

nonesuch



BRIGHT
FUTURES
AT BRISTOL
DENTAL
SCHOOL

FLOATING IDEAS: THE SHAPE OF HOUSES TO COME
EXCHANGING WORDS: THE CRAFT OF TRANSLATION

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); help current students by joining the Careers Network (bristol.ac.uk/careers/network/signup.asp); support Bristol University with a gift to help students or world-changing research; keep reading this great magazine.

Bill Ray

Bill Ray (BSc 1975)
Chairman of Convocation,
Bristol's alumni association

alumni@bristol.ac.uk

Eric Thomas

Professor Eric Thomas (Hon LLD 2004)
Vice-Chancellor

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 individuals who study here – and the resulting positive impact that our fantastic graduates have on society. This is why Bristol remains one of the most popular UK universities for home and overseas students.

Another important answer is that research undertaken at universities like Bristol is what changes the world for the better. Just in the past month, Bristol made global news for: advancing steps towards a quantum computer; treating meniscal tears in knee joints; discovering methane gases under Antarctica; quantifying 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

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Autumn 2012
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Regulars

In the city
The University in Bristol



Gardening, history and art have combined in a fascinating 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 plants from far continents, brought back centuries ago as 'incidental cargo' in the ballast holds of ships. The project was conceived by the Brazilian artist Maria Thereza Alves for

Arnolfini 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.
For more information email martha.crean@bristol.ac.uk

Rosebud
Everyday objects with a special meaning

'Earthrise' – the first colour photo of the whole of the Earth – was taken in 1968 during the Apollo 8 mission.

I couldn't tell you exactly when I first saw it, but like a lot of people who were kids back then, I remember the Apollo missions and being amazed by it all. These days we've got Google maps and satellite imaging, and we take it for granted. But before '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 Greenpeace and Friends of the Earth were founded shortly afterwards.

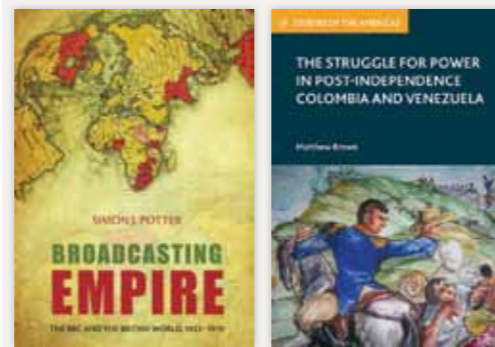
The work I do now – satellite remote sensing – is directly descended from this photograph. I produce visualisations of different parts of the Earth, especially the polar regions, which can provide very powerful insights into what the planet is doing.

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

The plug 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 rival British and American attempts to influence the world's 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
Dr 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)

Maria Thereza Alves, 'Seeds of Change: A Floating Ballast Seed Garden' (designed by Gitta Geschwendtner), 2012. Courtesy of artist and Bristol City Council. Photo © Max McClure

Laura Bechtolsheimer © Ian Tonks // Closing Ceremony © Flickr: houghtonbirds // Will Todd © The Chapter of St Paul's Cathedral.



Regulars

Bristol alumni go for gold

Sport



Alumni, staff and students were integral to the London 2012 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; Iain Percy (BSc 1998) and his partner took a silver medal in sailing; and hockey player Georgie 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 100m hurdle finals; Claire Hallissey (PhD 2011) who ran the marathon in a time of 2.35.39, finishing in 57th place in the event; and Vittoria Panizzon (BSc 2005) 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 dancers accompanying Eric Idle. At the end of the closing ceremony there was a fitting tribute to all volunteers who were integral to the success of the Games, including a number of Bristol University staff members. Jane Pearce-McMenamin (BA 1986) was Head of Press Operations.

New anthem for the Queen's Diamond Jubilee
Music

Composer Will Todd's (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 choristers of St Paul's and the Chapel Royal. The Thanksgiving Service was on the final day of a long weekend celebrating the Queen's reign, the second time in British history that a monarch has celebrated a Diamond Jubilee. A CD recording can be purchased at willtodd.com



In brief
Alumni achievements

- **Michelle McDowell MBE** (BSc 1984), Chair of Civil and Structural Engineering at BDP, has been named the ACE Engineering Ambassador for 2012 at 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 1980), 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 1987, 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 'Once Upon A Time In The South West', which is currently graded at E9 6C, just two grades below those regarded as the hardest in the world.

Regulars

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 \$18.82 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 I had been 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 a 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 alumnus 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.

Dr Zutshi first came to Bristol in 1949, but after his graduation his relationship with the University continued for almost half a century, with him becoming part of its fabric through his work as a volunteer on Council and Court and with Convocation, and then as an extraordinarily generous benefactor.

A small part of his £1.8 million legacy to the University was for the purchase of a new ceremonial mace, traditionally a sign of educational tradition and distinction, that would represent the alumni past, current, and future. The mace was first used, to great praise, at the graduation ceremony on 18 July, reminding Bristol's graduates that the University's relationship with its alumni is for life.

Laura Wade © Philip Hollis

Snapshots



Solomon Islands © Sean Wyles // Dinosaur // Robot © Joseph Meredith // LED wands © Chris Hill and Jim Milner // Antarctic © Neil Ross/ Newcastle University

In pictures

Snapshots Life and work at Bristol

Clockwise from top left.

DUELLING DROIDS // Bristol hosts Robot World Cup. // bristol.ac.uk/news/2012/8716.html

BLONDE LOCKS UNLOCKED // Genetic secrets of dark skin/blonde hair combination in the Solomon Islands. // bristol.ac.uk/news/2012/8455.html

DEEP ANTARCTIC // Exploring an ancient subglacial lake. // bristol.ac.uk/news/2012/8762.html

DRAWING THE BRISTOL DINOSAUR // One of the competition winners. // bristol.ac.uk/news/2012/8553.html

PICTURES ON RADIO // LED 'magic wands' visualise radio signals. // bristol.ac.uk/news/2012/8403.html



Feature

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 Wright

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.

