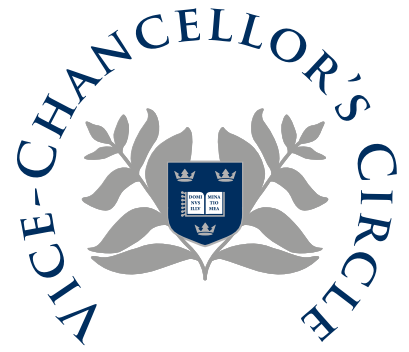


ANNUAL REPORT

2018-2019





Welcome from the Vice-Chancellor

One of the most enjoyable aspects of my role as Vice-Chancellor is encountering the extraordinary goodwill that exists towards the University of Oxford around the world. This is nothing new, of course. From the earliest days, Oxford has gained enormous strength from the generosity of our supporters at home and abroad. It is only with this support that we have been able to sustain our position as one of the top universities in the world, a university committed, as ever, to research, to teaching, and to improving the world around us. This tradition is today embodied in the Vice-Chancellor's Circle. Here we honour our closest friends, a remarkable collection of individuals, families, institutions, trusts, foundations and businesses, drawn from across the globe.

With your help, we continue to thrive: new chairs, new research institutes, new scholarships, expanded outreach programmes and exciting advances in medicine, science, law and scholarship are all being made possible by the generosity of the Vice-Chancellor's Circle. What's more, since the annual meeting of the Circle in May, Oxford has announced an unprecedented investment in the Humanities – the Schwarzman Centre, made possible by a £150 million landmark gift from the philanthropist Stephen A. Schwarzman. For the first time in the University's history, key academic disciplines in the Humanities will be housed together with a new library in a space designed to encourage experiential learning and bold experimentation through cross-disciplinary and collaborative study.

We are also creating Oxford's first new college in 30 years: Parks College, a graduate facility with an initial focus on three interdisciplinary research clusters addressing vital areas that are transforming our times and setting the course for the future: Environmental Change, Cellular Life, and Artificial Intelligence and Machine Learning.

We have recently announced the completion of our major fundraising campaign, Oxford Thinking, which has raised over £3 billion in support of the University and the colleges. Thanks to our many supporters, there is much to celebrate. There is no doubt that the continued generosity of Circle members will play a central role in helping Oxford to remain an outstanding University. To find out more about the impact of the Circle and the campaign please read the case studies included in this publication.

My colleagues across the University are, as always, deeply grateful to the members of the Circle for your generous support of our enduring mission. This support and this mission have never been more important to us as we confront challenging times both nationally and globally.



Professor Louise Richardson

Vice-Chancellor of the University of Oxford



Professor Louise Richardson
© Oxford University Images /
John Cairns Photography

Cover: Botanic Garden
© Oxford University
Images/Heather Green

Opposite: The Penrose paving, the
Andrew Wiles Building

Oxford: A powerhouse for AI

The term ‘artificial intelligence’, or AI, covers a range of potential-increasing computational tools designed by humans to give themselves the ability to work at superhuman speed and scale. AI methods enable vast computing power, combined with the facility to process enormous quantities of data, in search of patterns, trends or influences.

Chas Bountra OBE, Professor of Translational Medicine in the Nuffield Department of Clinical Medicine, instances a real-life situation: ‘Whenever we go to the optician, they take an image of our retina. In Scotland alone, 4,000 images are generated every day, all of them paid for by the NHS.’ Using AI to bring together all those images could make it possible to predict macular degeneration.

Professor Bountra explains, ‘You could get early diagnosis; potentially prevent the disease.’ As well as benefitting patients, this would bring huge savings to the NHS in terms both of specialists’ time and of expensive,

sometimes unnecessary, treatments. Identifying neurodegeneration at the back of the eye in this way could also lead to early and easier diagnosis of diseases such as Parkinson’s and Alzheimer’s.

AI’s application to new drugs is being researched by Charlotte Deane, Professor of Structural Bioinformatics and Head of the Department of Statistics. To generate one new drug now costs around £2 billion and takes about 12 years.

‘This is such an exciting area. We believe this is a platform that is going to transform every aspect of our lives.’

Professor Chas Bountra OBE

The UK is currently the sixth-richest economy in the world, yet many new drugs are deemed too expensive to use. ‘AI’, says Professor Deane, ‘has huge potential to change this.’

