Welcome

What a fantastic summer – in spite of the weather! Six alumni and one current student competed in the London 2012 Olympic games with four medal winners. Congratulations to them all. They are highlighted in this magazine.

Over 12,000 alumni followed Bristol’s Olympians on our alumni LinkedIn and Facebook pages; join our community there (if you haven’t already). The global network of Bristol alumni is growing all the time. We are holding more London networking events than ever before. We are strengthening existing alumni groups in several major cities and plan to create at least one alumni branch in China this year, marking the University’s first graduation celebration in Beijing in April. Activities like these, and the growth of our group on LinkedIn, makes Bristol’s alumni network increasingly powerful and relevant.

I hope you will keep looking out for ways to reconnect with Bristol University. Come to an alumni event near you; run for a post as an alumni representative on Court (see p25); support Bristol University with a gift to help students or world-changing research; keep reading this great magazine.

Bill Ray
Chairman of Convocation, Bristol’s alumni association
alumnibristol.ac.uk

Professor Eric Thomas (Hon LLD 2004)
Vice-Chancellor
bristol.ac.uk/alumni

It’s been a fascinating year to be President of Universities UK, as our universities have been much in the media, worldwide. Some stories were positive, such as UK universities (including Bristol) helping confirm the presence of the Higgs Boson. Others were mixed, raising questions about degree awards, relationships with philanthropists, and the place of overseas students in the UK.

I find that most media coverage of university activity misses a key question: what are universities for? When answering, it’s easy to understand the value that a Bristol degree confers on the resulting graduates, and the positive impact that our fantastic graduates go on to have on society. This is why Bristol remains one of the most popular UK universities for home and overseas students.

This is not to say that we can neglect our roles in the economy and society, or that we can ignore the negative impact of racism; and (one of my favourites) finding that we drink beer faster from curved glasses than from straight glasses. The world needs solutions, answers, and new ideas. Universities like Bristol provide them through our alumni, and our research.

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Autumn 2012
### Gardening, history and art have combined in a food-growing project, Seeds of Change: A Ballast Seed Garden for Bristol.

With help from the University of Bristol it’s now branching out to give schools and community groups the chance to gain a fresh perspective on the city’s trade and maritime past.

### ‘Rosebud’ – a special meaning

‘Earthrise’ – the first colour photo of the whole of the Earth – was taken in 1968 during the Apollo 8 mission. Wouldn’t be awful if we could see it again?

‘Earthrise’, we didn’t know what the Earth looked like from space. It was shocking, in a way – our planet looks quite fragile, a living organism suspended in space, with a very thin veneer of atmosphere. It’s been described as the most influential environmental photograph ever taken, both for Pacifism and Friends of the Earth were founded shortly afterwards.

The week before – satellite remote sensing – is directly descended from this photograph. I produce visualisations of different parts of the Earth, especially the polar regions, which can provide very powerful insights into what the planet is doing.

I keep going back to ‘Earthrise’. It’s as if you’re looking at yourself from the outside, like an out-of-body experience. You can’t help thinking ‘I need to take care of that’. There’s only one of them, after all.

Professor Jonathan Bamber (BSc 1983) School of Geographical Sciences

### New books

**Broadcasting Empire: The BBC and the British World, 1922-1970** Simon J Potter

Dr Simon Potter in the Department of Historical Studies spent eight years of research in Britain, Canada, Australasia and the USA for this study of the relationship between the BBC and the British Empire, particularly British radio and television systems. It also contributes to current debates about the legacies of empire and the shaping of Britishness and British culture. (Oxford University Press)

**The Struggle for Power in Post-Independence Colombia and Venezuela** Matthew Brown

Matthew Brown, Reader in Latin American Studies, wrote this biography of the veterans of the battle of El Santuario, fought in Colombia in 1829. The book uses untold stories of the soldiers’ lives to examine the imperial conflicts that shaped politics and society in Colombia and Venezuela after independence from Spanish colonial rule. (Palgrave Macmillan)

### Alumni in the news

Alumni, staff and students were integral to the 2012 London Olympic Games this summer – both as competitors and in the delivery and spectacle of the Games.

Five medals were won by Bristol alumni and students: Laura Bechtolsheimer (BSc 2007) won gold as a member of the dressage team and bronze as an individual; Hannah Mills, a current student and sailor, secured silver with her partner in the women’s 470 sailing; Ian Percy (BSc 1998) and his partner took silver in sailing; and hockey player George Twigg (BA 2012), sponsored by Dick Lovett, won bronze with the women’s GB hockey team.

Other alumni achievements came from hurdler Lawrence Clarke (BA 2011) who came fourth in the 110m hurdles final; Claire Hallisay (PHD 2011) who ran the marathon in a time of 2:33:38, finishing in 57th place in the event; and Vittoria Panizzon (BA 2009) who represented Italy in equestrian eventing and came 11th overall. Es Devlin (BA 1993) designed the hugely successful closing ceremony, which also featured Bristol student RAG Morris and her partner in the event; and Vittoria Panizzon (BA 2009) who represented Italy in equestrian eventing and came 11th overall. Es Devlin (BA 1993) designed the hugely successful closing ceremony, which also featured Bristol student RAG Morris and her partner.

In brief

- Michelle McDowell MBE (BSc 1984), Chair of Civil and Structural Engineering at BDP, has been named the ACE Engineering Ambassador for 2012 as its annual Engineering Excellence Awards ceremony. This award is given to individuals who have made a significant contribution to raising the profile of consultancy and engineering in the UK.
- Greg Doran (BA 1960), an award-winning theatre director, was announced as the new Artistic Director of the Royal Shakespeare Company (RSC) in March. He has worked at the RSC since 1982, first as an actor and then as a director, and has been Chief Associate Director since 2006.
- Hazel Findlay (BA 2011) became the best female mountaineer in Britain after becoming the first woman to conquer one of the toughest ascents in the UK Near Bideford in Devon, Findlay tackled a climb called ‘Onex: Once Upon a Time in the West’, which is currently graded at E9 6c. Just two grades below those regarded as the hardest in the world.
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For more information email martha.crean@bristol.ac.uk.

