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LINACRE News

The magazine of Linacre College, Oxford

CELEBRATING 50 YEARS

LINACRE

Anniversary Campaign exceeds £8 million

Student Hardship

Endowment

Library

Fellowships

Buildings

Scholarships

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First Thoughts


Phil Sayer

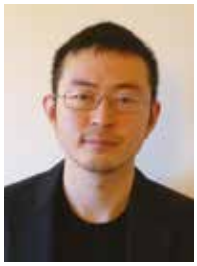
We have just passed what is reputed to be the most depressing day of the year – the third Monday in January. Here in Oxford the days are short and dark, and our weather has been enough to cast anyone into despair. It was the warmest December since records began – and the wettest since 1929. Our spirits were not lifted to hear Linacre's own Professor Myles Allen widely reported by the global media confirming that the envelope of 'normal weather' has been shifted by human actions. Extreme conditions will be the new normal. It's good news then that the College's Finance Committee has decided to make a significant investment in a local social enterprise renewable energy project – the very first Oxford College to do so. Staff and students alike have learned a great deal about making such investments in the process – a very important lesson for the future. In this issue of *Linacre News* you can read about more ground-breaking environmental research by Linacre members. Professor Samar Khatiwala is investigating the role that the oceans play in the global carbon cycle.

Meanwhile the University has been beset with angry arguments about whether our colonial legacies should be erased or retained, as a stimulus for debate about the past and our future. The campaign to remove a statue of Cecil Rhodes from the front of Oriel College has underscored the need to address University-wide challenges in relation to the experience and representation of black and minority ethnic students and staff. It's good news then that the College is on the brink of securing new scholarships to bring more outstanding African students to Oxford. Linacre already has a number of African scholarships, including an innovative scheme supported jointly by the College, the Rhodes Trust and the University's graduate scholarship fund. You can read more great news about the outcome of our 50th Anniversary Campaign on p3. We've still got a very long way to go before we can say that we have a needs-blind equality of access, but I'm very pleased that we're making steady progress in the right direction. I hope that our news helps lift your spirits.

As I write, rain is being spat against my window by the tail end of Storm Gertrude. It often takes a bit of a storm to make us recognise that change is necessary.

Nick D. Bown

Message from the Common Room



We had a great start to the academic year in Michaelmas. New blood arrived in College, stirring up change on the social scene while reminding us of great memories we shared with friends who have now graduated. The Fresher BBQ, punting, and adviser-advisee dinner were among many events organised to welcome Freshers to the Linacre family, with the cherry on top being the Sub-fusc Bop. The social scene was one of the best in town, and we had a fantastic selection of cultural and artistic events as well. Kazuya Ishida, a specialist in Japanese pottery and our first artist in residence, delivered a comprehensive lecture and hands-on workshop which was greatly enjoyed by all.

As we move into Hilary Term, the excitement of being a Fresher may have subsided and been replaced with some 'ordinary life'. With the final part of Common Room Executive elections happening this term, the incoming team will strive to keep the Common Room an enjoyable place for its members. Meanwhile, sofas in the CR are being re-done, introducing a new colour to CR space. To the delight of many CR members, the Common Room is now the proud owner of a wonderful bean-to-cup coffee machine, accessible around the clock! Last but not least, the rowing and football teams (to name a few) are training hard for their muscle-challenging races and exciting matches. Given their past successes, the pressure is on, but the teams are aiming high. It's going to be another great term. May the excitement commence again.

Qifeng Yang, Common Room President

Advancing Linacre

Celebration of 50th Anniversary Campaign

Fundraising campaigns have become so much the norm that it's very easy to disregard them, and even at first glance not to find them terribly interesting. If there is too much emphasis on structure, figures, and dates, people can miss seeing behind those facts – to the real and unquestionably life-changing developments enabled by these huge projects.

So we would like to invite all Linacre Members and Friends to join us in our great pleasure in recording and seeing: over 30 Scholarship awards for Linacre students (with others in progress); 2 new houses; 25 Junior Research Fellowships offering networking opportunities and College membership for young academics; £2.5 million additional Endowment income bringing our current total to £13 million; an enhanced College Library; 3 endowed Student Awards.

These fantastic developments, meaning Linacre is in a significantly better place than in 2009, are thanks to over 600 generous donors. Our thanks go to them once more, for their committed support.

Significant Old Members and Friends have been extremely committed to the work of the Campaign. In particular we thank Tanner Charitable Trust; The Rt Rev'd Carolyn Tanner Irish; EPA Cephalosporin Fund; Dr Graeme Fraser-Bell; Professors Franco & Carolyn Gianturco; Mr Rodney Griffiths; the late Ms Jaki Leverson; Dr Keith Lloyd; Mr Bruce Reynolds; Mr Takashi Uyeno, and the Japan Campaign Committee (chaired by Mr Uyeno), which more than reached its target of 20 million yen.

And so we come to the facts and figures. It is fantastic that the £7.5 million fund-giving target has been exceeded, the final total standing at £8 million at December 31st, the Campaign end-date. 498 Old Members, representing 9% of our alumni community, made gifts; the 114 remaining donations were from foundations, companies, and other friends. We especially thank our donors in Canada, Japan, the UK, and the US, who made the majority of gifts.

Scholarship holders 2012 (see 2015 Scholars, p4)

Campaign Scholarships: (New) Brewer Street; Carolyn & Franco Gianturco (2); Eldred; Green (2); JEOL; Oxford-Agnese Nelms Haury; Oxford-Allan & Nesta Ferguson; Oxford-EPA Cephalosporin; Oxford-Linacre African; Raymond & Vera Asquith; Ruth and Nevill Mott (2); Ryle **(Continued)** Blaschko (2); Canadian Alumni; Canadian National; David Daube; EPA (4); Hitachi Chemical; Norman & Ivy Lloyd; Rausing (2); Ronald & Jane Olson **(In Progress)** Anthropology; Hicks; Women in Science **(Non-Campaign)** Bryan Cartledge; Paul Slack; Hosier.

Buildings: Neil Fraser-Bell House; Tanner House.

