



Keble Research

Report 2018-19

August 2019

Introduction

This report summarises the research activities supported by Keble College's Research Committee in academic year 2018-19. The College has dedicated funding of up to £100,000 a year to support the research activities of its Fellows and, in particular, to encourage innovative and inter-disciplinary exchanges. Oxford colleges are the ideal environments in which to cultivate the flow of ideas across often long-established academic boundaries.

We support research through three main schemes or programmes:

- Senior Research Visitors (and Collaborating Research Scholars), who are academics of high standing, generally from outside the UK. They may visit for periods of up to six weeks (occasionally longer), receiving free accommodation and dining rights as members of the Senior Common Room. There were seven such visitors in 2018-19, in fields as diverse as anthropology, topology and climate science.
- Research Associates, who are generally post-doctoral researchers at the University who would not otherwise have a college association. Associates may be nominated as members of the Senior Common room for up to three years. In 2018-19 there were 18 associates, including researchers in Theology, Geography, Mathematics, Creativity and Internet Studies.
- Small Research Grants, sums of around £2000 (sometimes more) to support Fellows in their research activities, for example organising conferences and symposia or helping complete a book project with editorial assistance. In 2018-19 grants of just over £16,000 were made.

There is also the option of bundling together nominations for Research Visitors, Research Associates and applications for research grants into coherent Projects which may develop a theme or collaboration over periods longer than just a single year.

The allocation of research support is agreed by Governing Body on the recommendations of its Research Committee, currently chaired by the Sub-Warden, Professor Stephen Payne.

In 2018-19 the new H B Allen Centre came into operation. Under the coordination of the Centre's Academic Director, Dr Ian Archer, the College is keen to create closer links between the graduate community (now enlarged to almost 400) and the research activities it supports. This will be made more possible by the provision of dedicated accommodation in the Centre for research visitors and the creation of a 'research hotel' for shorter stays by visiting academics.

Dr A P Rogers, Senior Tutor

Oxford Weather and Climate Since 1767

Professor Tim Burt, former Tutorial Fellow in Geography at Keble, was a Collaborating Research Scholar at the College for 2017-19. During this time he worked in collaboration with **Stephen Burt**, formerly of the Department of Meteorology, University of Reading on a significant new title, *Oxford Weather and Climate since 1767*. Tim was hosted by Professor Richard Washington, the current Director of the Radcliffe Meteorological Station.



This new title charts the history of the Radcliffe Observatory, which was founded in Oxford in 1772 and has been home to daily weather observations ever since: the longest weather record in the British Isles and one of the longest in the world.

The School of Geography and the Environment maintains the [Radcliffe Meteorological Station](#) (RMS) on behalf of the University of Oxford. Its Director has, since Gordon Smith, have been Fellows of Keble. A tour of the station (in the Green Templeton College garden adjacent to the Radcliffe Observatory building) was offered to guests as part of the book launch.

Oxford Weather and Climate since 1767 brings together a unique 250 year-long weather record, placing today's weather in a rich historical context. Included are easy to find listings of extreme weather such as the hottest, coldest, driest and wettest periods (some of which you can discover below), while local documentary sources and contemporary photographs bring the statistics to life, from the prolonged frosts of January 1776 to the sparkling summer of 2018

An introductory talk by the authors to the book can be viewed at:
<https://www.geog.ox.ac.uk/news/2019/0701-oxford-weather.html>

Research Grant reports

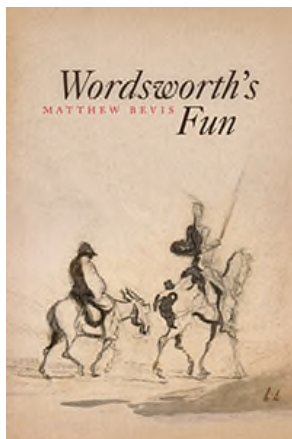
The Oxford Traherne: New digital techniques for editing early modern texts

Dr Sarah Apetrei

The research assistant for the Traherne Digital Collator project funded by the Keble small research grant, Ben Wilkinson-Turnbull, was interviewed on 26th February and duly appointed. He has photographed three sets of images of copies of Thomas Traherne's *Roman Forgeries* (at Worcester College, National Library of Scotland, and Bristol), and two sets of images of *A Serious and Pathetical Contemplation* (National Library of Scotland, and University of York). He will be going to Glasgow University to photograph their copy of *A Serious and Pathetical Contemplation* later this week. He will then be in a position to collate the images using the Digital Collator and to begin to analyse textual variants.

