

OXFORD
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RESEARCH FORUM

The magazine for Oxford Brookes research | Spring 2015



Human trafficking

Tackling major challenges
of the 21st Century

PLUS EXPLORING NEW GARDEN CITIES | 3D MICROSCOPY

Contents

4 REF 2014 results

Research excellence continues to grow

6 Research News

Cover story

10 Challenges of the 21st century

Professor Simonetta Manfredi reveals Oxford Brookes' research into human trafficking and women in leadership roles

12 Never Ending Games

Exploring Tokyo's Olympic preparations with Professor John Gold, Department of Social Sciences

14 How will the gardens grow?

Where the garden cities idea came from and its impact on the UK housing crisis

16 Rescuing opera from stereotypes

Misconceptions about opera are preventing it reaching new audiences, as Dr Alexandra Wilson, Reader in Musicology explains

18 In your hands: the 3D world of micro-organisms

How 3D models of microscopic organisms are changing understanding of the natural world

This issue and back copies of *Research Forum* are available at www.brookes.ac.uk/about/publications/research

4 REF 2014



12



Hello and welcome...

"I am honoured to be leading on research and knowledge exchange at the University. Alistair really championed our thriving research community, so I look forward to continuing his good work and furthering the University's research agenda."

...to the latest edition of *Research Forum*, the magazine showcasing research excellence at Oxford Brookes University.

I am the Interim Pro Vice Chancellor for Research and Knowledge Exchange at Oxford Brookes, taking on the role from Professor Alistair Fitt who became our new Vice Chancellor in January.

I am honoured to be leading on research and knowledge exchange at the University. Alistair really championed our thriving research community, so I look forward to continuing his good work and furthering the University's research agenda.

We had a fantastic end to 2014 with the results of the Research Excellence Framework (REF) submission which judged 94 per cent of Brookes' research as 'internationally recognised'. You can find out more about the results on pages 4-5.

What the REF 2014 results demonstrate is the true impact of research in the UK and around the world.

In this edition we lead with how Oxford Brookes' research is helping tackle some of the major challenges of the 21st Century. We also delve into the 3D world of microscopy and gain an insight into Tokyo's preparations for the 2020 Olympics.

With the Oxfordshire town of Bicester announced as the Government's second garden city last year, we explore how the original idea began in the 1900s. We also find out how a musicology expert is helping to rescue opera from stereotypes.

I hope you enjoy reading this edition of *Research Forum* and as always we welcome your comments and suggestions, so please get in touch via researchforum@brookes.ac.uk

Professor Linda King
Interim Pro Vice Chancellor,
Research and Knowledge Exchange

Research Forum, the research magazine of Oxford Brookes University, is published twice a year.

Contributions are welcome from all sections of the University and should be sent to

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REF 2014

Research excellence continues to grow

Oxford Brookes' well-established and growing international reputation for research was confirmed with the publication of the Research Excellence Framework (REF) 2014 results.

How did Oxford Brookes do?

300

We submitted research from around 300 researchers which is a far greater number than in any previous research excellence process.

94%

of our research is internationally recognised. This compares to 78% in 2008.

59%

of our research is 'world leading' quality or 'internationally excellent'. This compares to 36% in 2008.

Built Environment and **History** continued to be areas of research expertise. From REF 2014, Oxford Brookes is also seeing emerging research power in: **Biology, Engineering, Music, English, Business**

Following Oxford Brookes' success in the REF 2014 results, our research funding increased by **41%** in March when the Higher Education Funding Council for England (HEFCE) announced their funding allocations for 2015-16. This is compared to a 3% rise across the sector.

What is the REF?

The REF is the system for assessing the quality of research in UK higher education institutions and replaced the Research Assessment Exercise (RAE) which was last conducted in 2008. The results of how Universities performed were published in December 2014.



"Oxford Brookes' REF 2014 results are a reflection of the expertise and confidence of researchers from across the University. The results demonstrate the real difference that research at Oxford Brookes is having on the wider world. We are justly proud of our thriving research community and these results are testament to the hard work of world-leading experts at the University."

Professor Alistair Fitt, Vice Chancellor

Making an impact

REF 2014 introduced a particular focus on 'impact' or research that demonstrates wider impact beyond academia. Oxford Brookes submitted over 40 case studies which demonstrated specific impact that has been underpinned by excellent research.

The impact case studies cover a diverse mix of research and a selection have been developed into articles which can be read on the University's REF 2014 webpages.

These range from research shaping the legacy of London 2012, influencing counter-terrorism policy, helping to develop greater equality in the workplace and reducing the environmental impact of buildings.



Read more on Oxford Brookes' REF 2014 performance on our research webpages at www.brookes.ac.uk/research/ref-2014/

RESEARCH NEWS



New facilities for the biosciences

An award of £4.1 million has been made by the Higher Education Funding Council for England for Brookes to invest in new facilities for the biosciences.

The investment, which will be matched by Brookes, was part of a Government initiative to develop STEM subjects (science, technology, engineering and mathematics) across universities in the UK. The funding will provide industry-standard laboratories and cutting edge equipment to help build on Brookes' already successful bioscience programmes and increase the opportunities for students to prepare for employment in the bioscience sector.

£4.1 million

award by HEFCE for Oxford Brookes to invest in new facilities for biosciences

Doctoral Training Partnerships funded for future bioscientists

Oxford Brookes has partnered with the University of Oxford, the Pirbright Institute, Diamond Light Source, STFC Central Laser Facility and the ISIS Neutron Source in a £12.5 million Doctoral Training Programme.