TO UNDERSTAND THE WORLD 'UP HERE' WE NEED TO UNDERSTAND THE WORLD 'DOWN THERE'

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



Statistics The Earth in numbers

4.54 billion years

age of the Earth

1,300°C

melting temperature of basaltic rock at the surface

12.4km

deepest experimental borehole

2,890km

depth of the outer core

4,000°C

temperature generated by BEEST's lasers to simulate conditions in the inner core

Feature

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.

To get further down requires more drastic measures. The samples used in simulations of the lower crust and mantle are so minuscule that electron microscopes are needed to analyse them. The process used to generate pressure is relatively simple: metal pistons squeeze the sample to a simulated depth of 120 kilometres and reach temperatures in excess of 2,000°C. A 'multi-anvil' – an arrangement of steel wedges designed to compress the sample from all sides – produces temperatures of 2,300°C and pressures equivalent to a depth of 660 kilometres. These conditions correspond to those at the boundary between the Earth's upper and lower mantle.

Multi-anvil machines are extremely bulky and powerful, but to get even deeper – right into the Earth's core – the equipment used is small enough to fit in your pocket. In these diamond anvil cells, tiny samples are placed between the culets (flat faces at the base) of two diamonds and then compressed. An array of lasers generates temperatures of around 4,000°C, and the results must be analysed either by BEEST's electron microprobe or by a synchrotron such as Diamond Light Source in Oxfordshire.

THE CARBON CYCLE INVOLVES NOT JUST THE SURFACE BUT THE WHOLE EARTH

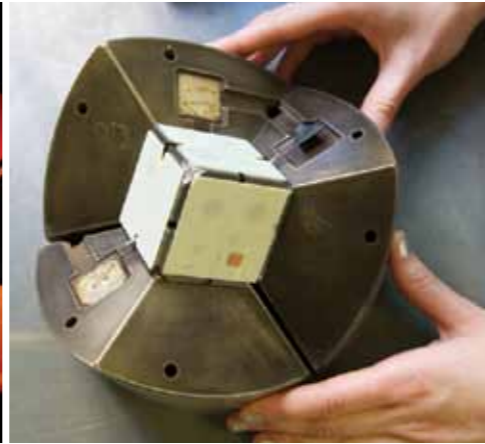
Studying the whole Earth

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. '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



Left Charlotte Stamper in one of the BEEST labs



Right A multi-anvil is prepared for its high-pressure work

minerals are formed and move around beneath the surface. In 2011, the group examined diamonds from the Juina region of Brazil and found tiny inclusions of minerals trapped within them. Further analysis revealed that these minerals must have formed at depths below 670 kilometres. How did they end up on the surface? 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.

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. 'When 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 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 hydrochloric 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.'

Illustration © Neil Stephens // BEEST photos © Nick Smith



Feature

Bristol is rightly proud of its engineering past, and the University's Faculty of Engineering aims to foster the spirit of Brunel in the next generation of civil engineers. Every year it asks its fourth-year undergraduates to combine creativity and technical skill in completing a final-year project. In 2010 three students rose to the challenge with a flood-proof house.

Feature

By Juliet Giles

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 30 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 have had to cope with the economic and emotional stress caused by flooding. In the future the effects of climate change could mean this is stress many more of us will have to face. And with the UK's flood defences already under strain, it looks as though we're 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 is 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 Dawei 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 the UK's flooding problems.

Creative opportunities

Every year the Department asks its fourth-year MEng students to tackle a realistic civil engineering project of this sort. It's worth a third of the undergraduates' final-year credits and gives them the opportunity to put the sometimes dry theories of hydraulics, fluid mechanics and structures to work on a real-world problem. 'With the design project we're trying to see how creative our students are,' says Han. 'They quite like it. Now they can see why they learned so many basic theories. When they start in their earlier years they may complain a lot about the formulas and equations, it's only in the final year that they realise how everything combines together.'

Working together in groups of three or four, students can choose from around 20 to

25 projects, which can range from finding a sustainable method of water treatment for an Indian village to designing a private golf driving range in the Gulf. Most are set by the Department, but occasionally students have the opportunity to enter national competitions, and can suggest ideas of their own.

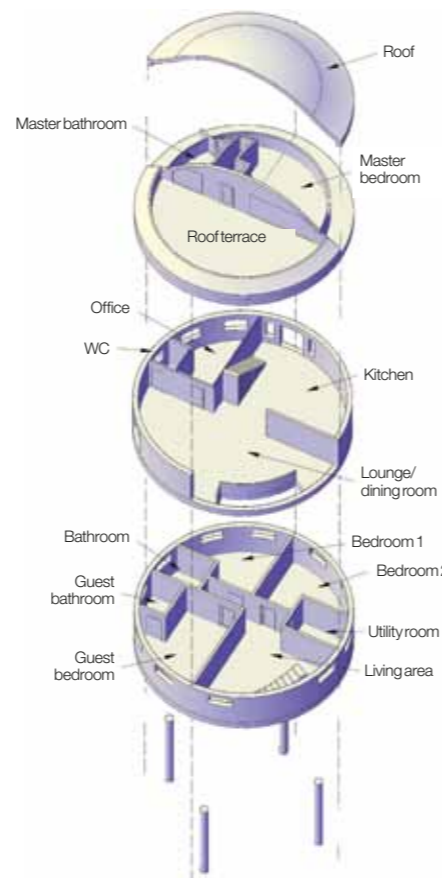
For three fourth-year students from the class of 2010 – Sophie Payne (MEng 2010), Lindsey Cubbon (MEng 2010) and Jonathan Melzer (MEng 2010) – the opportunity to come up with a conceptual and technical design for an eco-friendly, floating house was exactly the challenge they were looking for. 'We looked at the list to see which project stood out most and all three of us picked this one,' says Payne. Not only was it a chance to find a solution to a topical problem, but it also provided an opportunity to combine several areas of technical knowledge with the soft engineering skills they'd also learned on their degree. 'The course was very technical and there wasn't a lot of room for creativity,' says Cubbon. 'But for this project you could be more creative, it was more about design and putting everything that you'd learned together.'

