"...scholarships for research and education..."

Newsletter April 2012

The Leverhulme Trust

CINEMA IN THE 1920s

Converting the Isles

Quantifying the mosaic

Effective carbon capture

From soap to scholarships

As I go round the country to talk about grant-making, two of the questions I am most frequently asked are 'What are the origins of the Trust?', and 'How can I maximise my chances of winning a grant?' The answer to the first provides one (unexpected) answer to the second.

William Hesketh Lever was one of the great philanthropists of the Victorian era. Born the son of a wholesale grocer in Bolton in 1851, during his lifetime he built up Lever Brothers from a modest local soap-manufacturing company into a multinational business empire embracing a wide range of household and personal care products as well as foodstuffs.

When Viscount Leverhulme (as he had by then become) died in 1925, he left a substantial portion of his personal shares in Lever Brothers to establish an independent charitable trust, providing 'scholarships for the purposes of... research and education'. Although the Trust has since diversified its investments, the initial gift still forms the core of its endowment, and provides much of the £60 millions or so annual income that is distributed in grants.

Lever Brothers, meanwhile has progressed through a series of mergers, acquisitions and expansions to become Unilever, now one of the largest businesses in the world, familiar to consumers on every continent. Leverhulme, the Trust, continues to be wholly independent of Unilever, the Company which these days pursues its own fundraising and charitable giving activities via the quite separate Unilever Foundation.

The terms of the Trust are remarkably generous. 'scholarships' can take numerous forms, so the Trust now promotes some fifteen or so award schemes, supporting a range of grants, programmes, fellowships, studentships and artistic activity. The terms of the Founder's will also explain why the Trust funds 'people to do projects', but cannot pay for 'research infrastructure', such as buildings or large-scale scientific equipment.

All of which brings me neatly back to the second of the questions; namely, that of how best to maximise one's chances of winning a grant from the Trust. One somewhat irreverent (but nevertheless ultimately true) answer might clearly be 'Buy Marmite!' or indeed any one of the hundreds of products that Unilever sells worldwide, since the greater the dividend earned by the Trust from the Founder's initial gift, the more money there will be available to distribute as grants.

More helpful, however, is advice to potential applicants that simply points them to the Trust's website, where they will be encouraged to submit proposals that are bold, go beyond established disciplinary frameworks, are expressed clearly and – above all else – demonstrate a commitment to the highest standards of scholarship, academic inquiry, or artistic expression. Persuade the peers who review your application that this is what you are about and you will surely find support amongst the Members of the Board.

Gordon Marshall

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'Converting the Isles': conversion to Christianity in the insular world

Conversion to Christianity is arguably the most revolutionary social and cultural change that Europe experienced in Late Antiquity and the early Middle Ages. Christianisation affected all strata of society and transformed not only religious beliefs and practices, but also the nature of government, the priorities of the economy, the character of kinship and gender relations. It is against this backdrop that the network 'Converting the Isles' was founded, an international research network for the study of the conversion to Christianity in Britain, Ireland, Scandinavia and Iceland in the early and central Middle Ages. These areas are bound up in an intricate web of connections that are well attested in contemporary documentary sources. The combination of these places reflects the desire of those involved in the network to establish a wide comparative framework that will highlight these important cross-cultural links and illuminate the significance of conversion in both the pre-Viking and Viking eras.

St Oran's Chapel, Iona, Scotland (image credit: Dr Fiona Edmonds).

By focusing on social, economic and cultural aspects of religious conversion, the network aims to open up new research avenues, to offer a comparative perspective on conversion processes in the insular world, and to foster genuine interdisciplinary collaboration between leading historians, archaeologists, and philologists, as well as early career scholars. The archaeological map of the region with which the network is concerned has been significantly augmented in recent times thanks to a surge in new finds, some of which shed valuable light on the material culture of newly-converted communities or communities in a state of religious and cultural transition. The character of our network is meant not only to alert scholars to recent advancements that have been made in this and other fields, but also to search for ways in which highly specialised disciplines can engage in productive discussion with one other.

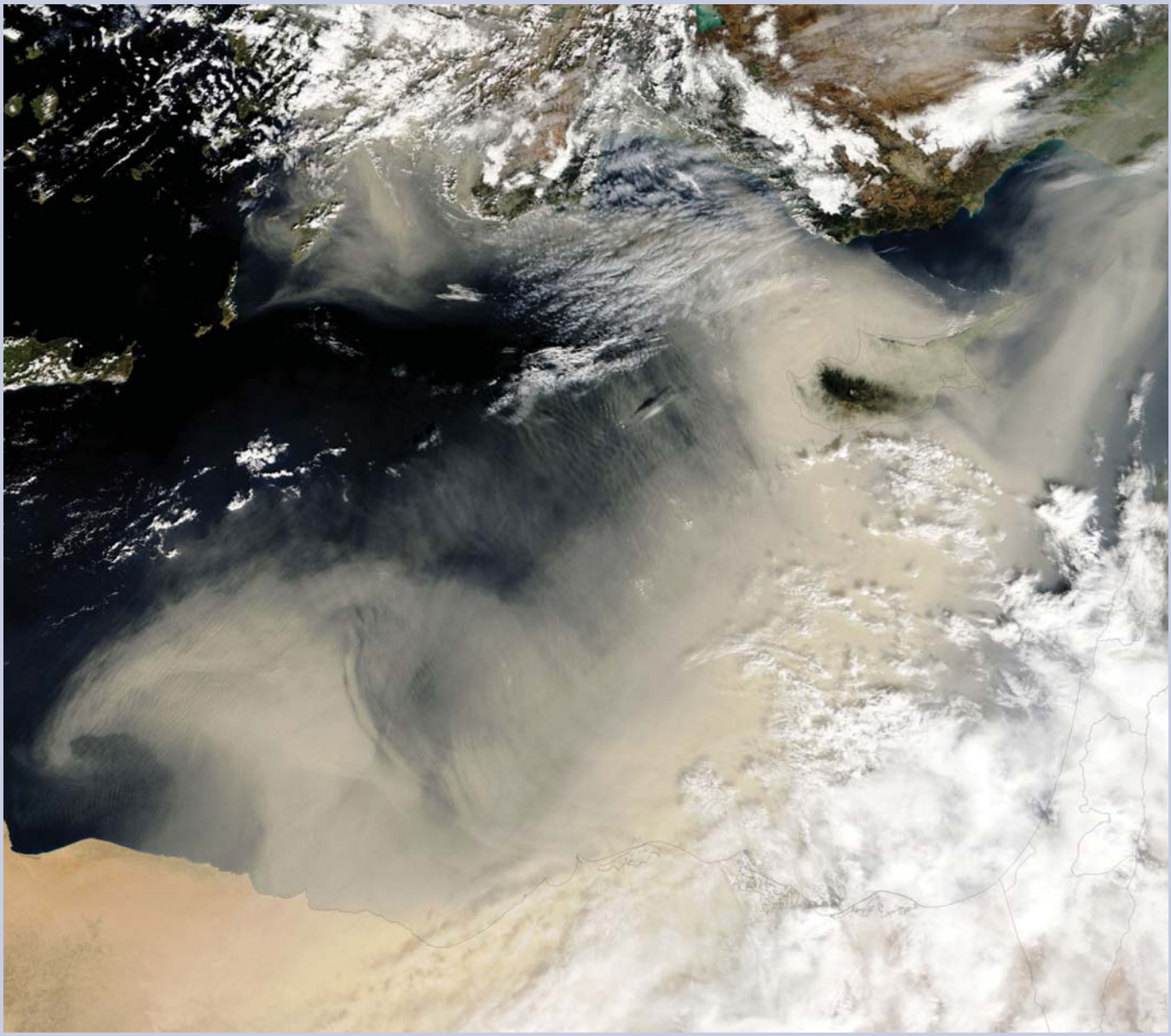
The network's website will serve as a major port of call for researchers engaged in the study of conversion. It will enable participants in the network and members of the general public to discuss general themes that emerge from the network's activities. A number of public events are also envisaged to raise awareness of the cultural and social significance of the process of conversion among a wider general audience.