The funding will support bioscience students, equipping them with the skills to tackle major global issues such as the growing demand for food, reducing dependency on fossil fuels and the transforming of industries to become more economically and environmentally sustainable. The programme will train research students to the level of PhD (doctorate) as part of a group undertaking a year of high-level intensive training followed by three years in some of the world's most technically advanced facilities.

Brookes aims to get 'Every Student Published' in a UK first

Oxford Brookes is set to be the first UK institution to enable undergraduate students to publish their research findings while studying at Brookes.

The *Every Student Published* project is about students shaping their experience, developing as professionals and preparing to make a constructive contribution to society through sharing knowledge and expertise.

Dr Louise Grisoni, Associate Dean for Research and Knowledge Exchange in the Faculty of Business, said: "We have thousands of students creating research that is currently not shared widely either with each other, across disciplines, with our local community or beyond the institution. "This project will allow students to collaborate in a research community as producers of knowledge and become more effectively engaged in the academic life of the University.

"The project will also ensure that students are supported in their preparation for careers and it will ensure that Brookes graduates stand out from the crowd in competitive, international job markets."

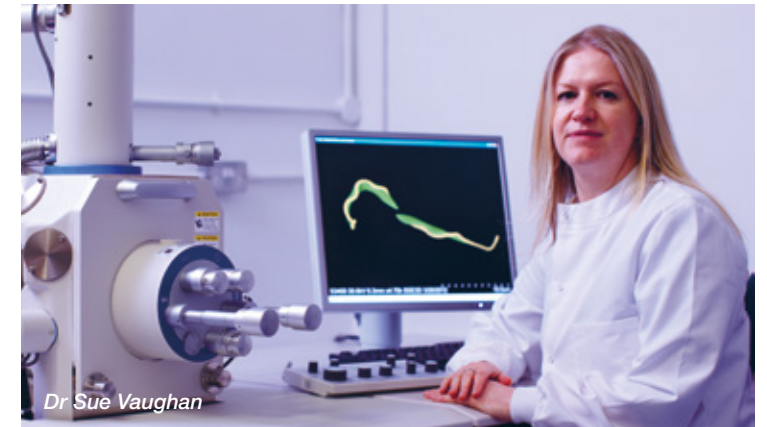
The research materials produced in this project will be held in the first dedicated undergraduate research repository in the UK, housed within the University's Research Archive and Digital Assets Repository (RADAR)..

Chimpanzees under threat as research shows change in eating habits

Brookes researchers Dr Matthew McLennan and Dr Kimberley Hockings and the Centre for Research in Anthropology in Lisbon have discovered that wild chimpanzees will adapt their eating habits when exposed to agricultural crops grown by humans and incorporate those crops into their diet.

Great ape populations are already declining rapidly in tropical Africa and with chimps coming onto farmland and villages it is increasing the risk to their numbers. Chimps coming into close proximity to people and livestock are more likely to contract diseases, enter into hostile situations with people or get caught in snares or traps farmers use to protect their crops.

Further observations have shown that chimpanzees will plant their own crops by eating cocoa pulp and either spitting out the seeds or swallowing them whole and depositing them later in faeces. This research begins to highlight the complex ecological interconnections between humans and primates.



Dr Sue Vaughan

Brookes maintains role as lead of UK microscopy

Dr Sue Vaughan has been awarded £472,200 by the Biotechnology and Biological Sciences Research Council for her project to develop novel electron microscopy technologies to understand the three dimensional ultra-structural organisation of basal body biogenesis. This part of the cell is responsible for assembling a structure called a cilium or flagellum, which facilitates movement in some cells such as sperm cells.

This project will use scanning electron microscopy technology to answer some fundamental questions in basal body/centriole biology, as well as maintaining Oxford Brookes' role as a leading centre of microscopy in the UK.

Cycle Boom update

Cycle BOOM has now reached the half-way point of the three year project which researches cycling among the older population.

The project team has studied 120 participants aged 50 plus, across three cohorts: those who have stopped cycling completely, those who have begun to cycle again and those who have continued to cycle into older age.

Overall, the project aims to advise government policy makers about how infrastructure in cities can be built and adapted to support cyclists and champion active ageing; something that, with the population living longer, the government is keen to support.

Last year, the team completed two case studies in Europe where the notion of older people cycling is on the increase.

Between April and June 2014, Cycle BOOM travelled to Munich and Seville on a fact finding

mission to help them address the design of a built environment and technology to support older people's cycling mobility and wellbeing in the UK.

Munich was selected because of the role government leadership has played supporting urban cycling via interventions such as infrastructure planning and pro-cycling publicity campaigns.

This was identified as key in determining the level of support for these interventions; however there are concerns that recent changes within the city governments might see a reduced focus on cycling in the future.

In Seville, cycle use has increased 10 fold from 2006 until 2010. The team studied how urban planners and designers had delivered an extensive cycle network in a city that has the largest walled old town in Europe.



Exploring experiences of Nazi medical experiments

Dr Paul Weindling, Research Professor in the History of Medicine, has been awarded 250,000 Euro from the Alexander von Humboldt Foundation in recognition of his outstanding achievements in academic research around the history of medicine. Dr Weindling, who works in Oxford Brookes' Department of History, Philosophy and Religion, will lead a collaborative research team to explore the life histories and experiences of victims of the Nazi medical experiments, German eugenics and racial research and he will develop an international network to study the Nazi persecution of medical practitioners and how they contributed to the development of health care in newly adopted countries.

Oxford Brookes researchers involved in the largest ever prostate cancer study

Researchers at Oxford Brookes are playing a key role in a pioneering £2.2 million research project named *Life after prostate cancer diagnosis*, funded by the Movember Foundation in partnership with Prostate Cancer UK.

