in the detailed patterns of light and dark; mantises only pay attention to locations with movement, leaving all the other tiny details out of the equation. Although simpler, the mantis mechanism can outperform humans on depth-finding tasks involving moving targets, making it a potentially useful model for machine vision, particularly for applications requiring efficiency at low weight and cost, such as lightweight drones ... or the robot mantises with 3D vision that Jenny plans to create with robotics experts in the USA. By demonstrating that nature has evolved more than one way to see in 3D, the Leverhulme team helped renew the fashion for comparative stereopsis, passing the baton from Rossel to a new generation of researchers. They even inspired a new range of glasses: this time to suit a more aquatic lifestyle. With advice (and lens samples) from Vivek, an American team recently developed an underwater cinema demonstrating that cuttlefish see in 3D too, and likely by another different mechanism. Cephalopods sporting specs was one of the more surreal but rewarding legacies of the award, Jenny says: “that’s one of the nice things about blue skies research: it often goes in unexpected directions”.

Opposite

Mantis modelling 3D glasses. Blue and green lenses were temporarily glued on with beeswax, allowing the team to present different images to each eye.

© University of Newcastle

Professor Jurriaan Ton



Priming plants for battle: new strategies for sustainable agriculture



It made a heck of a difference, having a very focused research team for five years to address these very basic and challenging questions

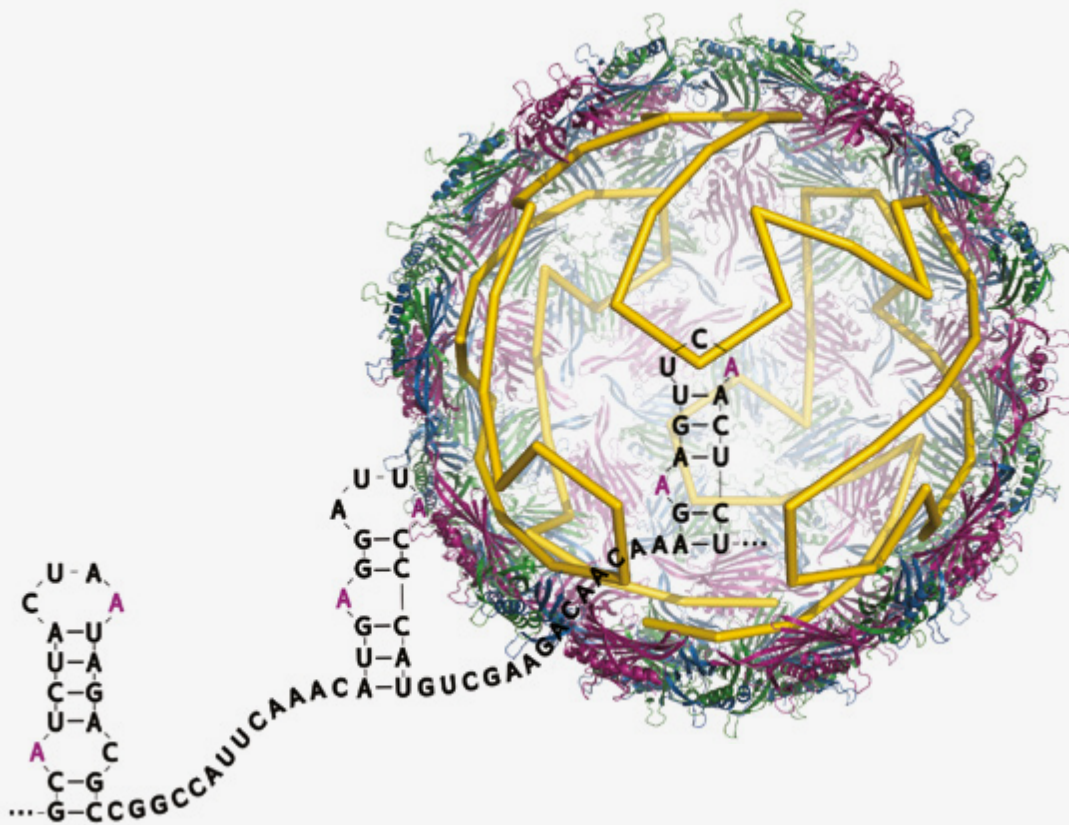
Aside from the triffids of John Wyndham's imagination, plants can't flee from pests and parasites. But the ingenious strategies they have evolved to protect themselves from attack have, at times, appeared no less fanciful. In the 1980s, few biologists believed that plants have a form of immune memory despite numerous observations to that effect. Only with recent advances in our understanding of plant molecular biology has it become widely accepted that a variety of cues – from pathogens to specific chemicals – can put plant defence genes on alert, enabling a faster and/or stronger immune response to a broad spectrum of attackers in the future. And when a plant's natural immunity is boosted in this way, it can be boosted for life without noticeable effects on growth. Exploiting this natural resistance, known as 'defence priming', could revolutionise crop protection, reducing our reliance on pesticides and fungicides. But first we need to understand the mechanisms behind it; Jurriaan Ton won a 2012 Research Leadership Award to address this important knowledge gap.

Then a lecturer at the University of Sheffield, Jurriaan had recently made an intriguing finding. Studies using the model plant *Arabidopsis thaliana* showed that the offspring of parent plants exposed to bacterial speck disease had inherited the 'immune memory' of that attack: their defence genes were already on high alert. The primed state was passed on via an epigenetic mechanism – a reversible biochemical modification of DNA rather than changes in its sequence – and specifically by the removal of methyl groups: a modification known to 'unlock' genes in readiness for expression. The next logical step was to identify the key regulatory genes modified in this way, Jurriaan argued, making this a major part of his Leverhulme project. But when the team analysed their results after many months of painstaking research, it became increasingly clear that no defence genes were even close to regions of DNA de-methylation. They looked again, not once but twice, using different experimental approaches. As Jurriaan explains: "When you go in with strong expectations, it sometimes takes longer to accept the evidence as it's laid down to you." Thinking outside the box, the team turned their attention to the 'junk DNA' in the centre of plant chromosomes – so called because it doesn't contain many protein-encoding genes. Here they found four key regions that, when de-methylated, somehow enhance the responsiveness of defence genes across the plant's genome: "It's almost as if this 'junk DNA' acts as a hard drive of environmental memory in plants, that can be passed down to the next generation," Jurriaan says.

"From a fundamental perspective, that discovery could be game-changing, because it implies an almost Lamarckian component to evolution: plants, in particular, can acquire traits in response to environmental stress and pass these on to their progeny," Jurriaan explains. It also takes forward the field of epigenetics with implications for a wide range of disciplines including ecology, evolutionary biology and even social science. The discovery could pave the way to novel epigenetic strategies for sustainable crop protection, a potential Jurriaan is currently exploring with the agricultural company ENZA Zaden. Now, a professor of Plant Environmental Signalling and co-director of the University's Centre of excellence for Plant and Soil Biology, Jurriaan says the Leverhulme grant was a 'game-changer' for his career too: "It made a heck of a difference, having a very focused research team for five years to address these very basic and challenging questions. You need time to be able to bounce back from the disappointment of negative results and turn them into something positive. Two or three years is simply not enough."



Deciphering the viral Enigma code



*I'm enormously grateful
that Leverhulme
trusted me – as a
mathematician – to
build a team bringing
in all the different
disciplines I needed.
That was priceless*

Opposite

Mathematical analysis predicted the layout of the packaged viral RNA (following the so-called Hamiltonian path indicated in yellow) and the positions where it would be in contact with the protein capsid: a vital step in deciphering the assembly code. The genomic fragment demonstrates the cryptic nature of the code, with short, in many cases even disconnected, sequence motifs (shown here in magenta), presented on RNA secondary structures. Image: Richard Bingham, adapted from a figure by Tom Keef.

It was the deadliest event of the twentieth century. The great influenza pandemic of 1918 claimed up to 100 million lives – more than both world wars combined. A century later, an equivalent viral outbreak could be just as catastrophic. As we've seen with COVID-19, a novel airborne virus can spread across the globe in a matter of weeks, but developing specific vaccines takes years. And vaccines have proved particularly ineffective weapons against rapidly evolving RNA viruses such as HIV and rhinovirus (which causes the common cold). For decades, biologists have studied these viruses looking for an Achilles heel – a generic weakness that could be exploited for an effective front-line defence. With the help of mathematics they may have finally found one.

Most RNA viruses protect their genome in an icosahedral capsid: a football-shaped container made up of multiple identical protein subunits. Like a Trojan horse, the capsid delivers its genetic material to a host cell, where it commandeers the cellular machinery to make viral RNA and proteins. How these building blocks then assemble efficiently and accurately to form viral progeny had long baffled biologists, but mathematician Reidun Twarock had a feeling that the answer must be in their icosahedral symmetry. With her 2007 Research Leadership Award, she explored that idea from every angle: her team of theoreticians at the University of York – bringing expertise in biophysics, bioinformatics and computational chemistry – worked with experimentalists led by Professor Peter Stockley at the University of Leeds. Biophysicist Dr Eric Dykeman's early observations on bacterial viruses suggested that the viral genome played an unexpectedly active role in the assembly process. He found numerous secondary structures or stem-loops in the viral RNA with affinity for capsid proteins, hinting at a secondary assembly code hidden within the genetic message. Identifying which of these sticky shapes could be part of such a code would have been like looking for a needle in a haystack, but by applying mathematical theory, Reidun narrowed down the search for the bioinformaticians, predicting exactly where the cryptic signals would be found. Next the team incorporated the candidate packaging signals into computer models of the assembly process. "When we used this geometry-inspired mathematical microscope it was absolutely amazing what we could see," Reidun says. "It was a real Eureka moment!" Running the simulations, they saw the RNA packaging signals working in synchronisation to bring capsid and genome together like a self-packing suitcase. Reidun and her colleagues have since shown that a similar mechanism drives assembly in plant, animal and human RNA viruses; and that drugs targeting the specific RNA-capsid protein contacts can jam the process. Such drugs are particularly promising contenders for resistance-proof anti-viral therapies because the packaging signals appear to be evolutionarily conserved – that is, they are the same structure even in different strains of a virus.

