

RESEARCH AND ENTERPRISE

A UNIVERSITY OF TEESIDE MAGAZINE ISSUE SEVEN



Welcome to the seventh issue of *Research and Enterprise*, our flagship annual publication. Once again, we have a wealth of stories about our research and business work with partners.

There have been some ground-breaking developments here at the University of Teesside in recent months. A major grant from the Higher Education Funding Council for England is helping us to deliver a step change in the way we work with employers. Our ambition is to become known as the premier business-facing university. It's a challenge we are more than ready to meet.

This year too saw the DigitalCity Institute of Digital Innovation open on campus, providing top-class facilities and expertise for new and growing digital companies in the Tees Valley.

Richard Lambert, Director General of the Confederation of British Industry, gave our annual Teesside Business School lecture, in which he identified universities as ideal business partners because they are innovators, constantly refreshed by fresh brains and talent.

It was very pleasing to have this view reinforced by Chris Braithwaite, Chief Operating Officer of award-winning Wellstream International Ltd, who said the University of Teesside's engagement with business was outstanding and a model for all.

We also welcomed John Denham, Secretary of State for the Department for Innovation, Universities and Skills, who formally opened the University's Centre for Creative Technologies, a £10m initiative designed to unlock new talent for the North East's creative industries.

And a landmark agreement signed recently with One NorthEast means that both our organisations are working closely together to increase expertise and innovation in process engineering, digital technology and the media, health and social care, and design.

In a time of rapid economic change, it becomes more important than ever to keep innovating, and to keep research, knowledge

and skills at the cutting edge. I hope you can see from this issue that University-business collaborations are making a strong contribution to the economy and society, particularly here in the North East.

Enjoy the read, and see for yourself that the spirit of enterprise and collaboration is alive and well here at the University of Teesside.

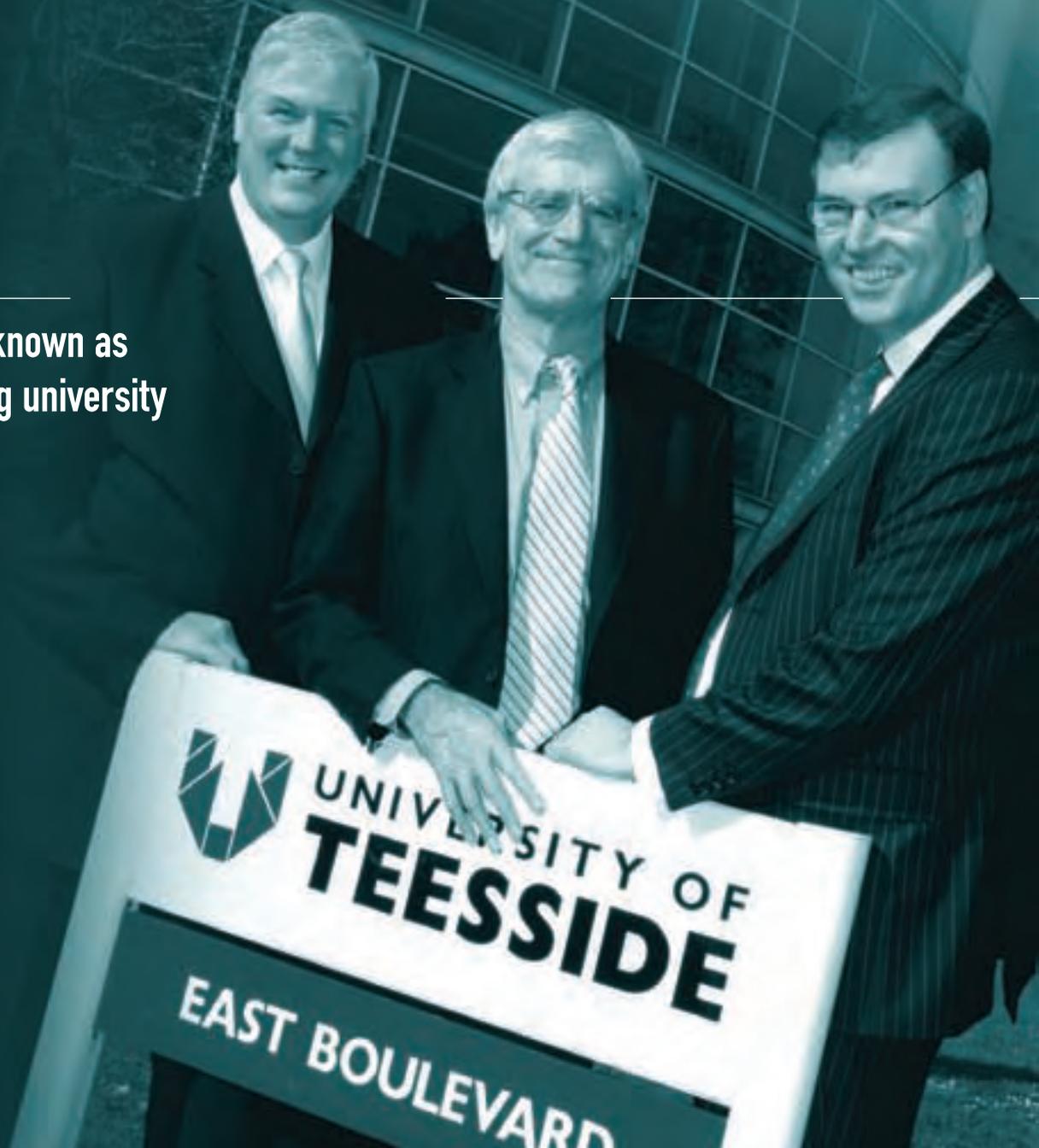


Professor Graham Henderson
Vice-Chancellor

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Our ambition is to become known as the premier business-facing university

Professor Graham Henderson (left) pictured with Richard Lambert (centre) and Alastair Thomson, Dean of Teesside Business School



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Blowing the WHISTLE!