In this largest study of its kind in the UK, researchers will analyse the experiences of more than 100,000 men who have been diagnosed with prostate cancer between one and three years ago. They aim to study the impact of a diagnosis on a man's daily life and work out the factors which can lead to poorer outcomes for some.

The results will help shape future improvements to prostate cancer care.

The project is led by Dr Adam Glaser at the University of Leeds, and Dr Anna Gavin at Queen's University Belfast. Researchers from the University of Southampton and Public Health England are also involved.



Groundbreaking Magic Camp helps children with hemiplegia

Oxford Brookes has undertaken life changing research with Breathe Arts Health Research to help young children with hemiplegia improve their motor skills and boost their confidence.

Research students and staff worked with occupational therapists and magicians from the Magic Circle to create an innovative two week magic camp for children suffering from the paralysing condition.

The camp is designed to help children by practicing specially formulated magic tricks to build strength and increase independence required to perform everyday tasks.

The programme is recognised as a new clinical service by the NHS and receives multi-year funding from NHS Lambeth. Both NHS Wandsworth and NHS West Kent have also backed the scheme.

Research findings of business management practices published



Recent research by a team of investigators from Oxford Brookes, University of Bristol and University of Sydney has found that there is an increasing trend of managers adopting practices normally associated with management consultants. Dr Nick Wylie from the Department of Business and Management at Oxford Brookes said: "This means rather than having a fixed role within traditional hierarchies these managers work across organisations on change projects and treat other managers as clients rather than colleagues." The research findings are available in a book titled *Management as Consultancy* by Andrew Sturdy, Christopher Wright and Nick Wylie (published by Cambridge University Press).

Researchers undertake religion and beliefs project for Equality and Human Rights Commission

Professors from Oxford Brookes' School of Law have won the tender to carry out a project for the Equality and Human Rights Commission (EHRC). Professors Peter Edge and Lucy Vickers will review the interpretation and effectiveness of equality and human rights law relating to religion or belief.

This project forms part of a wide ranging project by the EHRC looking to strengthen understanding of religion and belief in public life. The project has involved holding four workshops – one at Oxford Brookes, two at Kings'

College London and one at Edinburgh University. These have been attended by academics, policy makers and stakeholders from various religion and belief organisations. A project report will include a review of the relevant literature, as well as drawing on the findings of the workshops and the EHRC's recent call for evidence on religion and belief in public life.

The EHRC will use the report to help it determine its future strategy, as regards religion and belief which is due to be published this year.



ESRC to fund research on crime prevention

Dr David Botterill, Senior Research Fellow at Oxford Brookes, has secured £40,000 from the Economic and Social Research Council to fund a twelve month research project titled *Urban Coastal Transformations: Promoting transnational policy development in the governance of environmental policy and crime reduction*.

The study will focus on two urban coastal communities – one in South Wales, UK, the other in the North Coast region of Sao Paulo State, Brazil. Both have seen rapid and significant change in economic activity from heavy industry to services, including tourism.

The research will involve a comparative analysis of best practice in environmental management and crime reduction to inform future policy making. It will also form the basis of a planned international study of sustainable urban coastal development scheduled for 2016.

Dr Botterill's co-researchers are from Cardiff University and the University of Reading, as well as the State University of Campinas and FAAT College, both in Brazil.

Leverhulme Trust awards for Global Science Space network

The Leverhulme Trust has awarded funding of £118,000 to international network Global Science Spaces. Headed up by David Valler from the Department of Planning at Oxford Brookes, the network seeks to understand the diversity of key science spaces around the world.

David Valler said: "There are magnificent spaces around the globe which have been built to accommodate science and research. As well as serving a functional purpose, the buildings are architecturally interesting and they provide strong cultural influences and technological powers of persuasion for the countries they belong to.

"We are seeking to understand these hybrid buildings by looking at various case studies internationally throughout the project."

The project began in September 2014 and will run until March 2017.

"We are seeking to understand these hybrid buildings by looking at various case studies internationally throughout the project."

The Centre for Diversity Policy Research and Practice (CDPRP) at Oxford Brookes recently celebrated its ten year anniversary. Centre Director **Professor Simonetta Manfredi** reveals how they're tackling some of the major challenges of the 21st century.

Challenges of the 21st century

From trafficking of human beings (THB) to increasing women's representation in leadership roles, much of the work I am involved in relates to issues affecting society both in the UK and internationally.

THB is a serious and increasingly dramatic phenomenon. It is particularly prominent in Central and South Eastern Europe but is also rising in Western Europe. A significant proportion of trafficking is undertaken through travel and tourism businesses, for example travel agencies, airlines and hotels which, by their nature, facilitate the movement and accommodation of traffickers and their victims.

International and European measures have been introduced to combat this crime. However, although a solid legal and policy framework has been established, including the introduction by the UK coalition government of a Modern Slavery Bill, THB is assuming worrying dimensions to the point of being considered as the 'slavery of our times'.

I am currently leading a consortium of academic and industry partners working on a project aiming to develop measures for combating human trafficking in the tourism industry. The consortium includes Oxford Brookes colleagues, Kate Clayton-Hathway, researcher and PhD student at the Centre, Dr Maureen Brookes from the Oxford School of Hospitality Management and Dr Sonia Morano-Foadi from the School of Law. Research teams from the University of West London, Lapland University of Applied Sciences and the Ratiu Centre for Democracy in Romania are also involved.

The project, called COMBAT, aims to study THB from a multidisciplinary and transnational perspective. It is

supported with funding of £250,000 by the EC Directorate of Home Affairs under the Internal Security Fund's targeted call for Trafficking of Human Beings and will be completed in August 2016.