The discovery of the so-called 'viral Enigma code' underpins several patents for anti-viral therapies on which Reidun and Peter are named co-inventors and opened up many other avenues for research, including novel applications in nanotechnology. "It's spiraled into something really extremely exciting," Reidun says. "I'm enormously grateful that Leverhulme trusted me – as a mathematician – to build a team bringing in all the different disciplines I needed. That was priceless." The project laid the foundations for Mathematical Virology, creating an international network with whom Reidun continues to collaborate. She was promoted to professor in 2009 and was awarded the IMA Gold Medal in 2018 for building a research group of exceptional merit and for her inspiring example of how novel mathematical thinking can affect the lives of ordinary people.

Grants Awarded in 2019

Find listings for all grants made by the Trust during 2019. Details are given for each of the funding schemes across Sciences, Humanities and Social Sciences

Early Career Fellowships

Early Career Fellows received fifty percent of the salary costs of a three-year research position, up to £25,000 a year, with the host university providing the balance. Research expenses of £6,000 a year were also available.

Sciences

Dr Deonie Allen

University of Strathclyde

Looking back for the future through archives of airborne microplastic pollution

Dr Miguel Anaya

University of Cambridge

Light management in confined ABX₃ perovskite-based light-emitting devices

Dr Tobias Barker

University of Warwick

Symmetry and boundary effects for the Navier-Stokes equations

Dr Anna Bobak

University of Stirling

Development of individual differences in face processing

Dr David Boldrin

University of Glasgow

New caloric materials for energy-efficient refrigeration

Dr Luke Bridgestock

University of Cambridge

Tracing weathering and erosion using barium isotopes

Dr Salvatore Butera

University of Glasgow

Analog models of quantum fields and their background

Dr Bipasha Chakraborty

University of Cambridge

Search for doubly-heavy exotic mesons using lattice QCD

Dr Thomas Clements

University of Birmingham

Tackling taphonomic biases of mass extinction aftermath and recovery

Dr Matthias Ehrhardt

University of Bath

A continuous approach to machine learning for image reconstruction

Dr Samuel Ellis

University of Exeter

The evolution of menopause in whales

Dr Thomas Elsdén

University of Leicester

Resonating magnetic field lines: a process for energy transfer at Earth/Mercury

Dr Marina Escalera Zamudio

University of Oxford

Detecting parallel evolution in RNA viruses to forecast virulence emergence

Dr Emrys Evans

University of Cambridge

A radical step change for next-generation organic electronics

Dr Kayn Forbes

University of East Anglia

Quantum theory for advanced molecular photonics: structured light and plasmonics

Dr Sudeep Kumar Ghosh

University of Kent

Dynamics-based characterisation of topology in superconductors

Dr Tim Greenfield

University of Cambridge

Tectonic structure and earthquake hazard in Sulawesi and Kalimantan, Indonesia

Dr Nicholas Hedger

University of Reading

Spatial and temporal aspects of social attention

Dr Alexander Iveson

Durham University

Fluorine in magmas: how does it control critical metals and leaching potential?

Dr Michael James

University of York

Enantioselective charge-transfer organocatalysis

Dr Minkyung Kang

University of Warwick

Artificial photosynthesis: from fundamentals to design of a new platform

Dr Martin Kleppmann

University of Cambridge

Security and resilience of collaborative applications

Dr Amit Kumar

University of St Andrews

New directions in catalysis for sustainable organic synthesis and energy storage

Dr Anne Marie

Labandera Nadeau

University of Birmingham

Interactome and methylated targets of the plant O₂-sensing protein VRN2

Dr Adrien Lefauve

University of Cambridge

Turbulent mixing and structures in stratified shear flows

Dr Jingwei Liang

University of Cambridge

Geometry-based adaptive acceleration for non-smooth optimisation

Dr Xuan Liang

University of Cambridge

Caderin adhesion in de novo polarisation of epithelial tubes

Dr Xuanli Luo

University of Nottingham

Electrically modulated quasicrystals to enable room temperature hydrogen storage

Dr Charles Malleson

University of Surrey

Animo – tracking and understanding animal motion in the wild

Dr Elena Maters

University of Cambridge

Unravelling the role of volcanic ash in sulphur chemistry in the atmosphere

Dr Davide Michieletto

University of Edinburgh

Topologically active polymers

Dr Robert Mok

University of Cambridge

Organising knowledge for intelligent behaviour across cognitive domains

Dr Caitlin Newport

University of Oxford

Impact of sensory pollution on the ecology and navigational behaviour of fish

Dr Giulia Orioli

University of Birmingham

The ontogeny of peripersonal spatial representation in human infancy

Dr Kadi Saar

University of Cambridge

Physical basis for single cell proteomics

Dr Madeleine Seale

University of Oxford

The mechanical impact of dehydration on plant growth and development

Dr Shiwani Singh

University of Warwick

A new class of multiscale models for polymeric fluid dynamics

Dr Luke Wilkinson

University of York

Paddlewheel-porphyrin conjugates for molecular electronics and solar harvesting

Dr Qian Yang

University of Manchester

Molecular transport through angstrom-size artificial channels

Humanities

Dr David Anderson

Queen Mary,
University of London
'Declinism': nostalgia and decay in British and German post-war culture

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Ballesteros Petrella
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British refugee charities and refugee experience, 1951–2000

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How did the Romans actually speak? Spoken Latin in records of Church gatherings

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University of Cambridge
Jews in the 1932–1933 famine in Ukraine: perpetrators, bystanders, victims

Dr Erika Melek Delgado

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Children of the slave trade, 1808–1864

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Dr Sarah Peck
Northumbria University
Deterritorialised responsibilities: diaspora, civil society and development

Dr Niranjana Ramesh
London School of Economics and Political Science
Coastal city: materialising subaltern geographies at the urban margins

Dr Alice Rees
University of Edinburgh
Pragmatic priming in children: from comprehension to production

Dr Bethany Rex
University of Warwick
Restructuring museum provision under austerity: a change in form and function?

Dr Marton Ribary
University of Surrey
Computational modelling of law – sustainable legal AI from Roman legal sources

Dr Matthew Richmond
London School of Economics and Political Science
Distributed governance: the management of unruly spaces in São Paulo

Dr Lena Rose
University of Oxford
Christianity on trial: asylum, conversion and the modern-nation state

Dr Daniel Salisbury
King's College London
Embargo neutralised? How targets circumvent, breach or respond to arms embargoes

Dr Laura Aileen Sauls
University of Sheffield
Envisioning forests past and future: contested earth observation in Mesoamerica

Dr Rebecca Sutton
University of Edinburgh
Frontline land: the everyday life of international humanitarian law

Dr Madeleine Thompson
University of Keele
Global therapeutic networks: mapping the new disconnects between place and care

Dr Maria Tomlinson
University of Sheffield
Menstruation and the media: reducing stigma and tackling period poverty

Dr Bregje van Veelen
University of Edinburgh
Imagining the future to dismantle the present: governing a 'just transition'

Dr Thomas Verbeek
University of Sheffield
Cleaner air at all costs? A social justice perspective on urban air pollution

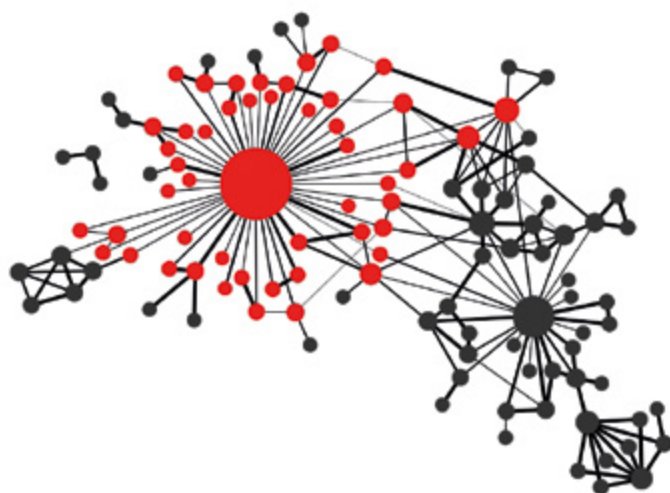
Dr Tomas Wallenius
University of Oxford
Citizens and aliens. Decolonisation and the origins of the European migration order

Dr James Weinberg
University of Sheffield
Political life at the apex: governance and policy-making in an age of distrust

Dr Christina Woolner
University of Cambridge
The poetry of politics: transforming political subjectivities in Somaliland

Dr Wei Zheng
University of Manchester
Can spatial decentralisation achieve sustainable urbanisation?