Cross of the Scriptures (replica) and west front of Cathedral, Clonmacnoise, Ireland (image credit: Dr Fiona Edmonds).

The network will involve historians, literary scholars and archaeologists from the universities of Cambridge, Bangor and Oxford in the United Kingdom; University College Dublin and University College Cork in Ireland; the University of Bergen in Norway; and the University of Iceland.

Dr Máire Ní Mhaonaigh
University of Cambridge

Understanding the delivery of phosphorus nutrient to the oceans



A dust storm over the Eastern Mediterranean (credit Jeff Schmaltz Modis Rapid Response Team NASA/GSFC).

Primary productivity, the growth of plants, in both land and ocean ecosystems is often controlled by the amount of soluble phosphorus (P) present. Because inputs of P from rivers accumulate close to land, airborne sources of P, mostly dust, are particularly important for supporting primary production in the open ocean. The major forms of P in soil-derived dust are apatite, the same mineral that is found in bones and teeth and, to a lesser extent, P bound to iron minerals. These minerals are insoluble in seawater. Since dust falls rather rapidly through the surface layers of the ocean where plankton (microscopic marine plants) grow, it means that only the soluble fraction of P in dust is bioavailable and can induce plankton growth. It was assumed that about 17% of total atmospheric P deposited globally at the sea surface is water soluble. However the soluble fraction is highly variable, with values ranging between 7 and 100%. Until now we had no idea what might control the amount of dissolved P in airborne particles at any given particular location.

We now hypothesise, based on our preliminary data, that chemical reactions of airborne particles with atmospheric acids is a major pathway for the production of this water soluble P. The main acids in the atmosphere, sulphuric and nitric acids are generated from acid gases emitted by natural and pollutant sources. These acids condense onto mineral particles causing the pH to drop to low values and increasing the solubility of apatite and iron minerals significantly.

An area where we expect this process to be particularly important is the Eastern Mediterranean (EM). It has been shown that primary productivity in the EM is limited by the amount of P supplied in the form of dust, thus any change in the amount of bioavailable P will have an immediate and proportional effect on carbon uptake. It is also an area where Saharan dust from North Africa meets polluted air from Southern Europe.

This project aims to combine geochemical measurements made on real dust and desert soil precursor materials with global aerosol modelling to examine these important processes. Initially we will concentrate on the Eastern Mediterranean using data and samples provided from Crete. Our process studies will then be extrapolated to the global ocean by further samples from China and by global modelling.

Professor Michael D Krom
University of Leeds

Co-investigators: Robert Mortimer and Kenneth Carslaw (University of Leeds) with Zongbo Shi (University of Birmingham), Liane Benning and Kirsty Pringle (University of Leeds), Nikos Mihalopoulos (University of Crete) and Thanos Nenes (Georgia Tech Institute).

The role of historians and historical consciousness in the making of modern Uganda

Research on Africa's pre-colonial past has become increasingly marginal to mainstream modern history, namely that which deals almost exclusively with the twentieth century. At the same time, more broadly, the public and professional significance of history as a discipline has declined markedly across Africa over the last forty years, in many ways reflecting a similar decline during the era of colonial rule. Only at moments of marked stress or abrupt change has history mattered in the public and political arena, notably the European partition of Africa between the 1880s and the 1910s, and the era of decolonisation in the 1950s and 1960s. In the wake of these moments of intense historical activity, history was both demonised – depicted as deeply dangerous and as the source of savagery and instability – and portrayed as irrelevant when set alongside the needs of economic modernisation and development. This project will use the case study of Uganda to examine the role of the deep past – i.e. the pre-colonial past – in the shaping of politics and society from the mid- to late nineteenth century to the present.

The project aims to chart the shifting fortunes of history and historical knowledge from the late pre-colonial era, through the colonial era and the process of decolonisation, to the often violent era of independence. In doing so, the project will explore the country's intellectual development; the changing nature and role of history in formal education; and the uses of the deep past by politicians and a range of civil society groups, as well as in public discourse more widely. The research will focus on several distinct periods in the Ugandan context: the mid- to late nineteenth century, i.e. the late pre-colonial era and the generation prior to colonial rule; the period of partition and the formation of the Uganda Protectorate, between the 1880s and the 1910s; the era of colonial rule at its apex, between the 1920s and 1940s; decolonisation and the struggle to create new nationhood during the 1950s and 1960s; and the era of political crisis, violence and redemption through economic development since the 1970s.