An Index for *Wordsworth's Fun*

Professor Matt Bevis



I applied to the Small Grants Scheme because I needed assistance to complete *Wordsworth's Fun* for Chicago University Press. The description of the book that will appear on the back cover is as follows:

"The next day Wordsworth arrived from Bristol at Coleridge's cottage," William Hazlitt recalled, "He answered in some degree to his friend's description of him, but was more quaint and Don Quixote-like ... there was a convulsive inclination to laughter about the mouth." Hazlitt presents a Wordsworth who differs from the one we know—and, as Matthew Bevis argues in his radical new reading of the poet, this Wordsworth owed his quixotic creativity to a profound feeling for comedy. *Wordsworth's Fun* explores the writer's debts to the ludic and the ludicrous in classical tradition; his reworkings of Ariosto, Erasmus, and Cervantes; his engagement with forms of English poetic humor; and his love of comic prose. Combining close reading with cultural analysis, Bevis travels many untrodden ways, studying Wordsworth's interest in laughing gas, his fascination with pantomime, his investment in the figure of the fool, and his response to discussions about the value of play. Intrepid, immersive, and entertaining, *Wordsworth's Fun* sheds fresh light on debates about the causes and effects of humor, and on how one poet's strange humor helped to shape modern literary experiment.

The Keble grant (£650) was to provide assistance with the index so that I could submit the final version to Chicago in a timely manner. The work has been completed and the indexer has done a superb job. *Wordsworth's Fun* is now in the final stages of production and will be published by Chicago on 22 September 2019. There is a webpage for the book here:

<https://press.uchicago.edu/ucp/books/book/chicago/W/bo41677762.html>

The Poet's Essay

Professor Matt Bevis

The Poet's Essay is a very successful interdisciplinary seminar series that has been running at Keble for the last 5 years. It is convened by me, and led by the internationally-renowned writer and psychoanalyst, Adam Phillips.



Phillips has been described in the *New Yorker* as 'Britain's foremost psychoanalytic writer', and John Banville has praised him as 'one of the finest prose stylists at work in the language, an Emerson of our time.' He is author of over 20 books on a wide range of subjects; he has also contributed to studies of photography and exhibitions on dress history, as well as edited writings by Edmund Burke, Charles Lamb, Walter Pater, Richard Howard, and Sigmund Freud (in 2003 he was appointed as the General Editor of the new Penguin Modern Classics translations of Freud). He has been a regular writer for *The London Review of Books*, the *Observer*, and the *New York Times* for many years, and he was poetry editor of the *Observer* in 2008. He is on the editorial boards of several international journals, and is frequently invited to speak at events in the UK, Europe, and the USA. Invitations include the Freud Lecture at Yale, the Mastermind Lecture at the British Academy, the Wolfson Lecture at Oxford, a University Fellowship at Princeton, and the 2014 Clark Lectures at Cambridge.

Each seminar lasts around one and a half to two hours. The series is free and open to all who wish to attend from inside and outside the university. It is widely advertised on Twitter, Facebook, as well as through University and NHS mailing lists. There are no sign-up lists or reserved places, although there is a small amount of required reading in advance of each seminar. The series focuses primarily on American poetry of the twentieth century. A few weeks before each seminar, a handout is made available via a downloadable link on the Keble website (this material is carefully selected and discussed in advance by both Phillips and myself). At the seminar Phillips introduces the material (usually through an informal lecture for the first 40 minutes), before then leading discussion.

One feature of the series worth stressing is how the wide-ranging, interdisciplinary nature of the seminars benefits from—and helps to encourage—a growing interest in the relations between poetry and various forms of therapy. Discussion often reaches across traditional boundaries (literature, history, psychology, and philosophy) as well as building on recent discussions in the medical humanities. Seminars are attended not only by university staff and students from many different Faculties, but also by health professionals working in the NHS and private practice.

In addition, the series has been invaluable for helping to further my own research into poetics, and for helping to develop the studies and research of other and students and staff members too.

The website for the series is: <http://www.keble.ox.ac.uk/the-poets-essay>

Conference on Austin Farrer

Professor Markus Bockmuehl

This Small Grant has proved enormously valuable in relation to the project proposed in my original application. Developed from an initiative arising out of my weekly senior research seminar, an international conference was held on 18 January 2019 to mark the 50th anniversary of the death of Austin Farrer, Warden of Keble College 1960-1968.