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### Rosebud

Gardening, history and art have combined in a food-growing project, **Seeds of Change: A Ballast Seed Garden for Bristol.** With help from the University of Bristol it’s now branching out to give schools and community groups the chance to gain a fresh perspective on the city’s trade and maritime past.

A disused grain barge, moored alongside Castle Park, has become the focus of a new and unusual living history project for Bristol. It’s been turned into a floating garden with a difference, as all its plants have been grown from seeds identified as those of ‘incidental cargo’ in the ballast holds of ships. The project was conceived by the Brazilian artist Maria Thereza Alves for Amofin with help from several partners, including the University and Bristol City Council. Over the summer it inspired a series of events that sparked discussions spanning culture, heritage, botany and art. Now the University has obtained funding from the Heritage Lottery Fund to enable local primary schools and community groups to grow ballast seed gardens of their own.

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### New an anthem for the Queen’s Diamond Jubilee

Composer Willo Tidings (BA 1991, MMus 1994) new anthem ‘The Call of Wisdom’ was performed at St Paul’s Cathedral, London during the Diamond Jubilee Thanksgiving Service in June.

The piece was performed by the Diamond Choir, made up of 40 children between the ages of 10 and 13 who were selected from around the UK to join the choirsters of St Paul’s and the Chapel Royal. The Thanksgiving Service was on the final day of a long weekend shaped by politics and culture in Colombia and Venezuela after independence from Spanish colonial rule.

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A Bengali star

Film

Parambrata Chatterjee (MA 2011) starred in the hugely successful Indian thriller Kahaani, which was released worldwide in March to great critical acclaim.

In Kahaani, Satyaki ‘Rana’, played by Chatterjee, comes to the aid of a pregnant woman, played by popular actress Vidya Balan, who is in search of her missing husband. But with nothing to rely on except fragments from her memories about her husband, all clues seem to reach a dead end and everyone she knows is trying to convince her that her husband does not exist.

The Telegraph described Kahaani as a ‘mother of a story’, and it became a worldwide box office hit, bringing in £8.82 million over 50 days. In an interview with The Indian Express, Chatterjee said: ‘I am enjoying the adulation and praise that I have been getting for Kahaani.’ Earlier, he had films only in Kolkata and neighbouring states, now it is also Mumbai and all over.’ Chatterjee, who studied Film Production at Bristol, is due to appear in a number of upcoming films next year and has recently launched his own production company called Workshops with fellow actor Rudranil Ghosh.

Playing it posh

Theatre

Posh by playwright Laura Wade (BA 1999) arrived in the West End at the Duke of York’s Theatre in May this year after sell-out performances in 2010.

Originally, Wade’s breakthrough play opened at the Royal Court in April 2010, in the middle of the run-up to the general election. The show, seen as a commentary on the Tory upper class, was such a success that it nearly sold out before the run had even started, and filled the theatre to capacity at every performance. In 2012 the play came to the West End, with an updated version of the story about ten young members of an elite student dining society, intent on planning an revolution and restoring their right to rule.

The Guardian said: ‘Wade grasped a fundamental truth about British life,’ and the 2012 production ‘retains its buoyancy and precision.’ Wade, who studied Drama at Bristol, is currently adapting the play into a feature film for Blueprint Pictures.

Up your sport

Enterprise

Alumni Nicola Broom (LLB 2004) and Steve Brindley (BSc 2005) have founded a popular website called upmysport.com, which provides a hassle-free way to book a sports instructor.

The company launched in London this summer amid the excitement of the Olympic and Paralympic Games. It provides those with a new-found interest in a sport with an easy way to get started. Steve said: ‘We want to get more people involved in sport and fitness by making it easier to find and book the right instructor, course or class. Whatever the sport: Wherever you are. From first timers to experts.’

The promising company currently has instructors all over London and is already looking to expand nationally.

Representing Bristol alumni; past and present

Legacy

Thanks to alumni Dr Derek Zutshi (MB ChB 1957, Hon LLD 1999), a new ceremonial mace was presented by Bill Ray (BSc 1975), Chair of Convocation, to the Rt Hon the Lady Hale of Richmond (Hon LLD 2002), the University’s Chancellor.

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Earth beneath our feet

Everything we see around us is affected by processes deep within the planet’s mantle and core. Understanding what’s going on down there is extremely difficult, but pioneering work by the Bristol Experimental Earth Studies research group is helping to reveal the secrets of the deep Earth.

By Chris Wraight

In Jules Verne’s seminal work of theoretical geophysics, *A Journey to the Centre of the Earth*, Professor Lidenbrock travels down a series of volcanic tubes towards the Earth’s core, encountering giant mushrooms, dinosaurs and ape-like people, before being ejected back to the surface off the coast of Sicily to write up his results.

It would be nice to be able to use similar methods to study the Earth’s deep places, but sadly Lidenbrock’s techniques are hard to replicate. The deepest mineshafts in the world reach about five kilometres, and the deepest experimental boreholes, such as the Kola Superdeep in Russia, some 12 kilometres. That might sound impressive, but it barely penetrates part-way through the topmost layer of the Earth’s crust. Getting to the ‘deep Earth’ – the mantle and the core – is still impossible. Nevertheless, the deep Earth has a profound effect on the geology of the surface. The igneous rocks we see around us depend on the incredible heat and pressure of the mantle for their production, so in order to understand fully the world ‘up here’ we need to understand something of the world ‘down there’.

The Bristol Experimental Earth Studies (BEEST) group are able to create conditions similar to those in erupting volcanoes, in magma chambers, and even at the very centre of the Earth’s core – and all within the basement of the Wills Memorial Building.