The project will ultimately assess the role of history in modern Africa vis-à-vis the developmental agendas and notions of economic growth against which African progress and prospects for stability are currently measured. It will examine how the past – with a focus on the retrievable pre-colonial past – has been understood locally in political, social, cultural and economic terms. It will consider the ways in which an African society reflects upon itself and uses – or abuses – historical knowledge in pursuit of particular goals. It is expected that the research will thus produce new insights into the shifting nature of social, cultural and political relationships in Uganda; into the meaning of 'African history', as it understood in Africa itself; and into the concept of 'development' as it has long been interpreted in the African context, namely in almost exclusively material terms.

Ham Mukasa and Sir Apolo Kagwa, two prominent Ganda historians, 1902 (Appleton's magazine, 1905, vol 5, p221, Royal Commonwealth Society).

Dr Richard Reid
School of Oriental and African Studies, University of London

Using social identity to promote psychological well-being and reduce maladaptive eating amongst morbidly obese people

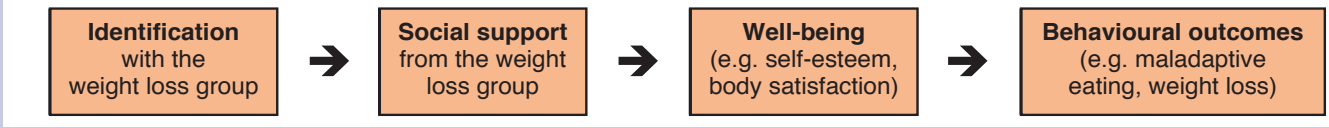
In the UK in 2009, 22% of men and 24% of women were obese. These figures are predicted to rise to 47% and 36% respectively by 2025. Increasing obesity prevalence rates highlight the urgent need to develop effective interventions to help people with obesity manage their weight and protect them from associated ill-health outcomes. The estimated £16 billion cost to the economy each year resulting from reductions in workplace productivity (e.g. due to weight-related illness), together with the healthcare costs of treating obesity, means that such interventions are of clear societal concern as well.

The negative health consequences of obesity are well documented. As well as its link to a variety of physical diseases, obesity is a significant risk factor for many psychological problems. These include body dissatisfaction, low self-esteem and depression – problems which are themselves linked to behavioural outcomes such as binge eating, refusal to diet and, ultimately, weight-gain.

This project elaborates a novel approach to understanding the management of obesity which is based on the idea that psychological and physical health is inextricably linked to people's social group memberships – in terms of how they identify themselves *as group members*. Past work on this topic has shown how involvement in social groups with which people identify can benefit health and coping with chronic illness. This approach to promoting health is referred to as the 'Social Cure'; building on this, the current project tests a new model which we term the 'Social Identity Model of Obesity Management' (see below). The model starts from the position that organised weight-management groups are a potential source of social support which empower people with obesity to make an effective transition to psychological well-being – and ultimately behavioural and physical health. However, the model uniquely predicts that whether or not group members will experience a weight-management group in supportive terms depends upon whether the group is psychologically meaningful to them – that is, whether they identify with it.

Using mixed methods comprising a 12-month longitudinal study and a series of interviews with members of weight-management groups in Devon, UK, we aim to generate a comprehensive understanding of the processes by which group participation impacts on health. In so doing, we expect to contribute to the evidence base for the future development of weight-management programmes. Based on our new model, we expect to recommend that group-based programmes for obesity be designed to capitalise on the social identity resource potential inherent in them by reinforcing a sense of belonging and social support amongst group members.

Dr Mark Tarrant
University of Exeter

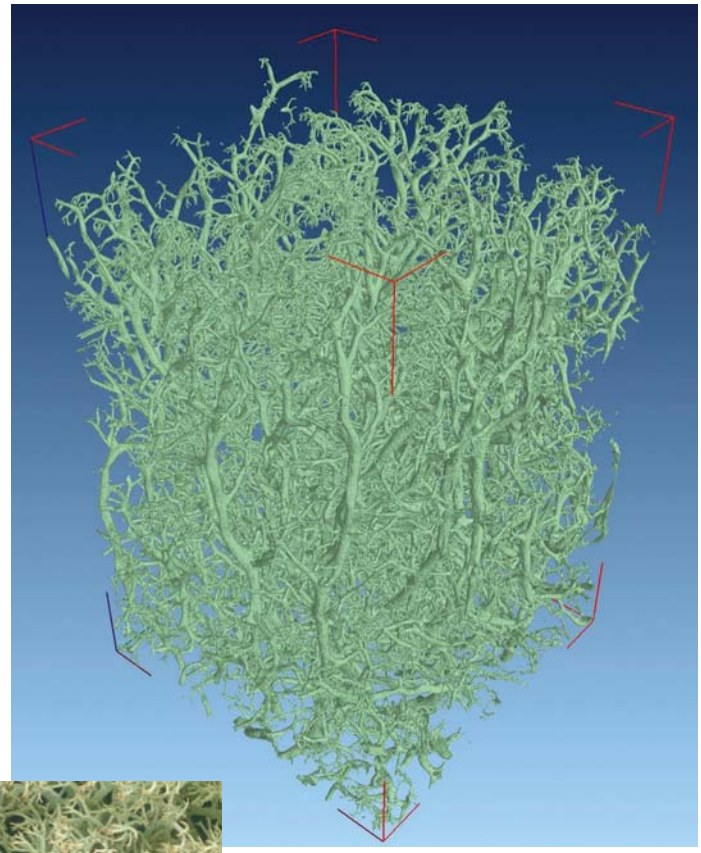


The ecology of mat-forming lichens – new vision using X-ray computed tomography

Lichens are mutualistic and intimate associations between fungi and green algae. Lichens will be familiar to many as the often colourful crusts and stains on rocks and trees in the countryside. While many lichens appear plant-like, they are more microbe than plant, and although photosynthetic, lichens lack roots and rely on rainfall and dust as sources of nutrients and water.