Other aims include developing a comprehensive training toolkit for businesses in the tourism and hospitality sector to assist them in setting up company-wide policies and procedures to identify, deter and prevent trafficking.

In a blog published by the UK Foreign Office in January this year *On Invisible Slaves and Involuntary Slave Masters* the project was singled out as an example of how the UK and Romania are working together to combat human trafficking. Cooperation like this, between universities and industry is vital to fighting this terrible crime.

Closing the gender gap is another area where higher education and employers can do more to affect real change.

In spite of decades of equality legislation women are still significantly under-represented in senior leadership roles across all sectors. This includes the higher education sector where only 21 per cent of Vice-Chancellors and Principals are women.

Last year the CDPRP conducted research jointly funded by the Leadership Foundation for Higher Education and Equality Challenge Unit to investigate gender and other diversity issues among senior managers and leaders in higher education.

The findings from this study, which I undertook along with Dr Louise Grisoni and Dr Karen Handley from the Faculty of Business at Oxford Brookes, highlighted that women are more likely than men to have experienced gender bias in their careers.

The research also provides a set of recommendations to help higher education institutions increase gender diversity in senior leadership roles, including the adoption of targets and the introduction of a code of conduct. I recently discussed this in an article published by the *Times Higher Education* in January entitled *Leadership goal more women and the top*.

The work we have undertaken in this area is very timely. For example the letter sent in January this year by the Department of Business Innovation and Skills (BIS) to the Chair of HEFCE, concerning higher education funding, noted that "currently only one Vice-Chancellor in five is female" and makes it clear that the sector "should do more to seek out and harness the diverse talent available".

The work of the centre will continue to provide expert research and guidance for issues which unfortunately continue to be significant challenges in 21st century life.

WHAT IS CDPRP?

CDPRP brings together academic and management expertise from the University's Faculty of Business, the School of Law and the Directorate of Human Resources to undertake policy-oriented research in the area of equality and diversity with a focus on the workplace.

Since 2004 the centre has carried out several projects funded by a range of bodies including the European Social Fund, the former Department of Trade and Industry, the Higher Education Funding Council, the Equality Challenge Unit, the Leadership Foundation for Higher Education and the European Commission.

More information about the CDPRP is available on our website here:
<http://www.brookes.ac.uk/services/hr/cdprp/>

Read an article on Professor Simonetta Manfredi's research on developing policy for greater workplace equality as part of Oxford Brookes' Research Excellence Framework webpages at www.brookes.ac.uk/research/ref-2014/



Co-funded by the Prevention and Fight against Crime Programme of the European Union

A view of Tokyo, the world's largest city



Never Ending Games

Professor John Gold, Professor in the Department of Social Sciences and a leading authority on the Olympics, on Tokyo's preparations for the 2020 Games.

I am not the best person to ask if you are thinking of placing a bet on the likely host city for the next Olympics. For many years I have studied the historical relationship between the Olympic movement and its host cities and can readily testify to the complexities and uncertainties of nomination.

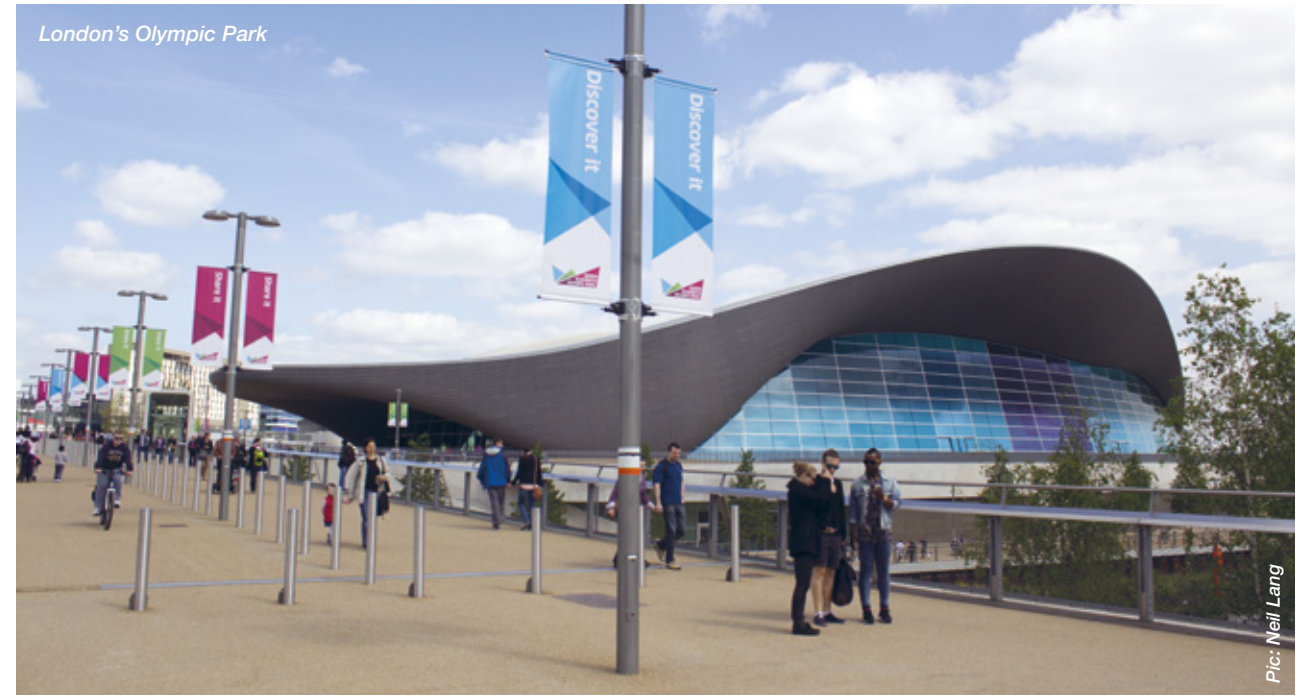
For example, I believed Paris was certain to gain the 2012 Summer Games. I regarded Chicago as a shoe-in for 2016. My record, though, improved slightly with respect to 2020.