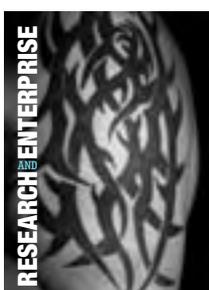
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FRONT COVER:

fashion becomes an investigator's friend (see page 8)



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To find out more about the stories featured email pr@tees.ac.uk or telephone 01642 342018. If you want to discover how your business organisation can work with the University, contact the Centre for Enterprise on 01642 384577 or email cfe@tees.ac.uk.

Enterprising WOMEN

A growing number of people are showing the tenacity, determination and energy to start up their own business, and a University-backed graduate enterprise initiative is providing vital support and encouragement to the new entrepreneurial spirit in the region, as ANASTASIA WEINER discovers.

Rachel Powell
of Idelic Design



FOR many university graduates, the thought of starting up a business before working in a 'proper' job may be a daunting prospect.

But a growing number of graduates and undergraduates are doing just that at the University of Teesside, which offers budding entrepreneurs start-up facilities, access to professional advice and mentoring support.

And with backing from initiatives like DigitalCity, the University's graduate enterprise scheme has helped over 100 fledgling firms and created some 300 jobs.

But it's not just digital start-ups which are creating a stir. Businesses in other sectors such as creative design are also flourishing.

One such company is Idelic Design – an eco-friendly and ethical fashion label headed by Rachel Powell which not only uses fairly-traded materials and natural dyes but incorporates traditional dressmaking skills overlooked by larger chains.

Rachel has created a North East fashion network aimed at connecting bespoke fashion manufacturers, machinists, knitters and weavers with each other.

'The North East has a growing fashion industry but it's often overlooked unlike Huddersfield and Preston, which are associated with the textile industry', she says.

'I saw that there was a real need for a network to get people in the industry together. It means that if you needed someone who was a specialist in, say, embroidery you could find them locally.'

Traditional skills and designs feature prominently in Rachel's designs. Ethical fashion is a growing trend, and Idelic Design has some powerful competition, but Rachel believes she has created a niche in a competitive sector.

'A lot of eco-friendly or ethical brands focus on one thing', she explains. 'But I look at the bigger picture. That's why I incorporate different materials as well as traditional skills into my designs. I think it's important to keep heritage alive.'

As if running a business is not enough, Rachel is only part-way through her fashion enterprise design course at Cleveland College of Art & Design, and works carefully to balance her studies with Idelic and maintaining the network.

Clearly Rachel thrives on being busy and undoubtedly she has the entrepreneurial qualities needed to make her label successful, but she admits that it was a six-month spell in hospital following a bad accident that helped drive her ambitions.

'I was told I would probably never walk again after breaking my back', she explains.

'Being hospitalised made me think about what I was going to do with my life.'



Jennifer Batty and Theresa McGlone, founders of Sisters Wardrobe

I'd always thought about starting my own business and going to university but hadn't got round to it. You could say that the accident inspired me. Suddenly starting my own business didn't seem so daunting.'

Today, the designer looks to inspire others to pursue their fashion dreams.

'The University has been very helpful', says Rachel, who operates from one of the University's Victoria Road business start-up units.

Jennifer Batty and Theresa McGlone also share Rachel's strong drive and vision. The Cleveland College of Art & Design fashion graduates are the talent behind young and funky fashion label Sisters Wardrobe. Although the firm was only launched in early 2008, it already has a strong following and is flying off the rails at Middlesbrough's answer to Harvey Nichols – Psyche.

Sisters Wardrobe offers individual pieces made from recycled clothing. The one-off garments are deliberately designed to look a bit mix and match, with intriguing design details such as original buttons and tags.

'Basically, we take old clothes and make new clothing out of them', explains Jennifer.

'I guess our style is a little like Religion or All Saints. It's urban style that's a bit funky-looking.

'We graduated two years ago but both of us have always wanted to run our own business and do something in fashion.'

The pair have strong ambitions for their business. There are plans to pursue retail opportunities in Yarm, York, Manchester and Leeds, with aspirations for concessions across the North of England. The strategy might seem adventurous for a start-up, but mentorship courtesy of retailer and Psyche founder Steve Cochran has lent them a distinct advantage.

'We entered a competition in our second year, in which we had to find a gap in the fashion market', Jennifer recalls.

'The prize was mentoring from Steve and the opportunity to have your line on sale in the store. Amazingly, we won, and have worked with Steve ever since.'

Indeed, Sisters Wardrobe clothes are proving very popular with customers looking for something a little bit different. Although Jennifer admits that the brand isn't very well known outside Middlesbrough, its success has given them the confidence to put together a marketing strategy to take Sisters Wardrobe further afield. But it seems that their base in the University's graduate business units has also provided inspiration.

'We have help from people on running the business, but the other tenants are also great mentors', says Jennifer.

'It's great to see how people have grown their businesses and how others are growing.'