She explains, ‘If I have enough data, can I use a computer to make a better prediction about whether this small molecule will bind to its target?’ She works closely with pharmaceutical and small biotechnology companies, combining their expertise in pharmaceutical testing with Oxford’s in developing the necessary computational tools. It could be a matter of reducing the time

taken to produce a drug from 12 years to 5, or simply narrowing a vast possible pool of likely answers down to 10 or 20, but AI will make, says Professor Deane, ‘a real difference’.

Professor Paul Newman directs the Oxford Robotics Institute and is co-founder of spinout company Oxbotica. His work on autonomous vehicles is well known; he is now focusing on ‘super-human navigation’, through challenging terrain and conditions such as dust storms, mines or ice roads where it is extremely difficult for humans to drive. He says, ‘If you think about every vehicle that we use, and everything we transport in them – all of it is potentially affected by this technology.’

Michael Wooldridge, Professor of Computer Science, is researching the area of interaction between virtual assistants like Alexa and others. If they could negotiate with each other on our behalf, they could arrange a meeting directly with another virtual assistant. To do this requires giving them negotiating abilities – to agree on a mutually convenient time of day, for example.

Professor Wooldridge says, ‘We now have computer programs in the laboratory that can negotiate with people better than people can.’ Computer programs are training people how to be professional negotiators in the US, Israel and elsewhere. He continues, ‘There are many other types of social skills that we might want to give our virtual assistants – and I think this is going to open up a whole new panorama of applications.’

Sir Nigel Shadbolt, Principal of Jesus College and Professor of Computing Science, warns that, just as nuclear technology gave rise both to the atom



John Cairns



bomb and a new source of electricity, AI has the same potential duality. Oxford has the philosophers, social scientists and lawyers needed to make sure that this latest revolution is ethically grounded. At Oxford the Institute for Ethics in AI, part of the Stephen A. Schwarzman Centre for the Humanities, will be central to that ambition.

‘We are looking at the social, cultural, political and ethical implications of AI in our everyday lives,’ explains Professor Gina Neff of the Oxford Internet Institute. She is also working on ‘ensuring that our own digital traces

are not used against us’. She says, ‘What I see as urgent in the coming era of AI is to think about how we see these changes emerging in different countries, in different contexts, and what we need to understand about how people work and think in order to ensure that AI systems are safe, fair, efficient and transparent.’

Oxford has all the attributes needed to make it, in the words of Professor Wooldridge, ‘a huge powerhouse of AI’. It has, he says, ‘enormous presence across computer science, information engineering and statistics’, the disciplines producing the algorithms

on which AI technology is built. This fundamental, AI-generating core is surrounded, he explains, by ‘a vast ecosystem of people who are putting those techniques to work’.

Against the fear that AI might ‘replace’ us Professor Wooldridge refers to the ancient invention of the plough: ‘It didn’t replace farmers; it just made them more efficient. You have to think about AI as being a tool which augments rather than replaces.’ Oxford is ready to use it.

www.research.ox.ac.uk/Area/ai

Making an Impact

If the University of Oxford is to achieve its full potential, it needs not only excellent staff and students but also modern, top-quality facilities within which they can flourish. Over the last ten years, the generous commitment of the Vice-Chancellor's Circle has helped with infrastructure projects enabling every aspect of Oxford's work, from quantum physics to student sport.

An award-winning environment for Oxford physics



Above: The Beecroft Building

The £50 million Beecroft Building is the University's first construction in 50 years to be dedicated to the theory and practice of physics. It boasts the deepest basement in Oxford: two underground floors of high-specification laboratories for physics experimentation, with vibration isolation and optical tables that float on air springs.

The building is also designed to foster a culture of interaction between the academics who use it. With offices for theoreticians around the sides, a central atrium houses an airy hierarchy of spaces where discussion groups of different sizes

can gather around elegantly curved chalk boards. There are links on three floors to the neighbouring 1939 Lindemann Building, and a communal coffee area at ground level where fruitful conversations are sparked between academics from different research groups and buildings.

Designed by architects Hawkins\Brown to an award-winning standard, the Beecroft Building demonstrates the importance the University places on the core discipline of physics. That importance is well appreciated by all the donors whose contributions made the new building possible. They understand

that, if academics are enabled to pursue their own research specialisations within an environment that facilitates interaction, the practical applications will follow – it was quantum physics research, for example, that led to the creation of the smartphone.