Initially I thought that the International Olympic Committee (IOC) might be swayed by Istanbul's symbolism as the point where East meets West and its pragmatic appeal as being somewhere that could satisfy demands to offer the Games to a city in the Islamic world. However, political difficulties meant that the final stages of the campaign went badly for Istanbul, making Tokyo seem like a safer option.

For their part, the Japanese helped their cause by crafting a bid that fully incorporated the IOC's known preferences, particularly for compactness and for legacy.

Briefly summarised, the bid proposed situating 28 of the 33 competition venues within the city's boundaries in two loosely-defined zones. One, the Tokyo Bay Zone, offered the possibility of building substantial numbers of new venues, including the Athletes' Village,

London's Olympic Park



on waterfront land that could be requisitioned or reclaimed.

The other, the Heritage Zone, sought to capitalise on physical legacy of the earlier Games. Notably the Kasumigaoka National Stadium, the Olympic stadium from 1964, would be rebuilt as the equivalent for 2020. The bid stressed integration of the Olympic projects into overall city planning and promised a rich legacy in terms of improvements to infrastructure and the urban fabric.

Tokyo's comfortable success at the IOC's selection meeting in September 2013 set in train the long-term trajectory by which the Games are prepared, staged and their aftermath managed. It is also a process that thus far I have been fortunate enough to witness first-hand.

My initial contacts with members of the Tokyo team came in June 2012 when I was invited to act as discussant at a symposium on the 2020 bid organised in London by the Japan Foundation. At this time, their scheme was clearly still evolving.

Although the two Zones had emerged with the strong emphasis on compact clusters of venues, there was still discussion on issues such as the location of the main stadium and its relationship to a putative Olympic Park.

My commentary emphasised Tokyo's enduring reputation as a city that pioneered approaches to deploying the Games in support of wider urban

development goals and the hope that this new venture would be matched by distinctively Japanese innovations in stadium design and site plan.

Further contacts over the next two years led to the development of shared projects, an invitation to visit Tokyo in January this year, and subsequently to maintain annual contact through an invited visiting position at Meiji University (through which I hope to see matters through to 2020). The essence of these contacts is comparative analysis.

London 2012 is regarded as far more of a role model for Tokyo than the emerging Games in Rio de Janeiro and identification of similarities are inescapable. I first toured the future Games sites for London 2012 in early 2007, around five-and-a-half years in advance of the event. Perhaps not surprisingly, given the comparable timing until the start of Tokyo's Games in July 2020, the situation on the ground was at precisely the same stage.

Property purchase is being negotiated. Design competitions are being planned for venues. The Kasumigaoka stadium has been gutted but still awaits demolition. The Tokyo equivalent of London's 'blue wall', the barrier placed around the main Olympic Park, is surely on its way.

By contrast, some things are very different. London's decision to place the Olympic Village in close proximity to the main stadium removed

the logistical problems of getting competitors to events since they could walk there.

That will not be the case in Tokyo where, for example, the eight kilometre journey to the main stadium will need to take into account ways to avoid the city's legendary traffic congestion. Discussion about security is less intense than for London, overshadowed from the outset by the 7/7 bombings. Concern about the summer heat, especially during the staging of the Paralympics in August, is far more acute.

Differences, though, are inevitable. The Olympic movement chooses new host cities for either Summer or Winter Games every two years. This never-ending cycle constantly creates new precedents, agendas and challenges. It is an essential part of what makes research on Olympic cities so endlessly fascinating.

Read an article on Professor John Gold's research on the legacy of the 2012 Olympic Games on Oxford Brookes' Research Excellence Framework webpages at www.brookes.ac.uk/research/ref-2014/

How will the gardens grow?

Exploring new garden cities

At the end of 2014 the Oxfordshire town of Bicester was officially announced as the Government's second new garden city with plans for up to 13,000 new homes. **Professor Stephen V Ward**, Department of Planning, explores the original ethos behind garden cities first established in the early 1900s and questions whether the old ideals will stay strong against the demands of the UK housing crisis.

You might have read the media reports when Bicester was revealed as a 'new garden city'. You might even recall that Ebbsfleet in Kent was last year launched by Chancellor George Osborne as the first of these. Given the recent mood music from all the main political parties, it seems likely that we might be having more in coming years. In Cambridgeshire, proposals for a similar type of new settlement called Northstowe have been rattling around for several years. The Brown government launched the not-dissimilar idea of 'eco-towns' a few years ago with North West Bicester becoming the first of these, something now rolled up into the new garden city.

So what's this all about? Just a political ploy to foist bog-standard housing on places where demand is high and locals might otherwise be up in arms against development? Putting a bit of lipstick on the Medusa of urban sprawl? Or, equally cynically, as a way of pretending to address this country's housing crisis with a few headline-grabbing gimmicks while really not doing very much at all?

Or is it an initiative with more substance? There are certainly some people who are arguing that all this can actually become something really worthwhile. Writing as someone who

has made studying the garden city tradition into one of my major research themes, I observe all this as a very interested and informed sceptic. If nothing else, this present episode will make a fascinating coda to the book I am currently finishing on the whole garden city movement.

