

# RESEARCH AND ENTERPRISE

A Teesside University Magazine

Issue 8



# Welcome



It was a tremendous honour for me recently to accept the *Times Higher Education* award of University of the Year on behalf of Teesside University – a hugely welcome endorsement of our business engagement strategy. When taken alongside the second award that we won for Outstanding Employer Engagement, this stands as a true testament to the excellent spirit of partnership that exists between the University and business in the region.

At Teesside, working with business is at the very heart of our mission. From teaching and research, through to innovation and workforce development, the needs of business play an important part in informing everything we do. Indeed, the nature and strength of our partnerships with business and industry were recently given a strong endorsement by Sir Richard Brook, Director of the Leverhulme Trust, at the launch of the University's five new Research Institutes.

These five Institutes form the backbone of our new research strategy which is aimed at maximising the impact of our research by focusing on key areas of strength. Sir Richard spoke very positively about both our approach and our achievements, emphasising that talented researchers whose work benefits society deserve to be supported wherever they are working – a welcome recognition of the talent and commitment of researchers in universities like Teesside.

Gaining national recognition for our research and business engagement activity is not only important to us but also to the whole region. The stories in this issue of *Research and Enterprise* showcase that recognition and demonstrate how we are building on this work to deliver lasting benefits for our partners.

Amongst the many examples is the work of our Centre for Design in the Digital Economy in developing a new, leading-edge environment for commerce through the creation of a virtual city on the 3D web. The North East Industrial Symbiosis Network is assisting regional businesses to make massive cuts in CO<sub>2</sub> emissions, and our computing experts are

helping autistic children struggling to communicate. These are just three examples of how our research and knowledge transfer activity is delivering real value to society and our regional economy. We're also growing our portfolio of Knowledge Transfer Partnerships – enabling academic expertise, graduate talent and industrial and commercial know-how to be brought together to create innovative products and processes to enhance business performance and the bottom line.

In DigitalCity, the regeneration initiative we jointly lead with Middlesbrough Council, we're bringing together business, research staff, graduates and creative students to develop new digital business opportunities, and we look forward to our 100th new digital company in spring 2010.

We at Teesside are committed to being the leading business-facing university, delivering our mission of 'providing opportunities, promoting enterprise and delivering excellence' and it is heartening and reassuring to know that our approach to working with business is so clearly reflected in government and CBI policy statements on higher education. It's an exciting agenda, and we look forward to some exciting times working with you!

**Professor Graham Henderson**  
Vice-Chancellor and Chief Executive



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**THE AWARDS**  
Times Higher Education  
**OUTSTANDING EMPLOYER  
ENGAGEMENT INITIATIVE**

**THE AWARDS**  
Times Higher Education  
**UNIVERSITY OF THE YEAR**

Inspiring success





# Tackling a matter of life and death

In the United Kingdom, the presence of fluoride in tap water has always been a controversial issue – but never a matter of life and death. However, that is not the case in many countries across the world, where it is linked to a bone condition which claims the lives of many young children. JOHN DEAN reports.



**Helping to save those lives was the driving motivation of a team of UK experts who travelled to Tanzania in Africa, one of the blackspots for skeletal fluorosis.**

Among them was dietician Dr Vida Zohoori, pictured, a senior lecturer in Teesside University's Health & Social Care Institute, who has devoted her career to research into the effects of fluoride on the human body.

She said, 'In the UK, almost 12% of the population receive fluoridated water, either naturally or artificially added to the tap water supply, at a level of one part per million. Water fluoridation is the most effective means of preventing tooth decay in children. However, if children ingest too much fluoride (from multiple sources including toothpaste) when their teeth are developing, particularly in the critical period up to the age of six years, they may risk developing mottled enamel (white spotted, yellow or brown stained teeth). In the UK, this is mainly a cosmetic issue.

'But, in countries like Tanzania where fluoride occurs naturally in groundwater at a level of up to 34 parts per million and there is deficiency in calcium and vitamin D, excess fluoride can cause skeletal fluorosis. It really is a serious issue in those countries and children who contract it never live long.'

The condition, which causes severe damage to bones and joints, is prevalent in 25 countries and is seen by the United Nations as a serious threat to children's health.

Such concerns prompted the Royal Society to fund a visit to Tanzania by a joint team from Teesside and Newcastle to investigate ways of reducing the impact of the fluoride.

Alongside Dr Zohoori on the team were three Newcastle University experts, Dr Ann MacGuire, a senior clinical lecturer in child dental health, Dr Richard Walker, a consultant physician at North Tyneside General Hospital and Paul Sallis, a senior lecturer in environmental engineering.

During the trip to the Kilimanjaro area, the team interviewed members of various tribes as well as local officials. The team's observations included the need to improve filtering of water supplies, to encourage mothers to breastfeed longer to give their children natural protection and to improve control of a tenderiser used by tribespeople in the cooking of meat.

Dr Zohoori said, 'We hope that the suggestions we made will be of use and that we can help reduce the effects of skeletal fluorosis in the area. However, with all these things it depends on money.'

In her UK-based research Dr Zohoori has been examining the impact of fluoride on children in areas where it is added to tap water – Newcastle among them – as well as the effects of its absence in areas such as Middlesbrough.

Dr Zohoori, who joined Teesside University in 2007, said, 'Fifty-four per cent of children in Middlesbrough have dental decay by the time they are five years old. One of the reasons could be lack of good oral hygiene, but we also believe that it is partly down to lack of fluoride in the water. The big



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argument in favour of adding fluoride to tap water is that it reduces dental decay. However, there has been very little research into the effects of fluoride exposure and retention on children in the UK.'

To improve our understanding of fluoride exposure in children, Dr Zohoori has carried out a range of research projects over recent years. One of the most recent analyses the tests used to measure levels of fluoride in children's diets. Dr Zohoori is overseeing the work of PhD student Narges Omid, also in the Health & Social Care Institute, who is assessing the two main methods of testing fluoride levels in children.

One method, widely used in the UK, involves parents keeping a food diary, and the second method, used in the United States, is based on providing duplicate portions of each meal.

Narges said, 'I have set out to compare both methods, something which has not been done before. I hope at the end of the project to be able to

recommend which is more effective with children. I will be looking at issues including effectiveness and the ease of use for parents.'

She has approached Newcastle schools to see if they will allow their children to be involved in the project.

Narges said, 'Children take in fluoride from a variety of sources. For instance, it can be part of the water used in the food processing industry in certain areas.

'It has been established since 1945 that the right amount of fluoride means less dental decay in young children but, as with any nutrient, too much can have detrimental effects. Too much fluoride can cause damage to the enamel on children's teeth, for example. I hope to learn more about the level of fluoride in children's dietary intake in my research.

'I hope my research findings will help to inform policy and practice on children's fluoride intake', she says.

# Creating new worlds online

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A huge new expo space is being built in the North East. Its 1,600 hectares will house the Northern Design Centre and attract commercial exhibitors from all over the world. You haven't heard about it? That's because it is being built online. DAVID WILLIAMS investigates.

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Imagine being one of the first settlers in a virgin land. This is what it is like now in the virtual world. The new technology of the 3D internet is allowing workable, photo-realistic locations to be built online for the first time. What's more, the commercial applications of this and other new technologies mean that these spaces will be more than playgrounds for social networking or games. These new locations will be places of business. Like their real-world counterparts, they will be used by people to gather together to share information, to exhibit their products, and to make money.

Professor Brian Wilson runs the Centre for Design in the Digital Economy (D-lab) at Teesside University, and his research group is one of a small number of teams throughout the world that have secured access to the new technology and are using it to build one of these virgin spaces.

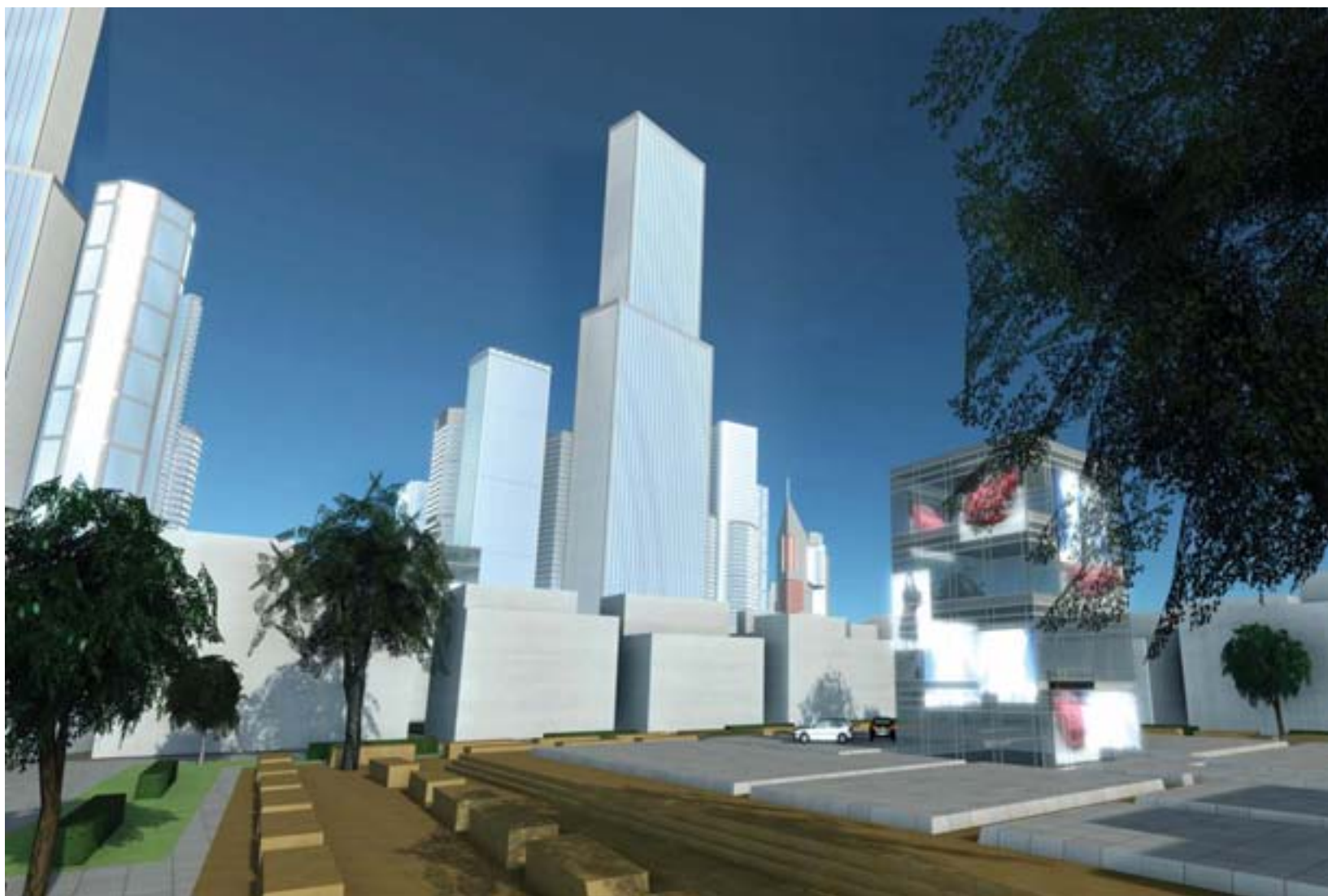
'With this new technology, you can create photo-realistic buildings and city-like environments which you can move around in a way that feels and looks naturalistic', he says. 'If you wanted to, you could re-create an existing city such as London in millimetric detail. Our team is doing something different, however. We are building a space dedicated to commercial applications, one that will entice organisations to interact and do business on the web in a completely new way. We are calling this space the Xpo.'

Until now only two types of online immersive environments have existed. They are social networking spaces and gaming spaces, and neither of them is designed for doing business. What Professor Wilson's

team is doing with the Xpo is to create a third kind of immersive environment: one that serves the needs of commerce.

'We are now in the transition between Second Life, which represents the previous generation of 3D online technology, and the next generation', explains Professor Wilson. 'Certainly, corporations had a presence in Second Life, but they were using it as an R&D opportunity to assess the potential of online space. We shouldn't forget, however, that Second Life was always a social networking tool.'

'We call what we are doing immersive commerce. If you have people scattered throughout the world and want to gather them together for a team meeting to discuss a set of plans laid out on a table, you can do that in your office building in the Xpo. If you want to launch a product or hold a conference, the Xpo can support 10,000 'avatar' virtual delegates at the same time. To achieve this, we need a different technical structure for i-commerce than you have for social networking or games.'



'A recent piece of research we did with a product called Metamole showed that commercial applications are growing faster than social networking and games applications. The Xpo aims to catch this wave of development and set the quality standard for the use of technical infrastructure in i-commerce environments.'

The first organisation to settle in this new space is the Northern Design Centre, which has taken a ten-hectare plot at the heart of the Xpo (and which, in 2011, will also have a real-world counterpart in Gateshead's Baltic Business Quarter). Currently known as the NDC District, this space aims to become a virtual creative quarter for the North East, offering a base for 76 design ventures and SMEs to locate themselves and do business on the 3D web.

'We need to ensure North East companies have the knowledge, skill and operational presence to exploit new forms of online commerce and become competitive pioneers of a virtual-3D online business environment', says Ben Strutt, One



North East design senior specialist. 'This pilot project will provide a new channel of communication that enables businesses in the design sector to increase collaboration and knowledge transfer opportunities, develop connections with new markets, and acquire market insight for product and service innovation.'

Funding for the NDC District comes from the EU – £515,000 from the European Regional Development Fund Competitiveness Programme 2007-13, which is managed locally by One North East – and £565,000 from Teesside University.