This combination of value for fundamental science with an interdisciplinary culture will continue to attract the best academics to Oxford, and the best students will follow.

www2.physics.ox.ac.uk/the-beecroft-building

Vital renewal for the home of Oxford sport

The value of a healthy mind within a healthy body has been well understood by many generations of scholar athletes at Oxford, but the facilities at the home of the four-minute-mile had become increasingly outdated and insufficient for demand. To remedy this, the University's sporting complex at Iffley Road has been undergoing a much-needed transformation into a sports complex for the twenty-first century.

Phase I was completed in Spring 2018, following the opening of the new Acer Nethercott Sports Centre and the Gallie–Lewis–Dean Boxing Gym. Further gifts have supported an extended rowing tank and an all-weather outdoor tennis centre, including upgraded pro-clay courts as

well as grass ones. The new clay surface was put to the test at the courts' official opening on 1 May 2019, with a mini doubles game involving the Pro-Vice-Chancellor, both the Chairman and a key member of the University Tennis Club, and a much-appreciated donor.

Plans for Phase II of the transformation are now underway; it is hoped they will include a new gym facility, refurbished cricket grandstand, synthetic 3G football and rugby pitches, new squash courts and a martial arts dojo.

As well as being fit for Oxford's finest Blues, these new additions will contribute to the wellbeing of all students keen to pursue an existing



sport or take up a new one. Community Membership is also available to members of the public, reinforcing the University's commitment to widen access to its resources.

www.sport.ox.ac.uk

The story of the Ashmolean

Following the Ashmolean Museum's acclaimed 2009 redesign, enabling it to better tell human stories across cultures and across time, visitors can now learn about the life and times of the museum's founder, Elias Ashmole, and the earliest incarnation of the collection. Created through donations both large and small, the Hackney, Stow and Gregory Gallery was opened in 2017 to mark the 400th anniversary of Ashmole's birth; he gave his collections to the University of Oxford in 1677.

This is a permanent space designed to evoke the museum of the 1680s–90s, giving visitors an opportunity to see what seventeenth-century collectors valued while putting the life of Elias Ashmole in its historical context. Displays include artefacts from the Civil War, curiosities – both natural and manmade – from foreign lands, and portraits of great scholars of the seventeenth century.

Modern methods of examination and recording used in the preparations for display have increased our appreciation of the objects treasured by Ashmole and his peers. Taking centre stage in the new gallery is Powhatan's Mantle, a large deer-hide hanging probably made in North America around the early 1600s and decorated with shells. It was carefully recorded using an advanced photogrammetry technique before being displayed in a purpose-built case, made possible by funds raised through a public appeal. The work done on this artefact has laid the foundation for further research on the North American parts of the founding collections, and was shared with a wider audience through a public Facebook page which attracted many interested comments.

The gallery itself was created through a generous gift from Mr Stephen Stow, Fellow of the

Ashmolean, along with a major grant from the Linbury Trust, and a grant from the DCMS/Wolfson Galleries and Improvements Fund.

www.ashmolean.org/the-ashmolean-story

Below: The Hackney, Stow & Gregory Gallery



Oxford's Department of Plant Sciences: translating innovative research into solutions for modern agriculture

Although some of the specimens in Oxford's herbaria date back to 1660, research in plant sciences today has a real-time drive similar to the 'bench to bedside' approach of the University's medical departments: solutions are needed fast for the health of humanity. Liam Dolan FRS, Sherardian Professor of Botany, agrees with this analogy. 'You can't look at agriculture in isolation; the terrestrial environment is part of the global system. Methane emissions create a huge global climate-change issue. Soil erosion has severe consequences for human welfare as well as the environment.'

The John Oldacre Foundation's new scholarship fund will support DPhil plant sciences students in perpetuity. This, says Professor Dolan, 'is allowing us to recruit DPhil students in an area where we think we can have an impact on the planet. Our big push over the past five years has been to encourage our researchers to consider their work in the context of planetary problems, and how their

research could impact on those problems. We have built a culture in which the translation of research is considered a strength, and something that we should, and could, be doing.

'These resources are allowing us to have real-life impact and application of our research that otherwise we would not have.'

Professor Dolan

'For example, research done by a DPhil student laid the foundations of our first spinout company, to address the crisis that resistance to herbicides is causing for agriculture. So there is a direct link between the excellent science produced during the DPhil and this existential challenge that agriculture faces.'