Our conference attracted over 90 registrations, and feedback was overwhelmingly enthusiastic. Following the Warden's welcome and Dr Archer's excellent historical introduction to Farrer as Warden of Keble College, four invited speakers from Oxford, St Andrews and Duke Universities addressed Farrer's role as a philosophical theologian, as a scholar of gospel origins, as a preacher, and as the associate and friend of CS Lewis and other literary luminaries in mid-20th-century Oxford. Following refreshments at the end of the formal proceedings, Bishop Stephen Platten preached a related sermon at a service of choral Evensong in the Chapel. A conference dinner for the organizers and visiting speakers concluded the day. Conference planning and administration were also greatly helped by a paid postgraduate conference administrator and a team of student volunteers.

Although no specific plans for publication had initially been envisaged, several speakers and visitors pleaded to have the contributions gathered into a volume of proceedings. Following negotiations with a publisher (SCM Press) about a print subvention that we subsequently secured from anonymous external donor, I am pleased to report that we have well-advanced plans to gather the conference contributions into a volume together with four unpublished lectures which Farrer delivered in the USA in 1966. My fellow editors (Stephen Platten and Nevsky Everett) and I are now working hard to try and ensure a publication date in early 2020 so as to make the volume available in time for celebrations and development activities around the College's 150th anniversary. To this end I would be most grateful for the Research Committee's permission to roll over the remaining funds (about 25% of the original total) to the coming academic year. This will enable me to hire a postgraduate assistant for miscellaneous editorial tasks (incl. indexing), thereby greatly increasing our chances of securing the timely publication of the conference volume.

Keble College
Small Research Grant Application Report
Resolving early neuronal interactions that underpin psychiatric disorders
Simon Butt (Tutorial Fellow in Medicine)

1. Background

Funding (£2,000) was requested to enable Sara Ratti (University of Trieste, Italy) to re-join the lab during the Spring and early Summer to complete a number of outstanding experiments that sought to address the contribution of a population of GABAergic interneuron – termed VIP+ interneurons – to early brain function. Sara rejoined the lab in March with the intention of returning to Italy at the end of term (21 June) prior to starting a PhD programme at King's College London this coming autumn. Unfortunately she was unable to secure additional funds from the Erasmus scheme as planned, and as such has been supported by the small research grant alongside private funding. Despite only coming for 4 months – as opposed to the intended 5 – she has completed most of the work set out in the original proposal with the exception of Aim1 (live imaging). We have not pursued the latter as circumstances – the development of a new 3-photon imaging microscope in collaboration with the Packer lab (DPAG) – mean that we will employ an alternative, more refined approach to assess interneuron migration in neonates.

2. Original Aims and outcomes (*italics*)

(1) To image live VIP+ neurons (tagged with a fluorescent probe) to see when and how they enter the developing cortex. Preliminary data from fixed tissue has already established an estimated time window of postnatal day 1 to 3 in mice (corresponding to the second trimester in humans).

We have decided to employ 3-photon microscopy to image the migration of VIP+ interneurons in neonatal brain in vivo. A prototype microscope was installed by our collaborators from Scientifica Ltd., UK last week and the aim is to start chronic imaging of fluorescently tagged interneurons once we have finished calibrating and testing this system. Sara has performed a number of additional experiments on fixed tissue to confirm her initial findings and provide the basis for these further studies.

(2) To confirm that VIP+ cells through this early connection can drive activity in the SST+ cells and thereby sculpt early sensory processing necessary for normal cognitive maturation. *Sara has performed additional experiments to complete this dataset. These findings appear to contradict the seminal work of Pfeffer and Scanziani – obtained in adult visual cortex (Pfeffer et al., (2013) Inhibition of inhibition in visual cortex: the logic of connections between molecularly distinct interneurons. Nature Neurosci. 16(8):1068-76) – and suggest that VIP+ interneurons play a broader role in emergent perception than hitherto realized.*

(3) Perform these studies in both normal and 'schizophrenic' mice. The experiments are performed blind to the genetic background as at this age the mice are asymptomatic.

Sara has been probing the contribution of VIP+ interneurons to emergent perception in both normal and mutant mice. Specifically we have tested the contribution of VIP+ to early touch perception (somatosensation). Somatosensory cortex is highly advanced in rodents – akin to vision in humans, and is one of the first cortical areas to come online in neonatal mice. Her experiments have identified a number of differences between normal and mutant mice for example, in normal mice somatosensory neurons can encode the velocity of an object touching the vibrissal whiskers by postnatal day 12 (equivalent to birth in humans) however mutant 'schizophrenic' mice do not develop this ability through the time window tested by the lab (postnatal day 20). More intriguingly her studies have further identified a residual population of non-mutant neurons in the developing brain (see Figure 1). While these represent a minority (<10%) of the total VIP+ cells, there could represent a reservoir of normal function through early development. Further experiments will be needed to compare the fate and function of these two populations.