WITH THE DESIGN PROJECT WE'RE TRYING TO SEE HOW CREATIVE OUR STUDENTS ARE

Going Dutch

Floating houses are still rare in the UK, so with help from a grant from the Bristol Port Company the students travelled to the Netherlands to get a closer look at how the houses might work. 'Our friends joked and suggested we were having a jolly,' says Payne. 'But no, we worked really hard to get the most out of our visit.'

The students spent three packed days looking at different floating-house developments in and around the IJburg area of Amsterdam. They got the chance to take a look inside some of the houses, seeing what worked and what didn't, and had the opportunity to talk to two firms of architects as well as to structural engineer Dil Tirimanna from FDN Engineering. He was able to help them get to grips with some of the more complicated structural concepts and to point out some potential problems. 'It was really interesting to see people living on water and the effect it has on their lifestyle,' says Melzer. 'It also helped highlight things we might



Above from top A3D visualisation of the students' final design; one the floating houses the students looked at in the Netherlands, designed by FDN Engineering; a cross-section of the students' house

not have thought about so much, such as the provision of drainage and services.'

Back in Bristol the students worked on six conceptual designs and then used a decision matrix, which weighted factors such as cost, practicality and eco-friendliness, to compare their advantages and disadvantages. 'Engineering design is always about options and compromise,' says Han. 'Economic cost is always a limiting factor. You can't build a floating house that's going to cost £1 million that nobody can afford.'

ENGINEERING DESIGN IS ALWAYS ABOUT OPTIONS, AND COMPROMISE... COST IS ALWAYS A LIMITING FACTOR

Testing the waters

The students' final design – a two-storey cylindrical house with a roof terrace and striking copper roof – was both environmentally friendly and economically viable. The bottom half was a partially submerged hollow concrete basement, which would provide buoyancy and additional living space and was held in place by telescopic piles that would allow it to rise with the water.

The top half was a mixture of structural glass and structural insulated panels (SIPs). These fibre-glass panels can easily be cut into rounded shapes and were chosen as they would be light enough to help the house float. The roof was made of lightweight wood clad in copper, and designed to collect rainwater. By harvesting rainwater and using passive cooling techniques and solar panels, the students aimed to minimise the house's carbon footprint, while additional services could be brought in through flexible pipes that would move with rising water levels.

Some ideas, such as the hollow concrete base, came out of their trip to the Netherlands, while the telescopic piles are an idea being used in the low-cost, flood-proof housing planned for areas of New Orleans. Other ideas, such as the SIPs, came from the students themselves after long hours struggling over loading calculations to make sure the house would float. 'Admittedly, we had to research further into areas we would never have looked at on the course,' says Payne. 'But the background understanding we'd been given over the previous three years meant that we could

actually go and look up these new concepts and pick them up for the design of the house.'

Not all of their ideas were entirely practical. The cylindrical shape was partly a reaction to the very boxy designs they saw in Amsterdam. 'By the end of three days of seeing nothing but cuboid shapes we decided to throw something else into it,' says Payne, although their alternative caused them a few design headaches. 'Originally, the idea was that the house would rotate so that the windows would always face the sun,' says Melzer. That idea was soon abandoned, but the shape did have its benefits. 'Unlike the houses we saw in Amsterdam, our house had a basement area which was partially below water,' explains Melzer. 'That puts pressure on the concrete. One of the advantages of it being round is that like with an arched bridge it's got a lot more strength.'

Planning for the future

So would such a house be practical to build? 'Definitely,' says Han, who nonetheless believes there is a reticence among people in the UK to live actually on, rather than beside, water. 'In the future who knows? If the Dutch people can live happily in that lifestyle, I'm sure more people in the UK can adapt.'

However, as the students discovered, even in the Netherlands developers often have trouble getting planning permission for floating houses. Here in the UK where such structures are much rarer, obtaining planning permission is even more of an issue, and in the current economic climate mortgage companies are generally unwilling to 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 houses, although for the time being they are building on the solid foundations of their degrees in more traditional areas of civil engineering. Payne is now a tunnelling engineer at Atkins Global 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, a project on which Melzer is also involved, although for engineers Capita Symonds in East Grinstead. Cubbon meanwhile is putting the geotechnical calculations she made on the house to good use designing the foundations for offshore wind farms and oil rigs for geotechnic specialist Fugro GeoConsulting. 'While I was working on the house I was designing the piles for it,' she says, 'so that's very similar to what I do now, just on a much bigger scale.' ●



Above from top Lindsey Cubbon, Sophie Payne and Jonathan Melzer



Back to nature

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 bird 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 Cross Country 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 improve the quality of people's lives.

Within the company, it's a privilege to be responsible for bringing consumer products to 22 different markets from Mexico to Peru, in a way that meets people's needs.

Since the recession, many multinational companies are turning towards emerging markets, such as Latin America, where there is a more sustained, natural growth. But you cannot just arrive in these markets and expect to be successful. It's vital to understand that these promising countries are culturally very different and have a unique range of needs.



My degree trained me to think both quantitatively and qualitatively, and I 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.