Furnaces, anvils and diamonds

Charlotte Stamper (MSci 2010) grew up in Shropshire, where some of the volcanic hills are 600 million years old, and she has long been fascinated with the question of how they were formed. As a PhD student with BEEST, she studies volcanic processes. ‘Being able to recreate in a lab something that’s going on under the surface of the earth is something I find really cool,’ she says. The BEEST group take natural rocks (or synthetic analogues of them) and subject them to the conditions that exist at various levels below the Earth’s surface. ‘The deeper you go,’ says Stamper, ‘the smaller the sample you’re working with, and the more difficult and intricate it becomes.’ Much of the equipment used by the team, including a series of fearsome-looking piston presses, is manufactured in the School of Earth Sciences’ own workshop, and some items are exported to labs across the world for use in similar work.

The first lab contains equipment capable of simulating the condition of lava as it erupts: atmospheric pressure, and temperatures up to 1,700°C. This enables the study of molten rock or magma ejected from volcanoes onto the surface. Tiny specimens – just a few millimetres across – are lowered into the furnaces, where they’re heated for long periods before being withdrawn for analysis. The next lab moves down a bit further, into the magma chambers that lie under active
The whole Earth.

Volcanic eruptions
Reading the signals
The BEEST team has used its specialist equipment to study volcanic eruptions, after the discovery that the ratio of sulphur dioxide and hydrofluoric acid emitted by volcanoes changes just before an eruption.

By examining how this relates to changes within the magma chamber itself, these experiments aim to link the observation of sulphur-chlorine ratio to what is going on under the surface, and thus to understand how the pre-eruption signal works.

“We’re getting to the stage where we can examine the material spewed out during an eruption and see the precursors,” says Stamper. “The next step is to use that knowledge to predict eruptions before they take place. Could we prevent future disasters? That’s really what we’re all striving for.”

Studying the whole Earth
So what does simulating conditions at the very centre of the Earth have to do with life on the surface? “It’s about understanding the Earth as a whole system,” says Dr Simon Kohn, Reader in Geology. “We are investigating not just the surface of the Earth, but how the carbon cycle involves the oceans and the atmosphere, and how minerals in the lab at extreme conditions.’

The result was a rare chance to compare theory with reality. As Professor Michael Walter of BEEST says, “Inclusions in diamonds are fantastically useful for studying the inaccessible part of the deep Earth. It’s a bit like studying extinct insects in amber. Although we can’t extract DNA and grow dinosaurs, we can extract the minerals’ chemical compositions and tell where they formed by growing similar minerals in the lab at extreme conditions.”

Since BEEST was established in 1989, our understanding of the deep Earth has changed out of all recognition. There’s plenty more to discover, and continued investment in the facilities at Bristol has ensured that breakthroughs will continue to be made in the basement of the Wills Memorial Building.

“Whenever we consider the array of high-pressure and temperature machinery we run here,” says Kohn, “along with all the analytical facilities that we have access to, I would say that we are one of the leading groups in the world. It’s a far cry from giant mushrooms and dinosaurs, but every bit as exciting.”

Volcanic eruptions
Studying the whole Earth

THE CARBON CYCLE INVOLVES NOT JUST THE SURFACE BUT THE WHOLE EARTH
Volcanoes. Inside ‘cold seal pressure vessels’, which look a bit like whisky stills, the sample containers are flooded with water to simulate depths of up to six kilometres. An electric heater is then used to raise the temperature to around 900°C.

The answer lies in plate tectonics: the diamonds were created when an oceanic plate was drawn down into the lower mantle, coming under enormous pressure. Diamonds were formed (with silicate mantle minerals trapped inside them) and were then thrust upward, ultimately emerging as part of volcanic eruptions.

So what does simulating conditions at the very centre of the Earth have to do with life on the surface? ‘It’s about understanding the Earth as a whole system,’ says Dr Simon Kohn, Reader in Geology. ‘For example, we tend to think of the carbon cycle as involving the oceans and the atmosphere, but recent work on diamonds shows that carbon-containing material can be pushed right down into the deep Earth, meaning that the carbon cycle involves not just the surface but the whole Earth.’

This diamond research is just one area where the BEEST group has made important contributions to our knowledge of how
When most people in the UK look back on the summer of 2012 it will probably be the successes of the Olympics and Paralympics they remember, not the weather. But for some, the UK’s wettest summer for 100 years – swiftly followed by the worst September storms for 20 years – will have left a far less pleasant legacy. From the Scottish borders to the south west of England, thousands of homes in the UK had to cope with the economic and emotional stress caused by flooding. In the future the effects of climate change could mean this stress many more of us will have to face. And with the UK’s flood defences already under strain, it looks as though we’ve soon going to have to think a lot more creatively about how we keep our homes safe and dry.

One of the more innovative ideas of recent years has been homes that float on water. Not simply houseboats but fully functioning houses that rise to avoid flooding and help ease development congestion on land. It’s a concept that’s starting to take shape in small pockets around the world, including San Francisco, Seattle and parts of Canada. Here in Europe, it’s the Netherlands, where more than half the land lies below sea level, that’s leading the way.

In the past the Dutch tried to fight against nature, now they’re beginning to realise there are some places where instead of building dykes to try and stop the water it’s natural for water to come back,’ says Daiwen Han, Professor of Hydroinformatics in Bristol’s Department of Civil Engineering. Two years ago he had the idea of seeing if students on the MEng in Civil Engineering could find a similar solution to a topical problem, by helping to put the idea of floating housing in front of students in the Netherlands, where developers often have trouble getting planning permission for floating houses. In the UK where such schemes, although rarer, obtaining planning permission is even more of a hurdle, and in the current economic climate many would be generally unwanted by finance potential buyers. Even so, there are some developments currently in the pipeline, the most advanced of which is a mix of office buildings and houses planned for the River Clyde near Glasgow. Two years on, all three are still enthusiastic about the idea of floating properties, although for the time being they are building on the solid foundations of their degrees in more traditional engineering. Han, who is now working on his PhD in Epsom, the engineering consultancy behind the Olympic Park. She’s working on designs for the underground sections of the High Speed 2 (HS2) rail project, on a project in which Melzer is also involved, although for engineers Capita Symonds in East Grinstead.

Floating ideas

By Juliet Giles

The house was designed to be built on reclaimed wetland in Somerset.