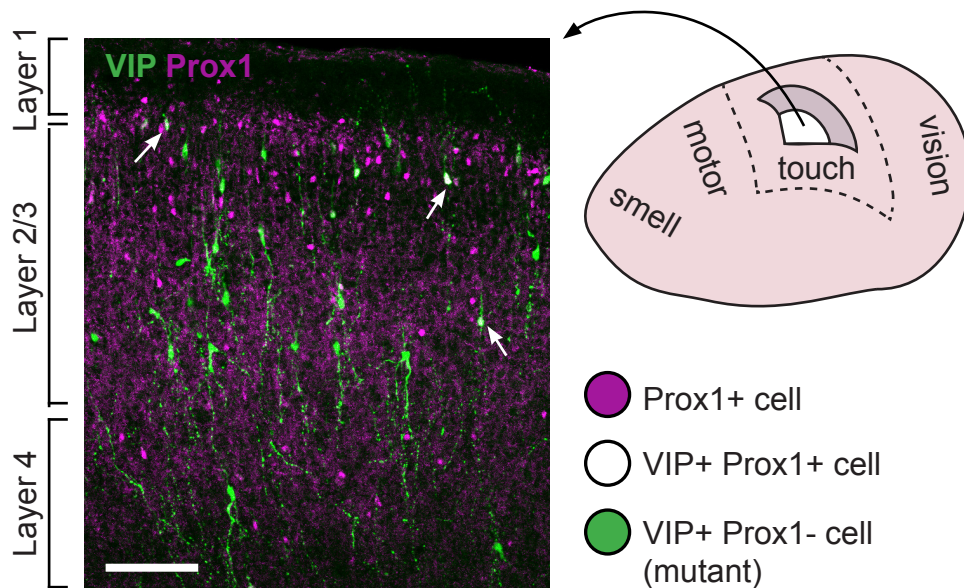


Figure 1: a photomicrograph of the superficial layers of somatosensory (touch) neocortex in mutant 'schizophrenic' mouse showing green fluorescent labelled VIP+ interneurons at postnatal day 3 (P3). Inset, schematic of the mouse brain at P3 showing the location of areas responsible for smell, motor output, touch and vision. The vast majority of VIP+ cells are negative for the transcription factor Prox1 (magenta); a gene necessary for normal development. However a small population (indicated by the white arrows) appears to continue to express Prox1 in the mutant brain.

3. Summary

The award of the small research grant has enabled Sara Ratti to complete a number of important experiments that have extended our knowledge of the function of VIP+ interneurons in the normal and mutant brain. The few outstanding experiments will be completed by another DPhil student in the lab – Cristiana Vagnoni – with the aim of submitting a manuscript for peer review publication by the end of the calendar year. The research grant has been extremely valuable, enabling further important insight that will greatly strengthen the impact of this study. Moreover Sara's research training has enabled her to leverage a place on the prestigious Developmental Neuroscience PhD programme at King's College London.

Keble College Research Support Scheme: six-month report

Project title: Animal research at the POLEs: Exploring the limits of the Animals in Scientific Procedures Act (January 2019-July 2021)

Award number: KSRG074

We have made considerable progress on organising a workshop on animal research in places other than licensed establishments (POLEs). We originally planned to hold this workshop on the 26th-27th of September, 2019, but after consultation with the Keble events team we have **confirmed the workshop for the 30th of September and 1st of October, 2019.**

We have **confirmed a workshop plenary speaker** for the 30th of September: Julie Lane of the Animal and Plant Health Agency (APHA), who will speak on the topic of wild animal welfare and law. We intend to advertise this plenary beyond workshop attendees, as it may be relevant for other researchers interested in wildlife research and ethics, including colleagues at Keble.

Collaborating Scholar Dr Vanessa Ashall was unable to visit Oxford in March as originally planned to help plan the POLEs workshop for health reasons. Since Dr Ashall arrived back at work we have been in regular correspondence about POLEs workshop planning, with additional advice from another AnNex colleague based in Nottingham, Dr Pru Hobson-West. Together we have drafted a list of potential workshop attendees and an invitation letter (the latter is attached to this report).