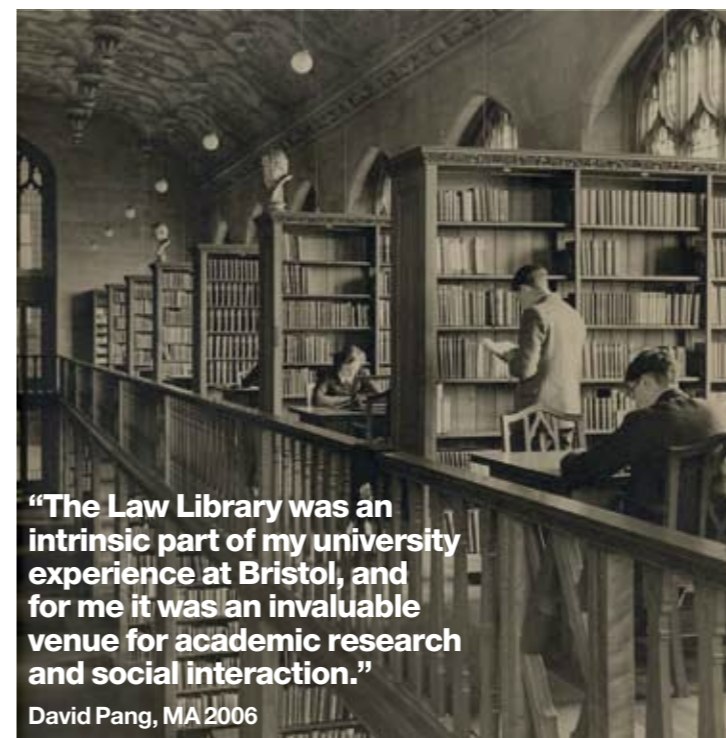
Research is an essential part of what we do. Even within this region, what and how people cook varies widely, which means they require different kitchen appliances to suit their way of life. As the General Manager, I have a team responsible for understanding the different markets and consumer needs,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

James Browne portrait © Stephen Shephard



"The Law Library was 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



Feature

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 law journals, or leafing through earth sciences 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 turnstiles, 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 II* 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 million has been raised so far in philanthropic support by over 200 alumni, staff and friends. Their donations, combined with over £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); building work, especially of this nature, is likely to be hiding unforeseen costs under a heavy stone floor.

Parts of the Library will remain open during 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 phase 2 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. ●

Feature

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 still 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

After studying aeronautical engineering at

Bristol, I naturally gravitated towards the field of propulsion. Luckily, I was able to get direct experience working in the field of space propulsion straight after my degree and I've never looked back.

At Reaction Engines, we are 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.

Feature



Cellular communications
Stephen Allpress (BEng 1990)
 Vice President, Nvidia

My biggest venture into microchip technology started in the technology recession of 2002, when I met Stan Boland, Nigel Toon and Simon Knowles, and we co-founded Icera Inc.

In the early days, we thought we could write a small piece of example physical layer software and sell the baseband chips to phone companies. But we ended up with a much bigger mission: acquiring a radio frequency (RF) chip company, licensing a million lines of protocol stack, and setting up development and customer support sites across the globe.

We were designing high-performance cellular modems, which are at the heart of every smart phone, mobile phone, laptop, netbook, tablet, e-book and more. Cellular modems consist of two pieces of silicon: the RF chip and the baseband chip. The RF chip is used to modulate and demodulate the baseband signal from the RF carrier. The baseband chip uses advanced signal processing and communication theoretical algorithms to extract the signal and provide a raw bitstream for vocoders (the algorithms used to compress and decompress speech signals) or TCP-IP packets.

The amount of raw compute required to do this process is immense. Today's handsets can do between 10 and 100 billion arithmetic operations every second and we use about 80 million transistors to achieve this. At Icera, we were the first company that could do the whole process in software, rather than having to rely on dedicated processing engines. So when the time came and we sold Icera to Nvidia for \$450 million, we had over 300 employees and our chips were out-performing many of those coming from leading companies in the sector.

The global technology company Nvidia is best known as the inventor of the GPU (Graphics Processing Unit), which provides spectacular visuals. These influence everything from PC games and visual effects in movies, to designs of golf clubs and jumbo jets. Researchers utilise GPUs to advance the frontiers of science with high-performance computers. The company holds more than 2,300 patents worldwide, including ones covering ideas essential to modern computing. I loved working on modems but it was really hard to explain to someone what it does. Now that we're part of a successful graphics

company, we're finally 'cool'.

Mobile technology has been evolving at rocket speed. Only twenty years ago, mobile phones were enormous 'Trigger-Happy TV'-type bricks, and you could only make a phone call using an analogue FM system. Today, Nvidia's mobile processors power a broad range of products from smart phones to supercomputers. With Tegra 3 you've got five Cortex A9 processors (each capable of running up to 1.6GHz) and significant GPU processing with an HDMI output, all in your pocket using a small battery. It doesn't stop there; our next generation of devices incorporate a better version of Tegra 3, integrating a new generation of Icera modem for fourth-generation LTE cellular systems.

It's been really exciting to see the Icera technology that we've created being integrated into mass-market products. These very latest devices will be out on the shelves next year, with people enjoying the breathtaking quality of the graphics. The speed at which you'll be able to communicate with the web will completely change the way people use mobile devices today.

Funding
Martin Stapleton
 (BSc 1991) Joint principal,
 Ipex Capital Management LLP

Ipex is an independent venture capital company providing funding to science and technology companies which provide systems that allow the authentication of pharmaceuticals at the point of dispensing, using high-security technology.

Visual effects
Dr Ben Morris
 (BEng 1993, Hon DEng 2011)
 Visual effects engineer
 and VFX Supervisor,
 Framestore-CFC

Morris models dynamic, complex robotic cameras and mechanical rigs, and derives algorithms to simulate lighting, shading and rendering in CGI images. Since graduating from Bristol, his career has flourished and he's worked on some of the biggest Oscar-winning blockbusters of recent times, including *Babe*, *Charlie and the Chocolate Factory*, *Gladiator*, *The Golden Compass* and several of the Harry Potter films.