But the NDC District is only the beginning of what is possible. Professor Wilson and his team are in

the process of developing a business plan with the aim of marketing the Xpo as the place to promote and exhibit your products on the 3D internet.

'As soon as people see the potential of the 3D web, they will want to be part of it,' he says. 'So the spaces that are being built today will very quickly become globally relevant. We want the Xpo to be the must-use destination for digital marketers and corporations on the 3D web. It will be the place to come for anyone who wants to exhibit, to migrate their existing products on to the 3D web or to launch a new product virtually. And in that sense it will make the Xpo a global destination.'



## &gt; THE UNIVERSITY FOR BUSINESS

# Double honours for Teesside

There were fireworks over the Tees Valley after Teesside University was named University of the Year recently. It also picked up the Outstanding Employer Engagement Initiative prize at the *Times Higher Education* magazine's awards night – one of the most prestigious dates in the higher education calendar.

The two awards were presented to Professor Graham Henderson, the University's Vice-Chancellor, at a glitzy gathering of higher education leaders in London's Grosvenor House Hotel in October 2009.

The twin accolade for Teesside was largely based on the University's support for employers and employees in the region. Professor Henderson believes the awards will help transform perceptions of both the University and Middlesbrough.

Award judge Dianne Willcocks, Vice-Chancellor of York St John University, told the ceremony that Teesside won the University of the Year title for its 'outstanding regional economic strategy and strong financial performance', and went on to praise the University for its 'history of working with communities and businesses that makes it the public benefactor par excellence, and truly a well-merited winner'.

*Times Higher Education* Editor Ann Mroz said, 'Teesside is a fantastic example of an institution that has put itself firmly at the heart of its community, embracing with zeal its mission of working with both individuals and businesses to help them achieve their full potential. With an ambitious 16-point plan it has helped to create and sustain jobs in the midst of a recession.'

'The University has been a beacon of hope in the region's economic gloom. It also set a fine fiscal example by turning in a strong financial performance of its own. Teesside is a very worthy winner of this year's top accolade', she said.

The Outstanding Employer Engagement award was presented to Teesside University for its Business School's pioneering partnership with the North East Chamber of Commerce (NECC) which has seen both partners working closely together to design and develop a new business-friendly Foundation Degree in Leadership and Management.

Mr James Ramsbotham, the NECC's Chief Executive, was a guest of the University at the *Times Higher Education* awards. He said, 'It is a great accolade and I'm really delighted that the Foundation Degree has received this national recognition. From the NECC's perspective, working with Teesside University has been fabulous. They really understand businesses and business needs and are always willing to be flexible. It couldn't be a better partnership.'

Graham Henderson said, 'This is the first time the *Times Higher Education* University of the Year Award has gone to a modern university, and there is a tremendous buzz around the campus.'

'I think it is fantastic that we have also won the Outstanding Employer

THE UNIVERSITY HAS A HISTORY OF WORKING WITH COMMUNITIES AND BUSINESSES THAT MAKES IT THE PUBLIC BENEFACTOR PAR EXCELLENCE

Engagement award for our innovative work with the NECC. It's a testament to the excellent spirit of partnership that governs our business relationships in the region, and we look forward to working together with more companies and organisations in the coming year to bring real benefit to the North East.'

The University Business School Dean, Alastair Thomson, said, 'Providing employer-focused, demand-led programmes has been at the heart of our work for several years, and we're very proud of the Foundation Degree in Leadership and Management. We developed the programme with the NECC to meet the real needs of employers in the region.'

## Incubation champion

Teesside University was chosen as the country's Business Incubation Champion at the UK Business Incubation (UKBI) annual conference in Bristol last year. The award was made for its pioneering graduate enterprise initiative which has seen over 180 graduate companies launched on campus, creating 271 new jobs.

The prestigious award recognises the University's dedicated team who provide a supportive environment for business start-ups during the early stages of their development.







## &gt; THE UNIVERSITY FOR BUSINESS

# Transferring knowledge

University resources and knowledge can help local companies to improve their business performance, as NIC MITCHELL and DAVID WILLIAMS find out.

If a company wants to make a fundamental improvement or change, it usually has two options – invest in permanent staff or call in consultants.

There is, however, a third, very cost-effective option – and that is to make use of university knowledge and expertise. Teesside University offers a range of flexible solutions.

There are three main schemes available:

- > **Knowledge Transfer Partnerships (KTPs) support strategic projects that can last between two to three years**
- > **Collaboration Innovation Partnerships (CIPs) address more tactical issues and last six to nine months**
- > **Shorter KTPs can last between ten and 40 weeks, and are aimed at organisations that are new to working with universities.**

All three partnerships have a similar format. A recent graduate or research student is recruited to implement the project at the company, overseen by a senior academic expert at the university. In the North East, these partnerships are part-funded by bodies like One North East, the Technology Strategy Board and the research councils.

Laura Woods, Director of Academic Enterprise at Teesside University, says, 'Knowledge transfer schemes can offer an ideal way of implementing major business changes without breaking the bank. And they've been shown to have a hugely positive effect on the bottom line.'

Professor Nash Dawood, Director of the University's Centre for Construction Innovation & Research is a firm supporter of the academic partnerships with business and industry.

He specialises in creating computer modelling tools which rehearse a construction process 'virtually' – identifying hot spots before site operations begin, and potentially saving businesses tens of thousands of pounds caused by unexpected problems.

One of his latest KTPs is with specialist sub-contractor Deepdale Solutions Ltd. They design and manufacture curtain-wall glazing, which is then installed on site. Professor Dawood says 'The more the company can integrate design, procurement and production with

construction site operations, the more efficient the process becomes. However, unforeseen delays can cause additional costs, as when preceding trades fail to complete their part of the work on time.

By creating a model which integrates their production with on-site processes, we can help them predict the impact of these and other delays and so give them an edge over their competitors.'

Another KTP is with Ryder Architecture. With staff based in Newcastle, London, Liverpool and Glasgow, the company is commissioned to design and deliver education, healthcare, commercial, residential, masterplanning and interior design projects. It has an award-winning reputation, largely gained through its devotion to design quality and technical innovation.

First contact was made when Professor Cliff Hardcastle, Teesside University's Deputy Vice-Chancellor for Research and Enterprise, invited Ryder's MD Mark Thompson and Architectural Director, Peter Barker, to Middlesbrough to meet Professor Dawood's research group, and find out more about their innovative work with 4D/5D computer modelling for the construction industry.

Mr Barker said, 'We're great advocates of innovation and were impressed by what we saw of Teesside's virtual construction and innovation work. We've had good experience of a KTP before and had no hesitation in setting one up with





>From left to right, Peter Barker, Nahim Aqbal and Professor Nash Dawood.

## CIPs

CIPs provide tactical solutions. For example, when Tyneside-based Bay Plastics realised they were missing an opportunity to reach new markets and manage their communications, they were helped through a CIP.

Barry Hebbbron, a senior lecturer specialising in web optimisation and web engineering at Teesside University, was called in. He suggested the company develop and implement a full web-optimisation plan, including re-designing site architecture and content to improve search engine listings and the use of a web-analytics tool to measure and understand user behaviour. A graduate implemented the plan and traffic to the site has now doubled, while sales are heading in the same direction.

'Working with Barry has undoubtedly added value to our business', said the company's managing director, Mick Currell. 'His knowledge and expertise have also guided us to many other strategic decisions relating to investment in this area which we would have found difficult on our own. I am delighted with the results so far.'

To find out more about KTPs and CIPs with Teesside University, email [ktp@tees.ac.uk](mailto:ktp@tees.ac.uk) or ring 01642 384407.

Professor Dawood and his team providing we could get a good KTP associate; and that's what we have got with Nahim Iqbal.' The graduate moved from Hertfordshire to begin his two-year KTP attachment with Ryder in September, and is now looking forward to doing his PhD under Professor Dawood's supervision.

Mr Barker said Ryder wanted to improve early-stage design processes to help clients make more informed decisions about building projects and prevent costly mistakes. 'The KTP will enable us to develop sophisticated analysis tools that allow

for an environmental impact analysis during the early design stage', said Mr Barker.

'We are already using a 3D tool for design but are currently unable to link this system with our partners. What we're looking for is an interactive model which is automatically updated when any partner makes a process change in areas like design, scheduling or cost. This will allow the project team to assess and rehearse the impact of design changes on the build schedule and the cost of the project.'

Mr Barker says KTPs are a 'win-win' for the academic and the business partner and the graduate.

'The University and associate get real-life business experience and we can draw on the latest academic knowledge and expertise.'

Nahim said, 'The KTP has given me the opportunity not only to contribute to the success of the partnership between Ryder Architecture and Teesside University, but also to gain new knowledge and skills which will open doors for my future career prospects.'



## &gt; THE UNIVERSITY FOR BUSINESS

# Helping the region through the recession

When Lord Mandelson unveiled what was billed as 'the biggest shake-up of universities for decades' in November, much of the media focus was on issues such as student rights and higher fees.

However, the Business Secretary's ten-year modernisation agenda also highlighted the need for higher education to work more closely with industry in designing courses and funding them. This is precisely the area which led Teesside University to win the *Times Higher Education Outstanding Employer Engagement Initiative Award* for its Business School's pioneering Foundation Degree in Leadership and Management – designed and delivered with the North East Chamber of Commerce (NECC).

The government's higher education framework for the next ten years fits in well with Teesside's 16-point action plan to help businesses and individuals through the recession.

Reacting to the government strategy, which appears to have wide cross-party support, Teesside's Vice-Chancellor Professor Graham Henderson said, 'We welcome Lord Mandelson's reaffirmation of the critical role that universities play in securing the country's economic recovery and long-term prosperity. It is a role that Teesside University is extensively engaged in and we look forward to working with ministers to achieve our shared objectives.'

Alastair Thomson, Dean of the University's Business School which



**WE'RE  
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OUR BUSINESS  
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runs the Foundation Degree with the NECC, as well as a newly launched similar programme with PD Ports, also welcomes the opportunity to work with employers. He said, 'We already work extensively with a variety of local businesses and this approach is consistent with our mission. Partners like the port and North Yorkshire County Council see us as very much part of their business, helping them to improve and develop to better meet the needs of their business and their customers.'

He believes that winning the Outstanding Employer Engagement Initiative Award doesn't just highlight the high standard of the Business School's work with the NECC, but also offers a model for employer and university engagement to others. 'The partnership has been recognised as the best in the country', he says.

Laura Woods, Director of Academic Enterprise, pictured, is a key player in driving forward the employer engagement agenda at Teesside. She also points to other activities which are making the University one of Britain's leading business-focused higher education institutions.

'We're developing our business focus to help companies through the recession and delivering measures to help businesses and individuals with partner colleges in the Tees Valley through our OneDoor campaign.

'Actions include helping business reduce the costs of professional

courses and innovation projects.

A good example is Bay Plastics, a north-eastern plastics company with whom we've worked – exploiting interactive web technologies to create a high-profile online presence.

'We helped the company obtain special funding to develop an online sales tracking and marketing system, designed to produce better targeting of marketing investment.

'Through our workforce development strategy we're working with a wide range of companies to deliver the professional skills and qualifications they need to stay competitive. Companies we're currently working with include the Marine Design Centre, Faraday Training, PD Ports, Kirkwood Media, Cablecom Training, Marlow Foods and Northumbrian Water, and we're developing new products for companies in the digital media sector, some of whom have been affected quite harshly by the economic climate.

'Our partnership with Business and Enterprise North East is hugely important. It has enabled us to help companies such as NETA Training in Stockton, where we are delivering training in the workplace.'

**For more information about working with Teesside University, please contact the Department of Academic Enterprise: T: 01642 384580, E: [business@tees.ac.uk](mailto:business@tees.ac.uk), [www.tees.ac.uk/business](http://www.tees.ac.uk/business)**



>Vice-Chancellor, Professor Graham Henderson, pictured, in the port of Tees

## 16-point plan to help business

The 16 points are:

- 1 Halving the time it takes us to pay bills – with weekly payments of all authorised invoices.
- 2 Delivering Future Management masterclasses to give employers new skills in managing through the recession.
- 3 Bringing forward £2.2m of work on University buildings.
- 4 Starting work on the construction of a new dental technology training and sports therapy centre, creating 150 building trade jobs.
- 5 Accelerating plans for a second campus base to provide courses in Darlington, bringing higher education to the west of the Tees Valley.
- 6 Appointing a team of business account managers to develop relationships with business and promote a businesslike culture.
- 7 Introducing subsidised training packages with employers and FE colleges to help workforce development.
- 8 Providing low-cost business start-up incubation units on campus to graduates and others launching new enterprises and bringing jobs to Middlesbrough.
- 9 Supporting the flagship DigitalCity initiative to keep high-tech jobs and companies in the region.
- 10 Offering funded graduate internships in regional companies and organisations.
- 11 Stepping up Knowledge Transfer Partnerships and providing financial support for shorter initiatives, to help firms introduce new ideas.
- 12 Providing generous bursaries worth £2,400 for postgraduate students.
- 13 Delivering free taster sessions to help people with career changes and developing new skills.
- 14 Introducing special initiatives to support the process industry, including a conversion programme for apprentices and a new Science to Business Hub supported by the European Union.
- 15 Providing bursaries in partnership with One North East for displaced workers in the electronics, process and engineering sectors to take postgraduate courses.
- 16 Providing careers advice to graduates and managers facing or experiencing redundancy.



An emotionally responsive tree is the latest example of world-leading research from Teesside University's new Digital Futures Institute. DAVID WILLIAMS investigates.