To date we have **sent POLEs workshop invites** to 4 people, with 3 confirmed. We have also been in contact with the Wildlife Conservation Research Unit (WildCRU) to gauge interest in workshop and/or plenary attendance within their group.

We have **confirmed with the British Animal Studies Network** that we will host the September 2020 meeting at Keble College.

We have also contacted the MCR about possibly organising an event or discussion with members about our work.

Spending to date: As the events are yet to take place, and Dr Ashall's visit was cancelled, our only spending to date is 5 months Research Associate costs.

Beth Greenhough, Reuben Message and Ally Palmer, 22nd May 2019



Out of the lab, into the field: Exploring animal research at POLEs

The Animals (Scientific Procedures) Act (A(SP)A) of 1986 was primarily designed to support the welfare of laboratory-housed animals used in scientific research. However, A(SP)A can also apply to animal research conducted out of the laboratory, at Places Other than Licensed Establishments (POLEs). A POLE might be an ecology or conservation project, farm, fishery, zoo, or veterinary clinic.

This workshop aims to stimulate discussion about what happens when A(SP)A moves out of the laboratory and into the 'field' at POLEs. Bringing together speakers with expertise from diverse areas, we hope that this workshop will highlight shared themes across different kinds of POLEs and offer researchers an opportunity to learn from each other's experiences.

Questions we are interested in posing at this workshop include:

- How does the 'type' of animal – e.g., pets, wild animals, and those housed in zoos or farms – shape ethical obligations, veterinary treatment, and humane end-points? How does A(SP)A manage these ethical obligations and influence decisions?
- How are boundaries drawn between A(SP)A and non-A(SP)A work, and how do these boundaries shape research and animal welfare practice?
- How do the general public and other stakeholders engage with research at POLEs?
- How does taking scientific research with animals out of the laboratory shape the knowledge produced?
- How is research with animals outside of the laboratory best regulated?

Alongside the workshop we will host a plenary, given by Julie Lane from the National Wildlife Management Centre (APHA), exploring issues in wild animal welfare and law. The plenary will be advertised to relevant departments in Oxford universities and will introduce themes to be explored further in the workshop.



Programme

Monday 30th September

17.00-18.00	Opening plenary
18.00-19.00	Drinks reception
19.00-21.30	Dinner

Tuesday 1st October

9.00-10.30	Wild, chair Ally Palmer
10.30-11.00	Tea/coffee
11.00-12.30	Farms, fisheries, and zoos, chair Reuben Message
12.30-14.00	Lunch
14.00-15.30	Veterinary clinics, chair Vanessa Ashall
15.30-16.30	Reflections, chair Beth Greenhough
16.30	Close

Material Engagement and Mental Health Workshop

Lambros Malafouris: Small Research Grant (KSRG064)

[What are the possible effects of materiality on mental health and what are the processes by which different forms of materiality achieve their impact?](#) The links between material engagement and mental health, how the one affects and impacts the other, was the theme of a cross-disciplinary workshop that took place between Monday 1st and Tuesday 2 of April 2019 at the School of Archaeology. The workshop, organised by Lambros Malafouris (Director ERC HANDMADE), brought together a range of specialisations from archaeology, anthropology, psychiatry, medicine, neuroscience, psychology, education, design, material science, art history and philosophy. This combination of theoretical perspectives and methods enabled productive dialogue across disciplinary boundaries. Some key strands that emerged from this dialogue concern: (a) the role of crafts and creative industries in psychotherapy; (b) the development of evidence-based understandings of the therapeutic effects and sensory qualities of different materials and digital media; (c) the role of museums in mental health as a space for creative interventions (e.g. object handling); (d) the importance of touch and of the human sensory experience of materials both in physical and digital environments; and finally (e) the cultural dimensions of mental health and well being. There is unrealised potential here for creating new approaches to mental health that can complement existing practices and broaden, or in some cases challenge, prevailing assumptions in the field. Fostering in-depth understanding of the material basis and ecology of mental health is a necessary step for developing interventions and practical solutions enabling people to improve their psychological well-being.