Returning flood-prone land to wetland can offer several environmental benefits: it can help reduce the risk of flooding in surrounding areas; it can help bring back declining species, such as lapwings; and it can act as a carbon sink that would help reduce levels of CO2 in the atmosphere.
From Bristol to Latin America
Freya Sterling interviews James Browne (BSc 2000), General Manager, North Latin America for Philips Electronics

My time at Bristol was priceless for two reasons. Firstly, it’s where I met my wife, and secondly, it provided me with a degree from one of the best geography schools in the country. A key reason why I chose to study at Bristol was its established international reputation, which later proved to be an asset.

Being a member of the Athletics Union committee (UBAU) at Bristol provided me with crucial transferable skills. I kept myself busy as a member of the Hockey Club and the Hockey Club. I was also the Hockey Club Treasurer and it was my job to keep it running financially by keeping an eye on club membership fees, sponsorships, kit and travel expenses and social events. Although in a slightly different context, the skills I honed as Treasurer are similar to the ones that I deal with on a day-to-day basis in my current job.

I chose to work for Philips because of its underlying ethos: bringing together design and technology to meet an assortment of cultural needs. Talking our products to meet an assortment of cultural needs has paid off, so much so that we are always looking to expand.

My degree trained me to think both quantitatively and qualitatively, and apply this methodology today. If we are going to successfully introduce a new product into Mexico for example, we need to do everything from deep consumer research so we can understand their wants and needs, through to building a precise business case.

Research is an essential part of what we do. Even within this region, what and how people cook varies widely, which means they require different kitchen appliances to suit their way of life. As the General Manager, I have a team responsible for understanding the different markets and consumer needs, and ensuring that we bring the right products to the right markets.

Philips is in a strong position; for years we’ve been living, breathing and researching Latin America’s growing economy. Tailoring our products to meet an assortment of cultural needs has paid off, so much so that we are always looking to expand.

My degree helped in training me for an international career. We had aszable breadth of sub-subjects within the course from mathematical mapping, human and physical geography to urban and international development. They required us to think bigger about geopolitical matters and to focus on understanding the world in a broader format, which is vital if you want to work in a multinational company such as Philips.

BRISTOL’S INTERNATIONAL REPUTATION PROVED TO BE AN ASSET

Regular

Wills Memorial Library: modernising the heart of the University

Libraries are the treasure troves of knowledge. The presence of an outstanding library in a university raises the quality of learning its students can unlock. Since 1925, the Wills Memorial Library has been at the heart of Bristol University, evolving and growing with it over time. Today, the Library is undergoing another important change, as it is revitalised to meet the needs of students in the 21st century.

Under the elaborate cream arches of the Wills Library, you’ll find students reaching out for textbooks, on time-worn wooden shelves. Some will be ploughing through an EU directive, while others may even have cause to turn carefully through the pages of an important, rare law book. Through its tumescence, the Library recorded over 240,000 visits last year, and issued more than 60,000 loans.

But libraries are evolving along with all academic study, laptops, tablet devices, and even sophisticated mobile phones are vital tools for today’s student. Every year, more journals are only available online, essays must be typed rather than handwritten, and research tools and learning resources are shared by professors online. In 2007, a student survey revealed that the Wills Library was an inspiring place to study, with a scholarly atmosphere, friendly and helpful staff, and impressive architecture. But the same survey also demonstrated that improvements needed to be made to reflect modern methodologies, for instance enabling students to plug in their laptops.

THE LIBRARY IS BEING REVITALISED TO MEET THE NEEDS OF TODAY’S STUDENTS

In response, the University launched a campaign in 2008 to raise money for the Wills Library refurbishment. The aim is to protect the Grade I listed heritage of the Library, while integrating modern technology and providing special support for modern learning styles. Students will still be able to enjoy the tall, cathedral-like windows, looping balconies, and soft wooden furnishings, but will now also have access to flexible study rooms, power outlets, faster computers, improved online resources, more efficient lighting, and comfortable heating.

With considerable leadership and support from the Law Campaign Board, a total of £1.1 million has been raised so far in philanthropic support by over 200 alumni, staff and friends. Their donations, combined with £1.1 million of University investment, will provide students with a state of the-art facility in which to study. Donations are still very much welcomed (bristol.ac.uk/donate); the refurbishment process, with the whole space modernised and refreshed by October 2013. To limit disruption to current students, the renovation has been planned in stages; phase 1a was completed at the start of the 2012-13 academic year, phase 1b will finish by February 2013, and phases 2 and 3 will take place during July-September 2013. The fully refurbished library will open completely by October 2013. A special opening ceremony will take place to thank all alumni and others who have supported the project over the years.

“...in Bristol’s Wills Memorial Library, an intrinsic part of my university experience at Bristol, and for me it was an invaluable venue for academic research and social interaction.”

David Pang, MA 2006
Alumni shaping technology

Recent years have seen a step change in the technological revolution with life-changing devices growing faster, smaller and more innovative every day. University of Bristol alumni are making our lives easier with innovative machines, apps, software and platforms.

Computer science

Daniel Newton (BSc 2010) and Lee Arromba (MEng 2010)
Founders, TangibleFX

Lee and I are a pair of musicians inspired to make the world of music a fun and creative place. We are developing an innovative, motion-sensitive controller, to be used primarily by DJs and guitarists to enhance the music they produce.

At Bristol, we both had similar ideas for our final-year projects, utilising sensors to control music. Lee won a cash prize and patent from Bristol’s RED New Enterprise Competition for business ideas, and after developing a baseball hat version of his project he asked me if I would like to join him. I jumped at the chance and we became TangibleFX.

We soon realised that there were certain limitations to playing guitar whilst controlling the sound with your head movements, and so we turned our attention to the MIDI-Moov. This used the same principle – that accelerometers control effects – but incorporated the technology into a little device that could be strapped either to your body or to the instrument itself.

During the prototype stages, I promoted it at club nights and while DJing, which helped me realise the potential of bringing the MIDI-Moov concept to the DJ market. Meanwhile, Lee was working as an iPhone developer, which revealed to him the possibility of bringing the MIDI-Moov concept to the iPhone App platform. So the iMoov was born.