Aerospace manufacture
Dr Andrew Clarke
 (PhD 1999) Vice-President of
 Engineering, GKN Aerospace

GKN Aerospace is a global engineering group with over 44,000 employees, producing technologies and products at the heart of vehicles and aircraft. Recently, they signed a Memorandum of Understanding reflecting a shared desire to maintain and develop the engagement between the engineering industry and the University.



Illustrations © Parko Poib

Regulars

What happened when ...
 ...the balloons went up



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 pictorials: 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 HH Wills Physics Laboratory, Powell looked for a material that would enable larger, more stable balloons to be made. His team 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 hot-air machine.

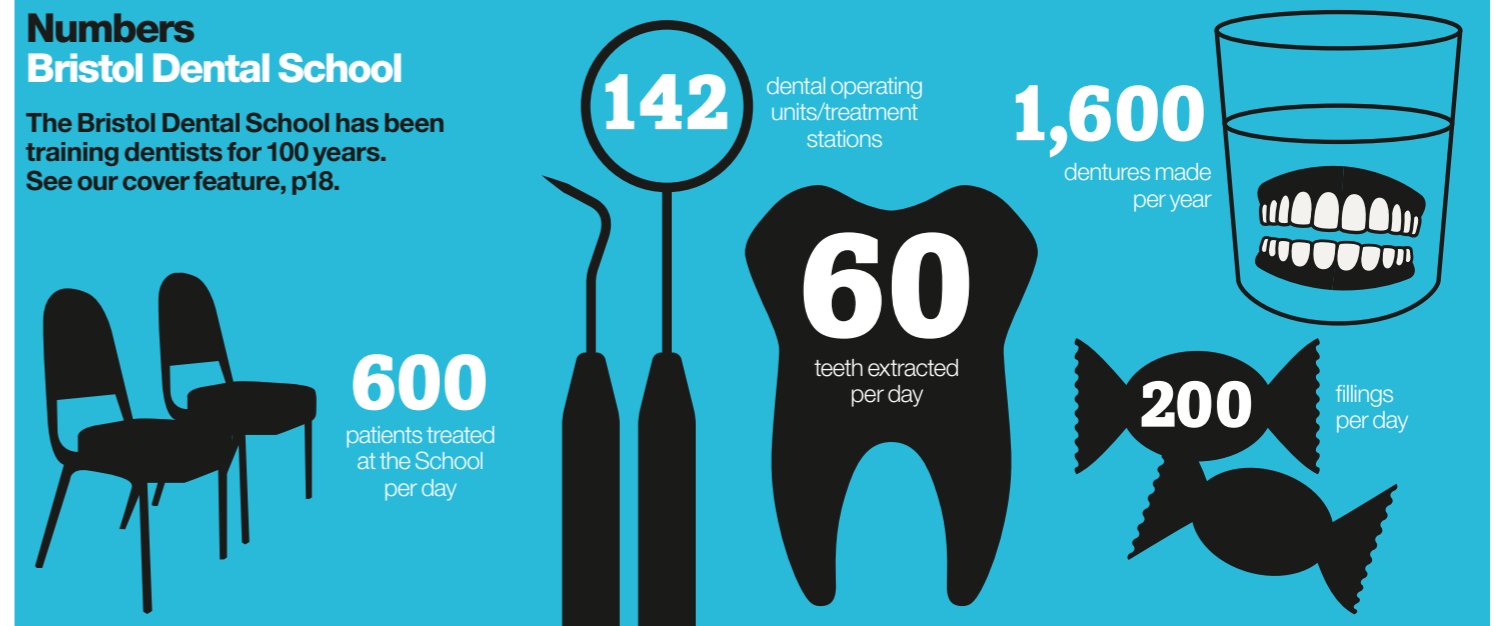
One of several launchings from Bristol took place at Coombe Dingle in September 1950. Around 30 people tethered the 100-foot balloon as it filled with hydrogen; attached to the tail was its scientific payload of photographic plates and radio transmitters, along with a parachute and a timing device – 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 popsies').

**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'.

Numbers
Bristol Dental School

The Bristol Dental School has been training dentists for 100 years. See our cover feature, p18.





Bright futures

Cover feature

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.

Cover feature

By Nick Riddle

One hundred years after its first cohort of dental surgeons graduated, the Bristol Dental School (or to use its full name, the School of Oral and Dental Sciences) is looking anything but long in the tooth.

There are new training and e-learning facilities, a restructured curriculum, and a completely overhauled 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.

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 very lucky to have found this niche.'

Barbour began as a physicist, but wanted to apply her skills to a different discipline. 'I looked at a wide range of projects, and there was a PhD opportunity at Bristol to look at developing a soft drink that didn't damage the teeth,' she says. 'Teeth are resilient under normal conditions, but they are slightly soluble in acids.' Most common are the acids produced by sugar-eating bacteria in the mouth, which cause tooth decay. Improvements in oral health have led to a decline in tooth decay in most of the developed world, but acid erosion is another matter.

'We've seen an increase in erosion from the acids in fizzy drinks, juices, wine, and even herbal teas,' says Barbour. 'There was a lot of interest in developing a soft drink that doesn't damage the teeth. It has to be acidic, or it won't taste fruity and tangy in the way that the consumer would expect. We tried adding calcium, phosphate and different salts in various ratios.'

The problem with that, she realised, is that nobody sticks to one kind of soft drink. Far better to develop something to add to toothpaste or mouthwash, which would protect the teeth against all comers. The funders of her PhD agreed to support two more years of research, during which Barbour looked at proteins and polymers that could be added to toothpaste and other products.