The Department of Plant Sciences houses one million specimens within the University of Oxford Herbaria, the digitisation of which has now begun thanks to a generous gift from Mr Clive Gillmore. They are a rich and current resource. Professor Dolan highlights one example of their ongoing use: 'Researchers working in the herbaria are identifying the closest wild relative to the sweet potato. The latter is an important agricultural crop

in the developing world; identifying its nearest relative will provide us with a resource whereby we can breed for resistance to various pests and diseases.'

Spinout companies are to plant sciences what small and medium enterprises are to the pharmaceutical industry: they form an interface between researchers and investors, where innovation can be translated from its academic origins to targeted applications. Professor Dolan explains: 'The academic lab does the fundamental research, you tweak it so that it could work in a variety of different organisms, and then the spinout company forms agreements and partnerships with the big companies for using that technology in one of their crops.'

Generous funds given by donors, he continues, 'allow us to translate excellent science into excellent application' by supporting the recruitment of excellent students. Henry Shouler, Chairman of the Trustees of the John Oldacre Foundation, says 'the trustees are very pleased to have entered into partnership with Oxford University, which will ensure that John Oldacre's legacy will be maintained in perpetuity through the research and experience of the John Oldacre scholarship recipients.'

Such philanthropy is enabling Oxford researchers to innovate and seek the novel solutions modern agriculture requires if it is to feed an increasingly populated world.

www.plants.ox.ac.uk



Left: Professor Liam Dolan FRS

Oxford helps vulnerable children to succeed at school

Supported by a gift from the Alex Timpson Trust, Oxford's Department of Education is promoting a new educational approach to trauma-affected children while compiling statistics to measure its effects.

Trauma, neglect or abuse in the early years can impede the development of the mental processes and skills a child needs in order to cope, socially and academically, at school. Neurobiologists have shown that such trauma affects the structure of the brain, sometimes resulting in disruptive and inappropriate behaviour.

Old-style punishments and exclusions do not help children affected by these issues. Recent government figures show that children in care are five times more likely to be temporarily excluded than other children, adding low educational attainment to their challenges.

To try to improve this, some schools have been changing their policy and practice. It is, says Dr Neil Harrison of Oxford's Rees Centre, a question of 'moving away from the idea of inherently naughty children, to a trauma-informed approach to dealing with young people.'

Solutions at school include chill-out spaces and voluntary time-out systems. Dr Harrison explains: 'The net effect is often the same: the young person is removed from class. But they choose to remove themselves, and they have a quiet

space which isn't the corridor or the head teacher's office.' This self-regulation is empowering for the child.

Rather than react instantly to misbehaviour, staff are trained to take a few seconds to think about what emotion the young person is going through. They might then use 'emotion coaching' – saying, for example, 'I would be angry about that, too.' Dr Harrison says, 'The child feels that the adult understands the emotion, and the adult helps the child to name the emotion they are undergoing.'

The children themselves have responded warmly to the new approaches, says Dr Harrison, including those who are not trauma affected: 'The great thing we are hearing is that often the children will then start to look out for each other.' Recent Ofsted inspections of schools using these approaches have been positive, with reports of a calmer environment for learning.

What is needed now is a body of statistical evidence to demonstrate the impact of this approach. In 2017, the Alex Timpson Trust, named for the late wife of businessman and philanthropist Sir John Timpson CBE, injected vital



Above: Dr Neil Harrison

funding to support the five-year Alex Timpson Attachment and Trauma Programme in Schools – bringing in the Rees Centre's academic rigour to back up the experiential observations. By summer 2019, 140 schools were already in the programme, with another 100 joining in the autumn towards a final target of 300.

Researchers promote the value of trauma awareness training to teachers, and also collect data on attainment, attendance and exclusions. This information will form the basis of statistical work by Dr Harrison to measure the outcomes of attachment and trauma awareness training for staff, schools and pupils. It is hoped that this will demonstrate the potential of extending these principles into mainstream school practice and integrating them into teacher training. The Alex Timpson Trust is creating a real opportunity for trauma-affected children to improve their chances of a happier life.

<http://www.education.ox.ac.uk/research/the-alex-timpson-attachment-and-trauma-programme-in-schools>

'Part of making sure that a child learns is about making sure that they are in an emotional position to be able to learn.'

Dr Harrison

Bringing American art history to Oxford

The Terra Foundation for American Art describes itself as ‘a museum without walls’. Established in 1978 by businessman and collector Daniel J Terra, its core mission is to enrich and increase global engagement with art of the United States. As well as loaning works from its collection, the foundation funds exhibitions, workshops and academic appointments across the world. It was the principal sponsor of the 2018 Ashmolean exhibition *America’s Cool Modernism: O’Keeffe to Hopper*, bringing to Oxford 35 paintings never previously seen in the UK.