The iMoov allows effects to become part of the performance. It can be used to add modulations to bring a humanistic life to standard loops and samples in productions. It can also be strapped to your body or instrument and let you move to control musical effects. There is also our app called MoovFX Echo, which allows guitarists to run the sound of their guitar into their phone, attach their phone to the guitar, and raise and lower the guitar’s neck to control a range of echo effects.

Our vision is that this concept of motion control will have a positive and unique impact on the production and performance of music beyond our lifetimes. It’s vital that we work with a variety of musicians, and we’re always on the lookout for more people to get involved and try out our products.

Lee and I have always been driven by the desire to change and improve the music industry and this is at the forefront of everything we do. One of the biggest reasons that Lee and I work as a team is that we both share an incredible passion for music. I would go so far as to say it is the most important thing in both our lives.

Aerospace engine technology

Dr Helen Webber (MEng 2004)
Performance Engineer, Reaction Engines

Dr Helen Webber (MEng 2004) is a Performance Engineer at Reaction Engines in Bristol, where she has developed a novel engine component, the SABRE engine cycle.

At Reaction Engines, I am currently developing an advanced propulsion system that would enable low-cost access to space, by means of a reusable spaceplane. The engine is known as the Synergetic Air-Breathing and Rocket Engine (or SABRE), and is a unique cycle, combining both air-breathing and rocket propulsion system technologies.

My job is to enhance aerodynamic and thermodynamic performance in engines. I then facilitate the design, help with tests, and work to optimise specific engine component performance, while also considering the optimisation of the engine cycle as a whole.

One of my big projects at the moment is to investigate methods of improving the thermodynamic performance of a large heat exchanger that forms a critical part of the SABRE engine cycle. To do this, I had to design an ultra-low-speed transient heat transfer wind tunnel from which I could evaluate the baseline performance of this component and carry out tests on alternative design solutions.

The purpose of SABRE is to develop a more economical means of travelling to low-Earth-orbit, which is an essential step towards mankind’s long-term prosperity. Reaction Engines’ ground-breaking propulsion technology will lead to some truly remarkable changes in how we get into space and what we do in space. It’s fantastic to be part of something so innovative that captures the bigger picture.

Engineering history

Bristol’s Engineering heritage is world famous

As well as providing outstanding industry links and internships, the University also provides opportunities for scholarships, bursaries and student prizes.

One such bursary was donated by the James Dyson Foundation. A total of £225,000 was given to the University of Bristol to encourage young people to pursue their interest in science, design and engineering. The funding will provide financial support for outstanding new PhD students, who demonstrate financial need, passion, and enthusiasm for design in engineering.
In 1950, after the announcement that Professor Cecil Powell was to be awarded the Nobel Prize in Physics, the world’s media visited him in Bristol. What they found was perfect for their pictorial. Powell and his research group were releasing giant balloons into the stratosphere. The balloons carried photographic plates that recorded the activities of cosmic rays as they hit the atoms in the Earth’s atmosphere. After initial trials launching rubber balloons from the turrets of the H H Wills Physics Laboratory, Powell looked for a material that would enable larger, more stable balloons to be made. He had some success with polyethylene panels, which they sealed together using a flat iron. ‘We were encouraged to make a bigger one, but we could hardly undertake the ironing method.’ Powell recalled. The solution was a 75-foot-long table and a shot-air machine.

One of several launchings from Bristol took place at Coombe Dingle in September 1950. Around 30 people tethered the 100-foot balloon as it filled with hydrogen; attached to the tail was its scientific payload of photographic plates and radio transmitters, along with a parachute and a timing device – an alarm clock connected to some batteries – that released the apparatus at a predetermined point. A message written in English, French and German offered the finder £1 for the return of the plates to Bristol, where they were scanned by a team of female volunteers (co-ordinated by Powell’s wife, Isobel) and referred to affectionately, in the language of the era, as ‘scan poppies’.

Powell was releasing giant balloons into the stratosphere

As for the unburdened balloon, Powell described how it ‘rose to 65,000 feet, and after crossing the North Sea, descended on a Dutch village which it more or less enveloped’. The total number of rewards claimed is not recorded, but Powell did recall one finder in Germany who refused the £1 ‘and asked for a pair of working trousers instead’.

What happened when... the balloons went up

Regal

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We've come a long way since dentistry meant getting your teeth pulled out by the local barber. Even in the last few decades, the field has seen huge changes and improvements in quality of care. As the Bristol Dental School celebrates its centenary, researchers like Dr Michele Barbour (PhD 2003, PGCE 2007) and clinicians like Dr Lisa McNally (PhD 2010) are helping to keep it at the cutting edge.
Barbour began as a physicist, but wanted to apply her skills to a different discipline. ‘I looked at a wide range of work being done at the Dental School. But talking to some of the people doing that work is a good start.

Science and soda ‘People tend to work in either the clinical environment or the physical sciences environment, so to be at the boundaries of those is very interesting,’ says Dr Michele Barbour. ‘I feel the physical sciences environment, so to be at the boundaries of those is very interesting,’ says Dr Michele Barbour. ‘I feel

There are new training and e-learning facilities, a restructured curriculum, and a completely overhanded admissions process. The School’s research activity, meanwhile, has never been more focused or ambitious, and its results feed straight into the training of young clinicians. It would take more than a couple of pages to do justice to the range of work being done at the Dental School. But talking to some of the people doing that work is a good start.

Material gains Fast forward a few years, and Barbour — currently Senior Lecturer in Dental Materials Science and Biomaterials — now heads the Oral Nanoscience Group. This group examines the physical and chemical processes that occur on surfaces in the mouth, and is seeking to develop nanoscale films on tooth surfaces to prevent acid erosion. ‘One major challenge is to protect the teeth in a way that can’t be detected,’ she says. ‘We’ve had a lot of success with a milk protein called casein, which absorbs rapidly to the teeth and bonds around for a long time,’ she says. ‘Lots of proteins absorb but come off quite easily; casein sticks around and creates a layer on the surface of about six to eight microns thick.’