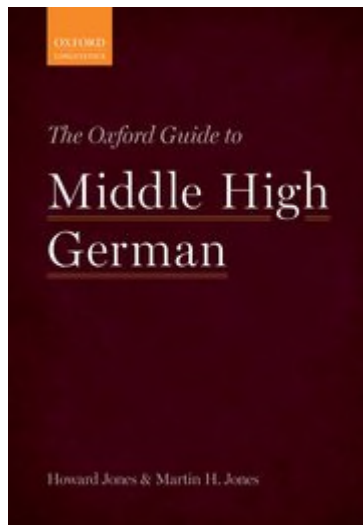
The meeting was funded through the School's ESRC IAA Strategic Impact Capacity Building Fund, Keble College (Small Research Grant) and the ERC HANDMADE: Understanding creative gesture in pottery making



Participants: Laura van Broekhoven (Pitt Rivers Museum, University of Oxford), Shaun Gallagher (Philosophy, University of Memphis), Jonathan Cole (Consultant in clinical neurophysiology Poole Hospital NHS Foundation Trust), Neil Armstrong (Anthropology, University of Oxford), Andreas Roepstorff (Interacting Minds Centre, Aarhus University), John Harries (Archaeology, University of Oxford) Vasu Reddy (Developmental Psychology, University of Portsmouth), Carey Jewitt (Institute of Education, University College London), Bruna Petreca (Material Science, Royal College of Art), Douglas Atkinson (UCL Knowledge Lab), Linda Thomson (University College London, biosciences), Jim Harris (Ashmolean Museum, University of Oxford), Katerina Fotopoulou (Psychodynamic Neuroscience, University College London), Roger Kneebone (Centre for Engagement and Simulation Science, Division Surgery, Imperial College London), Frank Rohricht (Consultant Psychiatrist & Medical Director, East London NHS), Maria Danae Koukouti (Archaeology, University of Oxford), Antonis Iliopoulos (Archaeology, University of Oxford), Paul March (Archaeology, University of Oxford), Catherine O'Brien (Archaeology, University of Oxford) and Chris Gosden (Archaeology, University of Oxford).

Middle High German: book launch and conference

Professor Howard Jones



My Keble College Small Research Grant (£1200) helped to pay the costs of German academics speaking at 'Middle High German 2019', a conference on 21–22 June at the Taylor Institute and 47 Wellington Square, University of Oxford.

As well as being an important conference in its own right, it also marked the launch of [*The Oxford Guide to Middle High German*](#) by Howard Jones and Martin Jones, which has just been published by OUP. I was helped in the preparation of this book by a previous Grant KSRG044. I also secured up to £1,000 from TORCH under the Oxford-Berlin Partnership (one of the academics is based at the Freie Universität, Berlin).

Keble Small Research Grants awarded in 2018-19

Grant to	Field	Dates	Activities	Amount awarded
Medieval & Renaissance Studies cluster	Renaissance Studies	26/10/19	Symposium	£800
Complexity cluster	Partial Differential Equations	2019-20	3 workshops	£1388.76
Dr Richard Bell	History	July 2019	Conference on Early Modern prisons	£1685
Prof Matt Bevis	Poetry/Psychology	2019-20	Poet's Essay	£2700
Prof Matt Bevis	Literature		Book index	£650
Prof Matt Bevis	Literature	July 2019	Archive research in USA associated with Lear exhibition	£1300
Dr Wahbi El-Bouri	Biomedical Engineering	Sept 2019	Research collaboration in Montreal	£2000
Dr Felix Leach	Environment	Jan 2020	Oxford Air Quality Meeting	£4135
Prof Diane Purkiss	Literature		Book index	£600
Prof Gui-Qiang Chen	Mathematics		Book editorial assistance	£550
Total				£16,308.76

Senior Research Visitors 2018-19

Fellows are able to invite visiting academics and other individuals to stay at the College to explore and develop mutual research interests and projects. They are given the title Senior Research Visitor for the period of their stay; accommodation, dining rights and membership of the Senior Common Room are provided. During their visit Visitors are expected to be involved with, for example, lectures, seminars or workshops connected to research activities within the College. Academics who pay repeated shorter visits throughout the year may be given the title Collaborating Research Scholar.

In 2018-19 Senior Research Visitors were able to stay in the new accommodation purpose-built for visiting academics in the H B Allen Centre.

Professor Andrew Barbour (Emeritus Professor of Mathematics at the University of Zurich and Honorary Professorial Fellow at the University of Melbourne)

Professor Gesine Reinert invited Professor Barbour to Keble in order to complete an ongoing collaboration on a book on the Probability and Statistics of Networks. They have collaborated on networks during Professor Barbour's previous research visitorship.

Professor Tim Burt (Emeritus Professor of Geography, Durham University)

Tim Burt, a former Tutorial Fellow in Geography at Keble, returned to college on several occasions as a Collaborating Research scholar to finish work on a jointly-authored book, *Oxford Weather and Climate Since 1767*. He was hosted by Professor Richard Washington. See above for a report on the book launch.