The North East has a growing fashion industry but it's often overlooked unlike Huddersfield and Preston, which are associated with the textile industry

Business leaders, politicians and Teesside's local newspaper are throwing their weight behind a Back our Biofuels campaign which they see as key for boosting jobs and economic life in the Tees Valley. But others, including the renowned British scientist, Professor Ed Gallagher, question the environmental case for increased use of crop-based fuel and warn world leaders that a rush to biofuels could exacerbate rising food prices and worsen food shortages. Here, Teesside University's Professor SIMON HODGSON talks to Keith Seacroft about the science and technology involved, and reveals that research is already under way right on the doorstep.

Getting the balance right over

BIOFUELS

The big debate about biofuels is where to strike the right balance among so many cross-over issues. Imagine a see-saw with not two but 10 or 12 arms and trying to keep it level.

Environmental, economic, political, legal and ethical issues all raise questions of scientific and human priorities. Throw in international relations, global business power, social responsibility, the time pressures of climate change, and the expectations and energy use of developing countries and you get the picture.

Oxfam blames biofuel policies for helping to put millions of people into poverty. Producers and governments face criticism over the shipping of European biofuels to the US for biofuel additives and back again for lower tax advantages.

The Tees Valley's Back our Biofuels campaign urges the government and EU to create economic and trade conditions where Britain, and the Tees region in particular, can fulfil its potential as an important producer of bio-alternatives to oil and gas. They recognise the global concern, but point out the urgency for getting on and tackling it. Fossil fuels will definitely run out – that means producing vastly more energy from alternative sources and cutting demand.

European Commissioners propose to increase the share of renewables in the energy mix to 20% by 2020 – an 11.5% rise. But there are serious concerns about whether this is a desirable target.

'The big contention', says Simon Hodgson, Dean of Science & Technology, 'is between using land for producing biofuels and using it for feedstock or for growing food. And even if we can meet up to 30% of energy needs from biofuels, that has to be part of a mix of solutions – using less fuel, more wind farms, recovering more carbon dioxide (CO₂) from the atmosphere and so on.'

Research includes making diesel from vegetable oils and producing bioethanol as an additive in petrol. Petroleum diesel produces a lot of undesirable CO₂ but biodiesel generates only a marginal increase in emissions, because the crops from which it is made capture CO₂ as they grow.

Part of the economic strategy for the Tees Valley is to make the area a hub for clean energy and related technologies. Plans include a highly-advanced power station with carbon capture and storage, the recovery of oil-like chemicals and energy from waste such as tyres, and potential municipal heating systems using waste energy currently dissipated through cooling towers. Biofuels are expected to be an important factor in this mix.

Professor Hodgson says one of the challenges for biofuels is to take refining in a new direction which makes economic sense. The production of bioethanol, the additive used for 'green' petrol, uses fermentation and distilling, based on centuries-old technology. It is relatively straightforward but its value depends on a plentiful and renewable supply of raw materials. The key problems are that the crops needed for bioethanol are high-grade food crops, such as wheat, maize or sugar beet, and the fact that current technologies only use a small fraction of the crop. The rest is mostly waste, so investigators are looking into how to capture and convert the carbon from the whole plant into a usable product.

Scientists at Teesside are working on several lines of research. One is digestion technology, to convert organic material into methane, by using different micro-organisms or physical conditions to speed up the process.

A second route converts plant material 'biomass' into liquid, in a new twist on the ancient craft of charcoal making: heat up a mass of non-food organic material (such as wood or straw) in the

absence of air. The liquid by-product, pyrolysis oil, is too acidic and full of water to use directly as a biofuel, but it makes a potential feedstock for refining, if cleaned up.

A third area uses a process invented in the 1920s but which until recently had only limited application – Fischer-Tropsch synthesis, converting gases into liquid fuels.

Professor Hodgson says, 'The highly-specific chemical blends in biofuels call for highly-specific interventions. This is difficult enough to achieve with specially-grown fuel crops, due to seasonal variations. When variable domestic waste or other products are involved the solution becomes even more difficult.'

The simplest application of biofuels is burning organic materials to generate heat or electricity. A large-scale biomass combustion plant at Wilton burns waste wood, industry by-products, old furniture and wood harvested from forests to run a substantial power station. This may do little in the quest for a clean transport fuel but it does convert most of the energy from the biomass into useful power and must certainly be considered a green option. However even this technology has its downsides. Supplying even a small fraction of our energy needs this way will result in significant changes in our landscape due to the voracious appetite of these systems for fuel.

Professor Hodgson adds, 'There is already anecdotal evidence of accelerated deforestation in our region due to the changes in economics that just one such unit can produce. Whether this is a price we are prepared to pay will no doubt be a hot topic of debate. What seems certain, though, is that society cannot continue to function as it has for the past century without a socially- and economically-acceptable green source of energy.'

Teesside is poised to take a leading and influential position in the next fuel era – when the right political and other pieces fall into place.



The big contention is between using land for producing biofuels and using it for feedstock or for growing food



when fashion becomes **AN**
INVESTIGATOR'S
FRIEND

Tattoos and piercings are some of the most visible signs of 21st-century life, but they can also be vital investigative tools, particularly when it comes to identifying bodies in war zones or natural disasters, as Teesside's Dr TIM THOMPSON explains to John Dean.

It was the devastation wreaked by the Asian tsunami four years ago that highlighted the challenges of identifying bodies in horrendously-difficult conditions.

That message was further emphasised by the excavation of mass graves after the bitter Kosovo conflict of the early 2000s, where many bodies were impossible to recognise because they had decomposed so much.

Those events have a particular resonance with University of Teesside researcher Dr Tim Thompson, a forensic anthropologist, who was called in to help identify corpses during both incidents.

His experiences in Thailand and Kosovo, as well as his work helping British police forces, have led to a project, funded by the Leverhulme Trust, that may make the process easier.