Above: Fraser-Bell family, Rodney Griffiths and Principal at Neil Fraser-Bell House opening

Right: Tanner House

Campaign Fellowships: (New) Assad Kotaite SRF; Bamborough JRF; Bryan Warren JRF; David Cockayne JRF; Fellows' JRF; EPA JRFs (2); Carolyn & Franco Gianturco JRF; Sir Paul Nurse JRF **(Continued)** Biomedical Studies JRF; Leeds Hoban Linacre / Huntington Exchange Fellowship; JMH JRF; 15 other JRFs already in existence.

Student Support: Busuttil Domus Prize; Fung Family Domus Prizes; Patrick Heffernan Fund; Thomas Linacre Studentships.

All of these wonderful developments have given us a substantially enhanced and enriched Linacre. This is certainly something to celebrate! Please join us in recognising this great news.

Anne Keene

Linacre Events

Italian Linacre debate

Italian Linacre Society organisers and debaters

For 16 successive years, the impressive Italian Linacre Society has organised a Linacre Lecture in Italy. This year, they opted for a new format; the 2015 Oxford Union-style debates on the UK and Europe, held in Florence on 10 October, were informative and entertaining. We warmly thank **Professor Maurizio Lupoi** (1964) and **Professor Sabrina Bruno** (1990) for their detailed organisation, and the four debaters: **Professor Giacomo Vaciago** (1965); **Dr Nick Brown** (1986) Principal; **Professor Carlo Mortara** (1969); and **Professor Patricia Springborg** (1971), for a spirited debate on this topical subject.

Listening on tour of Uffizi

In the morning, Linacre's Italian members were hosted to a wonderful private tour of the Uffizi, organized by **Dr Eutimio Tiliacos** (1970), who we warmly thank for such a special visit. We look forward to the Italian Linacre Lecture 2016, and will publicise details in due course.

Anne Keene

Lawyers' network

This Linacre network, set up in 2009, holds events twice a year in London, and, whenever possible, elsewhere. For example, there have been Lawyers' Dinners in New York, and one-on-one meetings between members are arranged when travel unexpectedly enables these. On Thursday October 15th a convivial dinner for network members new and old was held in the Oxford & Cambridge Club in central London. The Principal and Director of Development were delighted that most of the conversation was in sufficient high-level legalese that they didn't completely follow everything discussed; an important aim of the network is, under the 'Linacre umbrella', to engage its members professionally. Many thanks as ever to **Dr Paul England** (1993), Network Chair, for his dedicated work in building the network; he next plans a lunch in London for Linacre Lawyers, on Friday, 6 May, 12.30pm at Bacco, off High Holborn.

Anne Keene

Scholarship holders lunch

18 of Linacre's 33 scholarship holders were able to linger long enough for a photo following the annual lunch on 9 November to introduce them to each other and inform them about the benefactors who enabled their scholarship.

Supper with students

Dr Chandrika Nath (1993) returned to Linacre on 20 November to spend an evening with current students at a tray supper. Chandy spoke about her studies and her career since leaving College, emphasising the transferable skills she learnt during her DPhil in particle physics.

Dr Chandrika Nath (1993) and current DPhil, Computer Science candidate, **Norbert Nthala** (2015) from Malawi

Chandy is currently Deputy Director at the Parliamentary Office of Science and Technology (POST) where she works at the interface between science and politics. As well as her own research on a wide range of topics, she also oversees the researchers who prepare the POSTNotes. In addition, she advises foreign governments on how to collect evidence on the important issues of the day, for politicians in such countries as Kenya and Malawi.

The students who attended the supper had plenty of questions to ask Chandy, and some were interested in the internship opportunities at POST.

Ros Connell

Linacre Events

Hugh Brody seminar

Hugh Brody and Linacre OM **Dr Philippa Cullen** (1968) meet after seminar

The anthropologist and film-maker, Hugh Brody, came to Linacre at the start of Michaelmas term to give a Linacre seminar. His talk, which included excerpts from his film *Across the Sand*, was about the ‡Khomani-San land claim in the late 1990s. Hugh explained how the San Bushmen, having been deprived of their land divided into those who secretly still spoke the ‡Khomani language but lived in townships, and those who still considered themselves hunters and still tried to live off the land.

The audience was extremely enthusiastic and discussions continued about the Bushmen, the ‡Khomani-San language and, in particular, the three elderly ladies who were captured on film. It showed that discrimination against indigenous people is repeated across the world, so the seminar struck a chord with those anthropologists listening, regardless of their particular geographical area of interest.

Hugh Brody stayed for Guest Night Dinner, along with a number of Anthropology Fellows and continued to talk about his work.

Ros Connell

Looking ahead…

Saturday, 9 April • Linacre Dinner, Washington, DC in conjunction with Oxford North American Reunion, 9-10 April

Friday, 6 May, 12.30pm • Linacre Lawyers' Lunch, London at Bacco, off High Holborn

Saturday, 14 May • 50th Anniversary Campaign Celebration Dinner Ark Hills Club, Tokyo

Tuesday, 17 May, 6.30-9.00pm • Linacre London Reception at Taylor Wessing LLP
Dr Matthew Beaumont (1995) to talk about his book, *Nightwalking: A Nocturnal History of London*

Saturday & Sunday, July 2 & 3 • Linacre Summer Gaudy Matriculation years 1982 – 1991

Friday, 16 September • Linacre Reception & Event details tbc, in conjunction with the Oxford 'Meeting Minds' Weekend, 16-18 September

Keep up to date Details on these and other events are published on the College website, **http://www.linacre.ox.ac.uk/old-members-friends/old-members-friends-events.**

New Linacre society

The inaugural meeting of the Linacre Gloucestershire Society took place in Cirencester on 17 October. It is a credit to the strength of community in our College that a group of people who had not met before could get together, exchange stories, make new connections and have a really enjoyable evening. We plan to meet again in 2016 and would be delighted to welcome other Old Members who live in Gloucestershire or thereabouts. We are not taking the county boundary too seriously so if other Old Members would like to come along to the next convivial dinner of Linacre's 'West Wing' please do get in touch with Annis May Timpson, annis.timpson@linacre.ox.ac.uk You would be most welcome.