Dr Manuel Fernandez-Götz (Reader in Archaeology at the School of History, Classics and Archaeology of the University of Edinburgh)

Dr Fernandez-Götz was nominated by Professor Gosden. He is an early career academic. The aim of his visit was to work on his book *Archaeology of Iberia (1000 BC – AD 700): Colonial Encounters and Imperial Power*, currently under contract with Cambridge University Press. Having contact with Professor Gosden and the other members of the Creativity Cluster at Keble contributed to a better understanding of how new ideas and technologies, such as iron metallurgy, writing, coinage and orthogonal town plans, were creatively adopted and reshaped by Iberian communities as a result of the interaction with colonial and imperial powers (e.g. Phoenicians, Carthaginians, Greeks and Romans).

Professor Feimin Huang (Chinese Academy of Sciences, Beijing, China)

Professor Huang was nominated by Professor Gui-Qiang Chen. One of the objectives of his visit was to collaborate with Professor Chen on a joint research project on "Some Problems in Nonlinear Partial Differential Equations", especially on the solution behaviour of nonlinear hyperbolic conservation laws, nonlinear waves, the Boltzmann equation, and other related fundamental equations in the sciences.

Professor Huang is currently Hua Luo-Geng Chair Professor of the Academy of Mathematics and Systems Science. He has rich international experience as a visiting professor, visiting research fellow,

etc. in several different countries including Italy, Japan, and USA. He is a leading expert on nonlinear hyperbolic partial differential equations and related areas. His research interests have been in Partial Differential Equations and related applications to various areas such as fluid dynamics, solid mechanics, kinetic theory, magnetohydrodynamics, numerical computation, geometric motions, among others.

Rosemary Joyce (Alice S. Davis Endowed Chair in Anthropology, University of California, Berkeley) Professor Joyce was invited by Professor Gosden. She is an extremely senior figure in archaeology world-wide and has a reputation more broadly within the social sciences. She has been Chair of Archaeology at Berkeley, having previously been Director of the Phoebe Hurst Museum there. Her early work was on gender and identity, interests she still retains, but is also now complemented by work on human relations within the ecological and material systems.

During her stay at Keble she made progress on a book manuscript (working title: *Materiality and archaeology: Traces, animacies, and mattering*). This project builds on more than thirty years of engagement as an archaeologist specializing in the understanding of ceramic technologies in Central America, through fieldwork in Honduras and lab and museum study of curated collections. Drawing on excavations that have described the earliest documented village site known in the region (occupied by 1600 BCE) and others that followed subsequent histories of dwelling extending into the recent past (during Spanish colonial occupation), the complexity of engagements with materials and enlistment of materials across technologies developed over multiple generations can be made visible. To do so, this project builds on recent work from political ecology on the way materials are made active, along with insights from art history, anthropology, and cognitive psychology concerning the emergence of novel practices in social relations.

Professor Yi-Jen Lee (Si Yuan Professor of Mathematics), Department of Mathematics, Chinese University of Hong Kong

Professor Lee visited Professor András Juhász. They share an interest in gauge theory and symplectic geometry and worked on possible solutions to some long-standing problems in the field.

Professor Shijun Liao (University Distinguished Professor at Shanghai Jiao Tong University)

The research visit of Professor Liao was jointly sponsored by engineers (Professor Stephen Payne, Dr Wahbi El-Bouri and Professor Ton van den Bremer (Worcester College) and mathematicians (Professor Gui-Qiang Chen). He is a world-authority in applied mathematics, having developed the so-called Homotopy Analysis Method (HAM) in his PhD thesis in the 1990s. Since then, the HAM has been applied by many researchers in many different fields of mathematics, physics and engineering, most notably in fluid mechanics, which makes it of considerable interest to all the applicants.

The principal aim of his visit was to collaborate with Professor Ton van den Bremer's RAEng Research Fellowship and the grant 'Extreme wind and wave loads on the next generation of offshore wind turbines'.

A full list of previous research visitors since 2010 can be found in an appendix to this Report.

Research Associates 2018-19

Research Associates are nominated by Fellows. They are researchers with whom the fellow is working closely in relation to a particular project, or who is otherwise likely to make a significant contribution to the development of College research activities. Research Associates are members of the Senior Common Room and receive meal rights. These are up to three-year fixed-term non-renewable appointments.