At the heart of the pioneering work are some of the most visible signs of 21st-century life. Tattoos and piercings may be cosmetic adornments, the accoutrements of the rich and famous which find an echo in the lives of young people the world over, but they can also be vital investigative tools.

The three-year study led by Dr Thompson, of the School of Science & Technology, will focus on forensic traces left behind by the cosmetic procedures.

Dr Thompson is one of only nine accredited forensic anthropologists in Britain, which is why he is regularly called in to help police forces across the world.

He said, 'Forensic anthropologists are only called in when the bodies are in such a condition that identification is very difficult. In those situations, you are looking for anything which will help you put a name to the person.'

'When I was sent to Thailand to help identify bodies after the Asian tsunami, the humidity meant that many of the bodies were in an advanced state of decomposition. Another problem was the sheer number of bodies.'

'My job was to match evidence from corpses which had been recovered to records of people who had gone missing. Tattoos were important tools because even after the top and second layers of the skin have sloughed off, the tattoo remains, and actually becomes clearer.'

'Similar identifying marks were also useful in Kosovo, where mass graves were being excavated. Some bodies had been there for some time and were very decomposed so we had to rely on whatever evidence remained. We were able to match some bodies to identities and, although it is very hard work and very tiring, it can be very rewarding when that happens.'



You have to divorce the fact that this is a person from the task in hand

'You have to divorce the fact that this is a person from the task in hand. Having said that, in Kosovo there were children's bodies, which made it particularly hard for those with children of their own.'

His belief that there was a need to explore new ways of identification was strengthened through helping police identify corpses in the UK.

In cases where bodies remain undiscovered for weeks or even months, identification can be difficult and things like tattoos and piercings can be useful in matching the evidence to missing persons.'

The idea for researching traces left by cosmetic procedures first cropped up when he was at the University of Dundee and he and a colleague wrote a chapter on the subject for a book.

Now, he is working with University of Teesside PhD student Alex Starkie on the £50,000 project, and says, 'Tattoos and piercing, and other cosmetic procedures, leave evidence behind which can be useful to investigators.'

'Take the case of a dismembered corpse. We know that the chemicals from inks used in tattoos can migrate to the lymph nodes. That means they show traces in the armpits, even if the arms have been removed.'

'That could help police track down the manufacturer of the ink, which would give investigators a start in identifying the body. Some manufacturers use 42 different colours. That has encouraged us because it suggests you may be able to narrow down inks found in tattoos on bodies to specific manufacturers.'

'We will also examine piercing. We want to find out how long DNA stays on earrings and similar piercings. It could provide the evidence that helps with identification.'

Dr Thompson will also be running a nationwide survey on the use of tattoos and piercing in forensic body identification.



The Leverhulme Trust



The working poor

Is employment the best route out of poverty? Social scientists are asking the question as part of a Joseph Rowntree Foundation-funded research project into the 'low pay/no pay' cycle facing so many people in the North East. ALISON UTLEY reports.

Sadly the preponderance of low-paid, low-skilled and insecure employment – so called poor work – means that for some people getting a job will not constitute a step on a ladder up and away from poverty.

While many of us in different walks of life may be feeling the effects of the credit crunch, people in temporary work or in low-paid jobs without hope of progression are well used to harsh times. For them the low pay/no pay cycle is a way of life – a result perhaps of competitive pressures and business needs, but unsatisfactory nonetheless.

Now a new project, which builds on the University's previous studies of the lives of young adults living in the Teesside area, will explore the phenomenon of 'recurrent poverty' and the social exclusion which tends to follow on. Recurrent poverty refers to the experience of individuals and households moving into and out of poverty over a period of time when they may find themselves in low-paid jobs – which tend not to last – followed by periods of worklessness.

All too often this pattern seems to become established amongst certain groups of workers. So the research, funded by the Joseph Rowntree Foundation, will look in detail at the problematic 'low pay/no pay' cycle and will try to understand how recurrent poverty becomes the norm amongst the working population.

Adults aged 30 to 55 who are in the labour market but are nevertheless trapped in poverty will be studied using in-depth, biographical interviews, says lead researcher Dr Tracy Shildrick, from Teesside University Youth Research Group based in the School of Social Sciences & Law.

The research team, which also includes Professor Robert MacDonald of the University of Teesside and Dr Colin Webster of Leeds Metropolitan University, will question some 60 individuals about their working lives and try to build a broader understanding of their circumstances.

'We hope to shed light on the ways in which the 'low pay/no pay cycle' may add to people's cumulative disadvantage in respect of health, education and skills', Dr Shildrick said.

The approach will look at the ways in which people manage to escape recurrent poverty – and the implications for policy and practice development, she said.

Professor MacDonald said the study would help to understand how policy developments – such as the government's Employment Retention and Advancement programme and the Local Employment Partnerships 'jobs pledge' – were working, chiefly by offering a deeper understanding of the complex lives of poor people.

'Recent socio-economic changes make Teesside a particularly-interesting place in which to investigate recurrent poverty', Professor MacDonald said. 'We want to try and find out whether people ever escape recurrent poverty, how they do it, and if not, why not.'

Some 20 interviews will also be held with employers and other 'stakeholders' to gather their perspectives on the research questions and help build a fuller picture of these entrenched working patterns. The hope is that eventually, perhaps, the patterns may be broken.



Nicola studies while working

When Nicola Moore was 16 she couldn't wait to start work and dropped out of an art college course after a few months.



Now, 17 years later, the middle manager is halfway through the two-year Foundation Degree in Leadership and Management run by Teesside Business School for the North East Chamber of Commerce (NECC).