Since 2015 the Terra Foundation has generously supported a visiting professorship at Oxford, bringing one outstanding scholar each year to teach American art history – a new area for the University’s curriculum. The third Terra Foundation Visiting Professor, in residence during the 2018–19 academic year, was Dr John Blakinger. Like his predecessors, he was also a Visiting Fellow at Worcester College.

‘I framed the contribution that I could make to Oxford’, he explains, ‘around an engagement with political issues in American art that are both current and

historical at the same time. I’ve been inspired by current events, and thinking about the role of culture and the arts after 2016 in the age of Trump, Brexit, and the hyper-political polarisation that is characteristic of our moment now.’

Each Terra Foundation professor teaches American art history from the colonial period onwards, alongside their own area of interest. Wherever possible, Dr Blakinger has linked the historical view with contemporary events: ‘We would look at the American Civil War, for example, and read about representations of race and slavery in the mid-nineteenth century, and then we also looked at the debate around Confederate monuments today.’

In the 2019 Terra Foundation Lectures in American Art, Dr Blakinger explored reactions to controversial artworks in the digital age. The lectures are publicly available through the University’s podcast library at <http://podcasts.ox.ac.uk>, along with those of the two previous Terra Foundation Professors, David Lubin and Miguel de Baca.

Dr Blakinger has found his students and colleagues eager to join in discussions.

‘One thing that I’ve loved about Oxford’, he says, ‘is the tutorial system. You see students learning as you work with them, and you also learn from them.’

The 2019–20 Terra Foundation Professor is Amy Mooney, who specialises in African American art and visual culture. She is looking forward to engaging with scholars and students at Oxford and pursuing her research interests in portraiture and the politics of identity.

Through its visiting professorship, the Terra Foundation for American Art is greatly extending the historical and geographical range of Oxford’s History of Art Department and allowing new connections to be made with colleagues studying American history, politics and culture across the University. As Professor de Baca observed: ‘It seems abundantly clear that Oxford is poised to be the leading European destination for teaching and learning about the history of art of the United States.’

Terra Foundation Lectures
2018/19 are available in the University
podcast library
<http://podcasts.ox.ac.uk>

‘I framed the contribution that I could make to Oxford around an engagement with political issues in American art that are both current and historical at the same time.’

Dr Blakinger

Left: Dr John Blakinger



Annual meeting of the Vice-Chancellor's Circle 2019



The 11th annual meeting of the Vice-Chancellor's Circle took place on the evening of 9 May when members of the Circle and their guests joined the Vice-Chancellor to celebrate the enormous contribution of this generous group of donors to the University of Oxford.

In the majestic setting of the Sheldonian Theatre, the Vice-Chancellor, Professor Richardson, thanked Circle members for their generosity, reflecting on Oxford's sustained success in *The Times Higher Education* World University Rankings, the increasing representation of women and state-educated applicants in the student body and the growing numbers of students from ethnic minorities gaining places at the University. The Vice-Chancellor also spoke about the spread of innovation and entrepreneurship across Oxford, and answered questions from the audience about the future of the University.

Chairing the panel discussion, Spotlight on Artificial Intelligence, Professor Chas Bountra OBE, Pro-Vice-Chancellor for Innovation, led a multidisciplinary panel of leading Oxford academics in discussing the ground-breaking AI research being carried out at the University and its resolve to apply that research to solve some of the biggest problems facing the world today. The panelists emphasised Oxford's distinctive qualities as a research-intensive university and why it is best placed to lead on AI research. Further information about Oxford's pioneering work in this area can be found on page 2 of this report.

The evening concluded with a dinner at New College, offering members of the Circle an opportunity to reconnect with each other and meet scholars from the University. Guests were treated to an inspiring musical performance from the opera *Thaïs* by French composer Jules Massenet, played by two undergraduate students.



Top: Dr Humphrey Ko, Circle member, and Mrs Victoria Cox, St Cross College

Bottom: Professor Chas Bountra OBE, Pro-Vice-Chancellor for Innovation and Professor of Translational Medicine, Nuffield Department of Clinical Medicine



For further information
about how to support
the University of Oxford,
please contact:

University of Oxford
Development Office
University Offices
Wellington Square
Oxford OX1 2JD

Tel: +44 (0)1865 611530
enquiries@devoff.ox.ac.uk
www.development.ox.ac.uk