Barbour’s group is now turning its attention to developing antimicrobial nanoparticles. ‘A couple of years ago I found a way to make nanoparticles of an organic antimicrobial agent,’ says Barbour. ‘I’m looking at how to apply those to dental filling materials. It’s very common for tooth decay to continue around a filling; but if the filling material had an antimicrobial ingredient, we could nip that in the bud.’

The same principle could be applied to dental and orthopaedic implants, which can fail because of bacterial contamination. An antimicrobial surface for the implant material could solve that problem. ‘It has to integrate with the bone, and to withstand chewing, or walking, depending on where it’s,’ says Barbour. ‘To have the antimicrobial function last for months, even years, is the big challenge.’ She is also hoping to collaborate with researchers in the Medical School and the Faculties of Engineering and Science to develop an antimicrobial coating for central venous catheters, which could greatly reduce the incidence of bloodstream infections.

With so much innovation about it’s crucial that Bristol’s dental students learn to navigate through this ever-changing landscape. Luckily, Barbour is on hand to guide them. ‘The clinical lecturers teach them the techniques of, for instance, cutting a cavity for an amalgam filling,’ she says. ‘My job is to explain the materials science behind it: what amalgam is made of, how it works, and why it must be handled in the way the clinical lecturer has specified. The students have to look at materials with an informed, critical eye.’

With new dental filling materials launched onto the market roughly twice a year, that’s an important skill to learn.

Beyond the drill Dental students begin their training with more basic skills. After practising simple procedures on phantom heads (a twin, that’s not members of the spirit world), they have to complete a live practical at the Dental Hospital. Among the clinical lecturers is Dr Lisa McNally, who teaches the techniques of restorative dentistry: treatment of gum disease, root canals, replacement of missing teeth — the bread-and-butter work for your general dental practitioner.

The governing philosophy of oral and dental health has evolved somewhat in recent decades. ‘It’s much less of a drill-fill cycle now, and more about prevention, oral hygiene and diet,’ she says. ‘People are not just living longer, they’re retaining their teeth for longer. Not so long ago you’d have pulled all their teeth out and put in complete sets of dentures. That’s not acceptable any more.’

Equally outdated is the idea of the dentist as a patrician surgeon graduated, the Bristol Dental School has evolved somewhat in recent decades. ‘It’s much less of a drill-fill cycle now, and more about prevention, oral hygiene and diet,’ she says. ‘People are not just living longer, they’re retaining their teeth for longer. Not so long ago you’d have pulled all their teeth out and put in complete sets of dentures. That’s not acceptable any more.’

Equally outdated is the idea of the dentist as a patrician...
When you pick up, say, the Bible, or The Girl with the Dragon Tattoo, the chances are that you don’t read it with the constant awareness that it’s a translation. For most people, that would diminish the pleasure of reading, which is why good translation – in mainstream publishing, at any rate – is an ‘invisible’ craft. Indeed, multilingual people often do it without thinking: ‘Sometimes I will read or hear something, and afterwards wonder whether it was in French or in English,’ says Susan Harrow, Professor of French. ‘If you’re a linguist, you try to inhabit the language to the point where it becomes part of your skin.’

At the same time, the student of modern languages must remain critically aware of the workings of language, especially when translating a text. It isn’t just a matter of changing Language A into Language B: ‘It’s much more multi-modal,’ says Harrow. ‘It ricochets off in all directions. We want students to think about the cultural context in which the text was produced: who wrote it, and under what kinds of pressures? And who am I translating it for?’

Living translation

The closer one looks at the process of translation, the more questions arise. Harrow is keen to create opportunities for tackling them by bringing together academics, professional translators, critics and publishers. The most recent event was ‘Living Translation’, a day of workshops and discussions that she organised at Bristol with Julian Evans (a writer, translator and former Royal Literary Fund Writing Fellow in the Faculty of Arts). ‘A lot of these people wouldn’t normally come into contact, and we were stunned by how popular the events were with the public,’ says Harrow. ‘It gave us an insight into some of the issues for publishers. For example, some are commissioning fiction with an eye to how easy it will be to translate. That puts pressure on writers to write in certain ways, but what if it helps to expand their readership abroad? There’s more than one side to that kind of issue.’

Translation in a broader sense is becoming a major topic in research: the Arts and Humanities Research Council recently established ‘Translating Cultures’ as a theme, encouraging projects that examine the role of translation ‘in the transmission and sharing of languages, values, beliefs, histories and narratives’. At last, it seems, translation is coming out of the shadows.

Translation: a living

‘Translation is a huge global industry, and there’s a shortage of good mother-tongue English translators,’ says Adrienne Mason, Director of the MA programme in Translation, which has been running in the School of Modern Languages since 2009. ‘Besides translation and editorial work, all sorts of jobs require a degree of linguistic skill, particularly if you’re working abroad.’

The programme is one of a handful at Bristol taught entirely via distance learning, using Skype, Blackboard and other online applications. Its students are based everywhere from Hong Kong to the Caribbean to Estonia. ‘A lot of them simply couldn’t come to Bristol,’ says Mason. Moreover, she adds, ‘the impact of technology on translation is so rapid that if you’re not comfortable working online, forget it – you won’t be able to make a living at it.’

And there’s definitely a living to be made. But anyone planning to forge a career by translating works of literature is likely to come unstuck. The bulk of the demand comes from industry (think of every multilingual set of instructions you’ve knitted your brows over), governments (all those NHS leaflets offered
in a range of languages from Polish to Urdu, and bodies such as the European Commission’s Directorate-General for Translation. Each has its own distinct set of requirements, and the MA programme aims to train its students, among other things, to recognise what those requirements are.

‘The programme is general enough that we can have, say, two or three students doing Portuguese, one doing Czech, and a couple doing Mandarin,’ says Munroe. ‘You couldn’t run a course for two students, but the principles of translation that we teach are relevant to all the languages that we cater for.’

Pragmatism is paramount, but craft should always play a role, says Harrow. ‘In the commercial sector, your work has to be as good as possible, though you have to get through a certain volume to make a living. But the top rank of literary translators work with a very strong sense of craft. That’s something that we hope filters down into the classroom context and informs the attitudes of students who are training for the commercial world.’