But let's consider the roots of where we are now. Many of you will know that there are two 'old garden cities'; Letchworth Garden City and Welwyn Garden City, both in Hertfordshire. They were founded in 1903 and 1920 by a man called Ebenezer Howard. He was a lowly shorthand writer and failed inventor in late Victorian London who in 1898 wrote a visionary book called *To-morrow: A Peaceful Path to Real Reform* (reissued in a slightly amended form in 1902 as *Garden Cities of To-morrow* and in print ever since).

In essence, Howard was a utopian socialist land reformer. He thought that if you bought a large tract of rural land at its (low) agricultural value and kept it in unified and genuinely collective ownership, you could develop a modest-sized, attractive and spacious garden city, avoiding the ills of existing big cities.

The vast increase in land value that accompanies urban development would accrue not to individual owners

but to the garden citizens as a whole. Housing costs for all could be kept low. The collective amenities and services of the garden city might also be provided generously but at very low cost. Garden cities could be built as separate entities within connected networks, called 'social cities'. Many aspects of the vision were seminal in creating modern town and country planning, including regional planning, green belts, land use and density zoning, neighbourhood planning, sustainable development and much else.

Apart from the two 'old garden cities', the biggest impacts of Howard's vision came in the post-war New Town programme. Apart from being the product of locally-based philanthropic and co-operative endeavour however, the New Towns became the epitome of 'big government' and thus fell out of favour with post-1979 governments. As such the holistic nature of Howard's vision was lost.

However, the debate was re-energised last year by an ideas competition, the Wolfson Economics Prize, about how a new garden city might be created for the 21st century. The £250,000 prize was won by URBED planning consultancy who chose Oxfordshire to demonstrate how

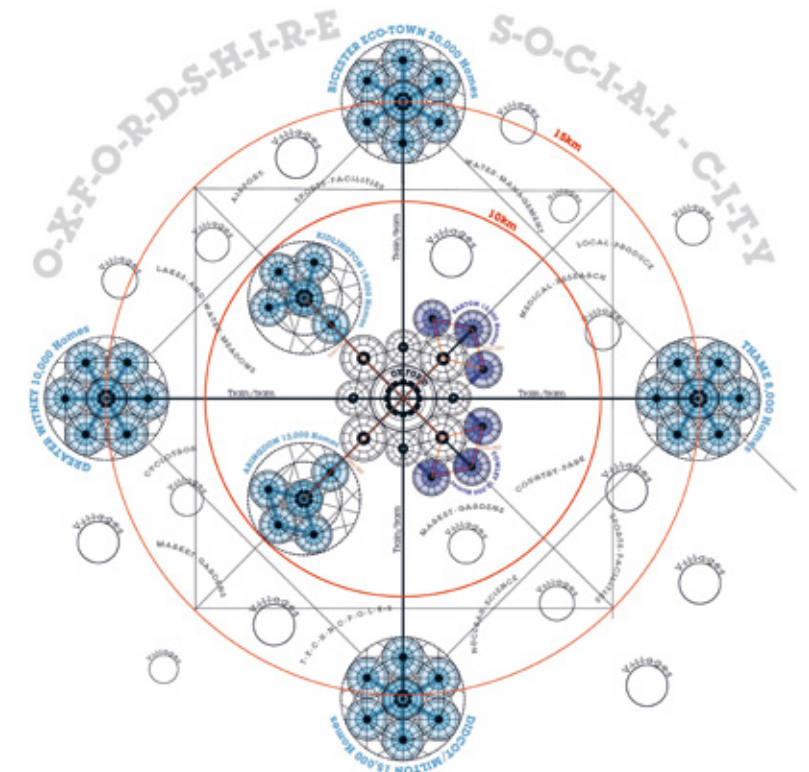


Reworking of Ebenezer Howard's 'Social City' vision of networked garden cities for Oxfordshire. Image courtesy of URBED.

new life might be breathed into the old idea. On top of Howard's original vision they added the latest thinking about how to reduce carbon emissions and be kind to the planet.

So, watch this space. The keys to its success will, in my view, follow from Howard's fundamentals – will his collective principles about the ownership and control of land triumph over the ordinary selfishness of humanity? Or have we grown too fond of salivating over the rising value of our own homes (if we have them, of course)?

Will the new garden cities maintain the high environmental standards of the early demonstration housing projects? Or will they soon fall into the hands of major speculative house-builders for whom profits ultimately are more important than collective interests? And, remembering the scale of our present housing needs, the question is whether there be enough new garden cities to have a real impact.



For more information on garden cities www.tcpa.org.uk/pages/garden-cities-259.html
More information about Oxford Brookes' Department of Planning is available at
<http://planning.brookes.ac.uk>

Rescuing opera from stereotypes

Dr Alexandra Wilson, Reader in Musicology, explores the misconceptions surrounding opera.

I am firmly of the belief that stereotypes are unhelpful and often harmful. This is as much the case in the field of culture as in any other area of life.

Over the last few decades the media have repeatedly perpetuated the idea that opera is 'elitist'. This cliché, often uttered by journalists who know little about opera, actually does great harm to the cause of artistic accessibility. Told that opera is 'not for them', potential new audiences are likely to be inhibited from giving it a try.

Opera is sometimes, although by no means always, performed in glamorous surroundings, but it is important to distinguish 'the trappings of opera' from the art form itself. (Try to argue that opera itself is elitist and you will not get very far, as my students find when we debate this issue in seminars.)

If we look at the history of opera we can see that it has meant different things to different people at different times. Opera was and still is accepted as very much a part of everyday life in Italy or Germany for example.

Some of the negative perceptions of opera, then, are peculiarly British, and closely tied up with questions of national identity. Opera has been greeted with hostility and suspicion ever since it first arrived in London in the early eighteenth century.