Annis May Timpson

Many thanks to Catherine and Blake Morton for photographing everyone together at The Crown, Cirencester. (L-R): **Annis May Timpson** (1977), Ben Catley-Richardson, **Jenna Catley-Richardson** (2008), **Dorianne Congdon** (1984), Tracy Perry, Ben Johannes, **Venetia Congdon-Johannes** (2010), Ian Read, Tim Congdon, **Grace Eden** (2006), Heath Rose (Fellow), and Chris Morton (Fellow)

Informal photos are often taken at Linacre events, and may be used in College publications or on the website. Please let us know if you do not want to be photographed.

Linacre and the Ocean

Dynamics of the Southern Ocean

Geoff Stanley (2013) is pursuing a DPhil in Atmospheric, Oceanic, and Planetary Physics after completing a MSc in Physical Oceanography at U Victoria and a BMath in mathematical physics at U Waterloo. He thinks perhaps too frequently about climate change, trying to reduce his own personal footprint, and is also fascinated with endurance athletics (see p16).

Water, as the source of all life, is immeasurably important. Its formlessness, its chaotic swirling, its darkness at depth – it is an ideal metaphor for the void before time, the abyss without light, the lack of differentiated matter. The *Rig Veda* surmises that there was a time before space or sky, but only questions whether there was a time before the ocean: *There was neither non existence nor existence then: there was neither the realm of space nor the sky which is beyond. What stirred? Where? In whose protection? Was there water, bottomless deep?*

It turns out the ocean is not infinitely deep. On average, it's about 4km deep. In some sense that is extremely shallow: its surface stretches tens of thousands of kilometres wide, so its depth is on a par with the thinness of a piece of A4 paper. Yet infinity is a useful concept when thinking about the ocean. Its top three metres store more heat than the entire atmosphere, and 90% of the additional heat from global warming enters the oceans. Its motions span spatial scales from millimetre-sized 3D turbulence, through wind-generated overturning spirals tens of metres in size, through fronts between cold / warm or fresh / salty waters kilometres wide, to eddies – equivalent to atmospheric storms – the size of one to ten Oxfordshires and persisting for many months, and finally to ocean currents stretching thousands of kilometres.

These complex motions arise from the Navier-Stokes equation governing fluid dynamics: a partial-differential equation, simple enough to write down, but whose nonlinearities couple disparate spatial and temporal scales together and make it impossible to solve. Unlike other fields of physics, in physical oceanography we *know* the equations: our task is but to understand them.

My own research focuses on the dynamics of the Southern Ocean, essentially asking how do the Navier-Stokes equations boil down when applied to a stratified fluid (dense fluid beneath lighter fluid) on a rotating sphere in a circumpolar channel with a southern boundary (Antarctica) and accelerated eastwards at the surface (by the westerly winds). What results is the Antarctic Circumpolar Current: the world's largest ocean current, carrying 115 times more water than all rivers combined, and of immense climatic importance. Its strong eastward flow is a barrier to north-south mixing, helping to keep sea ice plentiful on the coasts of Antarctica. Beneath this sea ice, the densest water anywhere in the ocean is formed. It sinks and spreads northward to occupy most of the global ocean's volume, determining the heat and carbon storage in the vast reservoir that is the deep ocean.

My research goal is to boil down the Navier-Stokes equations to a simpler set of equations that capture the ACC's key features. Uniquely, the ACC extends to the sea floor, so must navigate around complex marine topography. We've noticed that water throughout the Southern Ocean's interior broadly satisfies a particular set of relationships between its density, its stratification, and its total (including the Earth's rotation) angular momentum. With this, we've reduced the complex 3D circulation problem to two 2D circulation problems: one at the surface and one at the sea floor, with the latter strongly influenced by topography. This is a model of ocean circulation, and when we set the relationship between density, stratification, and total angular momentum uniform throughout the Southern Ocean, the model's circulation realistically wends around Antarctica, slightly leaning into, then deflecting around, topographic barriers. This (relatively) simple model allows us to study the influence of realistic topography on the ACC path. However, it cannot be telling the whole story as it does not capture the ACC's 90° northward deflection at Drake Passage. We are currently researching how to minimally extend this model to capture this prominent deflection – to understand *why* the ACC performs this feat.

Properly understanding the *why* of the present circulation is key to predicting the future. The westerly winds that drive the ACC tend to shift south under global warming. Will the ACC follow, or do topographic barriers such as Kerguelen Plateau, southeast of Africa, keep it north? Is there a tipping point, wherein a marginally further southward shift of the westerlies causes a jump of the ACC across Kerguelen? The answers to these sorts of questions, made important in the face of climate change, are hidden within the deceptively complicated Navier-Stokes equation, and we are gaining insight by solving simpler, reduced versions that retain the key features.

On August 30, **Dr Caroline Bowen** (2003) set off in the 70' ocean racing yacht, *Qingdao*, on the gruelling 40,000 nautical mile Clipper Round the World Race. Learn more on www.clipperroundtheworld.com and read her amazing blog, http://8postcards.tumblr.com/

Linacre and the Ocean

Modelling Southern Ocean ecosystems

Dr Jess Melbourne-Thomas (2003) is a Research Scientist at the Australian Antarctic Division and a project leader for ecosystems research at the Antarctic Climate and Ecosystems Cooperative Research Centre. She is a member of the Australian delegation to CCAMLR and was named Tasmanian Young Tall Poppy of the Year in 2015 by the Australian Institute for Policy and Science for her work in communicating marine science. Jess is particularly interested in the role of women in science and leadership, and is a founding member of the Women in Polar Science (WiPS) network and the Homeward Bound project. (www.homewardboundprojects.com.au).

I grew up diving in the magical kelp forests of Tasmania, so it was almost inevitable that I would fall in love with the marine environment, and pursue a career in marine science. At 21 I travelled to Oxford as a Rhodes Scholar and from there bounced around the corals reefs of the world – Indonesia, Mexico, the Philippines and more – and eventually landed back in Tasmania. Here, in a place that is a gateway to Antarctica, I have found my niche: developing mathematical models of marine biota right through from phytoplankton and krill to emperor penguins and whales.