Receiving loud and clear
Translation is now a key player in the field of reception studies, which examines how works of art and literature are received and interpreted by audiences during specific eras. The Arts Faculty, especially the Classics Department under Professor Charles Martindale (PhD 1993), helped to establish reception studies in the UK, and, consequently, says Mason, ‘there’s a great interest in translation here’.

She and her colleague, Dr Marianne Ailes, mined this interest in a recent series of workshops on translation, reception and appropriation. The sessions looked beyond modern languages to engage with work at Bristol on classics, the Bible and medieval literature. ‘Some of the MA Translation students came to Bristol for these workshops,’ says Ailes, ‘because it also gave them a more theoretical background to their practical work.’

‘Ailes’ own translation work includes a two-volume edition of a chronicle of the Third Crusade, Ambroise’s Études de la Guerre Sainte. ‘The purpose of that was to make the information available to historians,’ she says. ‘It’s not so much a “good read” as a close translation, the chronicle given all sorts of details about armour, weapons and so on, so I had to make sure I had the right technical terms in English.’

Looking at translation as a form of appropriation can highlight its political background. ‘I’ve always encouraged students to develop a sense of the enjoyment of words, their resonant resonance and their materiality,’ says Harrow, ‘so that they see translation as a practice to be refined. It helps to avoid very healthy habits of working and re-working, along with evaluation, negotiation, deep thinking, and judgment. It also means that some things aren’t really tradable. Translation is a complex, non-reducible, perplexing, exasperating, pleasurable process—all those things, quite often at the same time.’

Bristol renditions
Literary works translated by members of the School of Modern Languages

A History of the Gardens of Versailles by Michel Baridon
Translated by Dr Adrienne Mason

Estoire de la Guerre Sainte by Ambroise
Translated by Dr Marianne Ailes

The Last of the Living by Joan of Arc and other historical writings by Alexander Pushkin
Translated by Professor Michael Basker

Sleepwalking Land, Under the Frangipanis, The Blind Fisherman and other novels by Mia Couto
Translated by Professor David Brookshaw

The Notebooks of Malte Laurids Brigge by Rainer Maria Rilke
Translated by Professor Robert Vilain

Forcengoing

December

Thursday 6 December
Convocation Reception and Awards / Bristol
Meet current students, members of Convocation and staff. Learn about life at Bristol for today’s students.

February

Saturday 2 February
Wills Hall Association Annual Reception / Bristol
Enjoy drinks, canapés and good company at this annual reception, held at Wills Hall. All Wills Hall Association members, current and former residents, and their guests are warmly invited.

Tuesday 26 February
Discussion with Dr Paul Fisher, Executive Director for Markets at the Bank of England / London
The London Branch of University of Bristol Alumni have organised a private tour of Somerset House by the Director, Gavin Miles (BSc 1969) and Chief Operating Officer, Mark- Stuart Smith (BA 1985). Somerset House is a major arts and cultural centre; designed by Sir William Chambers, it is one of the country’s finest 18th-century buildings. The private tour will be followed by an informal drinks reception.

Date to be confirmed
Evening tour of Somerset House / London
The London Branch of University of Bristol Alumni have organised an a private tour of Somerset House by the Director, Gavin Miles (BSc 1969) and Chief Operating Officer, Mark-Stuart Smith (BA 1985). Somerset House is a major arts and cultural centre; designed by Sir William Chambers, it is one of the country’s finest 18th-century buildings. The private tour will be followed by an informal drinks reception.

Wednesday 24 April
Law and the Media – accredited Law CPD Event / London
Our third annual, accredited law CPD event will focus on ‘law and the media’. Hosted by David Clarke, Deputy Vice-Chancellor and Professor of Law, additional speakers will be announced online soon. This will be a unique opportunity to network with fellow alumni and gain CPD credits. An informal drinks reception will follow the event.

May

Wednesday 1 May
Student, staff and alumni golf challenge 2013 / Bristol
The third annual golf challenge, organised by the Bristol Branch of the University of Bristol Alumni Association, will see a team of alumni take on a combined team of staff and students. To pay for the alumni team, please email John Bramhall (BSc 1973) at john.bramhall@bristol.ac.uk.
The University extends its sincere condolences to the friends and families of those listed below for whom we have received notification of death.

In order of degree date

Dr Alfred Peach (MB ChB 1939) died January 2012, aged 82
Dr John May (MB ChB 1951) died December 2011, aged 80
Dr David Howard (MB ChB 1969) was mistakenly announced as deceased in the summer 2012 edition of *nonesuch*.

Please email any notifications of death to alumni@bristol.ac.uk

## Mind games

Today’s children will often learn to use a Nintendo DS before they can read, so should we be worried about the hypnotic draw of video games so close to our children? Dr Paul Howard-Jones, a Reader in Neuroscience and Education, believes games may not always be the dark force we fear and some might even help make our children smarter.

### Feature

Douglas Adams once observed that anything that was in the world when you were born is normal and natural. Anything that was invented between when you were 12 and 35 is revolutionary and exciting, and anything invented after you’re 35 is against the natural order of things. Over the past two years many educators have been knocked sideways by a tsunami of new technology, which, even if it isn’t necessarily against the natural order of things, certainly seems far more normal and natural to their children. Technology has so completely transformed the way children play and interact with each other that parents, and some neuroscientists, are beginning to question the effect this total embrace of the digital world might have on the developing brains of their children. Dr Paul Howard-Jones, a Reader in Neuroscience and Education in the Graduate College London, which found that the greater the number of friends a person has on Facebook, the denser the grey matter in the regions of their brain associated with memory, recognition, planning and emotional responses. ‘We don’t know what the cause-effect relationship here is,’ says Howard-Jones. ‘It could just be those who have large amounts of grey matter density in those parts of their brain who choose to use Facebook a lot and make lots of friends. But most likely it’s Facebook enhancing some subset of our social skills.’