# Emotional TREE

It's a work that fuses art, science and the aesthetic appreciation of the viewer. The e-Tree, or emotional tree, was developed by Professor Marc Cavazza's Intelligent Virtual Environments Group from a brief created by internationally renowned virtual artist Maurice Benayoun. The e-Tree is projected virtually into the world and it grows and develops on the computer screen, thriving or withering, turning green or fading to purple according to the attention shown to it.

'If you have a positive attitude, the tree will blossom; if you are doing nothing, or something that it perceives as negative, the tree will fade', explains Professor Cavazza. 'Once the viewers see it has a life of its own, this impacts on their emotional attitude which then changes the behaviour of the tree. This is how the loop is closed.'

'The installation works on a multi-modal input system. We are capturing the viewer's tone of voice – is it excited or flat and unimpressed? – some key words he or she might use such as "fantastic", and their motion – how many people are in the attention zone and how much they gesticulate. We then have a theoretical model for fusing these modalities and so creating the growth and behaviour of the tree.'

Maurice Benayoun is one of only a handful of people working internationally in this area. Benayoun's other works such as Frozen Feelings and Emotional Vending Machine reveal his fascination with concretising feelings and capturing the aesthetic response of his audience.

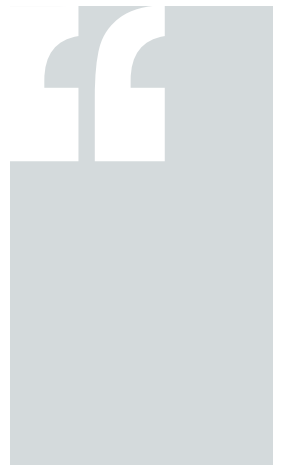
'We used the technology to explore his interests, and he provided us with the opportunity to embed the technology in what is a complete media experience: an interactive artwork', adds Professor Cavazza. 'The fundamental scientific contribution is concerned with how you capture something as complex as the emotional attitudes exhibited by people as they are undergoing an aesthetic

experience. There has already been a lot of work done on detecting whether people are angry or happy, for example, for call-centre interfaces. What is new is that we are capturing a wider range of inputs and showing how it is possible to map the signals from different sensors on to something which we could call a mathematical model of emotion. This real-time analysis can then be reincorporated into the media to produce something that is interactive and sensitive to user-feedback.

'In our research, we are very interested in interactive, new-media applications which involve emotional responses. The e-Tree is a good compromise between sophisticated research and something which has some practical application, and it is a nice illustration of where our research is going now.'

Although the e-Tree did not itself contribute to the final result, Teesside's School of Computing was rated highly in the 2008 Research Assessment Exercise (RAE). The University's Computer Science and Informatics submission had 10% of its research activity classified as 'world-leading in terms of originality, significance and rigour', with over half the research being 'recognised internationally'. The result brings quality-related income from the Higher Education Funding Council for England into the newly established Digital Futures Institute.

One of the key research groups in the Digital Futures Institute is the Intelligent Virtual Environments Group which is taking part in several high-profile projects. The e-Tree was a result of the group's involvement in a major EU-funded research project – CALLAS (Conveying Affectiveness in Leading-edge Living Adaptive Systems). The project has brought in €593,000 of funding from the European Commission Sixth Framework Programme dedicated to exploring multi-modal affective interfaces, and focusing particularly on digital art and entertainment.



**IN OUR RESEARCH, WE ARE VERY INTERESTED IN INTERACTIVE, NEW-MEDIA APPLICATIONS WHICH INVOLVE EMOTIONAL RESPONSES**





The Group is also the lead research group in the IRIS Network of Excellence. IRIS (Integrating Research in Interactive Storytelling) has allocated Teesside €704,000 from the European Commission's Seventh Framework Programme. The Network will structure European research into the way that new technologies and new media are bridging the gap between computer entertainment and more traditional film and broadcasting industries, particularly in the way they allow the user to influence the unfolding of the story.

Other collaborative funding includes a €700,000 share of COMPANIONS, a project run by a consortium of 11 international universities and four industrial partners. The consortium is examining the creation of personal, persistent 'agents' or 'Companions' who help their users through their experience of using digital media and the internet. The Companion will become, as the project aim states, 'in a precise sense, part of the user's memory on the web, essentially their memory of themselves and their life events. The originality here is the use of conversation as a tool of reminiscence for users who will already have much of their life's data in digital form, such as images, texts and videos. The Companion is there to give that data a narrative form, a life story, for the benefit of the user and their successors.'

'The e-Tree is important to our other research projects because the mathematical model of emotion it involves is something that can be transposed on to other types of application', adds Professor Cavazza. 'For example, we are beginning to explore the automatic and real-time editing and re-profiling of films around the emotional response of the audience. This would allow the way the audience reacts to the first part of the film to influence what they see in the second part.'

>Research assistant Remi Tache with the computerised Emotional Tree which grows and changes colour according to the viewer's tone of voice



# EPICC

## welcome



A new centre at Teesside University set up to unlock innovation in the health and social services has been welcomed by Professor Aidan Mullan, Director of Nursing and Patient Safety with the North East Strategic Health Authority.

Speaking at the official launch of the Enhancing Practice and Innovation Centre for Care (EPICC), Professor Mullan said, 'This Centre couldn't come at a more opportune time. History shows that in a time of economic downturn, the impact is felt around two years later by the public sector. Following the last global recession, we saw some hospitals downsizing or closing wards and we need to look at the quality and innovation agenda to protect from slash and burn. Centres such as this are the key to unlocking innovation.'

Professor Paul Keane, Dean of the University's School of Health & Social Care, said, 'We want EPICC to be an international centre of excellence in facilitating and promoting practice

enhancement, innovation and patient safety. Our students are the employees of the future, and it is essential that they also understand the importance of innovation in practice through learning and teaching within their programmes.'

The new centre will be led by Wade Tovey, the School's Assistant Dean (Enterprise, Knowledge Transfer and Employer Engagement), pictured right, with Professor Mullan (centre) and Professor Keane, left, at the launch in November.

For more information email [epicc@tees.ac.uk](mailto:epicc@tees.ac.uk) or phone EPICC Administrator Maria Morrissey on 01642 738063

## The poverty trap

In her research funded by the Joseph Rowntree Foundation, Dr Tracy Shildrick is challenging some of the popular myths surrounding poverty, such as the belief that entire families are happy to live on benefits. Here, she talks to HUW RICHARDS.

Three quarters of a million hits on the Google search engine show that the concept of recurrent poverty is of significant interest. The term exists in the margin between persistent poverty and the short-term poverty of those who fall in and out of economic hardship as personal circumstances change.

Tracy, a member of the Social Futures Institute, is currently undertaking research with colleagues on the issue. She has received funding from the Joseph Rowntree Foundation and says, 'A lot of people move out of poverty, but only marginally, and then drop back later. Much research is statistically based and if your income is as little as £1 per week above the poverty line, officially you are out of poverty. But if you are only just above the line, you never really escape poverty and everything that goes with it.'

For her research she has interviewed 23 employers and other stakeholders in the Middlesbrough area, along with 60 people who have been classified as recurrently poor.

Unemployment, both historically and currently high in the area, is a major element in poverty. So, too, says Dr Shildrick, are low-quality jobs, 'These are "poverty trap" jobs offering the minimum wage or little better in factories, shops or different types of care work. They often offer no prospects and can be difficult to hang on to.'

Many offer little financial advantage over unemployment in return for unpleasant work, but Dr Shildrick found that, 'Overwhelmingly people talked of the advantages of having a job, however poor it was. Its value is recognised as being beyond the merely economic. They know about the consequences of unemployment, the depression and demoralisation that can set in if it is long-term.'

At the same time she has found no evidence of popular myths. 'I found no "cultures of joblessness", with people who have never been in the workforce, or entire families who exist on benefits. The real picture is much more complicated.'

Family circumstances can create problems for people on these margins. 'They, or family members who depend upon them, may suffer from ill-health. There may be problems with childcare which make it difficult for them to stay in work.'

Nor is the benefit system always the safety net that it is supposed to be. 'The system is incredibly complicated and it takes time, persistence and resilience to reconnect with it if you drop out of the workforce. A lot of people find themselves with little or no money while this is happening, totally dependent on family or friends.'

As with most tough and intractable social phenomena, there are few easy or obvious answers. But Dr Shildrick believes that employers have a part to play. 'A way has to be found of enabling people to stay in jobs and progress, rather than being in and out of dead-end work.'



After the furore over MPs' expenses, Michael Macaulay tells HUW RICHARDS that Parliament could learn a thing or two about standards from local councils.



## Town Hall lessons for Parliament

**As Parliament attempts to refashion its procedures for ensuring members' integrity, and restore a battered reputation, it is likely it will look to a closely related area of British public life, local government.**

And, suggests Dr Michael Macaulay, the parliamentarians would be looking in the right place. One of his long-running research projects, funded by Standards for England, has been to examine examples of good standards practice by local authorities.

At the height of the furore over MPs' expenses in late May, Dr Macaulay, Reader in Governance and Public Ethics and a member of the University's Social Futures Institute, was among the invited speakers at a joint European-American conference in Amsterdam focusing on issues of ethics and integrity in public life.

He says, 'The institutions set up to deal with problems like this inevitably reflect the circumstances that led to their creation. Standards for England was set up in the wake of scandals such as that of Doncaster Council in the late 1990s.'

One option open to the government would be to extend the responsibilities of Standards for England to Parliament. Dr Macaulay says, 'That might work well, but my guess is that they'll want a high-profile response and the creation of a distinct body to deal with Parliament.'

He believes that Standards for England has been good for integrity and transparency in local government, particularly since it was transformed from a centralised all-purpose body into an overseer supervising the activities and investigations of local committees. 'Since it was decentralised there has been a much greater likelihood of complaints being investigated – and local knowledge is often extremely useful.'

There are occasional problems. 'Standards committees can become a target for local busybodies. One council in Yorkshire has a group of four consistent complainants who send up to 100 letters a day between them to the monitoring office.'

Overall, though, he believes there are serious lessons to be learnt which are applicable to Parliament. 'One of the first is that you shouldn't try to do too much too soon. There's an

understandable demand after a scandal that you should oversee everything, and that can lead to being too hands-on.'

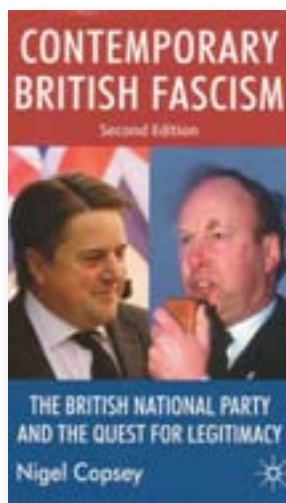
Any new body needs not only to understand what it is doing, but to share that understanding with parliamentarians and the public. 'There has to be a clear sense of values. Seven principles of public life were laid out as long ago as 1995, but I can't think there are many people now who can remember what they are.'

That clarity also has to extend to precise practices, avoiding the grey areas that developed on an ad hoc basis in Parliament. 'You need a clear set of practices and a list of what is and is not allowed.'



# The BNP's quest for LEGITIMACY

Teesside historian Nigel Copsey says the BNP are adopting Lib-Dem local campaigning methods in their quest for legitimacy, and warns of the dangers of other parties refusing to acknowledge their existence. Here he talks to HUW RICHARDS.



**The British National Party (BNP) did not do quite as well as they had hoped – and others feared – at this year's European elections. The Greens beat them to fifth place in the popular vote, and talk of gaining half a dozen seats proved premature.**

Winning the first two seats in the European Parliament was, though, historian Dr Nigel Copsey points out, a significant breakthrough. He says, 'The BNP have for a long time pursued a "ladder strategy", working their way up from the bottom of the political structure – from parish council to district or borough council to London Assembly and county council, and now the European Parliament. It builds up their claim to be a respectable, legitimate part of the political mainstream.'

No British academic has a deeper understanding of the BNP than Dr Copsey, Reader in Modern History, who with Leverhulme Research Fellow Graham Macklin is in the process of editing a volume of studies of the Party for publishers Routledge. This book, which came out of an international symposium at the University last year, builds on his earlier influential work *Contemporary British Fascism: The British National Party and the Quest for Legitimacy* (2004), the first academic monograph devoted to the BNP. This book has recently been expanded and revised as a paperback second edition.

For the BNP, the next rung on the ladder is representation at Westminster. While the first-past-the-post electoral system makes this tough for smaller parties, Dr Copsey says, 'It certainly is not impossible for them to win a Westminster seat, particular if the Labour vote collapses. It is possible

rather than probable, but if I were the Labour MP for Barking or Dagenham, or somewhere like Barnsley or Rotherham, I would be worried.'

These are seats where the BNP has the most voter appeal, especially among those who feel disillusioned and disenfranchised – white working-class communities who feel neglected by the New Labour project. 'My impression is that at the European elections, disaffected Conservatives tended to vote UKIP while the disaffected Labour vote was split, with the middle-class voters choosing the Greens and the white working class going for the BNP'

Aside from the greater profile that comes from the two victories, Dr Copsey believes that the results will strengthen the position of party leader Nick Griffin and could bring an influx of new members. 'They claim to have had 65,000 enquiries during the campaign and used a professional call centre.'

The BNP's new prominence creates challenges for a number of British institutions. Andrew Brons, one of the two new Euro MPs, was interviewed on Radio 4's *Today* programme the morning after he was elected, and the BBC caused a storm when it invited the BNP leader on to *Question Time*.