Let's start with some statistics on why Southern Ocean ecosystems are so important on a global scale. First, Antarctica and the Southern Ocean cover nearly 10% of the Earth's surface. This very large region is responsible for around half of the carbon uptake by the global oceans, and so it plays a key role in global climate regulation. The biology of the Southern Ocean is equally important on a global scale. One species, Antarctic krill, makes up an estimated biomass of nearly 400 million tonnes, more than that of the global population of humans (all concentrated south of 60 degrees south!). Over half of this biomass is eaten by whales, seals, penguins, squid and fish each year, and is replaced through reproduction and subsequent growth of the krill population. Potential catch limits for Antarctic krill are equivalent to 11% of current global marine fisheries landings, and this species could play an important role as a marine protein source in the near future as other global fish stocks decline. However the potential effects of increased harvesting of krill on the Antarctic ecosystem – together with the effects of a changing climate – are currently unknown.

Southern Ocean ecosystems are changing and will continue to do so as the ozone layer recovers and as climate change and ocean acidification continue to modify ocean habitats. A key challenge is to develop policy and regulatory frameworks that can respond to these impacts in a timely manner to conserve marine ecosystems and the services they provide. CCAMLR (the Commission for the Conservation of Antarctic Marine Living Resources) is the international commission that is responsible for the management and conservation of Antarctic marine ecosystems. CCAMLR was established in 1982, has 25 member countries (and 11 acceding states), and agrees a set of conservation measures that determine the use of marine living resources in the Antarctic based on the best available science. When I first attended a CCAMLR meeting I wondered if they were speaking a different language. I am only just starting to understanding the complexities associated with decision making in CCAMLR and just how much has been achieved in this consensus environment.

CCAMLR is widely known for its ecosystem approach to managing fisheries. However, there are significant challenges in developing ecosystem based management approaches that will be robust to future change. Marine ecosystems are not only difficult and costly to observe and understand (particularly in remote and extreme parts of the world like the Southern Ocean); they are also inherently very complex and nonlinear. In many ways it is this complexity that drew me to marine ecosystems research, and that makes my work so interesting! Building ecosystem models as 'flight simulators' is the most powerful approach we have for evaluating what marine ecosystems might look like under different future scenarios. My research uses these models to simulate and test different management strategies and to help determine what's driving change in particular components of the system. These results can then inform where and how we might best coordinate and invest in further research and monitoring. My current work is centred around the development of ecosystem models to provide assessments of the past, current and future state of Southern Ocean ecosystems, and to evaluate approaches for achieving conservation and sustainable utilisation of marine biota – including taking account of the impacts of climate change. This includes models targeted at particular species of interest, as well as end-to-end models that integrate physical, biogeochemical and ecological processes.

We are seeing rapid and striking changes in marine ecosystems globally: coral bleaching, kelp die-off and overgrazing by urchins, declines in sea ice habitats and associated biological changes in the Arctic and in some regions of Antarctica. Will we be able to predict and respond to future changes and design robust management approaches for the systems on which so many of us depend? Ecosystem modelling and forward-looking management frameworks like CCAMLR are our best chance of doing so.

Linacre and the Ocean

Whales, whaling and the Southern Ocean

Dr Jennifer Jackson (1999-2004, DPhil in molecular phylogenetics), is now a molecular ecologist at the British Antarctic Survey, and chairs the 'Southern Hemisphere' sub-committee of the International Whaling Commission's Scientific Committee.

Whales are the largest mammals on the planet, and a taxonomic sub-order of extreme characteristics: the longest seasonal migration of any mammal species and the smallest prey relative to body size of any mammal. Only 14 great whale species swim the planet but their impressive size and charismatic behaviour attract public attention and enthusiasm on a global scale, with whale tourism estimated to exceed £1 billion annually.

Thirteen of the great whales comprise the sub-order Mysticeti, the key feature of which is the presence of baleen plates for filtering large quantities of tiny zooplankton prey. Mysticetes first occurred in the fossil record roughly 34 million years ago. Early whales had teeth, but developed filter-feeding adaptations around 30 million years ago. The main modern radiation of baleen whales occurred in the mid-Miocene 15-23 million years ago, when increases in atmospheric oxygen and diatom diversity triggered the evolutionary radiation of the biggest whale family, the lunge-feeding Balaenopteridae, or rorqual ('furrow') whales. Interestingly, this radiation seems to have happened so rapidly that even today, with deep genetic sequencing of balaenopterids, including humpback, blue, fin and minke whales, the inter-relationships between these species cannot be distinguished. Calculating inter-species relationships is also challenged by the fact that rorqual whales can produce viable inter-species hybrids in the wild, which further obscures genetic distinctions between species.

The Southern Ocean is a key feeding ground for most great whale species, including humpback, fin, blue, minke and sei whales. The remote and inhospitable nature of the Southern Ocean also protected its visitors from centuries of widespread and unregulated whaling in warmer and more accessible seas. Rorqual whales were not regularly targeted for whaling during the age of sail because they swim fast and sink when killed. However, invention of the bow-mounted exploding harpoon by Norwegian Sven Føyn in 1860 finally allowed steam-powered boats to gain an edge in the war on whales. Coupled with an air compressor, this innovation could secure a fast-moving whale, and then rapidly pump in air, keeping it floating for capture.

Once this technology had decimated North Atlantic whale populations, eyes turned to the Southern Ocean, the last great frontier for marine exploration and last great haven for whales. Southern Ocean whaling was first conducted from whaling stations on high latitude South Atlantic islands, where whales were flensed and processed. Later, factory ships enabled full offshore processing of whales, allowing whalers to access the most remote waters where whales remained abundant. By the time the fishery collapsed in the late 1960s, over 2 million whales had been killed in the Southern Hemisphere in the 20th century alone. It is easy to forget that for 200 years, the world ran on whales: they were in food, transport, clothing, cleaning products and machinery, even fertilizer. At the same time, populations were dwindling to very low numbers, with declining genetic diversity and survivors persisting in marginal or remote habitats.