Nicola is one of three on the degree from Billingham-based market research company NEMS, which employs over 100 staff, and says she is loving every moment.

'I am the research manager and have worked here for four years. Last year one of the directors asked if we would like to do the Foundation Degree.

'We had a residential weekend at the beginning which let me meet the people in my group. They are very friendly. Most studying is done online and by distance learning, but it's really helpful to be able to email my fellow students and stay in touch using the University's "virtual learning" Blackboard system. I'm already applying things I'm learning on the course to the way I manage people at work', said Nicola.

Nicola had various jobs and training after leaving school and says, 'I wasn't sure what I wanted to do and wasn't ready for further or higher education in my teens.

'That's what's great about the Foundation Degree. You can do it in work when you're ready and at the pace and place that suits you. For instance I'm attending lectures at the NECC headquarters in Durham City as it's nearer to my home than Middlesbrough. The course is really flexible and allows you to gain new skills while continuing in full-time employment', says Nicola, who hopes to top up the Foundation Degree with an extra year's studying for an honours degree.

Her boss, Geoff Siggins, said, 'I'm always on the lookout for new, long-term training opportunities for my staff, rather than short courses, and I like the mix of elements on the Foundation Degree. They're a good fit for staff development and developing the individual. I can already see a noticeable difference in the way the team is thinking about things and how it's improving.'

Adam Foster, Commercial Training Manager with the NECC, said he was delighted with the relationship between the NECC and the Business School. 'The Foundation Degree is clearly making a contribution to business effectiveness in the region', he says.

'A much easier place to do business'

Former company director ALASTAIR THOMSON, who took over as Dean of Teesside Business School at the beginning of the year, is in an unusual position when it comes to business-facing higher education. Here he talks to Nic Mitchell.

As someone who has worked on both sides of the fence, Business School Dean Alastair Thomson says, 'I think I am in a good position to say that Teesside is a much easier place to do business with than perhaps some other universities. I believe this is because we were doing "employer engagement" before it became fashionable and that becoming a business-facing University is not something new to us.'

He cites the Business School's new Centre for Fraud and Financial Crime and its work to develop the school leaders of tomorrow, saying, 'They are among the best examples of workforce development around in the higher education sector in my opinion'.

He says the Business School is looking at different industrial and employment sectors and finding tailor-made solutions. 'In the case of fraud management and financial crime, we are offering a civilian and a police officer route and providing everything from short training and development courses to foundation degrees

and master's courses. And we are doing this in liaison with the people working in this area.

'The same goes for the school leaders programme, which has helped the development of existing and future leaders in over 460 schools in the North East.

'And we've also been delighted to work with the North East Chamber of Commerce in creating the new Foundation Degree in Leadership and Management for companies. To date, we have assisted more than 60 business executives with staff development and provided training, education and resources to improve their business performance.'

Alastair became Dean of Teesside Business School at the end of 2007. His previous roles included working as the divisional Managing Director of a FTSE 100 business, and working for seven years as a City accountant for an international commodity trading firm. In 2004 he set up his own company, Mint Services Ltd, to provide niche training and consultancy.

Graduates for the

WORLD OF WORK

'Our mission is to produce the best-prepared graduates for the world of work in the UK.' That's the bold, no-nonsense approach from Professor SIMON HODGSON, who took over as Dean of Teesside's School of Science & Technology just over a year ago.

And the School has already notched up one impressive accolade: its the top place in the country to study mechanical engineering, according to *The Guardian University Guide*. Graduate employability and the academic progress made by students both contributed to the table-topping result.

It's something that Professor Hodgson intends to embed in other disciplines as the School re-engineers itself to make itself more employer and employee friendly.

Professor Hodgson recalls being contacted by many local industrialists wishing him well on his appointment and offering to work with the University to help develop courses and programmes.

His immediate response was to invite some of the most influential figures on the Tees Valley industrial scene to join a strategic advisory board. He has already taken on board several of their priorities.

'Over the last 12 months we've actively worked with relevant professional bodies to ensure future accreditation of our degree programmes in engineering and in forensic and crime scene science.

'However, this is just the beginning of a revolution in the way our programmes will be developed and delivered in the future.

'We're going to ensure that our students leave this University fully equipped for the world of professional employment. This means putting skills like team working and problem solving at the core of our degree programmes.'

It also means swapping the lecture hall for the realm of real-world experience, tackling carefully-structured problems and applying theoretical knowledge to develop solutions.

'These are significant developments which will ensure that Teesside's science and engineering graduates have a distinctive set of skills which combine academic learning with real professional relevance. Our aim is for our graduates to be some of the most sought after in the country', says Professor Hodgson.



Glynn Jones' journey to become Utilities Maintenance Manager for Sembcorp UK at Wilton began at the age of 16 when he left school for an engineering apprenticeship with Elementis Chromium.

It was there he first showed his commitment to lifelong learning and, in 1998, he started four years of studying part time for the BEng (Hons) Mechanical Engineering at the University of Teesside.

His current job allows him to put the knowledge gained on his degree to good practical use, as Glynn is responsible for maintenance work on the new Sembcorp Biomass Power Station, as well as the site's conventional Wilton Power Station and associated water treatment plant.

The £64m biomass station generates electricity for the National Grid, burning about 900 tonnes of timber a day, and Glynn and his team have to continually monitor and maintain the operation, learning as they go along.



Around £250,000 worth of new kit has been delivered to the University of Teesside's Orion Building to support and develop the University's engineering provision and to help meet the skills challenge in the process industry.