This new project will try to understand the key features which help make ground-dwelling lichens so abundant in the Subarctic and, for species in the genus *Cladina* in particular, among the world's most abundant fungi. Ground-dwelling mat-forming lichens such as *Cladina* species dominate large tracts of terrain in the Subarctic, often developing pure and visually spectacular ground cover. They are also locally abundant in temperate heaths and forests, lichen-rich examples of these habitats frequently being regarded as sites of high conservation value. *Cladina* produces compact multi-branched 'thalli' which resemble miniature trees. We will seek evidence that the multi-branched morphology of *Cladina* species is an adaptation for intercepting light, casting deep shade and, thus, suppressing the growth of potential competitors. This is likely to be an important factor in promoting a state of dominance in which the ground is covered by almost uninterrupted mats of lichen.

Adaptations in forest trees for optimising light interception have been described frequently, but a lack of suitable methods to visualise and make measurements within the small and densely branched thalli of *Cladina* has to date prevented similar detailed quantitative analyses of lichen mat structure and function.



3D visualisation of X-ray CT scan of the common heathland lichen Cladina portentosa *(image credit: Craig Sturrock, University of Nottingham).*

Surface view of a mat of Cladina *arbuscular.*

Cladina *dominated spruce forest near the tree-line in northern Quebec.*

X-ray computed tomography (CT) will be used to measure and analyse the three dimensional structure of lichen mats. X-ray CT produces a three-dimensional pixellated map of density within a sample; this will enable us to see into lichen mats and for the first time make accurate measurements of variables such as branch volume, surface area and length which will allow us to make estimates of canopy density and leafiness. We will compare light interception efficiencies of different mat-forming lichen species which we hope might relate to their different ecologies. Moreover, because such measurements have frequently been made in vascular plants they will enable us to compare the canopy structures of lichens and forest trees to seek evidence of parallel evolution between fungi (in lichens) and plants. We will also measure light levels in the field using a fibre optic light meter to discover how light interception in lichen mats is modified by water content and the type of sunlight (direct sunshine or diffuse cloudy conditions).

It is hoped that the use of X-ray CT will give us a new vision of this globally important group of lichens, revealing how they have adapted to exploit and dominate the soil surface habitat in nutrient poor boreal forest and tundra ecosystems.

Dr Peter D Crittenden
University of Nottingham

Colour in the 1920s: cinema and its intermedial contexts

The 1920s was a decade when debates about colour were intense concerning its cultural, scientific, philosophical and educational significance. Before the First World War, Germany dominated international colourant production, owning most of the modern dye patents and factories. During the shortages of the war, colour usage diminished, but following the break-up of Germany's chemical patents as part of war reparations, colour surged internationally as a defining aspect of culture. In the art, advertising, architecture and cinema of the jazz age, cultural fascination with colour was lively and ranged across media and disciplines.

The Glorious Adventure, *a British film that was shot with Prizmacolor in 1922 (copyright: Austin Shaw, image courtesy of the British Film Institute National Archive).*

This project aims to investigate the major spheres of colour expression in commercial and experimental motion pictures of the 1920s. Taking cinema as the galvanising focus, it will also examine colour's intermedial role in other arts – including commercial and print culture; fashion and industry; theatre and the performing arts – in order to produce a fully comprehensive, comparative and interdisciplinary study of the impact of colour during a decade of profound social, economic and cultural change. More than in any other decade, international theorists and practitioners in a variety of media were keen to invest colour with a utopian sensibility that created dynamic exchanges between media, as with Adrian Klein's writings on and experiments with abstract 'colour-music'. British printmaking was revolutionised by the influences of European avant-garde art, and filmmakers such as Walter Ruttman and Oskar Fischinger drew on this tradition as they explored multivalent approaches in the integration of colour in film. From art to advertising, the French film company Pathé collaborated with the clothing industry to produce a popular fashion newsreel genre, united by a desire to sell commodities to female consumers who dominated cinema audiences in Europe and the USA. Through cases such as these, the project will compare and contrast the ways in which colour in the 1920s was associated with modernity, mass democracy and consumer culture. It will also investigate critics who feared that colour's unregulated application might lead to social instability and the advancement of taste cultures and media considered vulgar and undesirable.

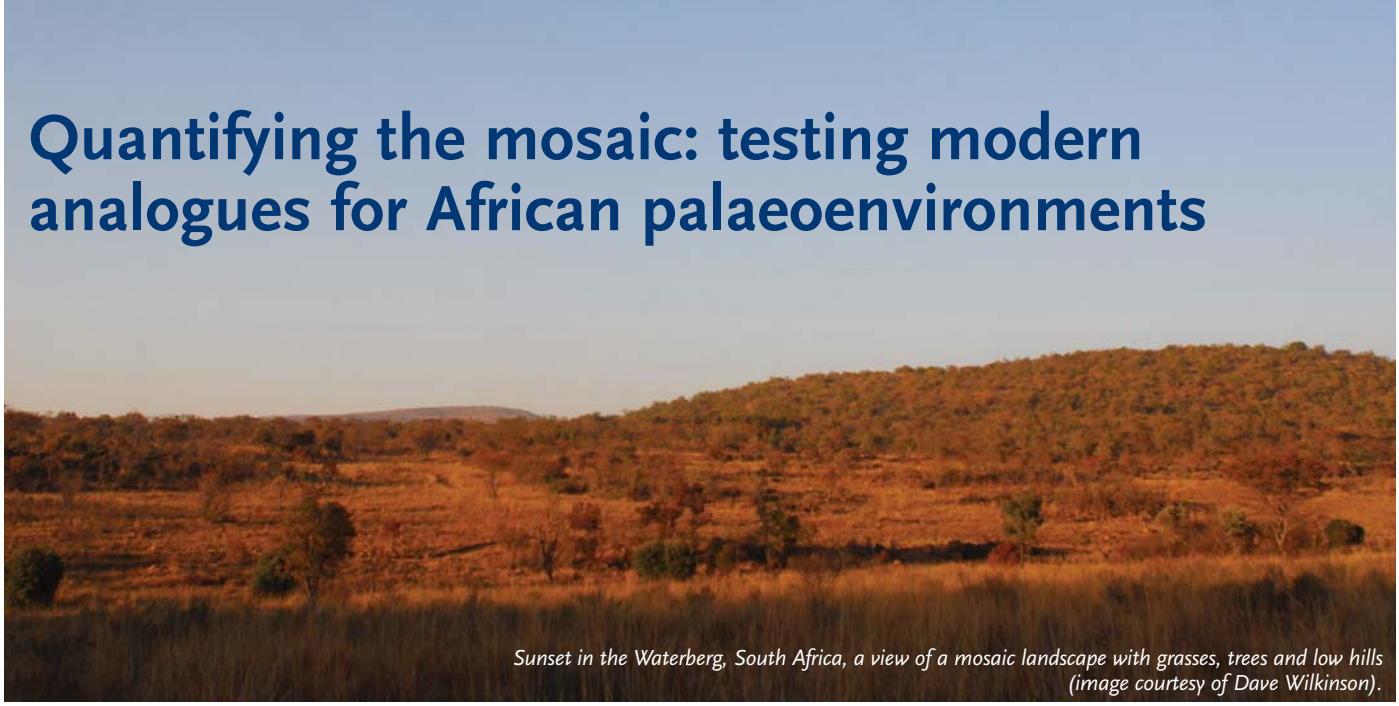
Below and cover: At the Villa Rose, *a British film released in 1920s displays colour tinting and toning (copyright: Austin Shaw, images courtesy of the British Film Institute National Archive).*