Criteria for selection include: the likely contribution of the associate to the development and success of the nominating Fellow's (or their research group's) research; the likely contribution of the associate to research lectures, seminars, or similar activities in College; the research record or potential of the associate; and due regard for the spread of associates across subject areas

Dr Rob Bellamy	Creativity
Dr Ali-Reza Bhojani	Anthropology
Dr Clare Copeland	History and Theology
Dr Nicola Farrer	Organic Chemistry
Dr Przemysław Gamał	Chemistry
Dr Chris Goldsworthy	Science and Society
Dr Heather Harrington	Mathematics
Dr Antonis Iliopoulos	Archaeology
Dr Tamas Josza	Biomedical Engineering
Dr Daniel McCowan	Oncology
Dr Reuben Message	Geography
Dr Matthias Nagel	Mathematics
Dr Alexandra Palmer	Geography
Dr Ralph Schroeder	Internet Studies
Dr Daniel Schumann	Theology
Ms Julie Scott-Jackson	Geoarchaeology
Dr Premysław Walega	Computer Science
Dr Shengguo Zhu	Mathematics

The **Research Centre for Victorian Political Culture** also has three Research Associates:

Professor Kenneth Gray
Dr Philip Salmon
Dr Ralph Walter

Senior Research Visitors 2010-18

2010

Professor Charles Williamson, *Cornell University, USA*

Professor Mikhail Feldman *University of Wisconsin-Madison, USA*

Professor P J Cherian *Kerala Council for Historical Research, India*

Professor Martin Plenio *Imperial College London, UK*

2011

Professor Jane Bennett *The Johns Hopkins University, USA*

2012

Professor Dehua Wang *Dept. of Mathematics, University of Pittsburgh, USA*

Professor Janeen Carruthers *School of Law, University of Glasgow, UK*

Dr Carine Barbafieri *Université de Valenciennes, France*

Professor Fengzhu Sun *Dept of Biological Sciences, University of Southern California, USA*

Professor George Lewis

2013

Professor Larry Goldstein *University of Southern California, USA*

Professor Jean-Claude Bunzli *Swiss Federal Institute of Technology, Lausanne*

Dr Richard Wilson *University of York, UK*

Dr Andrew Barbour *University of Zurich, Switzerland*

Professor Marshall Slemrod *University of Wisconsin, USA*

Professor Daniel Javitch *New York University, USA*

Professor Heather Dalton *University of Melbourne, Australia*

Dr Harry Allen *University of Auckland, New Zealand*

Professor Christopher Warren *English Department, Carnegie-Mellon University, USA*

2014

Professor Lina Bolzoni *Scuola Normal Superiore, Pisa, Italy*

Professor Gary Anderson *University of Notre Dame, USA*

Professor Yoo Sang Choo *National University of Singapore*

Professor Stefan Friedl *University of Regensburg, Germany*

Professor Prabhu Sivabalan *University of Technology, Sydney, Australia*

Professor John Watkins *University of Minnesota, USA*

Professor Marshall Slemrod *University of Wisconsin, USA*

Prof Lesley Head *University of Wollongong, Australia*

2015

Professor Lynn Meskell *Stanford University, USA*
Professor John Watkins *University of Minnesota, USA*
Professor Dehua Wang *University of Pittsburgh, USA*
Professor Fred Coolidge *University of Colorado, USA*
Professor Paul Saunier *University of Minnesota, USA*
Professor Elijah Millgram *University of Utah, USA*
Professor Bronwen Parry *King's College London*
Professor Hua Chen *Wuhan University China*
Professor Barry Fox *Boeing Research and Technology, USA*

2016

Prof Mark Newman *University of Michigan, USA*
Professor Charles Williamson *Cornell University, USA*
Professor Andreas Buchleitner *Albert Ludwigs University of Freiburg, Germany*
Professor Terry Hunt *University of Oregon*
Professor Shaun Gallagher *University of Memphis, USA*
Professor Ellen M. Bublick *University of Arizona, USA*
Professor Tilman Esslinger *ETH Zurich Institute, Switzerland*
Professor Mark Newman *University of Michigan, USA*
Professor Richard James *University of Minnesota, USA*
Professor Mark Elliott *University of St Andrews, Scotland*

2017

Professor Ian Hodder *University of Stanford, USA*
Dr Alan Kenwright *University of Durham, UK*
Professor Marshall Slemrod *University of Wisconsin, USA*
Professor Øyvind Thomassen *Seoul National University, Rep. Of Korea*

2018

Professor Barry Fox *Boeing Research and Technology, USA*
Professor Mark Newman *University of Michigan, USA*
Dr Manuel Fernandez-Gotz *University of Edinburgh, UK*