The International Whaling Commission (IWC) was set up in 1946 to facilitate orderly development of the whaling industry and conservation of whale stocks, but was unsuccessful in achieving either. Following the collapse of whale populations and the whaling industry, IWC member countries voted to place an international moratorium on commercial whaling, coming into force in 1986. The moratorium has never been lifted, as this requires the support of 75% of member countries; IWC membership is currently a roughly even split between pro- and anti-whaling countries.

After 30 years of protection, there are encouraging recovery signs. Humpback whale populations have rebounded strongly in some oceans, although patterns vary and at least two populations remain endangered. Right whales, following centuries of exploitation, remain low in abundance, as does the slow-growing Antarctic blue whale. As populations recover, the next great challenge will be to understand the interplay of whale population dynamics with the changing marine environment, as changes in sea ice volume and krill abundance are predicted. Working with ocean mammoths is costly per datapoint, and mathematical precision is often painfully elusive, but as zooplankton-fuelled, charismatic harbingers of a healthy marine ecosystem, they are key components of the marine food web, and can also send politically powerful messages about marine biodiversity, useful for marine habitat protection of many other species great and small.

The website for the International Whaling Commission, https://iwc.int, is an excellent resource for information on whales and whaling, and includes a small but fascinating catalogue of whale acoustics.

Fellows' Focus

Samar Khatiwala, Professor of Earth Sciences,

credits watching BBC nature documentaries as a child with first sparking his interest in the environment and natural history. His first science degree was geology – an unusual choice in India. He subsequently embarked on a palaeontology PhD in the USA, but within a year his interests in evolution and fossils morphed into an interest in reconstructing past climate, and a few years later to using chemical tracers to study ocean circulation. (These chemicals – both naturally occurring ones such as `radiocarbon', used to date archaeological artefacts, as well as manmade ones such as chlorofluorocarbons (CFCs), used in refrigerators until it was discovered they destroy ozone in the atmosphere; and tritium, produced during nuclear weapons testing – tag seawater at the surface of the ocean and allow oceanographers to track its subsequent motion as it flows through the ocean interior.) Eventually, after postdocs studying ocean waves and developing computer models of El Niño, Samar found the focus of his current research: the global carbon cycle and climate.

Carbon, one of the most common elements, and the foundation of life on Earth, is found in the atmosphere, the ocean, the land, and vegetation, and moves between these reservoirs in the global carbon cycle. These interactions are immensely complicated and technical, and the mind-boggling detail is beyond the scope of this article but, broadly, over hundreds of millions of years, a variety of 'negative feedbacks' keep the system in balance and carbon dioxide concentrations in the atmosphere, and hence Earth's climate, within a narrow range. However, the massive and, relative to geological timescales, near instantaneous release of CO_2 into the atmosphere by human activities such as burning of fossil fuels has knocked the system off kilter, with potentially dangerous consequences.

Luckily for us, unlike most gases, CO_2 readily dissolves in seawater and Samar's research has shown that a third of all anthropogenic CO_2 emissions are currently sequestered in the ocean, thus mitigating the human impact on climate. One can't actually directly measure 'human' CO_2 concentrations in the ocean, as one CO_2 molecule is indistinguishable from another, but the same chemicals that allow oceanographers to track seawater in the ocean can also be used – with a bit of maths Samar developed during his PhD and which seemed only of theoretical interest at that time – to calculate how much fossil fuel CO_2 has dissolved in the ocean since the beginning of industrialisation. Unfortunately, this absorption also makes seawater more acidic. That, along with the fact that CO_2 is more soluble in cold water, means that as the ocean surface both warms and becomes more acidic, not only does it have less capacity to absorb CO_2, but it also releases CO_2 back into the atmosphere due to this lower capacity, a `positive feedback' that may accelerate global warming. Understanding and modelling this complex interplay between climate and the carbon cycle is thus one of the fundamental challenges in current research, and the key to understanding human impact on Earth's climate.

Samar is also concerned with the physical circulation of ocean currents and life forms and, in particular, the `biological pump', whereby surface phytoplankton bloom and die, and then sink to carry `dead' organic carbon to the ocean floor. He is especially excited about a major Research Council project, led by scientists at the University of Southampton and involving several institutions in the UK, including Oxford, to carry out one of the most detailed investigations of the biological pump to date. His role in the project is to develop a computer model that is capable of simulating the dynamics of the microscopic particles of `dead' organic matter as they collide with and stick to each other, break apart when eaten by microscopic animals called zooplankton, and ultimately sink into the deep ocean where bacteria feed on them to respire CO_2 back into the surrounding water. The model must be able to cope with immense numbers of interacting particles (there are trillions of phytoplankton in just one cubic metre of sea water), as well as fluctuating factors such as ocean currents, time of year, temperature, and amount of sunlight. The model they are developing will use GPUs – graphics cards for games which are adept at doing parallel calculations. They are not easy to use, and are only useful for very particular types of problems, but where they do work, they can increase speeds by up to 100 times. (Oxford, it turns out, is a leader in this field.) It is hoped that eventually there will be a dynamic, fast, and very responsive mechanistic model that can predict what will happen to ocean biology under variable conditions.

Samar's work is driven by curiosity and, ultimately, underpinned by optimism. He believes that we will eventually find technological solutions to climate change once we have the political will to commit to paying the cost of developing those solutions. While it's clear that he is deeply engaged in his academic research, Samar has another passion – cooking. Contrary to what one might expect, he is not a Heston Blumenthal type, preoccupied with the scientific understanding of food. He instead enjoys simpler, rustic food and cooks every day. You can learn more about his culinary adventures (and pick up some great recipes) on his blog, http://www.oishiirasoi.com/. Samar initially expressed reluctance to be the subject of the Fellows' Focus because he might be 'too boring'. He is anything but.

Marsaleete Anderson

Fellows' News

New Fellows

Dr Laura Van Broekhoven became the new Director of the Pitt Rivers Museum, and a Linacre Fellow, on March 1. An expert on Amerindian archaeology and cultural history, she has conducted archaeological, ethnographical and archival fieldwork in Mesoamerica, the Andean Region and Central American. She was previously Head of the Curatorial Department and Curator of Middle and South America at the National Museum of World Cultures in The Netherlands, and Assistant Professor of Archaeology and Indigenous Heritage Studies at Leiden University. She is particularly interested in questions of decolonisation of museum collections and galleries and issues concerning repatriation and collaborative museology with indigenous and diaspora communities.