The researchers will work closely with archivists in examining surviving prints and secondary sources that document contemporary colouring practices of tinting, toning and attempts to introduce 'natural' colour. Excavating the history of colour film in this period is frustrated by the physical deterioration and loss of many key titles. To confront an historical record that is partial, we will address the methodological challenges of working with the instability of colour and attendant issues of preservation and restoration.

Surrounding motion pictures, the range of colours available for use in new consumer goods, buildings, magazines and in theatrical performances created an exciting, chromatically rich visual culture. By producing new research that integrates these various practices of colour expression, the project will facilitate an unprecedented assessment of the period. A chromatic revolution was taking place, profoundly influenced by the increasing availability of synthetic dyes and building materials, and incandescent lighting. Mapping this international colour field will demonstrate the extent to which it was forging new ways of looking at, and experiencing, the world – a history still relevant for today's digitally interlinked colour horizon.

Professor Sarah Street
University of Bristol

Quantifying the mosaic: testing modern analogues for African palaeoenvironments



Sunset in the Waterberg, South Africa, a view of a mosaic landscape with grasses, trees and low hills (image courtesy of Dave Wilkinson).

In what types of environment did our ancestors evolve? Since Charles Darwin first suggested that humans evolved in Africa, people have been fascinated by questions such as this. The environments in which early humans lived are central to our understanding of many features of their evolution, including their body shape, upright walking, and distances travelled for food and other resources.

Reconstructions of the ecology of sites where fossils of our ancestors have been found – from the earliest *Sahelanthropus* (approximately 6-7 million years ago) to archaic *Homo sapiens* (~200,000 years ago) – have often been described as 'mosaic habitats'. These are environments with a mixture of habitats such as water, grassland and wooded savannah. Yet there is no consensus amongst the scientists studying human evolution on what the term mosaic actually means, or what it might have looked like. Indeed, there has been considerable disagreement in interpretation of the environment (i.e. past levels of grasslands or tree cover) at a number of fossil human sites. In part this is because of the difficulty with terminology (a mosaic can imply different things to different researchers), but also because scientists have used various lines of evidence in reconstructing the environment. These include fossils of large or small mammals, plant remains (often rare), or the chemistry of fossils and past soils.

Our project takes a different approach that is independent of the fossils themselves. Using remote sensing data – such as modern satellite photographs – we will quantify modern African mosaics, the processes that form and maintain them and their spatial distribution, and compare these data to our knowledge of the fossil record (for example, estimated home range sizes for fossil hominins are 0.4km² to 400km²). Our aim is to use this understanding of current habitats to help interpret the past – for example, are mosaics likely to have been common? How far would an early human typically have had to walk to utilise a range of different habitat types? By defining and quantifying mosaic habitats, the project will determine whether they are likely to have been the most frequent habitat at hominin sites, either because they are the most prevalent type, or because hominins preferentially sought them out.

Alternatively mosaics may be over-represented because animals that preferred different environments have been mixed together in the fossil deposits (e.g. a forest-dwelling monkey and a plains-dwelling antelope). As African landscapes are rapidly changing in response to modern human pressures, time is of the essence in taking such an approach to understanding our evolution. Modern technology now makes large amounts of remote sensing data available for study, yet relatively natural habitats are decreasing, so now is the ideal time for a study such as this.

Dr Hannah O'Regan
Liverpool John Moores University

African elephant, Loxodonta africana*, chewing acacia branches. Elephants are a major driver of mosaic habitats through their destructive feeding behaviour, pushing down trees and converting tree-dominated environments into more open habitats (image courtesy of Dave Wilkinson).*

Biochar: an effective carbon capture method

For 800,000 years atmospheric CO_2 has fluctuated between 180-280 ppm. However, over the past century, the CO_2 concentration has been rapidly increasing to the current level of 380 ppm, and it is projected to increase further to over 450 ppm. Without human intervention, CO_2 would take thousands of years to return to the level required for sustainable human civilisation.

When organic materials are thermally decomposed in the absence of oxygen, one of the resulting products is biochar, a solid compound rich in carbon and inorganic elements. Biochar has been empirically known for over 2,000 years as a product of the conversion of biomass into a porous soil enhancer that can hold stable carbon, supply minerals, prevent nutrients leaching and water contamination and retain soil moisture. Therefore, plants synthesise organic carbon via photosynthesis and a portion of that carbon is then locked in the biochar and returned to the soil. Extensive studies of biochar-rich dark earths in the Amazonia region (*terra preta*) have led to a wider appreciation for biochar's soil enhancement properties.