The investment is the first capital expenditure by the National Skills Academy Process Industries since the Academy's launch earlier this year.

The mobile equipment will create a mini process pilot plant when assembled and provide students with 'hands-on' experience of working in a modern process industry environment.

Professor Simon Hodgson, Dean of the Teesside University's School of Science & Technology, is pictured (left) receiving some of the equipment from Philip Jones, Chief Executive of the National Skills Academy.



Transferring KNOWLEDGE



The University currently has a dozen KTPs in operation with firms across the region

It is not just degree courses, training sessions and skills development that Teesside University can offer employers.

Among the fastest-growing forms of collaboration between companies and the University are Knowledge Transfer Partnerships (KTPs) – a government-backed package to encourage innovation and growth in companies through the input of graduate skills and academic staff knowledge.

The University currently has a dozen KTPs in operation with firms across the region, from Northumberland in the north to Yorkshire in the south. Some of these are UK-registered global companies.

The KTPs cover manufacturing, design, computer-aided planning and production, and other aspects of business. The range of KTP activities is extensive and appeals equally to small and medium-sized enterprises, which may be looking for a step-up in scale, and to large multinational operators, such as Faithful+Gould, interested in exploring new technology for its potential application in their business.

The Partnerships are between the University, a graduate and the company and are flexible in length from 18 months to three years according to business needs. The company gets a highly-

qualified graduate working for them plus access to a team of specialist experts.

For example, in one KTP project, Teesside graduate Martin McKie is combining his PhD studies, under the supervision of Professor Farhad Nabhani, with a successful two-year link with industry as sales development engineer for the Stockton Casting Company.

The Company is a versatile manufacturer and specialises in high-integrity complex castings, such as large diesel engine components, compressors, pumps and blowers, and has produced castings for historic machine restoration or re-construction.

Martin, an Advanced Manufacturing Systems graduate, joined the firm, which employs 28 people, to help improve the way it works. His initiatives included developing new subcontractors, introducing Enterprise Resource Planning systems and helping to win funding support from One NorthEast for this development. And he has also increased the company's use of recycling.

He says, 'This project has helped to make the company more competitive as well as improving my own skills'.

The Teesside Manufacturing Centre (TMC) based in the School of Science & Technology is another good example of the University's business-facing approach.

It has a growing reputation for taking a holistic and strategic approach to dealing with its clients, who currently include Wellstream International, Integriti, Cramlington-based Advanced Electronics and Roman (Showers) at Newton Aycliffe.

Several of TMC's projects are co-ordinated with MAS-NEPA (Manufacturing Advisory Service – North East Productivity Alliance), with MAS-NEPA focusing on operational improvements and TMC adopting top-down strategies for change.

For more information about Knowledge Transfer Partnerships, contact Emma Dotchon, on 01642 384407, email ktp@tees.ac.uk

To get in touch with the Teesside Manufacturing Centre, contact Catherine Frost, on 01642 342481, email tmc@tees.ac.uk



As fraud becomes a major concern for investigators because of its links to organised crime and even terrorism, a new centre has been launched at the University of Teesside to work with law enforcement agencies and the private sector to help combat this growing threat.

Academics and practitioners are working closely together to ensure the new Centre for Fraud and Financial Crime in Teesside Business School plays a pivotal role in educating and training the financial crime fighters of the future.

Nearly 200 police officers and fraud prevention specialists from the private sector came together with academics at the University this summer to launch the new Centre and hear calls for the industry to work together to fight financial crime which is costing the country around £20bn a year.

The new initiative, part of Teesside's growing portfolio of employer engagement and workforce development, is being supported by a wide cross-section of organisations including the UK's fraud prevention service CIFAS, the National Police Improvement Agency and the insurance claims arm of Capita, TECERIS.

With high-profile figures such as Detective Chief Superintendent Steve Wilmott, Head of the Economic Crime Department of the City of London Police, welcoming Teesside's new Centre, the new initiative has got off to a flying start.

Det Chief Supt Wilmott's team will soon have over 200 detectives to help fight financial crime and improve fraud prevention nationwide. At the Teesside launch, he urged public law enforcement agencies and the private sector to pull together to fight financial crime by sharing databases and professionalising the education and training of specialists engaged in the fight against ever-more sophisticated forms of financial crime.

Also welcoming the new Centre was John Freeman, head of fraud prevention services at TECERIS, part of Capita. He said Capita had chosen to work with Teesside because 'this is an

fight against

FRAUDSTERS

Schools leaders learn lessons

Teachers are among the most active participants in professional development programmes run by Teesside Business School, equipping themselves with skills and knowledge to be more effective in headship and other school leadership roles.

According to Alastair Thomson, the Business School's Dean, 'The school leaders programme is one of the best examples of workforce development in the higher education sector'.

He said, 'Running a school these days is not that dissimilar to running a business. It didn't used to be, but it certainly is now, and school leaders of today and tomorrow need a range of management and leadership skills. They don't just need to be good teachers.'

'Through our National College for School Leadership provision, we are offering talented school leaders the right training and education to provide them with the management skills they need.'

The school leadership programme began two years ago and is attracting increasing numbers, thanks to a new contract for the Business School to run the national professional qualification for head teachers in the North East, to be delivered to about 140 trainee head teachers in 2008-09.

And with many local authorities reporting that between a third and a half of teachers are nearing retirement, the need to invest in the leaders of tomorrow is a pressing issue for a growing number of schools.

It is certainly something that Business School staff are addressing – through the Northern Partnership with colleagues at the University of Manchester and Leeds Metropolitan University.