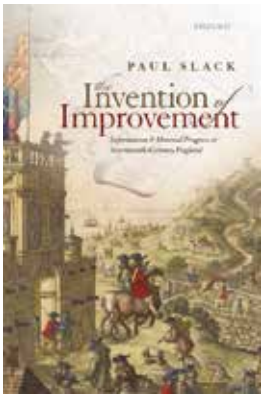
Professor Robert Iliffe, now a Linacre Fellow, was appointed Oxford Professor of the History of Science from 1 January 2016. Previously Professor of Intellectual History and the History of Science at the University of Sussex, Professor Iliffe's main research interests include: the history of science 1400-1900; historical relations between science and religion; the role of science and technology in the 'Rise of the West'; environmental history; and digital history. He is Editorial Director of the online Newton Project and co-editor of the journal *Annals of Science*.

Dr Cezar Ionescu, a fellow of Linacre since October 2015, is Associate Professor of Data Science at the Department for Continuing Education. His main interests include functional programming, program calculi, domain-specific languages, and mathematical education. His recent work focuses on correctness of scientific computing and modelling with synthetic populations. He obtained his PhD from the Department of Mathematics and Computer Science of the Free University Berlin.

Dr Heath Rose, Associate Professor of Applied Linguistics in Oxford's Department of Education, is a specialist in second language teaching and learning. He has taught for nearly two decades, beginning in Australian schools before moving into higher education at The University of Sydney. His career then took him to universities in Japan, and on to Trinity College Dublin, before joining Linacre on 1 September 2015. His main research interest is the field of Global Englishes, in which he examines the impact of the global spread of English on language pedagogy. He also retains an interest in the teaching and learning of Japanese as a foreign language (especially the written language).

Professor Dan Robinson, a Fellow of Oxford's Faculty of Philosophy and a Visiting Senior Member at Linacre, was recently elected a Linacre Adjunct Fellow. He is also Distinguished Professor Emeritus at Georgetown University and previously held posts at Amherst College, Princeton University and Columbia University. His research interests include the philosophy of the mind, of psychology, and of law.

Pepys Award to Slack



Professor Paul Slack, former Principal of Linacre (1996 – 2010) and Honorary Fellow, has won the 2015 Samuel Pepys Award for his book, *The Invention of Improvement: Information and Material Progress in Seventeenth-Century England* (OUP). The prize and medal, presented in a ceremony in London this past November, are awarded to the book which is judged to make the greatest contribution to the understanding of Samuel Pepys, his times or his contemporaries. His books on 16th and 17th century English social and economic history also include *The Impact of Plague in Tudor and Stuart England* (OUP).

History of Science Medal

Professor Robert Fox, Linacre Emeritus Fellow, is the 2015 recipient of the George Sarton Medal, the most prestigious award of the History of Science Society. This annual award recognises a lifetime of scholarly achievement across an international community of historians of science. Professor Fox held the chair in the history of science at Oxford from 1988 – 2006. His main research interests are in the history of the physical sciences and technology in Europe, particularly France, since the eighteenth century.

Fellows' News

Royal Academician

Congratulations to **Professor Brian Catling**, Linacre Fellow, who has been elected a Royal Academician (RA). Membership is limited to only 80 practising artists who work in the UK, and all are selected for this prestigious honour by their peers. RAs, as leading artists, are involved in the strategy and programmes of the Royal Academy, and also have opportunities to exhibit their work, as well as teach and lecture.

In a 'banner year' for Brian, Penguin Random House and Hodder & Stoughton have just purchased volumes 2 and 3 of his *Vorrh* Trilogy. The *Vorrh 1*, which came out last year and was described by one reviewer as 'a dizzying trek into the dark heart of fantasy', is scheduled to be made into a long format TV series directed by Terry Gilliam.

Ebola Medal for Service

Congratulations to **Professor Nicole Zitzmann**, Linacre Supernumerary Fellow, who was awarded the Ebola Medal for Service in West Africa. The medal was specially created in 2015 to honour UK civilian and military personnel who volunteered their time and expertise to help tackle the recent Ebola crisis in West Africa. Professor Zitzmann is Head of the Antiviral Research Unit and Director of the Oxford Glycobiology Institute in the University's Department of Biochemistry, where she leads a research group developing antiviral therapies to combat a host of viruses, including Ebola. She spent an intensive five weeks in Sierra Leone last March and April, in difficult and demanding circumstances, as one of two team leaders for a team of 12, who were there to diagnose patient samples as rapidly as possible. The medal was presented to her by the University Vice-Chancellor in an October ceremony at the Department of Biochemistry.

Dr Shonil Bhagwat, Linacre Old Member (1997), former Linacre Fellow and Senior Tutor, and now Linacre Adjunct Fellow and an academic at the Open University, is the co-author with Andrew Newsham (SOAS) of *Conservation and Development*, published earlier this year for the *Routledge Perspectives on Development series*. The book focuses on the 'intersection between biodiversity conservation, poverty eradication and sustainable development' to provide an 'introduction to the uneasy trade-offs emerging as environmental concerns arise amidst economic expansion'. A copy is available in the Linacre Library.

JRF News

Dr Bartlomiej Papiez, Linacre EPA JRF, is a member of the team from Oxford's Institute of Biomedical Engineering who won the MICCAI 2015 Challenge on Liver Ultrasound Tracking. Their winning entry was selected as the best performing method based on extensive validation using anonymised, independent annotated data sets coming from different research centres from around the world. Ultrasound, while being a non-invasive, non-ionising, low-cost and near real-time imaging modality, still requires dedicated fast and accurate motion compensation due to patient breathing, in order to further establish its clinical routine use in image-guided procedures.