Dr Marcos Zunino
University of Edinburgh
Subaltern international criminal law during the Cold War and its influence today



Emeritus Fellowships

Sciences

Professor Ranjan Banerjee
City, University of London
Dynamic stiffness formulations for structural elements
£21,900

Professor Dianna Bowles
University of York
Understanding the ability of Herdwick sheep to thrive in harsh environments
£19,974

Professor Bill Clyne
University of Cambridge
Indentation plastometry for evaluation of residual stresses
£19,870

Professor Amanda Cooper-Sarkar
University of Oxford
Determining parton distribution functions using ATLAS data from the LHC
£19,200

Professor Hannah Gould
King's College London
A role for human IgD in anti-bacterial defence
£20,587

Professor Roger Grimshaw
University College London
Generation of wave groups by wind
£16,000

Professor Peter Piper
University of Sheffield
A biomarker test system for the ecotoxicity of molybdate
£20,800

Professor Elliot Shubert
University of Westminster
Developing a novel model to begin elucidating the origin of multicellularity
£22,000

Professor J Toby Stafford
University of Manchester
Classification of noncommutative projective surfaces, with applications
£15,940

Professor Brian Straughan
Durham University
Thermal convection in double porosity materials: energy renewal and desalination
£22,000

Professor Timothy Sumner
Imperial College London
Definition of the Charge Management System for the LISA space mission
£15,500

Professor John Wearden
University of Keele
The dawn of time perception: German and French research, 1860–1960
£8,180

Professor Glenn White
Open University
Supernova remnants and the death of stars
£15,920

Professor Sir Ian Wilmut
University of Edinburgh
Cell reprogramming mechanisms in early embryonic development
£22,000

Humanities

Dr David Berry
Loughborough University
An unorthodox revolutionary: the life of Daniel Guérin, 1904–1988
£2,666

Professor John Bintliff
University of Edinburgh
Publication preparation: Valley of the Muses and Klimmataria crusader estate
£21,728

Dr Mark Bland
Independent Researcher
The world of Simon Waterson, stationer
£22,000

Professor Michelle Brown
Senate House Library, University of London
Catalogue of the Latin manuscripts of Saint Catherine's Monastery, Sinai
£21,070

Professor Tony Dowmunt
Goldsmiths, University of London
Satellite dreaming revisited
£20,065

Professor Anthony Howe
University of East Anglia
Free trade: an international history, 1776–1995
£14,362

Professor Rosemary O'Day
Open University
A scholarly edition of selected documents from Stowe Temple Papers, volume 2
£21,912

Dr Peter O'Hagan
Roehampton University
The ensemble music of Pierre Boulez
£11,400

Professor Christopher Rowe
Durham University
A new critical edition of Aristotle's Eudemian Ethics
£14,260

Professor Richard Sennett
London School of Economics and Political Science
Stage and street: a study of urban culture
£20,000

Social Sciences

Professor John Allen
Open University
Finance that defies maps: when the Global South turns up in the Global North
£7,123



International Academic Fellowships

Dr Terri Apter
University of Cambridge
Teenage girls' social media use: a project to facilitate positive effects
£2,080

Professor John Clarke
Open University
Brexit and beyond: towards a transnational conjunctural analysis of turbulent times
£7,577

Professor Paul Cloke
University of Exeter
The role of third sector organisations in post-disaster Christchurch, New Zealand
£16,680

Dr Christopher M Davis
University of Oxford
Elderly in Russia, China and the Koreas: changing capabilities and inequalities
£15,738

Professor Brice Dickson
Queen's University Belfast
The impact of state-reporting mechanisms on human rights in the UK
£7,730

Professor Janet Dine
Independent Researcher
Interrogating growth. The inefficiency principle
£18,041

Professor Howard Gospel
King's College London
Financialisation of the labour market: pensions, inequality, training
£16,400

Professor John Hey
University of York
Do humans evaluate research strategies optimally?
£6,000

Sciences

Dr Stephane De Brito
University of Birmingham
Personality trait of impulsivity in Japan: measurement and brain correlates
£38,297

Dr Tony Gutierrez
Heriot-Watt University
Application of RNA-based stable isotope probing in the deep sea
£13,150

Dr Fumiya Iida
University of Cambridge
Collaborative exploration of the next generation of soft robot integration
£19,700

Dr Apala Majumdar
University of Bath
Nematic shells: mathematics and experiments for new advances
£20,903

Dr Luca Sapienza
University of Southampton
Investigating quantum properties of biomolecules on a chip
£45,000

Professor Matthew Simon Turner
University of Warwick
Active sheets
£29,470

Professor Yang Zhang
University of Sheffield
Advanced imaging-based diagnostics for fire and firebrands studies
£43,000

Humanities

Professor Carola Boehm
Staffordshire University
University art schools as drivers for cultural and economic growth
£9,323

Professor Clare Hemmings
London School of Economics and Political Science
Archival interventions
£38,587

Professor Josef Lössl
Cardiff University
How to interpret early Christian key writings in the twenty-first century
£35,892

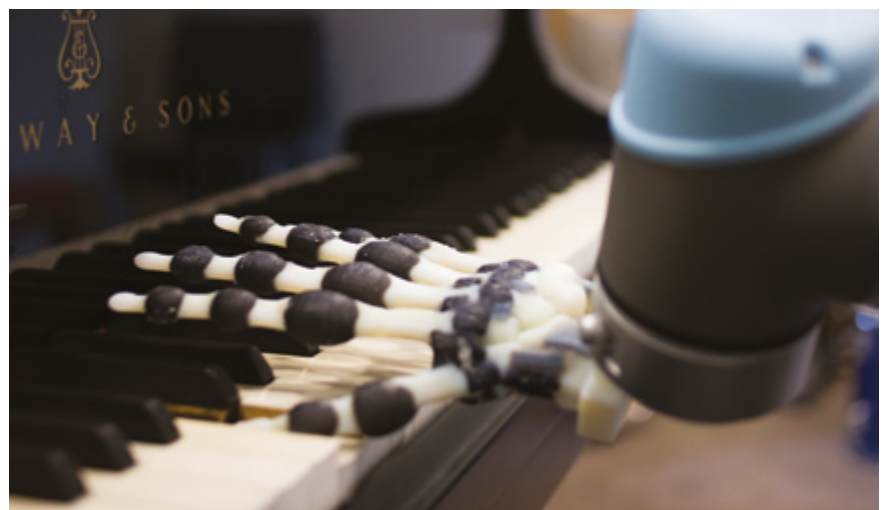
Dr Sarah Miller-Davenport
University of Sheffield
Capital of the world: New York City and the end of the twentieth century
£35,705

Social Sciences

Dr Emma Alleyne
University of Kent
Understanding why adults abuse animals: theory and evidence-based practice
£22,239

Dr Angelique Chettiparambil Rajan
University of Reading
Investigating migrant networks through immersive observation and learning
£18,814

Dr Adam Fishwick
De Montfort University
Methodological innovation for comparative labour research in Argentina and Chile
£16,545



Major Research Fellowships

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| <p>Professor David James Adger Queen Mary, University of London <i>Simplifying and restricting syntax</i> £118,677</p> | <p>Professor Anthony Crowley University of Leeds <i>The uses of the past: history and social memory in Northern Ireland, 1980–2020</i> £109,944</p> | <p>Professor Elisabeth Kelan University of Essex <i>Shaping the future of work – digitalisation and gender</i> £189,496</p> | <p>Professor Shaun David Pattinson Durham University <i>Law at the frontiers of biomedicine</i> £90,444</p> |
| <p>Professor Tim Bale Queen Mary, University of London <i>Party on the edge of a nervous breakdown: the Conservatives</i> £121,673</p> | <p>Professor Brian Cummings University of York <i>Erasmus and the invention of literature</i> £209,009</p> | <p>Dr Elaine Kelly University of Edinburgh <i>Musical diplomacy at the peripheries: East Germany and the postcolonial world</i> £149,413</p> | <p>Professr Barbara Penner University College London <i>Subject to design: social science in the home</i> £102,528</p> |
| <p>Professor Bridget Bennett University of Leeds <i>The dissenting Atlantic: archives and unquiet libraries, 1776–1865</i> £107,972</p> | <p>Professor Patrick Finglass University of Bristol <i>Sappho and Alcaeus: a new critical edition</i> £172,603</p> | <p>Professor Alison Liebling University of Cambridge <i>Moral rules, social science and forms of order in prison</i> £185,325</p> | <p>Dr Tom Perchard Goldsmiths, University of London <i>Popular music in the British home, 1945–1990: technology, experience, daily life</i> £145,059</p> |
| <p>Professor Celeste-Marie Bernier University of Edinburgh <i>Sacrifice is survival: Black families fight for freedom in the USA and Canada</i> £152,370</p> | <p>Professor Helen Fulton University of Bristol <i>Medieval Welsh political poetry</i> £113,262</p> | <p>Professor Robert John Mayhew University of Bristol <i>Alien nation: an intellectual history of British migration</i> £164,913</p> | <p>Professor Aurora Plomer University of Bristol <i>Intellectual property and the human rights of companies in Europe</i> £119,155</p> |
| <p>Professor Rosalind Blakesley University of Cambridge <i>Russia, Empire and the Baltic imagination</i> £110,557</p> | <p>Professor Abigail Green University of Oxford <i>Children of 1848: liberalism and the Jews from the revolutions to human rights</i> £175,629</p> | <p>Dr Susan Milner University of Bath <i>Feminist policy-making at work? The Women and Work Commission, 2004–2009</i> £99,903</p> | <p>Professor Anthony GM Sinclair University of Liverpool <i>The atlas of archaeology: a scientometric analysis of disciplinary growth</i> £157,569</p> |
| <p>Professor Emma Borg University of Reading <i>Who's in control? Re-examining agency in a world of bias</i> £64,897</p> | <p>Professor Kirsty Hooper University of Warwick <i>Hispanic London: culture, commerce and community in the nineteenth-century city</i> £172,512</p> | <p>Professor Stana Nenadic University of Edinburgh <i>The business of art in Scotland, c. 1700–1900</i> £112,053</p> | <p>Professor Julie-Marie Strange Durham University <i>Love in the time of capitalism: emotion and making the British working class</i> £142,662</p> |
| <p>Professor Rebecca Cassidy Goldsmiths, University of London <i>Fruitful lives: an anthropology of apples</i> £169,993</p> | <p>Professor Peter Jaffey University of Leicester <i>Private law: a way forward</i> £102,055</p> | <p>Dr Elizabeth Anne New Aberystwyth University <i>Identity, interaction and exchange in medieval England</i> £123,189</p> | <p>Professor Julian Weiss King's College London <i>In the tracks of Josephus: translating Judaism across Iberian worlds, 1492–1687</i> £115,288</p> |
| <p>Professor Alison Cooley University of Warwick <i>The evolution of Tiberian political discourse</i> £116,943</p> | <p>Professor Stuart Jones University of Manchester <i>Liberal worlds: an intellectual biography of James Bryce</i> £166,491</p> | <p>Professor Thomas Otte University of East Anglia <i>Fits of absentmindedness? In search of a grand strategy, 1650–2020</i> £157,692</p> | <p>Dr Beth Williamson University of Bristol <i>Describing devotion</i> £172,067</p> |
| <p>Dr John Creighton University of Reading <i>Money and the rise of inequality and the market in Northern Europe</i> £123,690</p> | <p>Dr Chandrika Kaul University of St Andrews <i>The BBC and India</i> £124,207</p> | | |