But ignoring the BNP may not be the answer. This is a perilous tactic, says Dr Copsey. 'It plays to the BNP argument that they are victims of a liberal elite conspiracy to stop their ideas being heard.' Dr Copsey argues that the other parties have to think long and hard about how they meet the BNP threat. 'Simply labelling them as neo-Nazis does not work.'

The reason for this, Dr Copsey argues, is that the modern BNP is a much more sophisticated operation than the streetfighters of the 1970s National Front. They have co-operated with other far





Getty Images

IT PLAYS TO THE BNP ARGUMENT THAT THEY ARE VICTIMS OF A LIBERAL ELITE CONSPIRACY TO STOP THEIR IDEAS BEING HEARD.

right groups in Europe, adopting ideas from French 'nouvelle droite' thinkers and debating tactics.

The BNP now adopts local campaigning methods with an echo of those used by the Liberal Democrats. 'They've focused on doorstep contact with voters and running community clean-up teams who clear litter and paint out graffiti, and whose activities get noted in the local press. Candidates tend to be locally based and known, so that voters think, "I know him, he's the builder or butcher".'

That sets up, says Dr Copsey, what is called a 'cognitive dissonance', a mismatch in the minds of voters between ideas outside the mainstream and apparently decent and reasonable people, often known to them, who are championing the BNP.

Where of course they differ profoundly from the Liberals is in the content of those ideas. The BNP message is much more subtle and sophisticated than the 'white supremacy' of the past. 'The argument now is not that one race is inherently superior to another, but that they are different and that it is multiculturalism that is racist, because it denies what is specific to culture and races.'

Issues of wider concern, such as housing and unemployment, are discussed in a racialised context. 'The BNP have been helped here by the politicisation of race and immigration in the press – with hostile coverage first of asylum seekers then of immigrants from Eastern Europe – and the pandering of the political mainstream to these views. Talking of "British jobs for British workers" only helps to legitimize their arguments.'

So what should the established parties be doing? Dr Copsey says, 'They have to start engaging in and winning the argument. That means engaging in particular with traditional working-class communities, building up trust through a local presence so that they no longer feel ignored. They have to take on the BNP on the issues and expose them not as fascists, but as people who have the wrong solutions to problems and are politically naïve across the board. Immigration has to be discussed, but the argument has to be deracialised.'



## &gt; NEWS ROUND UP

# Do all foreign faces look alike?

>Dr Kazuyo Nakabayashi from  
Teesside's Social Futures Institute



Why is it that we find it so much harder to recognise faces of other races than our own? That's the question being tackled by Dr Kazuyo Nakabayashi, who has won a £80,000 grant from the Economic and Social Research Council (ESRC) to fund the project. Here she talks to NIC MITCHELL.

**'Facial recognition is a hot topic and one that is important for bodies like the police and FBI and public security in general.**

With CCTV quality still pretty poor the local police rely on eye-witnesses when there is an incident – say a man attacked in a town centre', says Dr Kazuyo Nakabayashi.

'If the victim and eye-witnesses just say it was a Japanese man, it doesn't give the police much to work on for the picture portrait', says the senior Psychology lecturer and member of Teesside University's Social Futures Institute.

During her 12-month research project funded by the ESRC, she will be involved in experiments in Japan and the UK to collate

behavioural and eye movement data.

'There appear to be some levels of stereotyping, or cognitive shortcuts, when it comes to facial recognition of people from different races, but we don't have a satisfactory explanation for this.

'The research will examine the perceptual and cognitive processes underlying cross-racial recognition.

Understanding more about these mechanisms will have important theoretical and practical implications, for example in eyewitness testimonies.'

The study will involve asking students from different races to look at oriental and Caucasian faces in photographs and online and will examine the 'recognition keys' they use – their eye movement, for example.

'We will record eye movements while people look at a set of white faces and a set of oriental faces to find out which parts of the face they look at and how much time they spend on each feature.

'After that they will be asked to identify the faces just presented from a larger set of faces.'

Dr Nakabayashi will be the principal investigator for the research team, which includes Toby Lloyd-Jones, Professor of Psychology at Swansea University, Amina Memon, Professor of Psychology at University of London Royal Holloway, and research fellow Natalie Butcher based at Teesside.





# Business Leaders of Tomorrow



Two of Teesside's Knowledge Transfer Partnership (KTP) Associates, Sara Zarei and Alex Brown, have won prestigious Business Leader of Tomorrow Awards.

Zara graduated with distinction from Teesside's MSc Computer-aided Engineering and is currently doing her PhD while working as a KTP Associate with Stanley Vickers in Middlesbrough. She is pictured with her academic supervisor, Professor of Biomechanics and Manufacturing, Farhad Nabhani, left, and David Ford,

Production Manager at Stanley Vickers Ltd.

Alex Brown gained an MA Sustainable Product Design from Loughborough University and is working as a KTP Associate with Solo Cup Europe in Huntington under the supervision of Peter Reid, a Senior Lecturer in Product Design and Enterprise.

Earlier in the year, Teesside University was graded 'A' for Excellent' for its KTP with Stockton Casting Company and Teesside has twice won Business Leader of Tomorrow Awards before: in 2006, for

Laura Bishop's work with Country Valley Foods, Darlington, and a year later for Mohammed Shahnawazuddin's KTP with Malcolm Engineering Company of Darlington.

KTPs are funded by the Technology Strategy Board and other government bodies. They help businesses to improve their competitiveness and productivity through better use of knowledge, technology and skills.

**The Business Leader of Tomorrow Awards take place in March 2010.**

## Weather the storm

There was plenty of positive feedback from the 19th annual FAIM (Flexible Automation and Intelligent Manufacturing) conference hosted by Teesside University in July.

The three-day event, sponsored by the Institute of Mechanical Engineers, brought industrialists and academics together from 37 countries to discuss Lean Manufacturing and Services. They shared their thoughts on the world economic crisis and how businesses can weather the storm.

Professor Farhad Nabhani, pictured, FAIM conference Chair and Professor of Biomechanics and Manufacturing at Teesside University, said, 'Manufacturing today must adjust to the current global recession and the demanding markets facing both UK and international businesses, large and small. The conference gave delegates an unrivalled independent insight into current best practices and state of the art in manufacturing with associated practices.'

Following the conference, Professor Nabhani, front left, received scores of emails congratulating Teesside on organising the event.

Professor Nabhani, said, 'We had to beat off competition from Hong Kong and Dubai to host the FAIM conference and were successful because we had a good platform and because the University is surrounded by SMEs and is at the heart of the UK's process industry. I am delighted the delegates enjoyed it and I am sure it has done our reputation a lot of good.'

## OneDoor open for business

OneDoor offers a single access point for businesses and people to the University and college network in the Tees Valley. We can provide practical help with professional development, innovation, graduate placements and careers advice. And if you have been affected by the recession, you may also qualify for financial help.

To find out more, look at [www.onedoor.co.uk](http://www.onedoor.co.uk); email [onedoor@tees.ac.uk](mailto:onedoor@tees.ac.uk) or phone 0845 4630101.

## &gt; RESEARCH LAUNCH

# Welcome to the new research institutes

Teesside University has launched five new research institutes to help it make greater impact by focusing on key areas of strength, as NIC MITCHELL finds out.



Teesside University's new research strategy, based around five broad areas, was welcomed by Sir Richard Brook, Director of The Leverhulme Trust, at the official launch of the new research institutes this autumn.

In his keynote address, Sir Richard said he supported the concept of concentrating research activities in areas where the University was building up its research strength and had a pool of talented researchers.

Sir Richard said talented individuals and groups of researchers whose work benefits society deserve to be supported wherever they are working, adding that he was delighted to see Teesside University already benefiting from Leverhulme support.

His three rules of engagement for researchers seeking external funding were:

- > **know what you are good at**
- > **find the right support systems**
- > **remain creative**

'The formation of your research institutes is the right approach', he said (See pages 24-25. for a full interview with Sir Richard.)

Professor Cliff Hardcastle, Deputy Vice-Chancellor (Research & Enterprise), said, 'The five research institutes give Teesside University the opportunity to create synergy and link our research activities with the regional economic strategy and the nation as a whole'.

At the launch, Sir Richard and other guests watched a showreel highlighting the impact Teesside researchers were already making.

The event coincided with the publication of the University's first *Annual Research Report*, which can be seen at <http://www.tees.ac.uk/sections/research/institutes.cfm>.

Hard copies of the *Research Report* and DVD are available from Chrystine Carroll, Graduate Research School Administrator, on 01642 384438 or email [c.a.carroll@tees.ac.uk](mailto:c.a.carroll@tees.ac.uk).





Both the showreel and DVD give a flavour of the work of the Institutes and include:

> **The Digital Futures Institute's** CALLAS project. The research team led by the Institute's Director Professor Marc Cavazza is using interactive computer games technology and emotional speech recognition to create an 'emotional tree' demonstrator. This generates an on-screen response from the e-tree when it is spoken to in different emotional tones. (See 'The emotional tree' on pages 14-15) The research is being managed by Dr Steve Gilroy who has been working with a digital artist on this cutting-edge work which is supported by an EU Framework grant. The e-tree was featured on Euronews after being shown at ICT 2008 in Lyon.

> **The Technology Futures Institute** led by Professor Zulf Ali, is working in fields such as advanced processing, nanotechnology and energy. The focus includes helping companies reduce the carbon footprint and getting businesses to use other people's waste to help provide a more sustainable future. Professor Ali's Nano and Microsystems Group is leading a consortium of European partners in an EU Framework research programme which is developing a point-of-care device to help doctors and ambulance crews diagnose deep vein thrombosis.

> **The Health and Social Care Institute** is led by Professor Janet Shucksmith and its research is very applied, with a strong focus on rehabilitation and understanding pain, postural instability and public health issues – particularly oral public health, maternal obesity and young people's health problems. Work under way includes Professor Alan Batterham's investigation into the impact of an aerobic exercise rehabilitation programme to help patients recover after long periods of inactivity in intensive care units (ICUs). At present, post-ICU care is very limited and Professor Batterham's team, which includes Dr Gerard Danjoux, Consultant Anaesthetist at James Cook University Hospital, and Professor Denis Martin, Head of the Centre of Rehabilitation Studies, hope their pioneering work can influence and improve NHS policy and practice. The project is funded by the Research for Patient Benefit programme of the National Institute for Health Research.

>The Institute directors, left to right, Dr Barbara McGuinness, Professor Marc Cavazza, Professor Zulf Ali, Professor Matthew Rampley and Professor Janet Shucksmith

> **The Institute of Design, Culture and the Arts** headed by Professor Matthew Rampley, has four main research areas – history, creative arts, social and cultural identities, and new media. One of the most intriguing research activities being undertaken is Dr Simon Mckeown's 3D animated film *Motion Disabled*. The film exhibition is now touring the country and involved ten artists who have different forms of disability. *Motion Disabled* challenges stereotypes of normality and asks where we want science to take us in the next 100 years in terms of a common body image. The research is funded by the Wellcome Trust because of its bioscience nature.

> **The Social Futures Institute** under the leadership of Dr Barbara McGuinness, is concentrating on social problem solving and research under way covers social, economic, political and business perspectives. Activities range from looking at how digital technology can help build stronger local communities to the evaluation of government initiatives such as Sure Start. Research into youth issues is a major area for the Institute, and work led by Professor Tony Chapman is looking at how young people excluded from schools can be brought back into the mainstream.





> RESEARCH LAUNCH

# Supporting talent wherever it is!



The Director of The Leverhulme Trust brought a powerful message of support when he came to Middlesbrough to help Teesside University launch its five new research institutes, as NIC MITCHELL found out when he interviewed Sir Richard Brook.

Sir Richard said he didn't want to be seen as someone coming up from London to tell Teesside academics what they should be doing, when he agreed to attend the official launch of the University's new research institutes. Rather, he wanted to discover what they themselves found to be important in their own research world.

Talking to research-active staff and guests from industry and the region, Sir Richard reminded his audience that 'today's official keyword for researchers was "impact" and that ministers have recognised that when money is tight, it is fair to ask that there should be national and social benefits from the research they support'.

But he also pointed to three vital attributes of the successful researcher who wished to remain creative.

Sir Richard's three attributes for successful researchers:

- > a capacity for hard work
- > a readiness to welcome any benefits of good fortune by having an alert mind
- > a single-minded determination to resolve the research problem at hand by becoming almost an integral part of its culture and dynamism





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GREAT**

< Sir Richard, left, meets some Teesside recipients of Leverhulme Trust awards – Dr Robert Lee, Dr Natasha Vall and Professor Simon Hodgson.

Others supported by the Trust include Dr Tim Thompson and his Leverhulme PhD student Alex Starkie; Dr Iain Spears, Dr Nigel Copey and Dr Graham Maitlin.



Sir Richard also urged academics not to distrust industrialists – a clear reference to The Leverhulme Trust, which was set-up by William Hesketh Lever, the early 20th-century British industrialist and philanthropist who founded Lever Brothers, which later became Unilever.

Alliances were important, said Sir Richard. ‘And what’s changed in the last 10-20 years is the removal of prejudices between the industrial and academic worlds; where barriers have come down it has been to the benefit of both.’

In our interview, Sir Richard explained that Lever had said in his will that he wished to give resources for scholarships for research and education.

‘Lever’s view was that individual talent is the critical contributor to communal well-being. So he thought if you can give support to some highly talented person at the right moment, then there is chance for them to realise their abilities and contribute to the well-being of the community throughout their career.

‘It is a system failure if someone is prevented from contributing because they just didn’t have the chance to put their talents to use, and if the individual is on Teesside, then that’s great. You shouldn’t say, first, which institution is it.’