Howard-Jones’s own research is looking at social networking but at another area of digital technology, which he says can alter our brains far more dramatically: methylphenidate (Ritalin) are taken. ‘What we see is similar to that seen when amphetamines or cocaine are taken. Dopamine, a neurotransmitter associated with motivation, anticipated pleasure and attention, can alter our brains far more dramatically: certainly seems far more normal and natural to their children.

However, while Howard-Jones thinks technology’s impact on developing brains, he’s less certain it always has the dire consequences we tend to imagine. ‘I come across a study by Dr Roy Rose at Karolinska University College London, which found that the number of friends a person has on Facebook, the denser the grey matter in the regions of their brain associated with memory, recognition, planning and emotional responses. ‘We don’t know what the cause-effect relationship here is,’ says Howard-Jones. ‘It could just be those who have large amounts of grey matter density in those parts of their brain who choose to use Facebook a lot and make lots of friends. But most likely it’s Facebook enhancing some subset of our social skills.’

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Howard-Jones’s own research is looking at social networking but at another area of digital technology, which he says can alter our brains far more dramatically: methylphenidate (Ritalin) are taken. ‘What we see is similar to that seen when amphetamines or cocaine are taken. Dopamine, a neurotransmitter associated with motivation, anticipated pleasure and attention, can alter our brains far more dramatically: certainly seems far more normal and natural to their children.
that type of brain response does is help you focus in a stimulus–specific way, which can help you learn,’ he says. ‘Video games are incredibly good teachers. They don’t always teach what we want them to teach but they are very good teachers.’

What makes video games such good teachers seems to be partly down to how our brains respond to something that involves both skill and chance. Previous studies have shown that dopamine levels rise when we are exposed to a variety of pleasures or rewards, such as a slice of chocolate cake. If there is an element of chance involved and the reward is, say, 50 per cent uncertain, then dopamine levels rise in anticipation until we know if we will receive the object of our desire or not. That results in greater overall dopamine uptake for an uncertain reward than when a reward is entirely expected or comes as a complete surprise. That is partly what makes games, which by definition involve chance, so compelling, and it’s also the basis for Howard-Jones’s research into learning games.

VIDEO GAMES DON’T ALWAYS TEACH WHAT WE WANT, BUT THEY ARE GOOD TEACHERS

He’s now putting that research into practice with a game he’s developed for schools with educational software provider Zondle. But unlike some educational games this isn’t about just trying to inject an element of fun into the classroom, it’s about using neuroscience to enhance the way children learn. The game, Team Play, combines interactive computer graphics with a multi-choice team quiz, but it’s a quiz with a difference because the children don’t necessarily get a point every time they answer correctly. Instead, before finding out if they have got the answer right, they must choose, should it prove correct, either to have points added to their total score or risk ‘gaming’ them on a computerised wheel of fortune. If the wheel stops on a colour the points are doubled, if it doesn’t they lose them. While the children work out their answers teachers can exploit what Howard-Jones calls ‘a very teachable moment when dopamine levels are ramping up’ to reinforce the principles being taught.

In schools where Howard-Jones has tried the technique it’s been a hit with children. ‘The discourse in the classroom becomes much more like sport talk,’ he says. ‘Because now, when you fail, you can blame it all on bad luck, but when you succeed it’s because you’ve absolutely brilliant. And this is a part of the motivating environment that it generates. I saw it being used in a primary school in London’s East End, and the children screamed so loudly it hurt my ears.’

It may be fun, but is it working? Early feedback from teachers suggest that children are indeed retaining more knowledge through Team Play, and that seems to be especially true of boys who possibly respond more positively to the element of risk. ‘We did three studies where we taught three topics using this technique in North Wales. And in all the studies the boys learned more, but it wasn’t statistically significant. Our lab study did show a gender preference, so a larger study might well reveal a gender difference in response. But it is particularly beneficial to boys, that is possibly a good thing given that we have a lot of underachieving and unengaged boys in our schools.’ However, girls too seem to enjoy the gaming elements, and Howard-Jones has used gaming techniques with boys and girls as young as eight, up to his own post-graduate students, with equally encouraging results.

In the future, Howard-Jones can see a time when most lessons will involve some element of gaming. ‘That would certainly make learning a lot more entertaining, and from his experience with Team Play so far, pretty exhausting too. It’s a whole new problem when children are getting so excited about their lessons that they’re worn out by the end of the day,’ he says. ‘But it would be quite refreshing to face that problem.’

For more information on Team Play visit www.zondle.com

Soldiers have left arborglyphs, or tree graffiti, for centuries. Mostly they simply carve their names, the date and names of loved ones. I think they just want to be remembered, to say “I was here”. I found this particular one on Salisbury Plain in 2008, when I was writing my undergraduate dissertation. It had the simple engraving “F. Fearin. Hudson Mass. US. 6/4/44” above a heart and the name “Helen”. The date was the eve of what should have been D-Day – bad weather meant the invasion was put back a day – so I assumed that whoever had carved it must have thought they were about to go into battle and might not survive. From the name I uncovered the military record of a Frank Fearin and tracked down his daughter, Barbara, via a genealogy website. She told me Frank had been born in 1917 and had fought with the 5th Armoured Division, which after D-Day went on to help liberate Luxembourg. I asked her if she knew who Helen was, Frank’s military record had said she was single during the war, so I thought Helen might have been a sweetheart he’d met in England. But Barbara said “No, Helen is my mother.” Frank and Helen had secretly married before Frank left for Europe. They were married for 60 years until Frank died in 2001. I never spoke to Helen, but it was amazing to be able to show her this message from Frank. Barbara told me that when Helen died her family took a copy of this photograph to her funeral as a small reminder of Frank and Helen’s love.’

‘Frank’s tree’ is one of around 2,500 arborglyphs recorded by Chantel Summerfield (MA 2010), a PhD student in the Department of Archaeology and Anthropology, for her thesis ‘Wood within Warfare’. Barriers have left arborglyphs, or tree graffiti, for centuries. Mostly they simply carve their names, the date and names of loved ones. I think they just want to be remembered, to say “I was here”.

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