Philip Leverhulme Prizes

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

Archaeology

Dr Kate Britton
University of Aberdeen

Dr Enrico Crema
University of Cambridge

Dr Jessica Hendy
University of York

Dr Jane Kershaw
University of Oxford

Dr Ben Russell
University of Edinburgh

Chemistry

Dr Artem Bakulin
Imperial College London

Dr Thomas Bennett
University of Cambridge

Dr Kim Jelks
Imperial College London

Dr Daniele Leonori
University of Manchester

Dr Silvia Vignolini
University of Cambridge

Economics

Dr Gabriella Conti
University College London

Professor James Fenske
University of Warwick

Dr Xavier Jaravel
London School of Economics
and Political Science

Professor Friederike Mengel
University of Essex

Professor Benjamin Moll
London School of Economics
and Political Science

Engineering

Dr Jessica Boland
University of Manchester

Dr Rainer Groh
University of Bristol

Dr Hannah Joyce
University of Cambridge

Dr Camille Petit
Imperial College London

Dr Alister Smith
Loughborough University

Geography

Dr Sarah Batterman
University of Leeds

Professor Christina Hicks
Lancaster University

Professor Robert Hilton
Durham University

Dr Fiona McConnell
University of Oxford

Dr Philippa Williams
Queen Mary,
University of London

Languages and Literatures

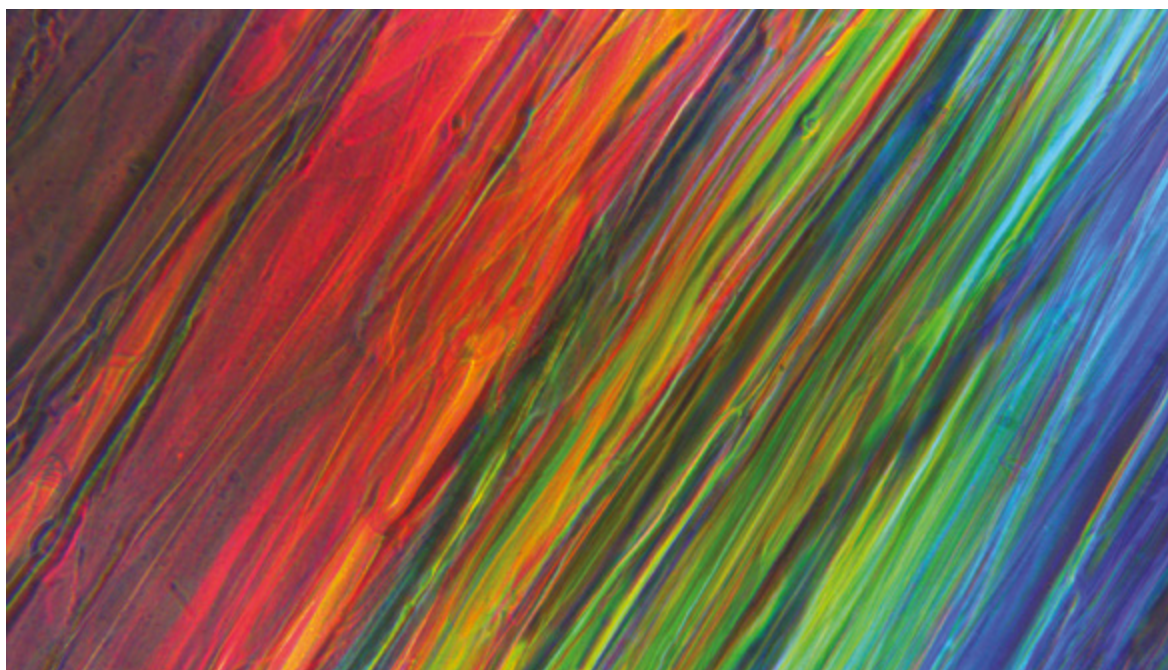
Professor Marc Alexander
University of Glasgow

Dr Emma Bond
University of St Andrews

Dr Merve Emre
University of Oxford

Professor Martin Eve
Birkbeck,
University of London

Dr Joe Moshenska
University of Oxford



Research Fellowships

Sciences

Professor Alin Achim
University of Bristol
Information fusion for heterogeneous retinal imaging (INFHER)
£43,800

Dr Gabriel Barrenechea
University of Strathclyde
Polyhedral meshes and the discrete maximum principle
£45,622

Dr Nelly Bencomo
Aston University
QuantUn: quantification of uncertainty using Bayesian surprises
£54,983

Professor Peter H Beton
University of Nottingham
Light emission from hybrid molecular/2D heterostructures
£47,368

Dr Jaclyn Billington
University of Leeds
To see or not to see: camouflage and human processes of detection
£54,772

Dr Inna Capdeboscq
University of Warwick
Classification of finite simple groups – large groups with two characteristics
£54,980

Dr Alistair Fielding
Liverpool John Moores University
Understanding the radical source of the degradation of plastic waste
£42,352

Dr Gillian Forrester
Birkbeck,
University of London
Hand to mouth: the role of tool-use in the evolution and development of language
£54,404

Professor Boris Gaensicke
University of Warwick
Mapping the shores of the solar neighbourhood
£39,113

Dr Timothy Heaton
University of Sheffield
Improving the measurement of time using radiocarbon
£54,886

Dr Richard Jiang
Northumbria University
Face2Gene: genetic identity behind deep facial features
£46,463

Professor Malcolm Kadodwala
University of Glasgow
A nano-resonator route to colossal magnetochiral optical effects
£54,641

Professor Ruth King
University of Edinburgh
Statistical ecology: modern challenges of quantity and quality
£54,511

Professor Vito Latora
Queen Mary,
University of London
CREATE: the network components of creativity and success
£53,809

Professor Yan Lavalley
University of Liverpool
Explore the magma frontier to unlock the full potential of geothermal energy
£54,996

Dr Thomas Leinster
University of Edinburgh
Magnitude and diversity
£53,553

Professor Rachel Norman
University of Stirling
Developing a theoretical understanding of non-linearities in the food system
£54,939

Professor Graham Shields
University College London
Evaporites and the long-term carbon cycle
£54,895

Professor Pietro D Spanu
Imperial College London
Interkingdom communication: the role of extracellular vesicles in plant disease
£54,691

Dr Karen Spencer
University of St Andrews
Understanding the interaction between habitat use, pollution and seabird health
£54,078

Dr Tobias von der Haar
University of Kent
Plastic-eating microbes: engineering options for a sustainable future
£45,782

Humanities

Dr Nadia Atia
Queen Mary,
University of London
Iraq reimaged: representations of home in diasporic Iraqi literature
£52,986

Professor Tiffany Atkinson
University of East Anglia
O what can I say?: Embarrassment, ethics and poetry
£45,705

Professor Matthew Giles Bell
King's College London
Goethe's intellectual development and the beginnings of European conservatism
£51,750

Dr Melanie Bigold
Cardiff University
Her books: women's libraries and book ownership, 1660–1820
£52,219

Dr Helena Britt
Glasgow School of Art
The cloth: exploring creative collaboration and interdisciplinarity, 1977–1987
£54,128

Professor Felix Budelmann
University of Oxford
The Ancient Greek present
£53,658

Dr Robert Burroughs
Leeds Beckett University
Congo House, 1889–1911: Black lives between empire and immigration
£45,207

Dr Luisa Calé
Birkbeck,
University of London
The book unbound: material cultures of reading and collecting, c. 1750–1850
£51,186

Dr Catrin Campbell-Moore
University of Bristol
Undermining beliefs and imprecise probabilities
£33,566

Professor Shohini Chaudhuri
University of Essex
Creativity and constraint: contemporary cinema in Iran and the Arab world
£44,749

Mr Stephen Coates
Independent Researcher
Over the Soviet horizon
£8,732

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| <p>Dr Helen Coffey Open University <i>Music and empire: instrumental sounds in the world of Maximilian I</i> £54,814</p> | <p>Professor Mark Ford University College London <i>Woman much missed: Thomas Hardy, Emma Hardy and poetry</i> £47,980</p> | <p>Dr Katja Haustein University of Kent <i>Alone with others: a literary history of tact in the twentieth century</i> £46,247</p> | <p>Dr Katherine Lebow University of Oxford <i>The people write! Polish everyman autobiography, 1921–1948</i> £54,763</p> |
| <p>Professor Matthew D Cook Birkbeck, University of London <i>Historic passions: queer history making in Britain</i> £51,846</p> | <p>Dr Craig French University of Nottingham <i>The epistemic power of perception</i> £21,972</p> | <p>Dr Catherine Haworth University of Huddersfield <i>Sounds criminal: scoring the 1940s crime film at RKO Radio Pictures</i> £37,176</p> | <p>Dr Colin Lever Durham University <i>Olfactory contributions to social identity and interaction in rodents and humans</i> £54,998</p> |
| <p>Dr Andrew Counter University of Oxford <i>Sexual poverty and the 'right' to sex: a nineteenth-century French genealogy</i> £48,949</p> | <p>Professor Rosalind Galt King's College London <i>Spectres of decolonisation: the cinematic imaginary of the Malay pontianak</i> £54,949</p> | <p>Dr Owen Hodkinson University of Leeds <i>Philostratus' epistles: edition with commentary, introduction and translation</i> £20,044</p> | <p>Dr Jan Machielsen Cardiff University <i>Witches, children, and refugees: terror in the French Basque country, 1600–1620</i> £46,651</p> |
| <p>Dr David Creese Newcastle University <i>Scientific authority in Ptolemy's 'harmonics': a comparative approach</i> £45,042</p> | <p>Professor John Gardner Anglia Ruskin University <i>Turning the screw: literature, technology and culture</i> £54,973</p> | <p>Dr David Huyssen University of York <i>The socialist who created the hedge fund: a new history of capitalism</i> £52,671</p> | <p>Dr Michael Mack Durham University <i>Disappointment: the destructive element from Spinoza to contemporary literature</i> £46,894</p> |
| <p>Ms Katie Cuddon Newcastle University <i>Rewriting clay</i> £50,996</p> | <p>Dr Francesco Goglia University of Exeter <i>Onward migration from Italy to the UK: sociolinguistic implications</i> £48,666</p> | <p>Dr Nancy Jachec Independent Researcher <i>Italy and Jean-Paul Sartre</i> £51,630</p> | <p>Dr Sarah McCleave Queen's University Belfast <i>Fame and the female dancer: the development of a profession</i> £8,235</p> |
| <p>Dr Manishita Dass Royal Holloway, University of London <i>Left luggage: cinematic legacies of the Indian People's Theatre movement</i> £52,782</p> | <p>Dr Hannah Greig University of York <i>Possessions of the crown: material worlds of the British court, 1688–1832</i> £53,941</p> | <p>Professor Helen Johnston University of Hull <i>English prisons at war: imprisonment during national crisis</i> £53,597</p> | <p>Dr James McConnel Northumbria University <i>The fighting race? Contested images of Irish soldiers in the First World War</i> £47,003</p> |
| <p>Professor Dejan Djokić Goldsmiths, University of London <i>Tito's last soldiers: 14th Military Police Battalion and the end of Yugoslavia</i> £54,555</p> | <p>Dr Sheryllynne Haggerty University of Nottingham <i>Merchants and managers: sojourners and slaves: Jamaica in 1756</i> £48,766</p> | <p>Dr Tristan Kay University of Bristol <i>The poet and the nation: Dante and the idea of Italy</i> £37,281</p> | <p>Professor Tony McEnery Lancaster University <i>English language learning and spoken interaction</i> £50,190</p> |
| <p>Dr Merve Emre University of Oxford <i>Post-discipline: literature, higher education and the crisis of the humanities</i> £47,649</p> | <p>Professor Susan Harrow University of Bristol <i>Letterworlds: epistolarity and the inter-art community in France, 1848–1902</i> £30,097</p> | <p>Professor Mark Knights University of Warwick <i>Corruption and the abuse of office in Britain and its empire, c. 1600–c. 1850</i> £11,589</p> | <p>Dr Emily McTernan University College London <i>On the ethics of taking offence</i> £52,041</p> |