Sir Richard added, ‘You have got splendidly talented people here and if those people have a chance to contribute in their own best way, then that’s great’.

Speaking directly about Teesside University, he said, ‘Middlesbrough is undoubtedly a better place because you have a university here, where people are teaching, where they are doing research and where they are thinking afresh, where new ideas can spring up. It enriches the surrounding community, no question about that. So, if people are saying “Why should a modern university like Teesside be supported?” you can certainly give them a direct and compelling answer.

‘You can never predict where outstanding talent will arise. That is why it is essential to recognise the power of individual talent rather than relying on the picture of an institution.

‘The [Leverhulme] Trustees are delighted when someone comes with an intriguing idea and with the competence to research it. Only then may they ask, well, where are they from? So, it is the idea and the competence that sells their bid for support.’

Sir Richard agreed that the work of Teesside forensic anthropologist Dr Tim Thompson, whose Leverhulme Trust supported research into identifying dead bodies through tattoos and body piercings – featured in the last *Research and Enterprise* magazine – was an excellent example of the Trust supporting intriguing new work.

He also thought Teesside’s five new Institutes would help to give the institution a higher profile and help to identify the University’s research strengths. ‘After all, there are now some 150 universities. A profile becomes important. You need to know what you are good at. For outside agencies, it is quite helpful if an institution says “We have structured our research contribution into the following categories”. I think the new broadly based research institutes make a lot of sense; these and the lively atmosphere here at Teesside are an excellent platform on which to enhance further a fine reputation for research of quality and significance.’

Doctoral students are supposed to make ‘a contribution to learning’ – in essence to find out something new. Not so easy, writes HUW RICHARDS, in well-trodden fields like modern British history, where it tends to be a question of finding a niche between the findings of previous researchers. But sometimes you can get lucky.

## Historical steel

# JACKPOT

**Christopher Massey, a first-year doctoral student from Eston, near Middlesbrough, has found himself a roomier niche than most in breaking new ground with his study of steel nationalisation under the Labour Government of 1945-51. In fact, he looks to have hit several simultaneous historical jackpots.**

The post-war Attlee administration is well remembered and has been copiously studied, with recent broad-ranging works by historians like Dominic Sandbrook and David Kynaston sustaining popular recall of the era. Steel nationalisation was a major issue, contributing to Labour's ultimate demise in 1951. Yet, says Christopher, ‘There has been very little written about it. It gets a passing reference in most histories of the period and of the government, but not much more.’

His research casts light on the debate about the boundaries between public and private ownership which has been a significant theme in British politics ever since, and does so via the industry that has to a great extent defined the identity of the region in which he lives and studies. He says, ‘You can see it in the local reaction to the threat of closures and in the Teesside *Evening Gazette*'s campaign to Save Our Steel.’

He also has the advantage of any historian's dream – a fresh, largely untouched archive of personal papers from a key actor in the debate. The files of Alfred Edwards, MP for Middlesbrough East from 1935 to 1950, were in the keeping of Teesside University history lecturer, Dr Richard Lewis, who supervised Christopher's master's thesis. ‘They had hardly been touched and were uncatalogued, and I had free access to them. They're now in the University Library’, explains Massey.

Those papers illustrate an intriguing and unusual political career. ‘Edwards had risen rapidly from the shop floor to become director then owner of a steel company. He appeared to be a fairly orthodox Labour MP, but decided that he was opposed to the nationalisation of steel and began to speak against it in public’, explained Christopher. ‘He fell out with his local party, which prepared a dossier of his speeches and demanded that the National Executive Committee expel him – and it did. Expulsions from the Labour Party have tended to be known for being too left-wing – Edwards was thrown out on the same day in 1948 as John Platt-Mills, a left-winger – but this is a case of being thrown out for being to the right.’

Edwards' subsequent career justifies that description. ‘He sat as an Independent for a while, but it is as if his doubts about steel made him question everything else he'd previously accepted and he became a critic of everything the government did. There's some evidence that he was in touch with the Conservatives during the debates over steel and eventually he took the Conservative whip and stood as their candidate in 1950. Labour were very determined to make sure he was beaten, bringing in the Pensions Minister Hilary Marquand, and he lost by 16,000 votes.’

That remarkable piece of local history illustrates wider themes. While nationalising steel was a



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commitment in the election-winning 1945 manifesto, it was not regarded as a priority in the same way as coal and the railways were. 'It wasn't an essential service, or a shambles in the way that the railways and mines were. It was an industry with a decent record. Nationalising it was essentially an ideological decision.'

Labour could, Christopher argues, have nationalised steel without any great difficulty if it had done so amid the political euphoria that followed the 1945 election. 'They were on the crest of a wave and had enough support to do almost anything they wanted.'

That it waited shows that even the most purposeful governments tend to postpone the trickier decisions. One reason was that the government itself was not wholly convinced. Christopher shows that six Cabinet members led by home secretary Herbert Morrison wanted to accept a compromise proposal in 1947 from the steelowners that private ownership be retained under government direction. Only three, led by Health Minister Aneurin Bevan, MP for the Welsh steel town Ebbw Vale, backed immediate nationalisation. The majority favoured a one-year postponement.

While nationalisation did go through, it was not completed until after the 1950 general election, which left Labour with a vastly reduced majority. One element in that reduction may have been a vigorous campaign by Conservatives and the owners, with Edwards a significant voice, against steel nationalisation. Christopher quotes polling figures showing that 60% of the public favoured the measure in 1945, but only 23% by 1950.

Christopher says, 'An opportunity may have been missed when the compromise was rejected in 1947'. It was not, he points out, as if there was a huge demand from steelworkers for a change of ownership. 'There were street parties when the mines were nationalised. Nobody seems to have taken much notice when steel changed hands.'

Steel went on to be denationalised by the Conservatives in the 1950s, taken back into public ownership by Labour under Harold Wilson, then privatised again in the late 1980s. Now much of it is in foreign ownership. Christopher Massey does not condemn nationalisation as such, but does feel that delay and failure to find a lasting settlement in the 1940s were harmful. 'It certainly cannot have done the steel industry any good to be treated in this way', he says.



>Chris, pictured by the Redcar Steel works. Inset shows Alfred Edwards

# Management DRAMA

Upcoming senior managers who face sensitive issues in dealing with staff and work situations can get new insight from the drama team in Teesside University's School of Arts & Media, as KEITH SEACROFT finds out.



**One of the prime skills in management is understanding people, and how they might react in situations at work. The issues can be complex and reactions take many forms.**

But by recognising the issues, and steering the situations and the people, managers can get their desired results while minimising complications and side-effects.

At Teesside University, staff with extensive theatre skills and experience have developed a series of performance masterclasses, called Leading Roles, for senior managers. It uses dramatised scenes to explore and resolve situations in the workplace.

The first masterclasses are on conflict and sensitive issues, with another in preparation on Women in Leadership and more to follow.

For example, the conflict session, 'Moving History', deals with problems which arise when relocating a bloc of staff into a new building, bringing communication, planning, emotional fall-out and resistance to change very much to the fore.

The workshop team acts out a couple of scenes from this situation. Participants engage in exercises designed to enable them to analyse and discuss the issues, and then collectively offer advice and strategies to the characters, who re-run the scenes taking account of the fresh input.

The elements of Leading Roles were first put together as a one-off series for use in the university and college sector for the national programmes run by the Leadership Foundation for Higher Education. They were designed to support staff preparing for strategic leadership roles such as deans, associate deans and service directors. They are now used in-house by Teesside University, and around the country.

The scenarios have been prepared with realistic situations and character profiles. None of them directly copies a real-life event, but the relevance is so sharp that participants have come up to the team afterwards and said, 'Ah, I know you got that from such-and-such university'. They didn't, but it underlines the authenticity of what they do.

Sharon Paterson, Assistant Dean for Curriculum Development and Innovation in the School of Arts & Media, explains that the elements of the masterclasses are so flexible that they can be adapted for a range of contexts while addressing the same core issues. There is enough common ground in management in different branches of industry, commerce and public services that, with appropriate preparation, Leading Roles programmes can be tailor-made to suit any of them.

Sharon explained, 'We really now want to expand the work and offer programmes across the public

and private sectors. Each masterclass is a three-hour session and ideally involves about 20 people.

'The participants get the opportunity to engage with an inspirational, collaborative, live experience. They observe a scene that we as writers and performers have developed – after advance consultation with the clients. Leaders then dissect the performance and share their own experiences and ideas, and consider how it might go differently. In this way they can reflect creatively on their own leadership styles, and refresh and develop their own skills.'

She points out that it goes much further than simple role-play, where participants act out situations for themselves. She believes that by observing, analysing and discussing collectively, participants add real value to what they learn and absorb from the experience. And what's more, it's fun.

One of the key strengths of the Leading Roles format is that Sharon and her colleagues have come into the academic sphere with many years' professional and practical experience in theatre, including writing, acting, design and facilitating interactive and educational performance work.

Leading Roles has grown both out of Sharon's previous work in professional theatre and out of her academic research, where the focus is on different forms of interactive theatre and the application of participatory performance in different contexts.





THERE IS A  
SAFETY  
ELEMENT IN  
LEARNING  
FROM  
FICTION, BY  
OBSERVING A  
PERFORMANCE



'There is a safety element in learning from fiction, by observing a performance', says Sharon. 'It all has to be rooted in truth to have resonance for the participants, but it avoids taking someone's own actual experience and hauling it up in front of everyone else to be picked over.'

The sensitive issues masterclass, 'Combined Effort', addresses issues such as collaborating with people with competing agendas, or where personal chemistry produces negative results, which challenge or threaten the desired outcome.

Alongside the broad management topics in the masterclasses, Leading Roles also offers practical workshops on presentation skills where drama techniques can also prove useful. They can particularly help speakers improve their effectiveness in communicating with an audience, whether it is four or five people or a large roomful. Being able to worry less about that gives the presenter more confidence overall.

Sharon says you do not have to be an actor to do it, but you can gain a few tips from stagecraft, such as understanding more about breathing, pitch, speed, tone and other elements.

If enough managers sign up and take the opportunity to 're-write the script', they should all be equipped to put on a better show at work.

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## &gt; RESEARCH ROUND UP

# Appliance of Science



A new science collaboration for the chemical industry is bridging the gap between research and the prototyping of products and services.

The 'Science 2 Business (S2B) Hub' is an industry-led partnership managed by Teesside University which aims to find innovative solutions for 'science-using' SMEs in the North East.

Local businesses, such as speciality chemicals sector company Linchem, are already seeing its benefits, said Project Manager Roy Huzzard, with a recent S2B personal care and cosmetics event attracting local SMEs, larger multi-nationals and support agencies. Professor Cliff Hardcastle, Deputy Vice-Chancellor for Research & Enterprise at Teesside University, opened the event and said, 'Our aim is to help the chemicals sector identify their

technology requirements and skills gaps, and then source partners from the universities, regional centres of excellence and research establishments to provide solutions'.

The S2B Hub is part-financed by European Regional Development Fund 2007-13 administered by One North East, which is bringing over £250m into the North East to support innovation, enterprise and business support. It aims to create and safeguard 28,000 new jobs, start 3,000 new businesses and increase the region's productivity by £1.1bn per annum.

For more information email [S2B@tees.ac.uk](mailto:S2B@tees.ac.uk) or phone 01642 738200.

Linchem's Terence Cox flanked by the University's Professor Zulfikar Ali, Director of the S2B Hub (right) and Dr Nitin Seetohul.



OUR AIM IS TO HELP THE CHEMICALS SECTOR IDENTIFY THEIR TECHNOLOGY REQUIREMENTS

## DVT research cited by HEFCE

A research project at Teesside University into deep vein thrombosis (DVT) was cited as a good example of how public capital funding in higher education is supporting the UK's dominant position in international research in a report for the Higher Education Funding Council for England (HEFCE).

The report followed an independent review conducted by Technopolis. Teesside's work was one of 35 case studies showing the importance of the second round of the government's Science Research Investment Fund (SRIF2).

The Technopolis report says new SRIF-funded facilities at Teesside, arranged through HEFCE, increased its research capabilities and thrust the University's Technology Futures Institute to the forefront of an EU consortium investigating new diagnostic systems for DVT.

DVT is the most common cause of unexpected death in developed nations – and the research led by Professor Zulf Ali, Director of the Technology Futures Institute, involves a consortium of European partners in a project supported by the European Union's Framework 6 Programme.

Professor Ali, said, 'We used SRIF2 along with funding from the then DTI, One North East and Europe to develop a clean room facility. This has allowed us to carry out research in miniaturised systems and win additional European research funding to support regional SMEs in the development of new products. We are very conscious that our work should bring economic benefit to the region and improve quality of life, so we are obviously delighted to be recognised in this report.'



# Would you trust the male pill?



A survey into attitudes towards the 'male pill' has cast doubt on whether Northern men can be trusted to take it.

Judith Eberhardt, from Teesside University's Social Futures Institute, pictured, led a team that questioned 380 people in North East England about the male contraceptive pill, which is undergoing trials.

Her findings show that while men said they would welcome it, women thought their partners could not be trusted to take the contraceptive pill regularly, leading to unplanned pregnancy.

'There's been some work into the male pill, mainly in the US and Australia', said Judith. 'But nothing it seems has been done in the North East, which is perceived to be a male-dominated society.'

'Men in the North don't go to the doctors very often and we wanted to see if that approach to health care would influence their attitudes to the male pill. Past research has shown a link between health awareness and attitudes towards the male pill.'