Increased interest in bioenergy and bioproducts derived from the thermal conversion of biomass residues has stimulated research on the valorisation of biochar. Initial studies and field tests around the world are successfully confirming biochar's unique soil amendment properties. In addition, biochar offers a viable way to reduce CO_2 concentration in the atmosphere and presents an economical alternative to CO_2 capture and storage. Multidisciplinary research in the sustainable production and use of biochar as a long-term storage for CO_2 is still in its infancy: some of the questions which are still unresolved are, for instance, the selection of the sources of suitable biomass, the processing conditions for the production of biochar, and its effects on the soil properties and on plants and microbial species. The fundamental questions on biochar production and usage are still to be exploited at an industrial scale; consequently, despite being potentially the most effective way of capturing CO_2, basic research on biochar still needs to be undertaken by assembling a multidisciplinary network of scientists and engineers capable of tackling these complex scientific issues.

Biochar-rich dark earth from the Amazonia region.

Biochar production using pyrolysis.

The creation of this UK-Canadian network will investigate the potential of biochar as a technically and economically effective method of capturing carbon in a stabilised form while, simultaneously, increasing soil quality and thus adaptability of agriculture to climate change.

The specific key objectives of the network, among others, are to:

i. Exchange methodologies for biochar production with the aim to develop and promote best practice guidelines.
ii. Develop modelling methodologies to complement and expand on the experimental expertise in the UK and Canada.
iii. Train the young generation of researchers in the area.
iv. Create the critical mass to position the UK and Canada as the leaders in the area of biochar production, utilisation and standardisation.
v. Create a dedicated website.
vi. Raise the awareness of the public and policy makers about biochar as a sustainable option for climate change mitigation and adaptation by publicising important outcomes of the network activities (website, social media, open days with media presence etc.).

Professor Raffaella Ocone
Heriot-Watt University

Decoding the message in the words we share

Carolyn Allen, *of the Trust, reports*

A speaker's map of the mind. *The oldest words in our lexicon (largest font in image) change through history slowly enough that they might have been recognized by people living 15,000 years ago or more, younger words (small font) would not. Our ancient shared speech is dominated in all languages by social relations: you, me (I), what we do, to whom, and has been throughout our history. Based on an image created by Professor Pagel and displayed at the Serpentine Gallery in London as part of the 'Map Marathon' event in 2010.*

Languages, like species, evolve. Over thousands of years, ancestral languages have split to form daughter languages that slowly diverge as shared words, pronounciations and grammatical features mutate and are replaced by novel forms.

Striking parallels between biological and linguistic evolution, have inspired a new field of research treating words not just metaphorically but statistically and mathematically the same way as genes. Using methods drawn from phylogenetics and comparative biology to study the way that words are slowly mutating through time, scientists are uncovering fundamental factors that have influenced language evolution throughout human history.

In one of the pioneering studies using this approach, Professor Mark Pagel and his colleagues at Reading University, found that while the words for some meanings appear to be evolving relatively quickly, the words for others seem more resistant to change.

Among a sample of 87 Indo-European languages – a family of languages (including modern day English) descended from a common ancestral language that would have been spoken around 9,000 years ago – the researchers identified 45 different ways of saying 'dirty' but only a single common related word for the meaning 'two'.

Why do the words for some meanings evolve so rapidly and others only slowly? Addressing this question, Professor Pagel discovered a fundamental law of language evolution: that words vary greatly in how often we use them in everyday speech and that it is the words that we use most often that change least.

Words like *I* and *you, he* and *she, who, what, where, why* and *when,* and the number words from one to five have changed very little over thousands of years and all are used far more often than most other words.

According to Professor Pagel, this tells us something remarkable about language: "I find it astonishing that a sound may be repeated millions or billions of times over the course of centuries or millennia and yet still retain its form and its shape with such fidelity that we can trace it back more than 10,000 years," he said.

Professor Pagel and his team also demonstrated that newly established sister languages tend to go through an initial period of rapid evolution as if to establish distinct identities.

The idiosyncratic spellings of American English – dropping the 'u' from words such as honour or colour, and using 'z' in words such as realise – were actually inserted into that language overnight by Noah Webster when he introduced his American Dictionary of the English Language. This was because, Webster asserted, "as an independent nation, our honor requires us to have a system of our own, in language as well as government".

Findings from the Leverhulme Trust-funded research project suggest that such bursts of change at the time of language splitting are an important and general process in language evolution, accounting for up to 33% of the total divergence of sister languages.

Professor Pagel's work was supported by a Research Project Grant awarded in 2006, and he has since been awarded a European Research Council Advanced Investigator Award of 2,000, 000 Euros to continue the themes of language evolution developed in this project.

How do mixed race parents classify their children?

Contemporary Britain is witnessing some significant changes to its population – namely the growth of both interracial partnering and of 'mixed race' individuals. Although we await the results of the 2011 Census, demographers are predicting that a significant rise in the numbers of mixed race people in comparison with the 2001 Census, when about 1.2% of the population were counted as mixed race – a figure which was bound to be a significant undercount. Reflecting the changing demographics of Britain, and the demands for recognition by mixed race individuals (and by the parents of mixed race children), 'Mixed' categories appeared (for the first time) as a possible choice in the 2001 England and Wales Census (and again in the 2011 Census). However, not all mixed race people (by parentage) actually *identify* themselves in this way, suggesting that people's choices and decisions about these matters can be highly subjective and context-specific. The experiences of mixed race people are highly diverse, and thus difficult to generalise, but there is increasing evidence of mixed race identifications in Britain and the US.

Accompanying the marked growth in interethnic relationships and the number of mixed race people in Britain, many adult mixed race individuals are or will have become parents themselves – prompting the fascinating question of how they, as parents, think about the racial identification of their own children. Becoming a parent is a major life transition, and this experience can engender questions about one's ancestry and the 'right' socialisation and classification of children: how will mixed race parents (as opposed to non-mixed race parents in interracial relationships) racially identify their children and what may such decisions bode for the future significance of racial boundaries and identities in Britain?