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| <p>Dr Chana Morgenstern University of Cambridge <i>A literature for all its citizens: cultures of co-existence in Israel/Palestine</i> £48,549</p> | <p>Dr Petra Rau University of East Anglia <i>Only what you can carry: nine working-class women and German cultural memory</i> £45,794</p> | <p>Dr David Tollerton University of Exeter <i>Holocaust remembrance and the socio-religious landscape of twenty-first century Britain</i> £51,963</p> | <p>Dr Edward Wilson-Lee University of Cambridge <i>A world of secrets: Portuguese archives and the beginnings of global history</i> £50,399</p> |
| <p>Dr Beate Müller Newcastle University <i>West German student essays on the Nazi era: war children's voices from the 1950s</i> £47,908</p> | <p>Dr Rebecca Reich University of Cambridge <i>True and false: the journalistic turn in post-Stalinist literature</i> £55,000</p> | <p>Dr Anne Toner University of Cambridge <i>Free direct discourse and the framing of dialogue in English fiction</i> £55,000</p> | <p>Dr Ute Wölfel University of Reading <i>Tradition, trauma, treason: screening war beyond the nation in East German film</i> £37,147</p> |
| <p>Dr Mark Newman University of Edinburgh <i>Reconciling the mystical body: Louisiana Catholics and desegregation, 1945–1976</i> £54,568</p> | <p>Professor Irit Rogoff Goldsmiths, University of London <i>Becoming research</i> £47,772</p> | <p>Dr Marion Turner University of Oxford <i>The Wife of Bath: a biography</i> £43,897</p> | <p>Dr Reza Zia-Ebrahimi King's College London <i>Jews, Muslims and conspiratorial racism, 1860–today</i> £54,999</p> |
| <p>Professor Harold Noonan University of Nottingham <i>Identity investigations</i> £25,743</p> | <p>Dr Anna Katharina Schaffner University of Kent <i>Self-improvement: a history</i> £48,007</p> | <p>Dr Nadia Valman Queen Mary, University of London <i>Literary East London</i> £54,883</p> | <hr/> <h2>Social Sciences</h2> |
| <p>Dr Niall O' Flaherty King's College London <i>Malthus and the discovery of poverty</i> £54,912</p> | <p>Dr Allison Stielau University College London <i>Meltdown and transformation in post-war German art</i> £53,780</p> | <p>Dr Colin Veach University of Hull <i>England's first colony: state-building on the Irish frontier, 1199–1265</i> £47,815</p> | |
| <p>Dr Stephanie O'Rourke University of St Andrews <i>Natural histories in early nineteenth-century European landscape painting</i> £50,072</p> | <p>Dr Ilse Sturkenboom University of St Andrews <i>Fifteenth-century Persian manuscripts on 'Chinese' painted paper</i> £55,000</p> | <p>Dr Belén Vidal King's College London <i>Love belated. Cinephilic films and ephemeral film cultures in Spain, 1945–2015</i> £54,939</p> | |
| <p>Dr Alexander Paseau University of Oxford <i>Structuralism within a theory of structure</i> £46,735</p> | <p>Professor Peter Swaab University College London <i>Sylvia Townsend Warner and the possibilities of freedom</i> £54,744</p> | <p>Mr Jelmer Vos University of Glasgow <i>Coffee and colonialism in Angola, 1820–1960</i> £48,081</p> | |
| <p>Dr Amanda Power University of Oxford <i>Medieval histories of the Anthropocene</i> £52,561</p> | <p>Professor Joan Taylor King's College London <i>Babatha's sisters in the Christmas cave: an 'engendered' archaeology approach</i> £52,611</p> | <p>Dr Benjamin Walton University of Cambridge <i>The beginnings of global opera</i> £47,145</p> | |
| <p>Dr Kitt Price Queen Mary, University of London <i>Tomorrow's news</i> £41,464</p> | <p>Dr Rebecca Tierney-Hynes University of Edinburgh <i>Laughing matters: comedy, sympathy and the ethical spectator, 1660–1750</i> £26,520</p> | <p>Professor Samantha Warren University of Portsmouth <i>In the key of she: women, technology and cultural production</i> £54,955</p> | <p>Dr Judi Atkins Aston University <i>Envisioning Britain and Britishness: the Queen's Christmas message</i> £48,071</p> |
| | | | <p>Dr Andre Barrinha University of Bath <i>Cyber-diplomacy: foreign policy in the digital age</i> £52,109</p> |
| | | | <p>Dr Silvia Casini University of Aberdeen <i>From where do we see? Centre-periphery in biomedical visualisation</i> £54,652</p> |
| | | | <p>Dr Kathryn Cassidy Northumbria University <i>Dis/b/ordering: disrupting everyday welfare bordering in the UK</i> £49,211</p> |

Professor Sarah Childs
Birkbeck,
University of London
*Building feminist
institutions: parliaments,
institutionalism and change*
£49,283

Professor Graham Crow
University of Edinburgh
*Managing career endings and
the transition to retirement:
the case of academics*
£53,175

Dr Deirdre Duffy
Manchester Metropolitan
University
*Feminist outlaws: abortion
trail activism and evolution
of abortion politics*
£53,170

Dr Madeleine Fagan
University of Warwick
*Contending cultures of the
Anthropocene: prospects for
political mobilisation*
£55,000

Professor Karin Fierke
University of St Andrews
*Agency and strategy in non-
Western political thought*
£54,674

Professor Gino Gancia
Queen Mary,
University of London
*Political structure and its
discontents in a globalised
world*
£49,799

Professor Mathew Humphrey
University of Nottingham
*Riders' rights: freedom, identity,
authenticity in grassroots
activism*
£44,039

Professor Aseem Inam
Cardiff University
*Frontstage / backstage:
relationality of inequality
in the contemporary city*
£30,766

Professor Paula Jarzabkowski
City, University of London
*A paradox lens on grand
challenges: addressing the
protection gap for disasters*
£48,964

Dr Daniel Kato
Queen Mary,
University of London
*The politics racism makes:
racial politics from slavery
to mass incarceration*
£46,260

Dr Tom Lavers
University of Manchester
*The politics of distribution
in Ethiopia's 'developmental
state'*
£54,597

Dr Kirsten McConnachie
University of East Anglia
*Utopia or bust? A socio-legal
analysis of community land
ownership in Scotland*
£53,622

Dr Kathryn McNeilly
Queen's University Belfast
*Time and 'things' in the
practice of international
human rights law*
£52,927

Dr Rose Meleady
University of East Anglia
*Normative social influences
on intergroup contact
engagement*
£49,560

Dr Catherine Mitchell
University of Birmingham
*Rescuing English contract
law (from irrelevance)*
£46,518

Dr Jonathan Montem
University College London
*Freedom by force: why
foreign-imposed democracies
succeed or fail*
£52,041

Professor Amanda
Perry-Kessaris
University of Kent
*Doing sociolegal research
in design mode*
£32,833

Professor Teela Sanders
University of Leicester
*Revisiting the brothels:
capturing change and
continuity over two decades*
£30,907

Dr Sanjay Sharma
Brunel University London
The ecology of digital racism
£50,382

Dr Richard Shorten
University of Birmingham
*The ideology of political
reactionaries*
£39,859

Professor Alison Stenning
Newcastle University
*Potential space and playing
out: exploring play,
neighbours and streets*
£53,790

Dr Luke Ulas
University of Sheffield
*Human nature and the
prospects for cosmopolitics*
£51,262

Dr Alice Wilson
University of Sussex
*Defeated revolutionaries,
lasting legacies: Dhufar's
afterlife of revolution*
£48,466