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. 'We've had a lot of success with a milk protein called casein, which absorbs rapidly to the teeth and hangs 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 ten nanometres – very thin, but still very effective at reducing the dissolution rate of the teeth.'

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 is,' 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 afoot it's crucial that Bristol's dental students learn to navigate through this ever-changing

STUDENTS HAVE TO LOOK AT MATERIALS WITH AN INFORMED, CRITICAL EYE

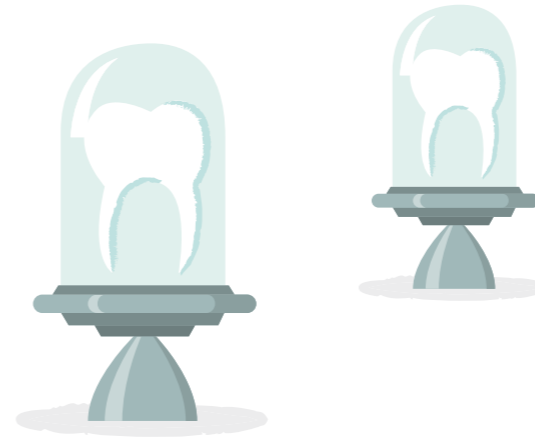
landscape. Luckily, Barbour is on hand to guide them. 'The clinical lecturers teach them the techniques of, for instance, cutting a cavity for an amalgam filling,' she says. 'My job is to explain the materials science behind it: what amalgam is made of, how it works, and why it must be handled in the 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 (manikins, that is, not members of the spirit world), they begin treating live patients 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 figure who always knows best. 'It's now much more about explaining the options and getting the patient's informed consent,' says McNally. 'That's a major part of the



Oral for the best

The School of Oral and Dental Sciences isn't just about the gnashers...

Healthy mouth, healthy body

The healthy bacteria in our mouth can sometimes cause problems elsewhere. Professor Howard Jenkinson has studied organisms such as *Streptococcus* and *Candida*, and the harm they can cause if they enter the bloodstream via, for example, bleeding gums. This can lead to blood clots, heart disease, arthritis, and possibly diabetes. All of which makes a persuasive argument for the benefits of brushing your teeth.

Biomedical Research Unit

A new Biomedical Research Unit in Nutrition, Diet and Lifestyle, funded by the National Institute for Health Research (NIHR), opened in spring 2012. The Unit, directed by Professor Andy Ness, will use the School's research findings on causal associations in nutrition to develop interventions to improve the health of people with conditions related to poor or sub-optimal nutrition.

Head, neck and cleft

The NIHR is also funding a programme that aims to improve the quality of care for children born with cleft lip and palate and those suffering from head and neck cancer. This includes an evaluation of the impact of the centralisation of cleft services following the recommendations made by the Clinical Standards Advisory Group in 1998, and a clinical cohort study.

The Cleft Collective

Cleft is one of the most common congenital abnormalities in the world, but little is known about its causes. The Cleft Collective, an £11million project led by the universities of Bristol and Manchester, is the world's first study of the factors involved in cleft lip and palate. The aim is to collect DNA, tissue samples and other data from all cleft children born in the UK and to follow them through to adulthood. The project is funded by the Healing Foundation, the NHS and other university partners.



Left Dr Lisa McNally Right Dr Michele Barbour

professionalism that dental undergraduates have to learn. They take modules on psychology, for example.'

It must be easier for the Dental School to cultivate a more respectful attitude now that its own approach to teaching is much more humane than in the days of marathon lectures. 'You can't engage students like that,' says McNally. 'We use e-learning, practicals, mobile apps... When I was a student we were grateful if we got a handout.'

But one thing that hasn't changed is the volume of work. Make no mistake, dental school is tough. 'From day one they're working a five-day week, 8am to 5pm, with only Wednesday afternoons off,' says McNally. 'It's a heavy course, and it lasts five years.' That sounds daunting, but it's reassuring to know that dentists must complete such intensive training before being let loose on our mouths.

PEOPLE ARE NOT JUST LIVING LONGER, THEY'RE RETAINING THEIR TEETH FOR LONGER

The future's bite

It's beneficial, too, for the students to have their training so well informed by the School's research. 'I think that's a large part of the appeal for students,' says Barbour. 'Personally, I really value working in a dental school where research is a priority.'

Research that gives us something to chew on, plus clinical training that helps ensure we have something to chew *with*: as it enters its second century, the Bristol Dental School's brand of research-informed training is the ideal combination for the future of dentistry. ●

For more information visit bristol.ac.uk/dental

Exchanging words

tradurre? scambiare? scambiarci parole

en échangeant des mots
échange de mots

** Wörkertausch*

** Wortwechsell*

Translation is easy to take for granted, but academia wouldn't get far without it. **Professor Susan Harrow** and colleagues in the School of Modern Languages are shining some light on the process of translation and the questions it raises; and students around the world are taking Bristol's **MA in Translation** without ever setting foot on campus.

By Nick Riddle

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-nodal,' 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.



Above Professor Susan Harrow

YOU TRY TO INHABIT THE LANGUAGE TO THE POINT WHERE IT BECOMES PART OF YOUR SKIN

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



Feature

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 Mason. '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.'



Above Adrienne Mason (left) and Dr Marianne Ailes

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 1991), 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 intellectual background to their practical work.'

Ailes' own translation work includes a two-volume edition of a chronicle of the Third Crusade, Ambroise's *Estoire 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 chronicler gives 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 motives, says Ailes: 'A lot of the texts that I'm working on were written during the Hundred Years War, and sometimes used to promote the

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 Lineage of Joan of Arc and other historical writings by Alexander Pushkin
Translated by
Professor Michael Basker

Sleepwalking Land, Under the Frangipani, 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
(forthcoming)

STUDENTS ARE ENCOURAGED TO DEVELOP A SENSE OF THE ENJOYMENT OF WORDS

English claim to the French throne, which was largely what the Hundred Years War was about.'