Are mixed race parents in Britain adopting post-racial attitudes and practices about the racial classification of their children, or is there evidence of intergenerational transmission of racial thinking and racial identification in these households? While there has been growing research attention to mixed race children and young people in Britain, very little is still known about how mixed race parents racially classify and socialise their own children. How do such parents make these decisions, and what do they mean in practice? How do mixed race parents identify themselves, and is a mixed race identity something that such parents wish to transmit to their children? This exploratory study investigates the ways in which *mixed race parents* think about and communicate ideas and practices concerning racial identities and racial difference, and is suggestive of how they foster their children's sense of belonging in the wider society. In order to investigate these questions, in-depth interviews will be used with a variety of disparate types of mixed race parents in both urban and suburban contexts in the southeast of the UK.

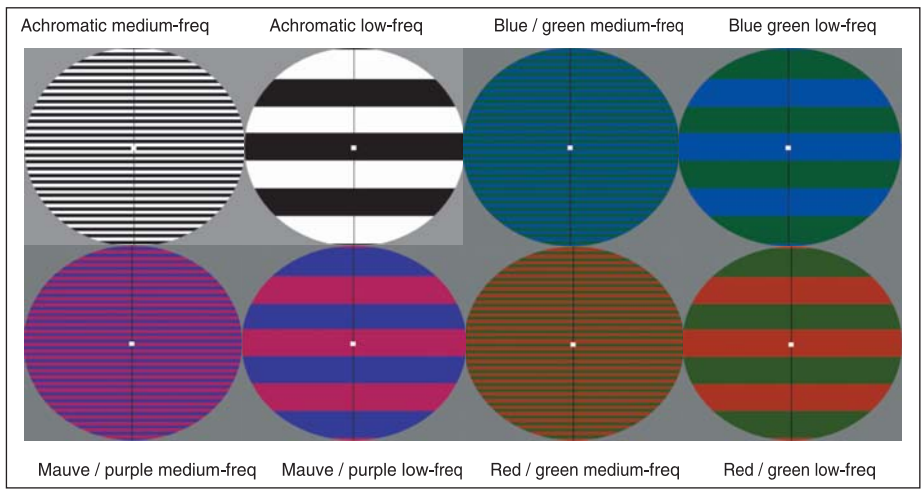
Professor Miri Song
University of Kent

Cortical hyperexcitability and hallucinations in the non-clinical population

In stark contrast to popular belief, hallucinations and anomalous experiences are not restricted to the confines of psychopathology and psychiatry. Large sections of the non-clinical and psychologically healthy population report striking and often disturbing hallucinations. One such example is the 'out-of-body' experience (OBE) where a person reports perceiving the world from a vantage point outside the physical body. These experiences are described as being extremely vivid – with all the perceptual qualities of veridical perception. A common scientific view is that such striking hallucinations reflect a temporary disturbance in specific neuroelectrical processes in the brain that can impact on how the brain constructs and processes the body-image, 'the self' and embodiment. However, the majority of published examples are based on observations from neurological patients who, for whatever reason, are known to display quite severe abnormalities in neural function. In addition, of the research that has been carried out on non-clinical samples, it is almost uniquely reliant on subject questionnaire-based research. As a consequence of these observations, our understanding of these hallucinations in non-clinical samples, and the underlying predispositions to experience them, remains incomplete.

This study seeks to provide a detailed investigation of the relationship between cortical hyperexcitability and visual out-of-body hallucinations in non-clinical individuals. Of particular interest is whether the brains of 'healthy hallucinators' do display signs of increased cortical hyperexcitability – a factor known to underlie anomalous perceptions in clinical samples. To bridge the explanatory gap between neurological studies and non-clinical investigations, the current project will employ a more objective task where observers will be required to view a series of striped discs on a computer screen that vary in terms of the density of the stripes (known as spatial frequency). Gratings with a medium spatial frequency are known to be uncomfortable/irritable to look at, and can induce a host of visual distortions and illusions in certain observers – who also display an increased predisposition to report visual hallucinations. The illusions reported correlate with the degree of visual discomfort and both are now thought to reflect increased cortical hyperexcitability in neuronally vulnerable populations.

I will examine whether such indicators are present in non-clinical visual hallucinating populations and as such, may reflect an underlying neuronal vulnerability leading to disruptions in brain processing and visual hallucination. In addition, the present study will also employ concurrent objective physiological measures of emotional arousal to viewing certain visual stimuli and non-invasive brain stimulation methods where the excitability of the cortex of observers can be either increased or decreased depending on the experimental condition. Two crucial predictions are that hallucinators would show stronger emotional responses to the presentation of certain striped discs (relative to baseline discs) and that due to a reduced role for inhibitory regulation in the brains of hallucinators, it may well be more difficult to inhibit the visual cortex of a brain that is itself hyperexcitable. These approaches significantly extend typical questionnaire methods and provide a more objective assessment of biases in the brain which could also be employed for clinical and psychotic samples, with wide reaching implications for mental health and well-being.



Examples of the stimuli to be employed in the project. Medium frequency gratings are more uncomfortable to look at, and induce more visual illusions/distortions (shimmering, flickering, etc) relative to baseline (low and high frequency) stimuli. This effect is magnified in hallucinators, such as people who experience OBEs. Note, high-frequency stimuli will also be employed, but it is not possibly to faithfully represent them here.