Research Leadership Awards

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| <p>Dr Roxane Andersen University of the Highlands and Islands <i>Developing a new understanding of blanket bog resilience –from molecules to landscapes</i> £986,088</p> | <p>Dr Timo Jütten University of Essex <i>Competition and competitiveness</i> £822,440</p> | <p>Dr Thomas Montenegro-Johnson University of Birmingham <i>Shape-transforming active microfluidics</i> £996,799</p> | <p>Dr Chris Venditti University of Reading <i>The evolutionary and biogeographical routes to hominin diversity</i> £993,276</p> |
| <p>Dr Tine Buffel University of Manchester <i>Urbanisation and population ageing: an interdisciplinary approach to understanding ‘ageing in place’</i> £962,117</p> | <p>Dr Nicolas Laurand University of Strathclyde <i>Lasers and photonics of the future: self-assembled optically active resonators</i> £839,660</p> | <p>Dr Zlatko Papic University of Leeds <i>Quantum many-body scars: a new paradigm of order amidst quantum chaos</i> £993,674</p> | <p>Dr Silke Weinfurtner University of Nottingham <i>Early universe and black hole simulators</i> £982,364</p> |
| <p>Dr Mulaika Hijjas SOAS, University of London <i>Mapping Sumatra’s manuscript cultures</i> £924,966</p> | <p>Professor Erin McClymont Durham University <i>Unlocking evidence for Antarctic sea ice evolution from a novel biological archive</i> £998,204</p> | <p>Dr Tyler Stevenson University of Glasgow <i>Epigenomic regulation of seasonal life history transitions</i> £952,360</p> | <p>Dr Okan Yurduseven Queen’s University Belfast <i>Developing solutions to acute threats: compressive imaging for real-time security screening</i> £988,159</p> |
| <p>Dr Katherine Hill Birkbeck, University of London <i>Global faiths: Anabaptist confessional communities of dispersion, 1550–present day</i> £959,953</p> | <p>Dr Gareth Millington University of York <i>Archiving the inner city: race and the politics of urban memory</i> £884,988</p> | <p>Dr Matthew Struebig University of Kent <i>The empty forest syndrome: reversing socioecological drivers of defaunation in the tropics</i> £999,961</p> | |



Research Project Grants

Sciences

Professor Dave Adams
University of Glasgow
Spatially and temporally controlled photothermal gels
£180,491

Professor James Anderson
University College London
The synthesis and investigation of chimeric luciferins
£196,902

Dr Donna Arnold
University of Kent
Designing magnetic materials with new frustrated topographies
£142,016

Professor Manfred Auer
University of Edinburgh
Understanding the biological ramifications of a 'forbidden' peptide nullomer
£133,650

Dr Patric Bach
University of Plymouth
Social perception as Bayesian hypothesis testing and revision
£462,995

Dr Iestyn Barr
Manchester Metropolitan University
Using glaciers to identify, monitor and predict volcanic activity
£221,194

Professor George Bassel
University of Warwick
Do plant organs and computers process information in the same way?
£178,034

Dr Roger Behrend
Cardiff University
The combinatorics of alternating sign matrices and plane partitions
£208,057

Dr Rebecca Bell
Imperial College London
Why do subduction zones exhibit widely contrasting seismic behaviour?
£232,968

Dr Pavel Berloff
Imperial College London
Eddy backscatter in primitive equations: mechanism and parameterisation
£245,014

Professor Robert Beynon
University of Liverpool
Grow fast or keep warm? Protein metabolism in the neonate
£94,823

Dr Markus Bindemann
University of Kent
Face detection by humans
£248,611

Dr Duncan Browne
Cardiff University
Tuning into frustrated Lewis pairings using microwave radio frequency
£192,733

Dr Amy Buck
University of Edinburgh
The evolution of RNA transmission between animals in the wild
£185,990

Professor Martin Buck
Imperial College London
Unravelling signaling for CARF domain functioning in RNA end joining
£342,654

Professor Andrew Burrows
University of Bath
The controlled release of semiochemicals from porous materials for pest control
£291,808

Professor Richard Butler
University of Birmingham
Climate as a driver in the evolution and macroecology of dinosaurs and their kin
£227,921

Professor Richard Butler
University of Birmingham
Resolving the dietary ecology and evolution of the earliest dinosaurs
£186,806

Professor Eleanor Campbell
University of Edinburgh
Cosmic chemistry as food for life
£207,045

Dr Gabriel Castrillo
University of Nottingham
Co-directing plant development: root branching in plants colonised by microbes
£223,035

Dr Mikhail Cherdantsev
Cardiff University
Stochastic homogenisation of high-contrast composites
£216,638

Professor Manish Chhowalla
University of Cambridge
Ultraclean contacts between 2D semiconductors and 3D metals
£119,233

Dr Haeran Cho
University of Bristol
New challenges in change-point problems
£159,447

Dr Mingyuan Chu
University of Aberdeen
Giving cognition a helping hand: how gesture facilitates spatial thinking
£122,236

Dr Francesco Ciampa
University of Surrey
Nonlinear air-coupled thermosonics for micro-crack detection in composites
£148,423

Professor J. Stephen Clark
University of Glasgow
A novel and efficient polyether synthesis based on apparent and latent symmetry
£249,244

Dr Chris Clements
University of Bristol
Effects of multiple stressors on the global decline of vertebrate populations
£108,968

Dr Alexander Cobb
King's College London
Speeding up reactions using biologically inspired molecular LEGO®
£221,822

Dr Jonathan Codd
University of Manchester
Living inside a box: performance adaptations in turtles
£186,207

Dr Natalie Cooper
Natural History Museum
Back to the water: macroevolutionary dynamics of secondarily aquatic tetrapods
£337,468

Dr Claire Cousins
University of St Andrews
Searching for life on Europa
£195,402

Dr Rachel Crespo Otero
Queen Mary, University of London
Understanding the effect of aggregation in light-emitting organic crystals
£230,791

Professor Fabio Cuzzolin
Oxford Brookes University
Theory of mind at the interface of neuroscience and AI
£273,366

Professor Markus Damian
University of Bristol
Does being bilingual work wonders for your brain?
£264,135

Dr Robert Dawson
University of Sheffield
Dispersible microporous polymer particles
£120,588

Dr Guillaume De Bo
University of Manchester
Force-driven molecular machines
£223,244

Dr Simone De Liberato
University of Southampton
Electrical injection of hybrid phonons for low-cost mid-IR devices
£110,974

Dr Barry Denholm
University of Edinburgh
Cell and molecular architecture of a countercurrent exchange system in a beetle
£188,713

Professor A Prasanna de Silva
Queen's University Belfast
Switchable delivery of cargo as a new path for molecular logic-based computation
£117,010

Dr Alexis Diaz-Torres
University of Surrey
Quantum dynamics: element creation in dense stellar plasma
£193,956

Professor Andrew Dove
University of Birmingham
Stereopure poly(caprolactone) towards functionalised crystalline nanostructures
£288,176

Professor Robert Angus William Dryfe
University of Manchester
Electrowetting on conductors: fundamentals and applications
£181,225

Dr Thomas Dyer
University of Dundee
Engineering harbour surfaces to limit colonisation by invasive species
£59,157

Professor Andrew Ellis
University of Leicester
Chemical origins of atmospheric aerosols
£129,321

Dr Peter Ellis
University of Kent
Mechanisms of meiotic drive: how do genes break Mendel's laws?
£282,284

Dr Nicholas Evans
Lancaster University
Exploring rapidly accessible rotaxanes as synthetic mimics of lasso peptides
£204,101

Professor Emily Farran
University College London
LEGO® construction, spatial thinking and mathematics achievement
£246,703

Dr Paco Fernandez-Trillo
University of Birmingham
EPiC engineering microbial physiology through polymer and computational sciences
£179,747

Dr Katie Jayne Field
University of Leeds
Friend or foe; who wins in the competition for plant resources?
£464,540

Dr Ruth Filik
University of Nottingham
Examining the causes and consequences of 'risky' reading in older adults
£164,415

Professor Kevin Fowler
University College London
Understanding the coevolution of mitochondrial and nuclear genomes
£280,301

Dr Jonathan Fraser
University of St Andrews
New perspectives in the dimension theory of fractals
£324,135

Dr Ljiljana Fruk
University of Cambridge
Dopamine hybrids for design of enzyme-inspired photocatalysts
£205,430

Dr Elizabeth Fullam
University of Warwick
Photo-active probes for dissecting the mycobacterial glyco-proteome
£212,083

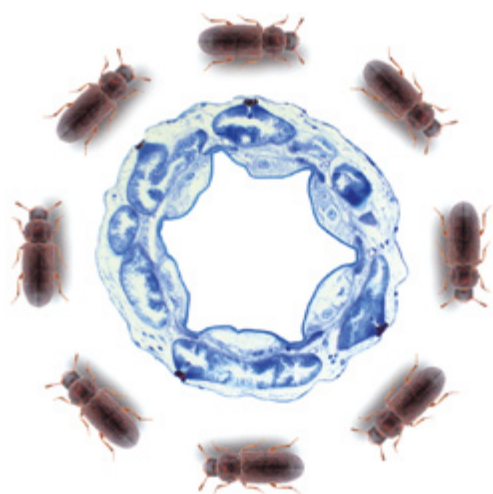
Dr Davide Gerosa
University of Birmingham
Black-hole spins and accretion discs with gravitational waves from space
£191,417

Professor David Goulson
University of Sussex
Unravelling the ecology of mites on bumblebees
£256,881

Dr Katie Gray
University of Reading
Investigating the visual perception of social interactions
£125,820

Professor Hartmut Grote
Cardiff University
Search for quantisation of space-time with precision-interferometry
£354,940

Professor Ivana Gudelj
University of Exeter
Quantifying the relationship between parasitic growth and host plant damage
£193,611