Dr Joris Hemelaar, Sir Paul Nurse JRF at Linacre, and University Clinical Lecturer in the Nuffield Department of Obstetrics & Gynaecology, has recently published a paper in *Lancet HIV* which finds that 'maternal HIV infection in women who have not received antiretroviral therapy is associated with preterm birth, low birthweight, small for gestational age, and stillbirth, especially in sub-Saharan Africa. Research is needed to assess how antiretroviral therapy regimens affect these perinatal outcomes.' For further information, see http://dx.doi.org/10.1016/S2352-3018(15)00207-6

In December former Linacre Sir Paul Nurse JRF in Biomedical Sciences, **Dr Rebecca Burton**, was awarded a 5-year Sir Henry Dale Fellowship, jointly funded by the Royal Society and Wellcome Trust. The Fellowships are for outstanding postdoctoral scientists wishing to build their own UK-based independent research career addressing an important biomedical question. Rebecca, now a Principal Investigator in the Department of Pharmacology, proposes a multi-disciplinary approach, ranging from conventional electrophysiology to state-of-the-art tissue engineering and optogenetics, and development of novel high speed optical microscopy techniques. The results will allow a better understanding of the basic biological mechanisms of sub-cellular calcium signalling and the aetiology of Atrial Fibrillation (a common rhythm disorder), directly relevant in the development of new treatment therapies. http://www.pharm.ox.ac.uk/research/rebecca-burton

College was thrilled to learn that former Linacre JRF, **Professor Garry L Taylor** (1984), became the Acting Principal of the University of St Andrews on January 1, 2016 when their previous Principal and Vice-Chancellor, Professor Louise Richardson, became Vice-Chancellor of Oxford University.

Advancing Linacre

Convivial college community

Last autumn saw a flurry of Linacre events; messages and e-mails were flying to and fro, full either of anticipation or of warm memories of the first events. The gatherings followed each other in quick succession: Pitt Rivers Museum, enticing and engaging us, followed by a College Dinner; an inaugural Linacre Hike; the Italian Linacre Debate in Florence which saw participants keenly rehearsing arguments; the start of the Gloucestershire Linacre network; preparation for the Hugh Brody Anthropology Seminar; looking forward to the Lawyers' Dinner in London; sending out invitations for our annual Thomas Linacre Circle lunch, and Scholarship Holders' lunch, both in College; and spreading the word about the April dinner in Washington DC. These were interspersed with one-on-one coffees and lunches, as Old Members visited College from Belgium, Canada, Colombia, France, Greece, Italy, Japan, New Zealand, Scotland, Spain, Switzerland, Thailand, Wales, and the US, and as our proactive Common Room President Kiron Neale, while on a conference, met with an equally proactive Old Member living in Turin, thanks to Marsaleete who had expertly put them in touch.

It's heart-warming to be part of this energetic and enterprising group of Linacre members. I hope that those reading, have been able to attend at least one Linacre gathering during the academic year.

Anne Keene

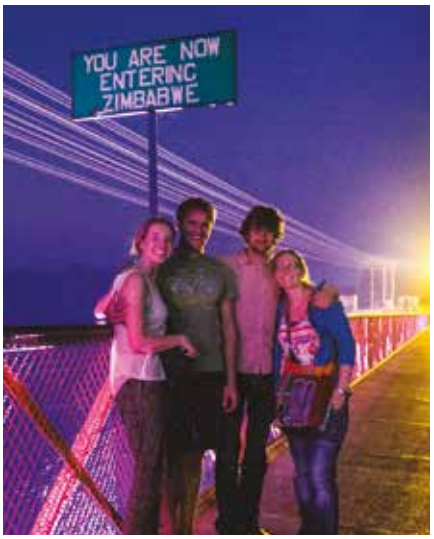
USA: Professor Malcolm Watford (1974) reports, 'Linacre is alive and well in this area', after a happy sequence of reunions with friends from his Linacre era. He is pictured below:

With **Paula Schlinger** (1976) for her traditional chili lunch on New Year's Day

With Wendy and **David Blakey** (1976) in New York City, December 2015

With **Chris Radnell** (1974) in Princeton, New Jersey, November 2015

Italy: When then-Common Room President, **Kiron Neale** (2014) attended a conference in Turin this past September, he asked to be put in touch with any Linacre Old Members in the city. **Professor Astrig Tasgian** (1970), kindly meet up with Kiron. A passing stranger obligingly snapped this happy photo of them as they walked around the city together.



Zambia: Margot Leger (2014) and **Matthew Davey** (2014) ran into Linacre Old Member **Dr Franziska Meinck** (2009) and Thees Spreckelsen (who taught Matthew how to row) as they crossed the border into Zambia. 'It was a completely random meeting – and lovely making the Linacre connection so far from home. I've attached a photo of us on the bridge over the Zambezi (suspended between Zimbabwe and Zambia) enjoying the full moon.'

Thomas Linacre Day in Seoul

Linacre Old Members met up in Seoul on October 20, 2015 (Thomas Linacre Day). Pictured L-R: **Dr Sukjo Kim** (1969); **Professor You-Kyung Suh** (1986); **Dr Jihwan Song** (1992); and **Dal-Ho Chung**, Oxford Foreign Service Programme (1977). Other Linacre Old Members in Korea are very welcome to join them. E-mail alumni.relations@linacre.ox.ac.uk to be put in touch.

College News

Double silver

(L-R): Michael Bockett, the Principal, Derek Soden

It was a double celebration on 2 October as College staff celebrated 25 years at Linacre for both **Michael Bockett**, Head Chef and **Derek Soden**, 2nd Chef. Since Michael began his College career as 2nd chef on 3 June 1985, returning to become Head Chef after an interlude elsewhere, he is able to say, 'I was here before the Bamborough Building.' It is no wonder, given the dedication of Michael and Derek, that Linacre has such a long-standing reputation for outstanding food for students, staff, visitors and Fellows alike. Thanks to the home baking efforts of the Principal's PA, Jo Whitfield, on this occasion Michael and Derek did not have to provide the treats.

Thanks and welcome

Nick Druce

We were sad to say 'good-bye' in December to **Rachel Rawana**, Development and College Office Assistant, as she returned to Toronto to take up a position as Program Manager & Executive Assistant at The Mosaic Institute, a non-profit 'think and do tank' which celebrates diversity and promotes international peace and development. Rachel's ideal combination of efficiency, initiative, and personal warmth made her an invaluable member of College, ably fulfilling multiple roles. We wish her well as she returns to work in global affairs.