Although the current media obsession with 'elitism' is a product of our particular time, it is in some respects merely a new twist on an old tale.

In order to challenge stereotypes and prejudices about opera that act as barriers to new audience engagement, we need to understand their historical roots. This is what I am seeking to do in my current research project, which is supported by the British Academy.

I am looking in detail at one particularly significant moment in the history of opera in Britain: the

1920s. Cultural categories were established during this decade that are still powerful today. As mass culture expanded, the intellectual elite tried to defend its authority by pigeonholing artworks, whether novels, plays or pieces of music, as 'highbrow', 'lowbrow' or 'middlebrow', the latter a newly coined buzzword.

A lot of scholarly work has been undertaken on literature and the 'brows', but so far nobody has investigated where opera fitted into the debate. Opera's relationship to the new categories is particularly intriguing because it was so complicated. It was far from clear that opera was 'highbrow', while 'middlebrow' also seemed an inadequate term.

The 1920s was also a decade when opera's cultural status was changing. In the late Victorian era, opera had been a form of genuine popular entertainment, performed by touring opera companies to socially mixed audiences up and down the country. Operatic music was also heard in music halls and brass band concerts. These outlets for opera were declining by the 1920s, yet at the same time it was reaching new audiences through broadcasting and interacting with popular culture in new ways.

In addition to my historical work on this topic, I have an interest in the contemporary politics of opera. Last September, with my colleagues from the OBERTO opera research unit at Oxford Brookes, I organised an international conference entitled '*Beyond Black Tie and Bubbly: Rescuing Opera from Stereotypes*'.

Our aim was to examine critically the idea of opera as a socially exclusive genre, and to consider how it might be presented to prospective audiences in more positive and imaginative ways.

One of the most exciting things

about the conference was the way in which it brought academics, students and members of the public together with opera singers and other industry experts. Among the speakers were the Commissioning Editor for Publications at the Royal Opera House, the General Manager of Opera Holland Park and the opera critic for *The Telegraph*. We discussed a wide range of topics, including the marketing of opera, its relationship with 'crossover', and the role of education in creating new audiences.

Finally, changing perceptions of opera and expanding the audience for it also underpins my broader knowledge transfer work. I enjoy sharing my research findings with a wide public, via broadcasts for BBC Radio 3 and programme essays and pre-performance talks for the country's leading opera companies. I have also argued the case against operatic 'elitism' in *The Guardian* and written a book for the general public called *Opera: A Beginner's Guide*, which seeks to demystify opera and demonstrate its relevance for contemporary life.

My ongoing research, and work with colleagues from OBERTO, will continue to challenge stereotypes and prejudices and help to encourage new audiences to explore opera and develop what may become a source of life-long enjoyment.

For more information on OBERTO, please visit <http://obertobrookes.com>

Read an article on Dr Alexandra Wilson's research on the reception of Puccini's operas at www.brookes.ac.uk/research/ref-2014/



In your hands: The 3D world of micro-organisms

Dr Louise Hughes, Bio-imaging Unit Researcher and Microscopist at Oxford Brookes, was awarded a Passion in Science award by New England Biolabs Ltd in 2014 for her work on making the microscopic massive. Here Dr Hughes writes for *Research Forum* on bringing science to the visually impaired and how a 3D model of an organism could change ideas around medical biology.

Over the last year, while running the Bio-imaging Unit at Oxford Brookes, I've been leading a team who have been bringing ground-breaking research into the hands of the visually impaired.

We have been creating 3D models of microscopic organisms and cells by collecting images with microscopes and interpreting the data for 3D printing. The result is a like-for-like, 3D model of an organism several million times its normal size, demonstrating in detail what micro-organisms would really look like if they were large enough to hold in your hand.

Microscopy is a huge part of how we interpret and visualise biology so if you aren't able to see, engaging with the subject becomes extremely difficult. It is very hard to imagine what parasites and viruses look like without anything to base it upon.