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| <p>Dr Ceri Hammond Cardiff University <i>Do zeolite catalysts mimic nature during aqueous phase methane oxidation?</i> £180,923</p> | <p>Dr Andrew Ho Royal Holloway, University of London <i>Intertwined superfluid and density-wave orders in quantum many-body systems</i> £278,707</p> | <p>Dr Matthew Johnson University of Sheffield <i>Elucidating metabolic control of photosynthetic membrane structure</i> £410,504</p> | <p>Dr Andrew Kerridge Lancaster University <i>Tuneable molecules for the exploration of heavy element chemical space</i> £82,483</p> |
| <p>Professor Julie Harris University of St Andrews <i>Visual salience: patterns that maximally activate the visual system?</i> £184,893</p> | <p>Professor David Hodell University of Cambridge <i>Human-climate-environment interactions in the lowlands of northern Yucatan</i> £314,998</p> | <p>Professor Alan Johnston University of Nottingham <i>An adaptable geometry for visual space perception</i> £241,497</p> | <p>Dr Ilya Kuprov University of Southampton <i>Inverse quantum theory using deep neural networks</i> £202,868</p> |
| <p>Dr Jelle Hartong University of Edinburgh <i>What is non-relativistic quantum gravity and is it holographic?</i> £163,317</p> | <p>Dr Alton Horsfall Durham University <i>Harnessing quantum defects for magnetic measurements</i> £431,918</p> | <p>Dr Karen Johnston University of Strathclyde <i>Catching nucleation in action using surface-enhanced Raman spectroscopy</i> £262,942</p> | <p>Professor Mark Leake University of York <i>Beyond traditional biometrology: understanding how cells distribute molecules</i> £249,424</p> |
| <p>Dr Alan Hastie University of Birmingham <i>Icelandic continental analogue for sialic evolution (ICASE)</i> £269,090</p> | <p>Dr Yongyun Hwang Imperial College London <i>Assessing attached eddy hypothesis using quasi-linear approximations</i> £211,930</p> | <p>Professor Cliff Jones Newcastle University <i>Separation and interference: learning from the history of concurrency</i> £138,263</p> | <p>Dr Chiu Fan Lee Imperial College London <i>Active jamming: fact or fiction</i> £134,142</p> |
| <p>Dr Thomas Hayward University of Sheffield <i>Harnessing complexity: neuromorphic computation with magnetic domain walls</i> £145,056</p> | <p>Dr Anton Ilderton University of Plymouth <i>Uncharted regimes of light-matter interactions</i> £122,610</p> | <p>Dr Nick Jones Imperial College London <i>The control of mitochondrial populations</i> £270,436</p> | <p>Professor Rohan Lewis University of Southampton <i>Comparative palaeontology using nanoscale and 3D imaging</i> £177,310</p> |
| <p>Dr Ian Henderson University of Cambridge <i>Testing a reaction-diffusion model for sexual recombination in plants</i> £121,876</p> | <p>Dr David Jess Queen's University Belfast <i>Faint signals from bright sources: identifying high-frequency waves in the Sun</i> £274,257</p> | <p>Dr Katherine Joy University of Manchester <i>Accessing ancient solar records on the Moon</i> £245,959</p> | <p>Dr Steven Lind University of Manchester <i>Sounds of the seaside: breaking wave noise prediction via numerical simulation</i> £186,551</p> |
| <p>Professor Jeremy Henley University of Bristol <i>What do Kainate receptors do in the brain and how do they do it?</i> £273,925</p> | <p>Dr Sui Jie University of Bath <i>The ubiquitous self: testing the enhanced binding account</i> £230,517</p> | <p>Professor Malgosia Kaczmarek University of Southampton <i>DiG for the future: taming disorder in self-assembled materials with topology</i> £399,866</p> | <p>Dr Grigorios Loukides King's College London <i>Privacy-preserving collection of sequences from individuals for data mining</i> £219,016</p> |
| <p>Professor Alistair Hetherington University of Bristol <i>Investigating the origin and evolution of stomata</i> £436,156</p> | <p>Dr Zerina Johanson Natural History Museum <i>How to tuna fish: drivers of diversity in Pelagiararia (tunas, mackerels and kin)</i> £284,912</p> | <p>Dr Euan Kay University of St Andrews <i>Hierarchical reaction networks: nanoscale amplification by molecular replication</i> £281,592</p> | <p>Professor Martin Lowe University of Manchester <i>Cell organisation: an unexpected role for membrane lipids in vesicle traffic</i> £202,853</p> |

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| <p>Dr James Lucietti University of Edinburgh <i>Supersymmetry, integrability and the moduli space of black holes</i> £204,685</p> | <p>Dr Mostafa Nabawy University of Manchester <i>Unlocking the mystery of wake capture in insect flight aerodynamics</i> £116,196</p> | <p>Dr Giuseppe Pileio University of Southampton <i>Theory and methodology for nuclear spins diffusing in porous media</i> £279,170</p> | <p>Professor Vivek Ranade Queen's University Belfast <i>Oxidative desulphurisation without using any catalyst and external oxidant</i> £199,097</p> |
| <p>Dr Reinhard Maurer University of Warwick <i>Tunnelling or electronic friction: what controls hydrogen chemistry on metals?</i> £175,151</p> | <p>Professor Richard Nichols University of Liverpool <i>Single molecule electrochemistry in the time domain</i> £277,208</p> | <p>Dr Teuta Pilizota University of Edinburgh <i>A physiological approach to understanding osmotically induced growth modulation</i> £177,818</p> | <p>Dr Neil Rees University of Birmingham <i>Recycling critical metals: making catalysts directly from waste</i> £261,994</p> |
| <p>Professor Anne Magurran University of St Andrews <i>Darwin, Wallace, Bates and biodiversity change in the Anthropocene</i> £301,913</p> | <p>Professor Thomas Nowotny University of Sussex <i>Peripheral olfactory coding: information processing outside the brain</i> £293,703</p> | <p>Dr Andre Pires da Silva University of Warwick <i>An intrinsic polarising signal for asymmetric cell divisions</i> £299,039</p> | <p>Dr Gareth Roberts Imperial College London <i>Scaling regimes of landscapes and biodiversity</i> £166,620</p> |
| <p>Dr Lee Martin Nottingham Trent University <i>Chiral and racemic 2D superconductors</i> £163,913</p> | <p>Dr Cian O'Donnell University of Bristol <i>Generalisable neural learning from noisy synapses</i> £207,224</p> | <p>Dr Argyris Politis King's College London <i>How do membranes communicate with their molecular partners?</i> £292,249</p> | <p>Dr Nicholas Robinson Lancaster University <i>Using the Asgard archaea to trace the natural history of protein homeostasis</i> £349,925</p> |
| <p>Dr Stephen Montgomery University of Bristol <i>Evolution of a kin recognition system in social insects</i> £271,376</p> | <p>Professor Beth Okamura Natural History Museum <i>Hidden affiliate diversity and threats</i> £374,121</p> | <p>Professor Phillip Poole University of Oxford <i>Imaging bacterial chemotaxis to roots: role of the global regulator PTSNtr</i> £129,428</p> | <p>Dr Majid Safari University of Edinburgh <i>Shannon meets Schrödinger: communication theory for a nonlinear channel</i> £296,729</p> |
| <p>Dr Wesley Moran University of Huddersfield <i>Electrochemical synthesis with iodine compounds</i> £173,251</p> | <p>Dr Sheehan Olver Imperial College London <i>Constructive approximation theory on and inside algebraic curves and surfaces</i> £243,114</p> | <p>Dr Matthew Powner University College London <i>3'-amino-TNA: predisposed synthesis and non-enzymatic replication</i> £288,566</p> | <p>Dr Kazuya Saito University College London <i>Does having a good ear promote successful second language speech learning?</i> £233,813</p> |
| <p>Dr Huw Morgan Aberystwyth University <i>EMPSOL: an empirical solution to space weather forecasting</i> £218,122</p> | <p>Professor Mark Pagel University of Reading <i>The fabric of macroevolution</i> £183,262</p> | <p>Dr Andrew Preston University of Bath <i>Developing bacterial GWAS beyond traditional SNP and gene content diversity</i> £335,072</p> | <p>Dr Matteo Salvalaglio University College London <i>Modelling the structure and assembly of protein low complexity domains</i> £201,387</p> |
| <p>Dr John Mulley Bangor University <i>Decoding dark DNA</i> £196,897</p> | <p>Dr Nikolai Pedentchouk University of East Anglia <i>Deciphering past sea ice dynamics using novel stable isotope proxies</i> £220,222</p> | <p>Dr Alessandro Principi University of Manchester <i>Controlling magnetism in multilayers of Van-der-Waals materials</i> £366,307</p> | <p>Professor Dave Scanlan University of Warwick <i>Revealing the function of a potential RuBisCO 'deactivase'</i> £267,155</p> |
| <p>Professor Robert E Mulvey University of Strathclyde <i>Propelling sodium to the forefront of metallation chemistry</i> £250,408</p> | <p>Professor Josephine M Pemberton University of Edinburgh <i>Mapping inbreeding depression in the wild</i> £189,141</p> | | |