There's still some debate as to whether translation itself can be considered a form of research – hence the tendency for academics to translate literary works in their spare time, as a labour of love – but Bristol is helping to change perceptions a little. 'We're one of the first UK universities to offer a PhD by Extended Translation,' says Mason. 'That involves doing a translation of about 60,000 words of a significant piece of work that offers a range of difficulties. You submit that with a 30,000-word commentary. I think that puts Bristol ahead of the game: the external examiner has already described it as a leading-edge programme.'

Craft and complexity

Technology offers ever newer, slicker tools for the translator: machine translation, computer-aided translation, subtitling software... but the heart of the process will always require a living, thinking, feeling human being to keep the nuances pumping.

'I've always encouraged students to develop a sense of the enjoyment of words, their semantic resonance and their materiality,' says Harrow, 'so that they see translation as a practice to be refined. It helps to instil very healthy habits of working and re-working, along with evaluation, negotiation, deep thinking, and judgement. It teaches you that some things aren't really translatable. Translation is a complex, non-reducible, perplexing, exasperating, pleasurable process – all those things, quite often at the same time.' ●

Susan Harrow portrait © Nick Smith // Adrienne Mason and Marianne Ailes © Dave Pratt

Listings

Calendar December 2012 – July 2013

Unless otherwise stated, more information and booking details are available from bristol.ac.uk/alumni/events or by calling +44 (0)117 331 8204. The events programme is always being updated, so keep an eye on the website for the latest event news.



If you're organising an event for alumni and would like our help publicising it, please email alumni@bristol.ac.uk

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 has arranged an evening with Dr Paul Fisher (BSc 1980). Paul has been a senior member of the Bank of England staff since 1995 and is a member of the Monetary Policy Committee. This event may be of particular interest to those working in the finance sector. An informal drinks reception will follow the discussion.

April

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.

Date to be confirmed
Evening tour of Somerset
House // London

The London Branch of University of Bristol Alumni have organised a private tour of Somerset House by the Director, Gwyn 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.

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 play for the alumni team, please email John Bramhall (BSc 1975) at john.bramhall@bristol.ac.uk.

July

Friday 5 to Sunday 7 July
Bristol Alumni Reunion
2013 // Bristol

The Alumni Reunion is your annual opportunity to come back to Bristol to visit old haunts and meet fellow alumni. The full programme of events (which includes the Convocation Annual General Meeting) will be available online.

Represent
your alumni
community

At the 2012 AGM it was decided that, from 2013, all Convocation Elections should include distance voting, as has been successfully used for the last two years for Convocation Representatives on Court.

Online nominations are now open for the posts of: Deputy Chairman; members of the Convocation Committee; and Convocation Representatives on Court. Please see bristol.ac.uk/alumni/convocation/elections.

The deadline for completed applications, including the support of two nominators, is 28 February 2013. Email reminders of these opportunities and the application deadline will be sent to all alumni for whom Bristol holds current email addresses.

Online voting will take place from May 2013. Postal ballots will be available on request from the Campaigns and Alumni Relations team: +44 (0)117 928 7938, or alumni@bristol.ac.uk.

Listings

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 1937)
died January 2012, aged 98

Joan Bray (née Mitford)
(BSc 1940, Diploma 1941)
died May 2012, aged 92

Doris Tweed
(BA 1939, PGCE 1940)
died June 2012, aged 94

Ludwik Iberal
(BSc 1941)
died February 2012, aged 91

Professor Douglas Lloyd
(BSc 1941, DSc 1972)
died aged 92

George Dorrington
(BSc 1943)
died 2011, aged 89

Commandant Mary Talbot
(BA 1943, Hon LLD 1993)
died 2012, aged 90

Brian Price
(Diploma 1946)
died February 2012

The Rt Hon Lord Amos Chilver
(BSc 1947, PhD 1951, DSc 1962, Hon DSc 1983)
died July 2012, aged 85

Joseph Keiler
(BSc 1947)
died June 2012, aged 84

Anthony Merriweather
(BSc 1947)
died February 2012, aged 85

Norma Arne Rolstad (née Chedzoy)
(BSc 1947)
died January 2012

Philip Waterhouse
(BA 1947, PGCE 1948, MA 1952)
died April 2012, aged 85

Mavis Hollwey (née Howarth)
(BSc 1948)
died April 2012, aged 84

Betty Knight
(BSc 1948, Cert Ed 1949)
died March 2012, aged 85

Leonard Silver
(BA 1949, Cert Ed 1950)
died May 2012, aged 83

Robert Corner
(BSc 1950, Cert Ed 1951)
died December 2011, aged 83

Dr Derek Dear
(BSc 1951, PhD 1955)
died March 2012, aged 85

Peter Hoskings
(Cert Ed 1951, Cert 1989, BA 1993)
died May 2012, aged 86

Dr David King
(PhD 1951)
died March 2012, aged 89

Francis Pine
(BSc 1951)
died July 2011

Alan Speed
(BA 1951, Cert Ed 1954)
died January 2012, aged 82

Ronald Warren
(BSc 1951)
died November 2011, aged 83

The Rev Michael Whetter
(BA 1951)
died May 2012, aged 81

Ursula Bell (née Delaney)
(BA 1952, Cert Ed 1953)
died 2012, aged 81

Dr John Davies
(BSc 1952, PhD 1955)
died 2012, aged 81

Emeritus Professor John Pridham
(BSc 1952, PhD 1956)
died May 2012, aged 82

Peter Rex
(BA 1952)
died March 2012, aged 81

Dr Mary Wood
(MB ChB 1952)
died December 2011

Dr John Griffin
(MB ChB 1954)
died April 2012, aged 81

Margaret Thomas (née Jaques)
(BSc 1954)
died April 2012, aged 79

John May
(BA 1955)
died January 2012, aged 78

Franklyn Bovey
(BA 1956)
died aged 77

Peter Burnham
(BA 1956)
died April 2012, aged 76

Emeritus Professor Michael Cooper
(BSc 1957)
died April 2012, aged 76

Patty Grimsley (née Good)
(BA 1957)
died November 2011, aged 75

Gordon Tucker
(BDS 1957)
died March 2012, aged 81

Emeritus Professor Robert Giddings
(BA 1958, MLitt 1965)
died March 2012, aged 76