Dr Jason J Braithwaite
University of Birmingham

Grants awarded by the Board at their March 2012 meeting

Research Project Grants

Sciences

Professor Nabeel Affara *University of Cambridge*	Control of offspring sex ratio by spermatid genes that evade transcript sharing	£244,745
Dr Andrey Abramov *University College London*	Novel properties of phylogenetically ancient molecule in the mammalian cells	£189,202
Dr Jason Smith *University of Oxford*	Tunable microcavities for sensing in the physical and biological sciences	£227,833
Professor Darren G Crowdy *Imperial College London*	"Holey" optical fibre (MOF) fabrication: towards a mathematical model	£242,640
Dr Jonathan Rossiter *University of Bristol*	A robot that decomposes: towards biodegradable robotic organisms	£209,558
Dr Hannah O'Regan *Liverpool John Moores University*	Quantifying the mosaic: testing modern analogues for African palaeoenvironments	£222,780
Dr Nick Lane *University College London*	A far-from-equilibrium reactor to investigate the origin of life	£248,883
Professor Marcel Jaspars *University of Aberdeen*	Natural product nanotechnology: engineering natural products for new uses	£218,274
Dr Kay Grünewald *University of Oxford*	Polysomes in cells – the society of ribosomes	£250,000
Professor Alexander Ruban *Queen Mary, University of London*	Photosynthetic light harvesting in natural and artificial membranes	£176,412
Professor Michael Krom *University of Leeds*	Understanding the delivery of phosphorus nutrient to the oceans	£170,558
Professor John Goodby *University of York*	Microsponges derived from plant spores in novel materials applications	£189,710
Dr Terence P Kee *University of Leeds*	A novel chemoton model for the emergence of self-maintaining systems	£166,816
Dr Richard Layfield *University of Manchester*	Selective functionalisation of pentadienylsilanes	£144,971
Professor Dek Woolfson *University of Bristol*	The design, assembly and functionalisation of peptide nanotubes	£143,611
Professor Robert Upstill-Goddard *Newcastle University*	What is the surfactant control of air-sea gas exchange across contrasting biogeochemical regimes?	£138,544
Dr Mark Williams *University of Leicester*	Pioneer ostracod zooplankton	£153,981
Dr Jason Braithwaite *University of Birmingham*	Cortical hyperexcitability and the out-of-body experience (OBE)	£125,634
Dr Gabriel Barrenechea *University of Strathclyde*	Minimal stabilisation procedures on anisotropic meshes and nonlinear schemes	£188,037
Professor David Andrews *University of East Anglia*	Electrodynamics of optically coupled and activated nanoparticles	£140,424
Dr Dmitry Skryabin *University of Bath*	Nonlinear photonics of microcavity polaritons in periodic structures	£156,936
Dr P D Crittenden *University of Nottingham*	The ecology of mat-forming lichens – new vision using X-ray computed tomography	£136,299
Dr Joseph Jackson *Aberystwyth University*	Thermal variation and immunity in ectothermic vertebrates	£242,019
Dr Steven Cobb *Durham University*	The development of 19F-NMR as a tool for analysing steroid degradation in active urine samples	£68,268
Professor Eric Barnard *University of Cambridge*	Assemblies and migrations of native P2Y ATP-receptors in developing brain	£74,598
Dr Chris Hamilton *University of East Anglia*	Methods for analysing 'invisible' cellular disulfides	£114,770
Dr Binod Sreenivasan *Coventry University*	Experimental simulation of magnetoconvection in the Earth's tangent cylinder	£91,997
Professor Simon Bottrell *University of Leeds*	Validating models for microbial colonisation and function in the subsurface	£109,839
Professor Fred Diamond *King's College London*	Langlands correspondences for GL(2) in finite characteristic	£113,091

Humanities

Dr Eleni Asouti *University of Liverpool*	'Unfamiliar landscapes': from foraging to farming in central Anatolia, Turkey	£231,948
Professor Hugh Kennedy *SOAS, University of London*	Bridging religious difference in a multicultural Eastern Mediterranean society	£256,693
Professor Philip Torr *Oxford Brookes University*	Structured models for natural language description of scenes	£218,981
Professor Jim Davis *University of Warwick*	British-Australian cultural exchange: live performance 1880-1960	£131,343
Professor Ben Rampton *King's College London*	Crossing languages & borders: intercultural language education in a conflict-ridden context	£151,303
Professor Peter Barry *Aberystwyth University*	Devolved voices: Welsh poetry in English since 1997	£232,042
Dr Richard Reid *SOAS, University of London*	Endangered histories: the role of the deep past in the making of modern Uganda	£235,820
Professor Christopher Wickham *University of Oxford*	The South Oxfordshire project: perceptions of landscape, settlement and society c.500-1650	£261,176
Professor Sarah C J Street *University of Bristol*	Colour in the 1920s: cinema and its intermedial contexts	£246,243
Professor Neil Bermel *University of Sheffield*	Acceptability and forced-choice judgments in the study of linguistic variation	£130,676
Dr Peter Garrard *St George's, University of London*	A 'semantic space' to analyse content and coherence in 18th century writing	£105,082

Social Sciencies

Professor Hazel Johnson *Open University*	Understanding rural co-operative resilience in Uganda: a pilot study	£113,257
Dr Barbara Bompani *University of Edinburgh*	"I have cursed you all": sexuality, religion and politics in Africa	£79,411
Professor Vera Kempe *University of Abertay Dundee*	When do dialects become languages? Let the human cognitive system decide	£67,897
Dr Mark Tarrant *University of Exeter*	Using social identity to promote psychological well-being and reduce maladaptive eating amongst morbidly obese people	£86,283
Professor Jonathan Tonge *University of Liverpool*	A membership survey of the Democratic Unionist Party in Northern Ireland	£88,296
Professor Miri Song *University of Kent*	Mixed race parents' racial classification of their children	£113,479

International Networks

Sciences

Professor Raffaella Ocone *Heriot-Watt University*	Biochar: an effective carbon capture method	£105,056

Humanities

Dr Máire Ní Mhaonaigh *University of Cambridge*	'Converting the Isles': conversion to Christianity in the insular world	£50,961
Dr David Lines *University of Warwick*	Renaissance conflict and rivalries: cultural polemics in Europe, c. 1300–c. 1650	£56,354
Dr Kate Fletcher *University of the Arts London*	Local wisdom: post growth fashion and a user's craft	£124,735

Social Sciences

Professor Neil Anderson *Brunel University*	Innovation at work: psychological well-being, processes and outcomes	£89,325
Professor Simon Joss *University of Westminster*	Tomorrow's city today – an international comparison of eco-city frameworks	£115,396

Arts Portfolio

Ms Judith Robinson *National Youth Jazz Collective*	NYJC Summer School Bursaries	£46,118
Mr Wayne Eagling *English National Ballet*	Apprenticeship scheme	£114,520
Mr Andrew Quartermain *Pro Corda Trust*	Chamber Music Training Fellowships	£31,520