'There were three findings to our research. Firstly, both men and women had a positive attitude towards the male pill and thought it was a good idea.

'Secondly, women were more positive than men, but women didn't trust men to remember to take the pill every day. This means that pharmaceutical companies need to look at developing options such as a monthly injection or an implant that could last three years.'

'And finally, men in a stable sexual relationship had a better opinion of the male pill than men in casual sexual relationships.'

Writing in the *Journal of Family Planning and Reproductive Health Care*, Judith said, 'Once the male pill is widely available, promotional campaigns could target not only men but also their female partners, as women tend to come into contact with health services more frequently.'

Judith is currently working on her PhD developing an electronic coping programme to help women deal with bereavement.

## Shanghai sights

Computer experts from Teesside and Shanghai Universities have started a collaborative project to research imaging tools that could one day help doctors train for complicated surgery procedures.

The research aims to solve problems faced by augmented reality (AR) systems, which produce advanced visualisation technologies by merging real and computer-generated imagery and aims to develop AR-based medical applications.

Dr Wen Tang, from Teesside's Digital Futures Institute, said, 'The opportunities and applications for augmented reality are vast and we hope that this collaboration will help bring it out of the laboratory and into the real world where it could be used to instruct surgeons and simulate a range of training environments where the consequences of a mistake are huge'.

The research has been funded by the International Research Collaboration Funding Scheme from the Science and Technology Commission of Shanghai and the Regional Development Agency One North East.

Dr Tang's research group is working with Yimin Chen, Professor in Computer Science and Director of the Multimedia Research Centre of Shanghai University, on the project.

Mark Jackson, Business Development Director at Knowledge House which supports North East universities, said, 'It's very satisfying to have helped set up a partnership as far-reaching as this'.

## SHAPING THE

# landscape

Historian Dr Rob Lee talks to HUW RICHARDS about how to read the signs provided by buildings, their location and their relationship to other buildings to get a feeling for the social dynamics of a place.

**Seen through the eyes of Rob Lee, the landscapes of the North East cease to be a collection of inanimate objects and instead become story-tellers about the past.**

Dr Lee, a lecturer in the History section and a member of Teesside University's Institute of Design, Culture and the Arts, is fascinated by the impact of land ownership during the 19th and early 20th centuries, particularly the influence of the great 19th-century coal-owners on the north-east landscape.

Of particular interest to him is the Hastings dynasty, originally from Norfolk, who in the 1840s inherited the Seaton Delaval estate, its substantial coalholdings and its iconic Hall, which the National Trust regards as one of the supreme achievements of the early 18th-century architect, Sir John Vanbrugh.

Dr Lee says, 'As a Norfolk landowner Lord Hastings had been very conscious of and resistant to the development of trade unionism and the development of nonconformist religion. When he moved to the North East in the 1840s he found that these things were already established there.'

That dislike of organised labour left a permanent mark on one of the most important Hastings enterprises in the North East. 'There was already a harbour at Seaton, but the Hastings interest developed and extended its facilities so that they could control the trade in their coal, rather than being dependent on the keelies in Newcastle and Sunderland. Lord Londonderry, another significant coalowner of conservative views, did much the same at Seaham.'

Dr Lee sees the Hastings dynasty as essentially paternalistic. 'They tried to recast Seaton Delaval in much the same way as villages in rural Norfolk.' A strong element in this was providing decent housing by the standards of the time. 'Articles in the *Newcastle Weekly Chronicle*, a liberal paper, in the 1870s commented on the high quality of the housing they provided for mine workers.'

Those cottages no longer survive, replaced by council housing in the 1920s and 1930s. But the Hastings mark remains in local names. 'The Melton Constable Hotel in Seaton is named after the Hastings estate in Norfolk, while Astley, which was the family name of the Hastings dynasty, was attached to several things including the village school.'

The quid pro quo for decent housing was that the recipients were expected to show their gratitude by toeing the owner's line on trade unionism and religion. 'Primitive Methodism was more or less synonymous with trade unionism, so the more conservative landowners were strongly resistant to allowing the construction of chapels on their estates.'

Those attitudes had an impact on north-eastern communities that can be seen to this day. 'There are places like Castle Eden, which was closely controlled by the ruling family and still has the feel of a traditional estate village in parts. On the other hand you have Chopwell, near Gateshead, which in the early 20th century was known as "Little Moscow" because of the strong Communist influence. There the Primitive chapel is right at the heart of the community, close to the central crossroads, while the Anglican church is on a hill on the way out of the village.'





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THEY TRIED TO RECAST SEATON  
DELAVAL IN MUCH THE SAME WAY  
AS VILLAGES IN RURAL NORFOLK



## STOP PRESS

Teesside historians, in association with colleagues from Durham University, are to embark on a three-year joint research project that will analyse the role of the churches in the development of popular monarchy between the coronations of Queen Victoria in 1837 and Queen Elizabeth II in 1953.

The research will have a particular focus on how royal events were marked in the North East of England and the project, which has been designed by Dr Robert Lee from Teesside University and Dr Andrzej Olechnowicz of Durham University, is being supported by a grant of £170,000 from The Leverhulme Trust.

Dr Lee says, 'The special significance of this region became evident while I was working on my book, *The Church of England and the Durham Coalfield, 1810 – 1926* (2007). I found that pre-existing political tensions in the North East made the relationship between religion, monarchy and the various parish communities deeply complex. By the end of the 19th century, the North East had a reputation for being the strongest area in the country for secularism and republicanism. The role of the churches in trying to promote the image of popular monarchy, conducted in this particularly fraught and volatile atmosphere, will offer a key route to a much wider understanding of the interactions between monarchy, popular culture, religion and politics.'

> A postdoctoral researcher and a PhD studentship will examine media coverage of royal visits and royal celebrations in the Teesside area during the period 1822 to 2010 using newspaper, film and TV archive material.



The Leverhulme Trust





# The benefit of DIGITAL CITY

Anyone who wants to understand the concept of DigitalCity should ask Dominic Lusardi and Sam Harrison who set up Animmersion four years ago. Here they tell their story to  
NIC MITCHELL.

There's no shortage of entrepreneurial spirit on Teesside, where more and more graduates are turning their backs on the old career path of joining a big company and working their way up the ladder.

Take Dominic Lusardi and Sam Harrison, for example. Both graduated with visualisation degrees in 2001 and now run a thriving digital media company, Animmersion UK Ltd.

After leaving University, Dominic worked for digital companies in Newcastle and Harrogate, while Sam spent a few years as a senior developer with Teesside's Virtual Reality Centre – the forerunner of DigitalCity.

But the two friends, who first met on the degree course, were determined to set up their enterprise one day.

And DigitalCity, the joint initiative led by Teesside University and Middlesbrough Council to develop a new digital industry in the area, gave them the opportunity they needed.

Their first move came when Sam won a DigitalCity Fellowship. This gave him the time and space to develop the Animmersion business concept with University-supported mentors under a scheme backed by the European Union and One North East.

Then, four years ago, the pair took the plunge and formed Animmersion UK Ltd as a limited company specialising in digital media and technology, particularly 3D animation. During its first 18 months, the fledging company was based in one of Teesside's on-campus business incubation units.

Last year, they moved into the University's prestigious Institute of Digital Innovation (IDI), renting space in the new Phoenix Building.

Now, with the business expanding, they have moved again, this time into DigitalCity Business's Boho One building – the development supported by Middlesbrough Council and the regional development agency to help attract a super-cluster of digital companies to the town.

'We are a visualisation studio producing interactive digital media content through the use of 3D computer graphics. This can be applied to education, training, marketing and promotion,' said 31-year-old Dominic, originally from Leeds.

'Our clients so far have ranged from Schneider Electric and Kinetic World Wide through to architects wanting to visualise their new building concepts. One of our early clients was DigitalCity Business, who wanted to create a 3D animation of their new Boho building.

'We've done slightly more complicated interactive training guides for the University and under a joint-funded project with the University, we created an animated training package for student nurses before they go out on placement.'

Sam added, 'We're now busy with Hartlepool Council, using our expertise in animation and interactive digital media to help them prepare a planning tool to cope with the one million visitors expected at the Tall Ships event over three days in 2010. This is more than a marketing tool. The prime function is to help the Council visually plan for the event and plan how to handle the huge number of visitors expected.'

So how is the business doing, particularly during the worst recession in recent memory?



**ANIMMERSION IS  
A GREAT SMALL  
COMPANY THAT  
SHOWS HOW  
DIGITALCITY CAN  
HELP YOUNG  
ENTREPRENEURS**

'Things have been picking up for the last six months. We did have a mini recession around Christmas 2008, but since April we've been doing very well and have expanded to four people', said Sam, 30, originally from Nottingham.

'We've had great support from the University and the IDI is a fantastic place, but we've always seen Boho as where we would end up. It has great technical benefits such as a 100mb high-speed internet connection and a render farm which we can use to output very high-quality animations', he added.

'We think we will benefit from being surrounded by companies working in parallel sectors in the digital media industry. And it is time to fly the nest. We're very proud of the University, but it's time for us to stand on our own two feet.'

So does that mean leaving Middlesbrough? 'No – why should we? People around the region now think Middlesbrough is the place to go for the digital revolution.

'People used to wonder how a town like Middlesbrough could be the place for high-quality digital media work, but I think the University and DigitalCity are proving the doubters wrong', said Sam.

'After all we're not trying to build a hardware factory, but a place that can support the latest ideas. The key to our future is to grow the business at the right pace and to continue to work to create a Digital City right here in Middlesbrough', said Dominic.

Dr Jim TerKeurst, Director of the University's Institute of Digital Innovation and a key player in Teesside's digital revolution, said, 'Animmersion is a great small company that shows how DigitalCity can help young entrepreneurs. Sam and Dominic were attracted to Middlesbrough by Teesside University, and with the help of DigitalCity are now making a real contribution to the Tees Valley and the region.'





## &gt; DIGITALCITY

# Fellows on the path to success

**It has been an incredible time at the Institute of Digital Innovation (IDI), with a new company launched almost every week since the summer.**

Backed by a £5.9m funding boost from the European Regional Development Fund, One North East, and Teesside University, the IDI is Teesside University's major contribution to DigitalCity: the initiative helping to create and support a new cluster of digital and creative industries in the Tees Valley.

Based in the University's new £12m Phoenix Building, IDI Director Dr Jim TerKeurst, pictured, says, 'We're producing a new company at the rate of one a week at the moment and expect to launch our 100th new enterprise by the spring of 2010'.

The new companies include Rob Colling's Internet Subtitling – very important for online television and videos, where accessibility is a legal mandate.

There's also Adam Green's Assyria Games, specialising in iPhone games, and Haus Projects, which focuses on project and events management for interactive media.

'Some of our DigitalCity Fellows are building truly ground-breaking digital projects that take the potential of digital solutions into entirely new areas. A great example is Andrew Robinson's Gold Extraction & Purification fellowship – the title tells

you what will happen, but the solution wouldn't be possible without digital technology', says Dr TerKeurst. Another of the new wave digital companies to come off the IDI production line this summer was an exciting new science-based company, Nano Agrochemicals.

Dr TerKeurst says there is no stopping Teesside's digital revolution. 'We are seeing a step change in the number of our DigitalCity Fellowships, which provide support and mentoring for prospective digital entrepreneurs. And the quality is simply astounding.

'I think things are taking off now because DigitalCity is so well recognised and the companies we are helping to get off the ground encompass the entire range of digital technologies – from nanotechnology to interactive events procedures and games companies.'

Loday Gonpo, the IDI's Creative Director, agrees, saying, 'Our Fellowships create a conducive environment for up-and-coming entrepreneurs, with the support of mentoring from industry professionals and financial grants to help innovators develop their ideas into new digital businesses.'



## A TWO-WAY STREET

**'It is easy to think that harnessing social media is just about creating a Twitter account or a Facebook page and then carrying on as normal', says Mark Easby, a Teesside graduate who is now managing director of Stokesley-based Better Brand Agency.**

'But that's missing the point! For marketing in the social-media space requires a new way of thinking. Unlike traditional marketing and PR you can't just push content at a social-media audience. As the name suggests it is "social", a conversation space where people engage, ideas are shared and businesses can gain new insights into their audience.'

Astute organisations are harnessing this two-way channel to support product development and gain valuable feedback on their services, says Mark. He points to the way O2 is using Twitter to resolve customer service

issues in full view of its Twitter audience as a good example.

Mark worked for a creative business start-up while a postgraduate student at Teesside University. He then branched out and formed Better Brand Agency in September 2008 to offer expertise across branding, digital and social media. And despite the downturn, digital media communication has continued to expand. 'In some ways the downturn is helping. Companies are investing in online communication because it helps to keep costs down and is better at targeting and measuring their marketing activity', he says.

**Mark, who graduated with a BSc(Hons) Media Technology and MSc Multimedia Enterprise from Teesside, was recently shortlisted for the If-We-Can-You-Can Challenge 2009 Award.**





## &gt; CASE STUDY



Nano Agrochemicals is a

# FAMILY BUSINESS

Developed by Andrew and Sylvia Dean, Nano Agrochemicals was nurtured through the DigitalCity Fellowship scheme before its launch as one of the latest enterprises to come out of the Institute of Digital Innovation (IDI).

The mother and son enterprise hit on the idea of using nanoparticles to protect crops while developing their business plan with industry mentors at the IDI.

Both were recent Teesside graduates and they worked with the IDI for six months, mastering computerised design packages to develop a new product range of nanoparticle agrochemicals which they believe will prove more effective in protecting crops in the future.