Dr Frank Lewis
(MB ChB 1958)
died 2012, aged 86

Dr Robert Munn
(BSc 1958, PhD 1962)
died January 2011, aged 75

David Phiri
(Testamur 1960)
died January 2012, aged 77

Martin Charles
(BA 1961)
died January 2012, aged 71

Anthony Edwards
(BA 1962)
died 2012, aged 74

Diane Henderson (née Young)
(LLB 1962)
died June 2011, aged 70

Ian Burgess
(BSc 1963)
died 2012, aged 71

Dr Ahmet Lunel
(BSc 1963, PhD 1967)
died 2012, aged 72

Eric Rundle
(BSc 1963)
died June 2012, aged 69

Pamela Whyte (née Baigent)
(BSc 1963)
died June 2012, aged 70

Paul Sayzeland
(BDS 1964)
died May 2012, aged 72

Dr Richard Woodhouse
(BSc 1964, PhD 2010)
died May 2012, aged 69.

Dr Geoffrey Bignold
(BSc 1966)
died August 2012, aged 67

Robert Franklin
(BA 1966)
died 2012, aged 67

Vivian Coghill
(BSc 1967)
died 2012, aged 66

Professor Terence Hamblin
(MB ChB 1967)
died January 2012, aged 68

Janet Miller (née Walker)
(BA 1968)
died March 2012, aged 65

Dr Graham Steer
(MB ChB 1968)
died November 2011, aged 67

John Fieldhouse
(BDS 1969)
died 2012, aged 66

Kenneth Matthews
(BA 1969)
died May 2012, aged 84

Paul Whitaker
(BA 1970, PGCE 1971)
died 2012, aged 64

Clive White
(BA 1972)
died April 2012, aged 60

Howard Todd
(BSc 1975)
died 2012, aged 65

Nicholas Townsend
(BSc 1976)
died 2012, aged 57

Michael Graves
(BA 1977)
died June 2012, aged 55

Ian Crouch
(BDS 1980)
died August 2011, aged 62

Olivia Delyle-Turner
(BEd 1982)
died August 2011

Dr Eric Roseberry
(PhD 1982)
died 2012, aged 82

Evan Wright
(Hon MA 1984)
died April 2012, aged 87

Helen Sidebotham (née Baker)
(BSc 1985)
died January 2012, aged 47

Sarah McGranachan (née Calvert)
(BSc 1986)
died 2012, aged 47

Helen Cocking
(BA 1988)
died March 2012, aged 46

Nimish Shah
(BSc 1989)
died November 2011, aged 44

Dr Rupert Russell
(BSc 1990)
died 2012, aged 43

Roy Clark
(BSc 1995)
died August 2011, aged 67

Catherine Yannakopoulos
(BSc 2006)
died November 2010, aged 29

Douglas Ferguson
(MB ChB 2011-2012)
died July 2012, aged 19

The death of **Dr David Howard** (BSc 1966, MB ChB 1969) was mistakenly announced in the summer 2012 edition of *Nonesuch*. On behalf of Dr Howard and his family, we would like to reassure our readers that he is alive and well, and we apologise for any distress caused.

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

Feature

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 video games seem have on 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.



By Juliet Giles

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 15 and 35 is revolutionary and exciting, and anything invented after you’re 35 is against the natural order of things. Over the past ten years many over-35s have found themselves knocked sideways by a tsunami of new technology, which, even if it’s not 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 now some neuroscientists, are beginning to question the effect this total embrace of the digital world might be having on the development of their brains. Dr Paul Howard-Jones, a Reader in Neuroscience and Education in the Graduate School of Education, believes we are right to be asking those questions. ‘Children are at the vanguard of this technological explosion,’ he says. ‘They’re the ones who are using technology more than anyone and their brains are also more plastic.’

However, while Howard-Jones thinks it’s only prudent for us to monitor technology’s impact on developing brains, he’s less certain it always has the dire consequences we tend to imagine. He cites a study by Dr Ryota Kanai at University 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, face recognition and emotional responses. ‘We don’t know what the cause–effect relationship is here,’ says Howard-Jones. ‘It could just be those who have large amounts of grey matter density in those areas 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 not at social networking but at another area of digital technology, which he says can alter our brains far more dramatically: video games. According to Howard-Jones, playing video games engages the brain’s reward system so strongly that the uptake of dopamine, a neurotransmitter associated with motivation, anticipated pleasure and attention, is similar to that seen when amphetamines or methylphenidate (Ritalin) are taken. ‘What

Feature

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. This 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're absolutely brilliant. And this is 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 if 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



In pictures

'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'.

'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 Fearing. 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 Fearing 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 he 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.'

Share

'At first, I thought about selling my shares and giving the proceeds to the University of Bristol. But then I learned that by giving my shares directly to the University of Bristol neither the University, nor I, have any Capital Gains Tax liability. As a UK taxpayer, giving shares also reduces my taxable income by up to 45% of the share value.'

Colin Green CBE FREng (BSc 1971, Hon DEng 1997)

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