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| <p>Dr Philipp Seib University of Strathclyde <i>Engineered substrates for the isolation and expansion of mesenchymal stem cells</i> £271,652</p> <p>Professor Michael Shaver University of Manchester <i>Polymeric frustrated Lewis pairs for carbon capture and hydrogenation</i> £321,264</p> <p>Dr Helena Shepherd University of Kent <i>Synthesis of switchable molecules through mechanochemistry</i> £175,708</p> <p>Professor Alexandra Silva University College London <i>Verification of machine-learning algorithms</i> £203,928</p> <p>Professor Alison Smith John Innes Centre <i>Origins of starch granule diversity in seeds of the grass family</i> £485,599</p> <p>Dr Lisa Smith University of Sheffield <i>A plant-specific motor during cell division and seed development</i> £173,950</p> <p>Dr Martin Smith Durham University <i>A fizzle or a bang: how fast was the Cambrian 'explosion'?</i> £499,986</p> <p>Dr Jordi Solana Oxford Brookes University <i>A novel mathematical approach to study stem cells in regenerating invertebrates</i> £239,914</p> | <p>Dr Tony Southall Imperial College London <i>Revealing unknown micropeptide functions using ultra high-throughput screening</i> £113,596</p> <p>Dr Adam Tierney Birkbeck, University of London <i>Individual differences in dimensional weighting in speech perception</i> £118,326</p> <p>Dr Salvador Tomas Birkbeck, University of London <i>Controlling chemical reactivity in the cavity of lipid vesicles</i> £213,261</p> <p>Professor Mark Trimmer Queen Mary, University of London <i>Temperature and nitrogen modulated nitrous oxide fixation</i> £285,552</p> <p>Dr Pavel Tumarkin Durham University <i>Reflections and mutations</i> £197,605</p> <p>Professor Robert Upstill-Goddard Newcastle University <i>Control of air–water gas exchange rates in lakes by natural surfactants</i> £173,221</p> <p>Dr Gerben van Ooijen University of Edinburgh <i>Dynamic regulation of magnesium and cellular circadian timekeeping</i> £219,045</p> <p>Dr Paz Vaqueiro University of Reading <i>Understanding ultralow thermal conduction in copper-containing sulfides</i> £220,229</p> | <p>Dr Alexei Vernitski University of Essex <i>Machine learning for recognising tangled 3D objects</i> £196,267</p> <p>Professor Michael Ward University of Warwick <i>Glycosylated coordination complexes for luminescent imaging of lectins</i> £180,472</p> <p>Dr Nicholas Warren University of Leeds <i>Reconfigurable polymers via supramolecular self-sorting</i> £270,114</p> <p>Dr Sobanawartiny Wijekumar University of Stirling <i>Brain–brain synchrony through the emergence of visual working memory</i> £251,061</p> <p>Dr Jonathan Wilden University College London <i>Electrochemical, bio-inspired activation of molecular oxygen for C–H activation</i> £124,981</p> <p>Dr Elizabeth Wonnacott University College London <i>Language learning as expectation: a discriminative perspective</i> £320,358</p> <p>Dr Joseph Wright University of East Anglia <i>Metal hydrides probed using muon spectroscopy</i> £177,755</p> <p>Dr Nicholas Wright University of Keele <i>The structure and dynamics of star clusters in 6D</i> £164,408</p> <p>Dr Yongde Xia University of Exeter <i>Porous oxide-based catalytic membrane reactors for carbon dioxide conversion</i> £209,318</p> | <p>Professor Yi Xu University College London <i>High quality simulation of early vocal learning</i> £361,598</p> <p>Professor Andrei Yafaev University College London <i>Diophantine problems related to Shimura varieties</i> £312,448</p> <p>Dr Rupert Young University of Sussex <i>Genetic algorithms to select the parameters for iterated function systems</i> £107,230</p> <p>Dr Igor Yurkevich Aston University <i>Quantum correlations: witnesses and quantifiers in solid-state setups</i> £234,239</p> <p>Dr Martinus Antonius Zwijnenburg University College London <i>Exploring metal-free pathways for hydrogen evolution by polymer photocatalysts</i> £114,893</p> <hr/> <p>Humanities</p> <p>Professor Jocelyn Alexander University of Oxford <i>Global soldiers in the cold war: making southern Africa's liberation armies</i> £393,789</p> <p>Ms Trish Belford University of Ulster <i>An alchemy of exploration, screen print in the fashion industry, 1990–2004</i> £116,350</p> <p>Dr J Adam Carter University of Glasgow <i>A virtue epistemology of trust</i> £254,871</p> |
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Dr David Carey
Bangor University
Can cerebral asymmetries be predicted from behaviour?
£116,998

Dr Eva
Fernandez-Dominguez
Durham University
What's in a house? Exploring the kinship structure of the world's first houses
£371,818

Dr Matthew Haigh
Northumbria University
Does "Scientists believe ..." imply "All Scientists believe ..."?
£67,642

Dr Rosalind Love
University of Cambridge
Latin Arthurian literature and the rise of fiction
£194,821

Dr Alastair Mann
University of Stirling
The Scottish Privy Council, 1692–1708: government from revolution to union
£425,223

Professor Clare McManus
Roehampton University
Engendering the stage: the records of early modern performance
£314,137

Dr Katherine Messenger
University of Warwick
Cross-linguistic influence and shared syntax in bilingual language development
£289,022

Dr Karen Milek
Durham University
Cohabiting with Vikings: social space in multi-species communities
£311,848

Mr Nick Millea
University of Oxford
Understanding the medieval Gough Map through physics, chemistry and history
£112,242

Professor Janet Montgomery
Durham University
Mobility, sex and the Neolithic transition in Europe
£272,475

Professor Paula Reimer
Queen's University Belfast
Migration or adaptation: emergence and development of nomadism in the Altai
£209,933

Professor Andrew Reynolds
University College London
Monumentality and landscape: linear earthworks in Britain
£406,252

Dr Benjamin Roberts
Durham University
Did British tin sources and trade make Bronze Age Europe?
£329,099

Dr Richard Salmon
University of Leeds
The Society of Authors, 1884–1914: professional association and literary property
£344,805

Dr Emily Selove
University of Exeter
A sorcerer's handbook: medieval Arabic magic in context
£126,588

Professor Richard Sharpe
University of Oxford
The writings of Gerald of Wales
£265,101

Dr Richard Staley
University of Cambridge
Making climate history
£499,958

Professor Jon Williamson
University of Kent
Evidential pluralism in the social sciences
£244,183

Social Sciences

Dr Katy Bennett
University of Leicester
Mapping multicultural: disrupting representations of an ethnically diverse city
£101,183

Dr Olivier Cardi
Lancaster University
Understanding cross-country differences in deindustrialisation
£153,374

Professor Ariel Ezrachi
University of Oxford
An empirical analysis of how competition laws affect the distribution of wealth
£138,651

Dr Kathy Hamilton
University of Strathclyde
Transformative servicescapes and consumer vulnerability
£78,762

Professor Marco Mariotti
Queen Mary, University of London
Economic choices and cognitive diversity: a window to the human soul
£352,071

Professor Dame
Henrietta L Moore
University College London
Supporting macroeconomic stability and prosperity in an age of mass displacement
£250,012

Professor Jonathan Payne
De Montfort University
Digital technologies and job quality: do trade unions make a difference?
£160,633

Professor Jill Porter
University of Reading
Access and higher education: inclusive online learning for deaf students
£218,577

Professor Susie Scott
University of Sussex
Narratives of nothing: stories of the great undone
£285,975

Professor David Thomas
University of Oxford
Holocene socio-environmental relationships in the Indus Valley
£282,846

Dr Chronoula Voutsina
University of Southampton
Cultural rules and uses of written numerals in children's everyday environments
£107,347

Dr Krystal Wilkinson
Manchester Metropolitan University
An exploration of fertility/pre-conception and work
£85,134

Dr Ben Worthy
Birkbeck, University of London
Who's watching parliament? Monitory democracy at Westminster
£51,659

Study Abroad Studentships

Sciences

Dr Benjamin Chandler
A multi-method, glacial-geological and geophysical approach to exploring moraines
Sweden

Mr Joshua Lambert
Between island and mainland: new theory for non-oceanic islands and an empirical test in the 'Galápagos of Africa'
The Netherlands

Miss Lucy Millington
The conservation value of regenerating forest for endangered primates in Peru
Peru

Mr Adam Powell
Masters in Physics
Canada

Miss Umaira Shuaib
Oxides as battery materials
Germany

Mr Ektoras Yiannakas
Investigating novel ligand scaffolds for the development of an alkyne cross metathesis selective catalyst
Germany

Humanities

Mr Benjamin Allport
Communication and community in high medieval Norway: a social network analysis of high medieval Norwegian sources
Norway

Mr Julian Bacharach
Agents in time: perspective, tense and the first person
Germany

Miss Alice Beazer
Masters Research Training Program in Social Sciences
Germany

Ms Anna Caceres
Masters in Governance of Migration and Diversity since 1945
The Netherlands

Mr Alexander Collin
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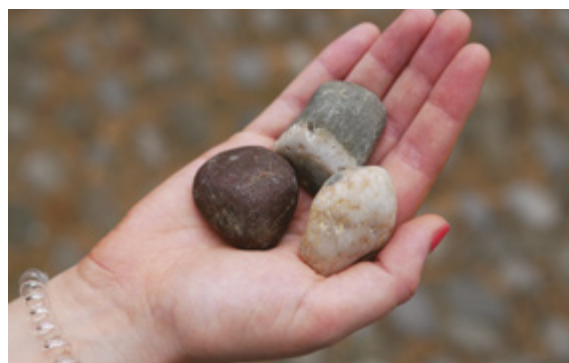
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A network visualisation of an episode from the *Saga of King Olaf the Saint*. King Olaf and his closest followers are shown in red; the black nodes represent the king's rivals among the Norwegian nobility. Created using Gephi software. Dr Ben Allport, Study Abroad Studentship.

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Understanding the ability of Herdwick sheep to thrive in harsh environments. Professor Dianna Bowles, University of York, Emeritus Fellowship.

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Soft robot hand skeleton that was used to investigate the effect of soft components while interacting with a piano. (Adopted from Hughes, J.A.E., Maiolino, P., Iida, F. (2018). An anthropomorphic soft skeleton hand exploiting conditional stiffness for piano playing, *Science Robotics* 3(25): eaau3098.). Dr Fumiya Iida, University of Cambridge, International Academic Fellowship.

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Cellulose nanocrystals; a cellulose coloured film looked at under the microscope. Photo: Giulia Guidetti. Dr Silvia Vignolini, University of Cambridge, Philip Leverhulme Prize.

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Potential space and playing out: exploring play, neighbours and streets. Professor Alison Stenning, Newcastle University, Research Fellowship.

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Professor Jo Morgan servicing a seismometer in New Zealand to collect data for the application of full-waveform inversion. Photo by Sian Evans. Dr Rebecca Bell, Imperial College London, Research Project Grant.

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A cross-section view through the buried kidney complex, circled by *Tribolium* beetles. *Tribolium castaneum* photo: U.Schmidt, 2017. CC BY-SA 2.0. Dr Barry Denholm, University of Edinburgh, Research Project Grant.

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Moving, making, meaning: manuports in the archaeology of the Bronze Age Aegean. Ms Ellen Finn, Study Abroad Studentship.

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A fossil of *Wiwaxia*, characterising the strange appearance of Cambrian organisms. Dr Martin Smith, Durham University, Research Project Grant.

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