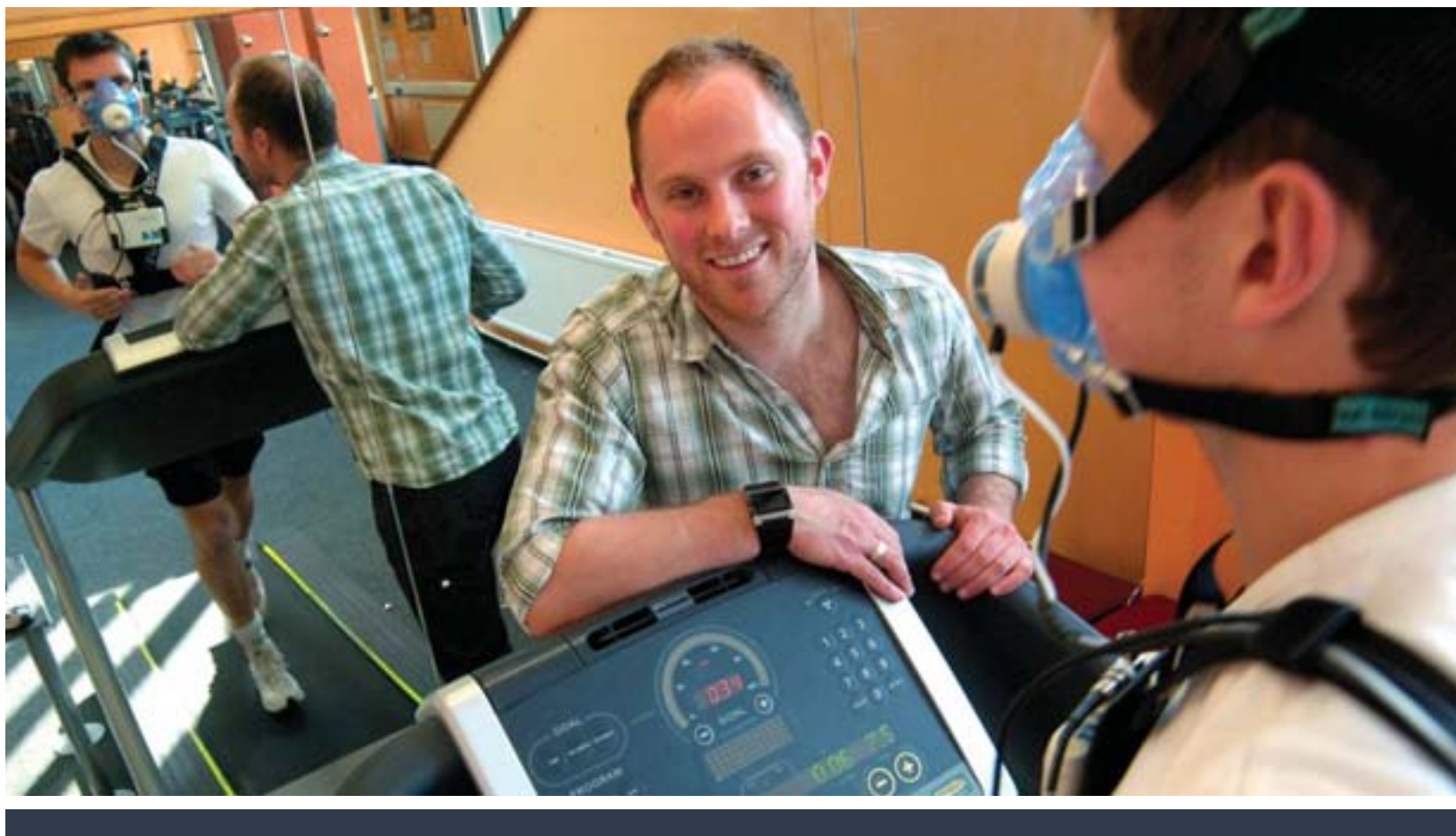
'We are using nanotechnology to develop products that can offer better crop protection from a wide range of pathogens and soil contaminants, and can enhance the health and well-being of crops through improved nutrient and trace mineral uptake.'

'Working with the IDI has been a huge benefit to the project and has enabled us to design optimal synthesis mechanisms that we

believe will significantly increase the activity of these products and cut down laboratory testing times and costs', explained Andrew, pictured.

The new company has grand plans, including working with researchers in California, the state responsible for 40% of food production in the United States. 'California is facing a series of problems, particularly water shortages, as it has huge farms and has been using so many chemicals to increase food production that insects are becoming resistant to normal insecticides', says Andrew, whose PhD at Teesside looked at sensors to detect DNA.

Dr Jim TerKeurst, Director of the IDI, believes that digital design is now firmly at the heart of some of the best innovations. 'Digital design is an approach to finding a solution. It's a philosophy, not an aesthetic outcome, and can be put to good use in all sorts of technologies and businesses', he says.



# MIRROR IMAGE of fitness

Can looking in a mirror while running on a treadmill affect your sporting performance?  
STEPHEN LAING finds out.

Watching your reflection as you run on a treadmill can help your performance, particularly if you are just taking up running. But it may have some drawbacks for more experienced athletes.

That's the conclusion from a study by Daniel Eaves, Programme Leader for Sports Psychology at Teesside University, and two colleagues, Nicola Hodges, from the University of British Columbia, Canada, and Mark Williams, from Liverpool John Moores University.

Daniel, 29, pictured with a runner, led the research project. He said, 'What we see influences how we coordinate our limbs. When two people walk or run alongside each other, they are often drawn towards doing the same thing at the same time. Their step patterns become spontaneously synchronised.'

'We wanted to look at the effects this may have on performance, specifically when people are running in front of a mirror on a treadmill.'

The research sample was ten physically fit males with an average age of 22. They each took part in three 20-minute treadmill runs, separated by a day's rest between each run.

Participants faced a different life-sized image of themselves while running under each condition.

The images included a normal mirror, a mirror where left and right sides were reversed, and a static image.

Various performance factors were measured, such as oxygen consumption, heart rate, biomechanical running patterns – how the body moved – and reaction time.

Daniel said, 'Our results showed that seeing a dynamic mirror image of yourself while running is less energetically demanding than seeing a static image. The reversed image placed more demands on the runners' thought processes.'

'The majority of gyms in the Western world have mirrors in front of treadmills and our research suggests mirrors help to stabilise your movement, allowing you to focus on running more smoothly.'

'However, looking at yourself in the mirror can make your work rate less energetically demanding.'

'If you are just getting into running then mirrors may be ideal for developing your style and performing a less demanding run. Experienced runners, however, who want to train harder, may benefit from not looking in the mirror.'

The results of the research were published in the highly regarded journal *Medicine & Science in Sports & Exercise*.



## Meet the Inventor...

### Iain Spears

Should anyone ever write a book on '101 Uses for a Light Emitting Diode,' then the inventions of Iain Spears are likely to play a prominent part. He has already used this electric light source, known as an LED, as a key component in his Red Dot Box – a device for testing balance and so spotting early symptoms in a number of illnesses.

Now comes his RGBTracker, which projects images manipulated by the user's movement on to a screen and sounds reminiscent of a well-known games platform.

Dr Spears, Reader in Sports and Exercise at Teesside University, says, 'We did look at the possibility of developing it for use with an exercise game, but there seems little point in trying to compete with Nintendo'. Instead, he has chosen to focus on the potential medical benefits of his system, an area in which it has a clear edge over the Wii and its rivals.

Dr Spears says, 'Although it's easy to describe the system as being like the Wii, our technology is more similar to the new motion-sensing controller from Sony. We have devised software which can look at a camera image, locate the LEDs and, by triangulating in the same way as a GPS system, work out how far away they are and at what angle. Because the LEDs are in three different colours – red, green and blue – we know which one is which and can produce extremely precise results.'

One possible way of using it will be to strap the LED strip to a patient's hip or knee and then track their

movements while wearing it. Dr Spears says, 'That would enable you to follow the movements of joints, work out joint and muscle forces and calculate how muscles are operating.'

'Just as a mechanic needs to see under the bonnet of a car, the health practitioner needs to be able to conceptualise, visualise and quantify the internal workings of the body when attempting to diagnose injury. We will be able to virtually remove the skin and look at how our muscles and bones are working by using this technology.'

It will, Dr Spears believes, prove popular with physiotherapists, coaches and anyone with aching joints and muscles. Just a single camera is needed to produce the images, so it should not be too expensive a piece of equipment.

To take the work forward, Dr Spears has obtained funding from the University's scholarship fund for PhD student Pierre Lagadec to work on developing the device and, in particular, testing the validity of the muscle force calculations.

Dr Spears is a member of Teesside University's Social Futures Institute and his work has been aided by a multi-disciplinary research team including Dr Wen Tang from the Digital Futures Institute, Dr John Dixon from the Health and Social Care Institute and Professor Farhad Nabhani, from the Technology Futures Institute.

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# Intelligent ROLE playing

ALISON UTLEY reports on a new gaming system designed for autistic children.

**Autistic children often struggle with communication, lacking the ability to empathise with other people and never developing the kind of social skills which will enable them to interact easily with others.**

As such autism is a lifelong developmental disability, and sufferers find it particularly difficult to understand facial cues or metaphor – expressions such as ‘you are really cool’ or ‘you are what you eat’, for example, tend to be taken literally and cause much confusion. Insensitivity to emotion is another common problem.

A variety of learning disabilities tends to result and, although autism is not curable, research has shown that its effects can be improved dramatically if children receive expert treatment when they are very young.

The special care and treatment needed is very costly, however, and often not available. Current alternatives are often unsatisfactory since each autistic child has very individual requirements.

But new software being developed at Teesside University looks set to help autistic children learn about emotional expression and social engagement using computer-based role-playing games.

‘A group of 24 autistic children from Darlington, aged 11 to 14, have been testing the software by playing games with “avatars” – animated computer games characters which use artificial intelligence to interact realistically with humans. Often the children do not realise that one of the avatars is computer generated, assuming they are playing the computer game with another child.’

‘Our prototype offers great possibility to help young people achieve their full potential in terms of social and learning skills, which could increase their confidence and improve their self-esteem’, said Dr Li Zhang, a member of the Digital Futures Institute, and an expert in artificial intelligence who is leading the project.

Eventually the software could help autistic children to integrate effectively with society and even to get into work.

So how does it work? The avatars encourage users to play role-playing games which may depict bullying, for example, or coping with someone who is ill. The avatars display emotions and facial expressions which react according to how the children behave towards them.

Dr Zhang, pictured, said that while there have been numerous computerised training systems designed to help autistic children, none have combined complex social behaviour with interactivity.

Many of the existing systems train children to recognise emotion, she explained, but they do not simulate any sort of interaction so that while players are taught to recognise emotions, they do not learn appropriate responses to subtle social cues.

‘We have created an interactive chat room-like virtual environment with avatars’, she said. ‘The avatars, which are cartoon-like 3D characters, are capable of expressing emotional states such as happiness, anger, fear, sadness, surprise, and caring and

threatening behaviours. And we have natural language processing which is highly sophisticated.’

The system tackles name-calling, which is a minefield for autistic children. In common sense, for example, calling someone a baby animal name like ‘kitten’ or ‘bunny’ may indicate affection. However calling someone by an adult animal name like ‘pig’ may convey an insult. The difference may be subtle but getting it wrong can have very unpleasant consequences! Similarly the difference between referring to someone as ‘big’ compared to ‘fat’ is explored.

‘Once they began to enjoy the role-play, it was really hard for them to stop the session’, Dr Zhang said. And in feedback tests, the children gave an average score of 5.7 in a range of 1 to 7 to indicate to what extent such experience would be useful for real-life situations. More work will be carried out, she added, to prove how useful the work is to help autistic children learn emotional expression in verbal communication and body language.

The system will be further developed, Dr Zhang said, to create more sophisticated emotional animations and user avatars. ‘We believe that the work is a stepping stone into a much wider use of such systems by education and training in general, providing 24/7 efficient personalised social skill and language training – and offering automatic monitoring of progress. Globally such applications could provide tempting potential revenue for the game industry.’

The study has been a collaboration between Teesside University and commercial partner Mellanium. The National Autistic Society was also a project partner, and support was provided by Darlington Council and Education Village (EV) which has three schools, one of which caters for special needs.



EVENTUALLY THE SOFTWARE COULD HELP AUTISTIC CHILDREN TO INTEGRATE EFFECTIVELY WITH SOCIETY AND EVEN TO GET INTO WORK



## A QUESTION OF TASTE

Strokes are a major cause of severe disability in the UK, and new research is taking place at Teesside University into the role of good nutrition in fighting the effects of a 'brain attack'.

A stroke is what happens when the blood supply to part of your brain is cut off. Without that blood supply – and the oxygen it carries – brain cells are damaged and die.

It's a condition on the increase, with factors such as excessive alcohol consumption, obesity, smoking, stress and sedentary lifestyles implicated as contributory factors.

While strokes can kill, no two strokes are the same and sufferers can be affected in many different ways. Some patients recover quickly while others may experience lasting health problems.

One less-understood consequence of stroke which can hold up recovery is malnutrition. There is some suggestion that malnutrition might occur because taste and smell function can be damaged by a stroke, but it is an under-researched area and little is known about how taste dysfunction is linked to stroke. Dr Sharon Hamilton and her team at Teesside's Health and Social Care Institute have already undertaken a pilot study looking at the feasibility of doing research to test taste and smell functions and dietary intake of a number of stroke patients.

That study presented a challenge, she said, because it was difficult to recruit sufficient numbers of stroke patients who met the right criteria to be included in the study. 'It illustrates the difficulties of reaching this "hard to recruit" population, but we have now identified new strategies to overcome this problem.'