We also warmly welcome **Mrs Kirsty Scott**, who made an enthusiastic start on January 4 as Development and College Office Assistant. Kirsty brings substantial administrative experience from her previous position with a local business. She and her husband, Chris, enjoy city breaks around Europe as they tick off their 'bucket list'; next up is Prague. She has a son, Sam, who is studying at college, as well as a menagerie of pets. Kirsty's pastimes include creative writing.

In Memoriam Rosalind Brain

Rosalind, who died in September 2015, was a Linacre Fellow for 23 years, and Emeritus Fellow 1989-2015, marking up an impressive record of 49 years' College membership. Awarded a double first in Classics from Lady Margaret Hall, she initially taught Latin in Glasgow, before moving into Administration at Glasgow University, a career she continued in Oxford from 1966. Rosalind's eventual final post at Oxford University before retiring was as Senior Assistant Registrar. She was the first woman to be appointed to this position, and her impressive skills and attention to detail were legendary. At Linacre she was much involved in the Boat Club, having a boat named for her, and regularly cheering on the crews. She was also a Life Member of the Oxford Harmonic Choir, as Chair for 5 years, and a key committee member for 20 years. Rosalind will be remembered at Linacre with much affection; her regular attendance at many events, and her ongoing interests in all things Linacre was evidence of her strong commitment to College. Our deep sympathy is extended to her five nephews and nieces, and to their two subsequent generations, many of whom spoke with great warmth, at Rosalind's funeral.

Anne Keene

Sporting Linacre

Football success

This season Linacre Football Club has gone from strength to strength. For the first time in as long as anyone here can remember we have enough players to field three teams: two men's teams and a joint women's team with Pembroke and Corpus.

Peter Holmes (2012), produced this promotional chalk drawing for the Club, which includes a play on the College's unofficial motto, 'No End to Learning'

The Men's 1sts remain unbeaten in the league for two seasons and are seeking back-to-back promotions into the dizzy new heights of MCR Division 1. We're now in the semi-final of MCR Cuppers – the big one – which is a massive result for us, especially given that we've gloriously crashed out of the cup at the first hurdle for the past three seasons running. We're made up to have got this far but are hoping we can go the distance and brighten up the CR with a new bit of silverware. The Men's 2nds have heroically battled their way through the team's inaugural season. Often scraping players together at the last minute and taking the odd pasting, this team shows just how many Linacrites (about 25-30 every week) are keen to play college football. **Max Heikenfeld** (2014) and **Aidan Robinson** (2012) have done an absolutely stellar job captaining the side. Take a bow.

The Linacre Women's team, joint with Corpus and Pembroke, have smashed their way through the first half of the season. Sitting third in Division 2, at the time of writing Linacre has two teams chasing promotion to the top divisions in MCR football. Fingers crossed for the rest of the year!

Roger Irwin (2014), Captain

Oxford Ultra

On 14 August 2015, Geoff Stanley and his running mate, James Bonifacio, together crossed the finish line of the Oxford Ultra – a 66-mile ultramarathon along the Thames, roughly from Farmoor to well past Henley – after 12 hours 49 minutes, taking first place for the day and setting a new course record by one minute. Although Geoff modestly hastens to point out that this is a niche sport, with not very many competitors, it is nevertheless not for the faint-hearted. He entered the race not knowing if he would finish, and at 55km (34 miles) an old injury flared up and threatened to put him out of the race. However, with James's support, and knowledge Geoff learned during his training about nutrition, muscle functioning and fatigue, he came through it. Summing up the experience, Geoff said, 'Ploughing far beyond what I previously thought were my limits, and finding my mind and body entirely capable and indeed flourishing, will remain one of the most precious memories of my life. Not only that, but it's a valuable memory to carry as I take on more challenges in life, be they physical, mental, emotional, or spiritual.'

Five volcanic peaks

Matthew Davey *and* ***Margot Leger*** *(both Linacre 2014) set off this autumn on a challenging trek to climb five of the 'other', lesser-known 9000+ft East African Rift Valley volcanoes.* *See p12 for more on a remarkable chance meeting during their journey.*

Three weeks. Five volcanic peaks. 18,800 metres total elevation. More than a thousand kilometres between them. Combining these lesser-known East African giants was always going to pose serious challenges, but we did not expect that the hiking would be the least of them! We tackled them from oldest and grandest, to youngest and fiercest. Individually, these 'other' Rift Valley volcanoes were unique hiking experiences: extinct Mt Elgon (4,302m, Kenya/Uganda) is superb for trekking, Mt Longonot (2,776m, Kenya) is a phenomenally scenic day out, Mt Meru (4,566m, Tanzania) is arguably a worthier mountaineering option than Kilimanjaro, and the active Ol Doinyo Lengai (2,962m, Tanzania), well, that one caters for a special strain of mountain madness. Combining them, however, was very tough. As we learnt, getting to the volcano is more dangerous than the volcano itself, and it always takes longer to get there than to get back. We left with a strong respect for these volcanoes, feeling privileged to have ventured across such old and new lands.

Matthew Davey

This expedition owes a debt of gratitude to the Supertramp Award from the Mountain Club of South Africa, and to a generous grant from the Irvine Fund at Oxford University, established in memory of AC Irvine of Merton College (who lost his life during the 1924 Everest Expedition), and which assists members of the University to go on expeditions to mountains in Britain or abroad. http://users.ox.ac.uk/~acirvine/.

Ladies that give

Three members of the *Linacre Ladies that Lift* have qualified for national championships in one or more powerlifting events. Emma Lewis, Isabel Stoppani de Berrié and Catherine Walter will compete in the BDFPA Single Lifts in King's Lynn on 26th March. And in a move to share their fitness beyond the lifting group, four members of the club lined up to donate blood on November 5th. Linacre's weightlifting club for women runs training sessions most Wednesday evenings, and Saturday mornings during term, for a maximum of 15 women per session. With the growing popularity of the club, most sessions are fully subscribed. To learn more about the group and the benefits of weightlifting, see www.linacre.ox.ac.uk/common_room/societies/linacre-womens-weightlifting-linacre-ladies-lift

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