Joanne Hughff, Senior Enterprise Manager (Educational Leadership), explained that the Business School is hosting the Training and Development Agency for Schools' regional centre, which is supporting schools and local authorities in the North East.

'Since 2006, we have run three flagship programmes for the National College for School Leadership. During this time we have supported the development of both existing and future school leaders in over 460 schools in the region.'

'Our various workforce development packages and leadership provision have had a positive impact and both helped participants to meet the challenges of leading 21st-century schools and build capacity for succession planning.'



Further information

Joanne Hughff, 01642 384652

Or write to

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Middlesbrough
Tees Valley
TS1 3BA

Online: http://www.tees.ac.uk/schools/tbs/leadership_schools.cfm

innovative university and a centre of excellence for knowledge transfer'.

A University-accredited Corporate Fraud Investigator course has already been jointly developed and 40% of participants have indicated they wish to continue studying towards the MA Fraud Management.

Mr Freeman quoted one of his clients, David Williams, Claims Director at AXA, saying, 'You have delivered a highly-professional training package for our fraud investigators which focuses not only on building knowledge but also on developing practical skills that they can use every day in our fight against fraud'.

Others welcoming the new Teesside Centre included Gabrielle Devereux, Training and Compliance Manager with CIFAS, which has 270 members, including major banks, mortgage lenders, share dealers, insurers and credit cards.

She said that they were launching a Foundation Degree in Fraud Management with Teesside, describing the response from industry as 'very encouraging'.

Fred Hutchinson, Director of the Teesside Centre, said, 'We're building on the early sterling work led by Professor Alan Doig, who recently retired as head of Teesside Business School's Fraud Studies Unit. Alan had a strong

reputation for advising governments and law enforcement agencies worldwide on fighting fraud. So we already have a significant reputation in this field.'

Among activities already under way is an MA Fraud Management degree, which includes accreditation for the National Fraud Training programme delivered by three UK police forces – West Midlands, West Yorkshire and Greater Manchester.

New partnership arrangements have also helped to develop new courses with the asset recovery arm of the Serious and Organised Crime Agency (SOCA), the National Police Improvement Agency, the Department for Work and Pensions and CIFAS.

Mr Hutchinson said, 'The nature of the organisations working with us shows we are at the forefront in this field. Our programmes are seen as innovative and we bring in experienced practitioners on a regular basis to ensure that the training is realistic.'

'This work is important as there is an acknowledgment from the government that there has not really been a co-ordinated approach to the reporting of fraud so no one is fully aware of how much it costs and the impact it has on thousands of lives. We hope that our work will help to address that.'



The nature of the organisations working with us shows we are at the forefront in this field





Stuart Varrall, left, with Richard Mairs outside the University's graduate business centre

'CAN DO' culture

There can be few experiences more inspirational than immersing yourself in another culture, as Anastasia Weiner found out when she met the founder of Fluid Pixel Images, STUART VARRALL.

When University of Teesside graduate and DigitalCity Fellow Stuart Varrall was chosen as one of 12 young entrepreneurs for a six-month sabbatical in the US, he was understandably excited – if not a little daunted by the prospect.

It meant leaving behind his business and everything familiar in exchange for a once-in-a-lifetime mentorship and voyage of discovery, courtesy of a National Council for Graduate Entrepreneurship and Kauffman Foundation Fellowship. The prestigious award is hotly fought for and Stuart beat many candidates to reach the final selection round. He was the only successful North East candidate last year.

Speaking to the founder of Middlesbrough-based mobile phone wallpaper and games specialist Fluid Pixel Studios shortly after his return, it's obvious that the experience has had a powerful effect on any future business plans and personal ambitions. Stuart admits that, although it took him a few days to acclimatise to both the Kansas weather and the feeling of being thousands of miles away from his business and home, adjusting to the gruelling regime of lecturers and seminars wasn't an issue.

'The two months spent in Kansas City was a bit like being back in university, although it was very intense', he recalls.

'It was like packing an MBA into a very short time. We looked at everything you would if

studying for an MBA, from case studies from Harvard and Stanford to entrepreneurship and start-ups. It was very useful.'

After two months Stuart and the other Fellows embarked on a lightning tour of the US, stopping off at Stanford University to meet the spin-out team which set Google on its path to glory, plus visits to Harvard, MIT, and Microsoft's and Adobe's Californian offices.

For Stuart, it was internship with internet marketing specialist SoftVu that proved to be the most invaluable part of the tour.

'I got to spend time in a number of departments, which was great', he said.

'What really made it for me was spending time with the firm's founder, understanding why he made the business decisions he did and how he turned SoftVu into a multi-million dollar turnover business.'

Indeed, it is the US's attitude to entrepreneurialism and business which has left a lasting impression on the 24-year-old.

'How they go about business is completely different to the UK', he says.

'They have a "can do" attitude, which is contagious. It's left me very keen on doing business with the US and I've no fears about opening an American office some time in the future.

'His enthusiasm will certainly reassure Richard Mairs – the North East's second Kauffman Fellow in as many years and another graduate from the University of Teesside.

The founder of multimedia development firm Gizmo Visual Studios is counting down the days until he too whisks off to the US, for what he describes as an unbelievable and somewhat unexpected opportunity.

'I really didn't expect to be selected', confesses Richard.

'I was put forward and after submitting the written report was asked down for an interview. There were 16 of us on the day and only 11 were selected, including me.'

The farmer's son, who graduated from Teesside with a BA (Hons) Creative Visualisation and an MSc Multimedia Applications, runs his business from one of the University's business units. He says he's looking forward to learning new ideas which he can use in his business.