The aim of the research so far has been to test the feasibility of a protocol to measure taste and smell function and dietary intake after a stroke. Dr Hamilton says, 'A larger study is now needed to gather the data necessary to identify whether taste and smell are affected by stroke. We hope a larger study will contribute to our knowledge of the broader consequences of stroke, and, ultimately, lead to improvements in patient care and outcomes.'

## &gt; ENVIRONMENT SPECIAL

# Seeing RED

It has been called the red river, its waters blighted by the legacy of ironstone mining. But better times could be ahead for the polluted Saltburn Gill which has blighted local wildlife. JOHN DEAN reports.

The pollution began one night in May 1999, when a new discharge from abandoned ironstone mine workings turned the beck a rust colour, raising concerns for Saltburn Gill Nature Reserve, which is a Site of Special Scientific Interest because of its ancient woodland.

Saltburn Gill flows into Skelton Beck, which in turn flows through the famous Valley Gardens Park at the seaside town of Saltburn and on to the beach. The discharge means more than 50 tonnes of dissolved iron flows into the North Sea every year.

Although it is not toxic, the high concentration of iron smothers the stream bed to such an extent that wildlife struggles to survive.

But now teamwork by experts at Teesside University, the Environment Agency, Entec and the Coal Authority, may be close to solving the pollution problem.

Geoscientists from the University's Clean Environment Management Centre (CLEMANCE) have been using mining records to show how the interconnected workings that led to the pollution might also be used to control it.

The CLEMANCE team, working with the community-led Saltburn Gill Action Group and a number of other organizations, has identified a way of pumping and treating the mine water which seeps from the nearby old ironstone mine workings in East Cleveland.

The Environment Agency secured the funding for the feasibility study and pumping tests, which have now been completed, and the Coal Authority has also been helping, using expertise gained from treating coal mine water problems elsewhere.

The team's next step is to get further funding to complete their investigation and solve the problem.

Dr Richard Lord, CLEMANCE's Reader in Environmental Geochemistry and Sustainability, said, 'During our investigation, we found an old mine shaft which had not been closed off and we wondered if we could use it to pump the water out of the underground workings, rather than letting it come to the surface naturally in the Gill.'

'Through the use of CCTV cameras, we were able to check the shaft's condition. It was disappointing when we discovered that the shaft



was blocked off further down but the survey did get us thinking about pumping as a way of controlling the pollution.

'Drilling a borehole to pump the water from the underground workings will allow it to be treated and discharged back into the Beck. That way we could make sure that it does not leak out untreated close to the Saltburn Gill Nature Reserve. We are hopeful that we are nearing a solution to this difficult problem at last.'

And the breakthrough could have wider implications. Dr Lord said, 'There are many becks and streams

across the country with similar problems from old metal mines and if the solution works at Saltburn Gill, it could be developed elsewhere. At the moment, many of them simply are not up to the standard which will be required in 2015 by the EU Water Framework Directive.'

Environment Agency officer Don Mason said, 'This latest development is exciting news and shows that by working together as a partnership, we will hopefully improve the water quality in Saltburn so that the town's becks and woodland will be protected for future generations.'



# Eco-friendly solutions to handling waste

Teesside University has launched the North East Industrial Symbiosis Network, a two-year sustainability initiative to deliver eco-friendly solutions to small and medium-sized businesses (SMEs) in areas such as tackling difficult waste problems.



The Network has been designed to complement and build on existing National Industrial Symbiosis Programme (NISP) activity in the region and will help businesses cut CO<sub>2</sub> by over 250,000 tonnes by reducing the amount of waste going to landfill. It also aims to assist 40 businesses each year with direct research and development support and consultancy, and contribute towards environmental cost savings and business profitability.

The £1.2m project is being supported financially by the European Union's ERDF Competitiveness Programme 2007-13 with a matching £621,000 contribution from the University.

Christine Parry, Industrial Symbiosis Project Manager at Teesside University, said, 'We want the Network to influence and fuel a change in business culture and bring about long-term environmental and social benefits for regional sustainability.

'We need to increase the capacity and will of SMEs and their workforces to improve business performance by recognising that waste is a useful raw material and a resource to be utilised. There are numerous opportunities for collaborative networking, sharing resources and access to technical information, research and support for virgin material savings between companies', she said.

The North East Industrial Symbiosis Network project will be delivered across the region from its base, the Clean Environment Management Centre (CLEMANCE) at Teesside University.

'Our regular workshops will stimulate cross-sector engagement, business to business collaboration and technology transfer, and provide

SMEs with up-to-date guidance on legislation, eco-innovation and best practice', said Christine.

The project also seeks to create two new dedicated waste and recycling businesses and encourage eco-friendly business practices by offering site visits to the best waste management and treatment facilities in the region.

One North East Head of European and Skills Strategy, Lesley Calder, said, 'Many businesses are under increasing pressure to measure and reduce their carbon footprints and waste is generally seen by business as a negative issue, with significant costs and legislative pressures associated with it.

'European Union support for this project will improve businesses' understanding of resource management in all its forms and encourage them to implement strategies to become more efficient and competitive. It will help overcome technological barriers to resource efficiency and identify new market opportunities, as well as the obvious environmental benefits.'

The ERDF Competitiveness Programme 2007-13, managed by One North East, is bringing over £250m into North East England, with an emphasis on enterprise and business support and encouraging SMEs to develop, grow and innovate.

For further information please telephone Christine Parry on 01642 342 409 or email [northeast@nisp.org.uk](mailto:northeast@nisp.org.uk).

## &gt; ENVIRONMENT SPECIAL

# Food or Fuel?

Scientists on Teesside are playing their part in helping to solve one of the most difficult problems facing the world today: generating power without accelerating climate change or harming food production.

JOHN DEAN reports.

**Biofuels generated from wastes and crops, such as corn and rapeseed, are seen by many as the green alternative to fossil fuels.**

And while they may appear to be the perfect solution because they are not net producers of harmful environmental by-products, they create another problem. And that is they encourage farmers to grow energy crops at the expense of badly needed food, particularly in poorer countries in the world.

Finding an answer to the 'food-fuel conflict' is at the heart of research led by Dr Komang Ralebitso-Senior, Senior Lecturer in Molecular Biology in the Technology Futures Institute at Teesside University, pictured.

She is leading a team of six researchers looking at whether biofuel production could use waste materials, such as domestic refuse and sewage sludge, instead of energy crops to generate biogas, which can then be used directly or to produce alternative energy sources such as electricity.

Dr Ralebitso-Senior said, 'We're carrying out laboratory investigations to optimise the production of biogas through a process known as anaerobic digestion. This uses naturally occurring micro-organisms to break down waste in closed vessels', she says.

Dr Ralebitso-Senior believes that, although anaerobic digestion is an established process already being used by some waste-to-energy companies, its full potential has not yet been realised in solving many of the problems associated with growing biofuel crops.

'We can produce most biofuels using crops – but the big issue is whether the land could be used for food instead. The loss of agricultural crops is a major issue.

'We call this the food-fuel conflict as the economic returns of growing crops for fuel are often higher and with

more farmers choosing this option, foodstuffs inevitably become more expensive.'

She says, 'Using anaerobic digestion is an alternative method which has considerable potential, but we still do not understand a lot about how it works. That is what we are investigating in the laboratory, seeking ways in which we can optimise and, therefore, exploit the process effectively.

'This work has significant potential because it can produce a biofuel which is truly sustainable. The refuse from which the biogas is produced would have ended up in the ground, with possible damage to the environment, and also there will not be the need to grow crops which take food away from people.

'The value of biofuels is their potential to be sustainable, providing a good balance between the environment, the economy and society. This is very exciting work', she says.

So exciting is the potential of this research that the Centre for Process Innovation (CPI) based at Wilton is supporting the PhD programme associated with this work.

For Dr Ralebitso-Senior, this kind of external support is crucial. 'The next stage after the PhD is developing a new bioreactor type at pilot-scale but for the system to be viable, we need an even larger capacity. We're looking at it taking a number of years to go from laboratory to pilot to actual scale, with modifications and additional research along the way. The only way the project may be realised sooner is if we can integrate findings from other research teams in the region, then nationally and internationally.'

The work is the latest phase in a career which has seen Dr Komang Ralebitso-Senior, an applied environmental molecular microbiologist, work all over the world, including Lesotho, South Africa, the Netherlands and Singapore.







## Thinking green

For chemical industry managers, sourcing raw materials at a time when they are being urged to adopt more environmentally friendly methods can be a major challenge.

However, a research project on Teesside has the potential to come up with a solution.

The project will see Teesside University working with seven local companies and the North East Process Industry Cluster – the body representing sectors ranging from pharmaceuticals and petrochemicals to biotechnology – and researchers at Newcastle and Surrey Universities.

Together they will examine ways of extracting chemicals from biomass, the organic substance being used now to generate electricity.

At the heart of the research lies biomass. This can be wood, grasses and other organic materials, such as solid municipal waste or industrial waste, which when burnt in a power station can generate electricity without producing the pollutants associated with fossil fuel, explained Teesside University researcher Dr Maria Olea.

'The biomass also contains chemicals which, if extracted, could be used in other industrial processes, reducing the need to locate raw materials from sources such as quarries and mines', said Dr Olea, Reader in Chemical Engineering and Catalysis in Teesside University's Technology Futures Institute.

Dr Olea will be one of the experts analysing methods of extracting eight chemicals from biomass. She says, 'This work is of interest to industry because companies can use the chemicals present in the biomass. What they need is to know the best methods of extracting them so that they can be re-used, rather than being wasted.'

'We are looking at methods which will allow the chemicals to be removed on an industrial scale.'

The academics at Teesside and Newcastle will use computer software to analyse different industrial routes from biomass to target chemicals and then experts from Surrey University will build a model based on the inputs from the other two Universities, so helping the project's industrial partners to select the best method of extraction.

Dr Olea said, 'This is an interesting project because it is environmentally friendly. Re-using these chemicals would make it completely sustainable.'

The government department Defra has provided part of the funding for the 27-month project.



# Taking THE BAIT

There is more to fishing than catching fish as ALISON UTLEY discovers.



£2.7bn  
spent on fishing annually in the UK

**Last year the Environment Agency listed fishing as the most popular participant sport in the UK. And yet recreational fishing is an under-researched activity, despite becoming a significant cultural and tourist industry in its own right.**

More than 3m people describe themselves as regular anglers and around £2.75bn is spent on fishing annually in the UK industry alone, which employs about 20,000 people.

Dr Tom Mordue, Assistant Dean (Research) at Teesside University Business School, has been making a special study of the fishing industry which he says reveals much about the complex intimacy of our relationship with the natural world.

The research, being published in the international academic journal *Current Issues in Tourism*, shows that while growing numbers of anglers are content to explore rural England, many now go further afield. Dr Mordue found that within the last 30 years many destinations across the globe have developed leisure fishing industries, and a new generation of tour operators has emerged to offer a breadth of choice that was unimaginable a few

decades ago. Destinations like the US, Canada, Cuba, Chile, France, Spain, the British Isles, Slovenia, Russia and many more have developed significant fishing tourism over recent years.

So what drives the passion for fishing, who is doing it, and what is its social significance?

Historically of course, fishing formed part of a subsistence economy in which fish were caught to eat by any method which was effective.

According to Dr Mordue, fishing as a leisure pursuit emerged with the ancient Egyptians and Chinese nobility who turned subsistence fishing into a sport for the privileged. In Europe, the Renaissance nobility continued the trend, refined the art and reserved the better streams for their use by excluding the masses. Thus, once fishing made the transformation from work into leisure, the history of its social division between elite and common forms of fishing began.

English language research into the history of angling is almost entirely about the history of fly and game fishing he says, reflecting the power and influence of the upper classes who have traditionally pursued these activities.

However, Dr Mordue points out that different types of freshwater fishing have been devised in more modern times, broadening the sport's social appeal.

Fly-fishing may be deemed upper-class and sophisticated, environmentally sound and technology-free or, to put it another way, natural, he says.

Coarse fishing, on the other hand, is thought of as the fishing of the masses. 'Certainly there are elements of truth in this conception, but clearly the differences are not as substantial as fly fishermen would have us believe', Dr Mordue says.

His research does show however that fishing is still predominantly a white male occupation, in the UK at least. Few women or people from black or minority ethnic groups take up the sport, and in the UK the rural landscapes and chalk streams of the South have tended to be dominant destinations in social and cultural terms.

More recently the wilder landscapes of Britain's north country have been popularised as outdoor leisure playgrounds, encouraged by various media, not least TV dramas like *Heartbeat* and *Monarch of the Glen*. And it is obvious, says Dr Mordue, that the

>Elizabeth, Duchess of York (1900 - 2002) during a fishing trip to Tokaanu, New Zealand



Getty Images

passion for and the joy of fishing is felt through all social strata, even though access to different types of fishing tends to be socially delineated – by cost if nothing else.

Angling, he says, is a highly physical activity that relies on success in a space which can be fished many times, and where the experience is rarely, if ever, the same. 'The promise of excitement is never diminished', and so the passion for angling continues to exert its grip on so many people's lives, he stresses.

The old axiom in angling, that there is much more to fishing than catching fish, holds as well in academic research, Dr Mordue concludes. 'It hints at how angling is not only an important activity in its own right but one that, if studied critically, reveals much about the complex intimacy of our relationship with the natural world, and the lengths we are prepared to go to consume it, exploit it and conserve it.'

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**FLY-FISHING MAY BE DEEMED  
UPPER-CLASS AND SOPHISTICATED**





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