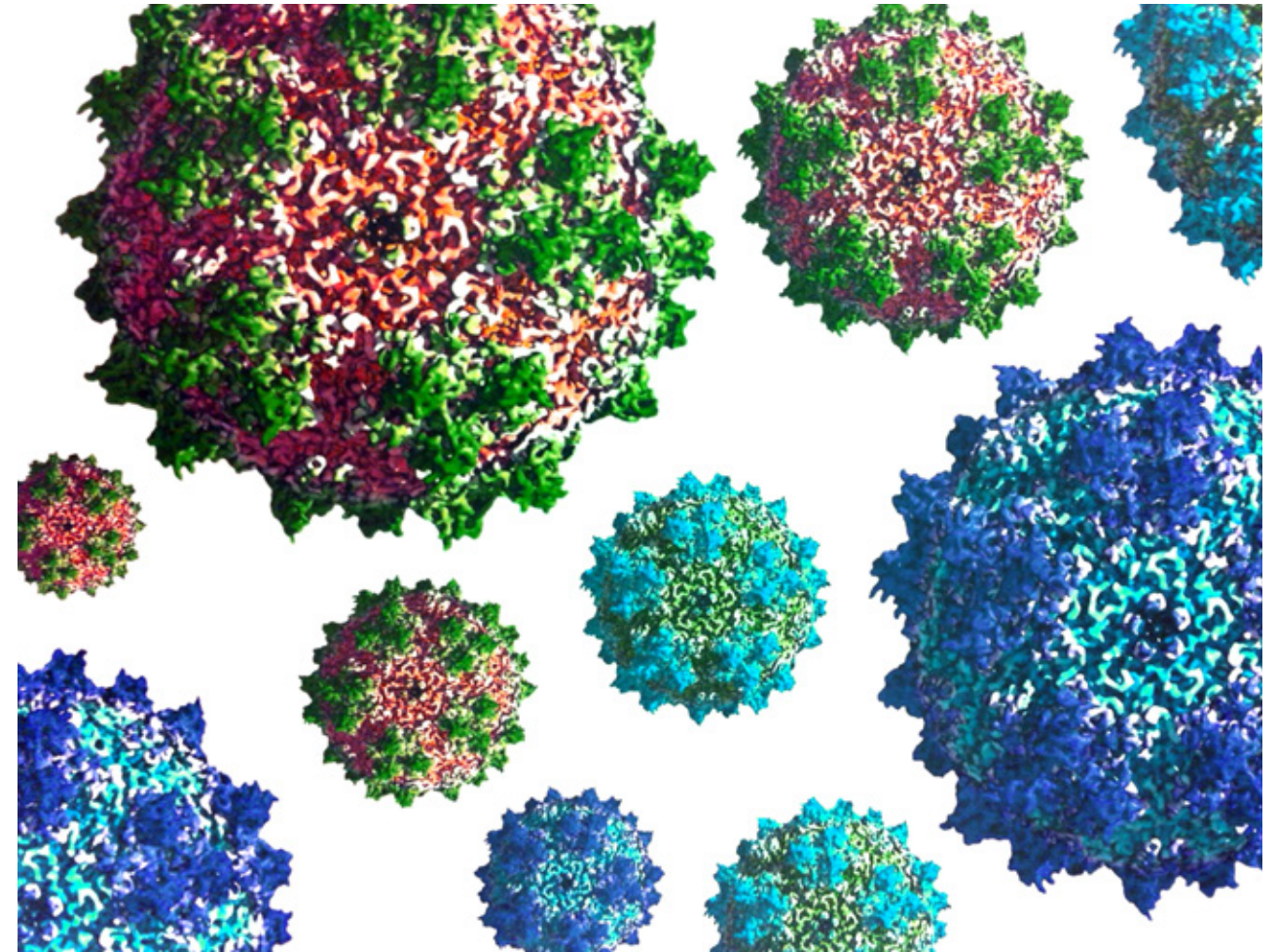
In 2014 a team from the University's Department of Biological and Medical Sciences, including lecturers, professors and PhD students, showcased our research at

various exhibitions. These included *Science Uncovered* at the Natural History Museum in London and the Biotechnology and Biological Sciences Research Council's (BBSRC) *Great British Bioscience Festival*. We also had a one off *Giant Germs* event, also organised by the BBSRC, for visually impaired adults in the Tower Hamlets region of London.

This was a rewarding experience for the team. We were able to take the 3D models to our target audience and change people's perceptions of science and the world of micro-organisms. All of the events we attended were a fantastic chance to represent Oxford Brookes, talk to the general public about the excellent work going on in our bio-imaging unit and share our passion for science.

The response we received from the public was amazing. One woman, who had been blind her entire life, came to a private test session before *Science Uncovered* and said that she had never been able to do anything like it or interact with a microscope before and

she found the session really interesting. At the *Giant Germs* event, another visually impaired adult commented on how the tactile nature of the models kept her attention in a way that lectures or listening to science on the radio simply was not able to do. In addition to blind and partially sighted visitors, we presented the models, our images and the 3D printer to school groups and individuals with a diverse range of backgrounds. We received positive feedback from the general public about using the models as teaching tools for science in schools and we are in the process of putting together kits that schools can borrow. We have taken relatively abstract biological concepts that are normally only represented in textbooks and brought them to life in a unique and engaging manner. The physical nature of the models helps people to understand complex microscopic structures and what happens in our own bodies. All the positive reactions we have received through our engagements have brought home that what we are



doing is innovative and of interest to others. It also helps raise awareness of the remarkable work going on within Oxford Brookes.

There are several ways in which we can generate 3D microscopy data of biological samples. This can be done using both light and electron microscopy but our work so far has focused on the higher resolution information accessible using an electron microscope. The oldest method uses a process called serial sectioning. Several sections of a sample are cut, positioned on a support surface (a grid) and imaged. The images are combined and a 3D model is built from the data. An alternative technique is to tilt a single sample within the electron microscope, taking a series of images at different degrees of tilt. Computer algorithms can then reconstruct the 3D structure of the object. A more recent method

uses a new electron microscope that we purchased and installed in 2014. The biological sample is embedded in a resin and a diamond knife mounted inside the microscope is used to take a slice off the top. The resin block is then imaged and a new slice is removed. This repeats over thousands of slices and the images are subsequently combined in the same manner as for serial sectioning. This means that we can produce information from large regions of tissue or small regions within cells. Once the 3D model is made on a computer we convert it into a format that our 3D printer can use. A few hours later we have an exact replica of our biological object.

We have found this produces some interesting results. As well as allowing people who can't see images to appreciate microscopy, 3D printing can also help researchers interpret their own data. Many researchers will have

their own ideas about specific cells and organisms simply based on 2D images or micrographs seen in textbooks and publications. Access to a 3D model of an organism, part of a cell or even a molecule can change perception and interpretation of these structures. It is also possible to observe how these structures change over time, which can be significant in many areas of biology and medical research.

Being able to see microscopic structures is fundamental to understanding the natural world. Without it, our understanding of cells and tissues would be far behind what we know today. 3D printing is another useful tool that we can use for outreach and our own research, but is only a small step in the field of microscopy and answering the key biological questions we have today.

Find out more about the Department of Biological and Medical Sciences at www.bms.brookes.ac.uk

For more information about Brookes research visit our website at
www.brookes.ac.uk/research

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