'I will have two or three projects on the go when I'm away but I'm confident that I can project-manage them from the US', says Richard.

'It will be an interesting balance but a challenge I'm very much looking forward to!'

As for Stuart, it's business as usual with some exciting new projects currently in the pipeline. Both Richard and Stuart have recently been given Apple iPhone Developer status, allowing them to develop iPhone content and applications.

Top award for Janice

Janice Webster, one of the founders of the DigitalCity project, was named as the Most Enterprising Academic by UPBEAT, a benchmarking project funded by the Higher Education Funding Council for England (HEFCE).

The judges looked at 150 case studies of university engagement with business and the community last year to find the best examples.

The award was presented to Janice by Professor James Powell, Director of the University Partnership for Benchmarking Enterprise and Associated Technologies. He said, 'Her entrepreneurial flair was shared with her creative teams in a unique and compelling way so they became their own leaders of the pioneering DigitalCity project'.

Janice said, 'Winning this award feels like "I have got the truffles after all the digging" and I would particularly like to thank the University's Academic Enterprise team and my DigitalCity team for putting us on the map for enterprise in the UK university sector'.

University Vice-Chancellor, Professor Graham Henderson, said, 'This is a great accolade for both her and the University and we congratulate Janice for raising our profile and this University's engagement with the digital world'.



Janice Webster with her award outside the Phoenix Building



New look for Bob

A new-look Bob the Builder game could be on retail shelves this Christmas courtesy of Middlesbrough-based games designer Halch.

The nine-strong firm, which was founded just two years ago by University of Teesside computing graduates Marc Williamson, right, and David Hankin, left, was contracted by Blast Entertainment to refresh the popular game. According to Marc completion is 'very close'.

Although Halch, which is based in one of the University's graduate business units, has already designed games under licence for both Sony Play Station 2 and Nintendo DS Lite, this is the first time that they have built a commissioned game using their own technology.

'It's great using our own technology', says Marc.

'We're also working directly with the publisher instead of dealing with developers as before, which is a big change.'

The new Bob the Builder game, which will be available for Wii consoles, has seen the majority of the team working on the project.

Staff numbers have built up steadily over the past few years with many of Halch's team recruited from University of Teesside graduates.

Marc says that the firm will be looking to swell its numbers over the coming months, as discussions with two additional but as yet unnamed publishers move forward.



Feel the PAIN

Everyone feels pain differently, and nobody can know what somebody else's pain is like. This often makes the problem difficult to describe and treat, which is bad enough when you have toothache or a similar condition that can be 'fixed'. But chronic pain is even more problematic, and for millions of sufferers the long-term consequences of living with on-going pain can profoundly affect quality of life, as ALISON UTLEY finds out.

Mel Curtis

Up to 10% of the general population are affected by chronic pain, rising to more than 50% of older people. The pain can result from a wide variety of injuries and illnesses such as nerve damage following surgery, arthritis, Multiple Sclerosis, ME (chronic fatigue syndrome) or diabetes. Sometimes it is not easy to identify how the pain started and what caused it. So is chronic pain a condition in itself?

Definitely yes, according to Denis Martin, Director of the University's Centre for Rehabilitation Sciences. Dr Martin is developing a research programme focusing on chronic pain. Already he has managed to persuade some influential people about the importance of recognising chronic pain as a condition in its own right, not least Scottish Health Secretary Nicola Sturgeon.

'Chronic pain is often seen in the health services as "someone else's problem" but now, in Scotland at least, chronic pain is going to be dealt with as a priority and a core problem in its own right', Dr Martin said. 'It has taken us many years of lobbying to get to this point!'

The shift in emphasis in Scotland could mean more help for sufferers there which is a huge step forward. 'No matter what the cause, once chronic pain is established it brings its own set of problems and this needs to be more widely recognised', Dr Martin says. 'There are physical difficulties, mobility may be reduced, people may be fatigued by their pain and there are psychological and emotional consequences such as depression and anxiety to deal with.'

Acute pain is the body's warning system which tells it to move away from danger and to protect itself from further injury, but chronic pain means there are changes in the nervous system and brain so that the pain no longer functions as a warning system.

The word chronic refers to the persistence of pain. The International Association for the Study of Pain defines chronic pain as 'pain which has persisted beyond normal tissue healing time'. Although there is no formally-accepted time for this, any pain lasting for more than three months is generally considered to be chronic pain. Most people's experience of chronic pain, though, will have lasted longer than three months.

Dr Martin's approach to help sufferers of chronic pain will include the creation of an online site offering information and experience-sharing, plus the use of virtual reality to inform the rehabilitation process. 'Interactive health technology has a huge role to play in helping people to get the most out of rehab and will make a big contribution to the field in the coming years', Dr Martin said.



Chronic pain is often seen in the health services as 'someone else's problem'

More than a thousand people living in Teesside have signed up for the 'Get a better life' project by pledging to improve their diet and do more exercise.

Participants have promised to eat less fat and more fruit and vegetables, whilst increasing their physical activity.

And there are early signs that it is improving people's lives.

The volunteers who signed up with the University's Centre for Food, Physical Activity and Obesity were asked to keep records during their year-long project involvement. These records will be analysed by the Teesside research team and reported to the Food Standards Agency.

The results will be important because parts of the Tees Valley suffer from significantly poorer health than the national average. It has been estimated that, on average, people in parts of the area die 12 years earlier than they should. Heart disease, strokes, smoking and alcohol abuse are some of the biggest problems.

Project manager Frances Hillier, pictured below, said that many people were already responding well to the project. 'Nine months into the initiative we have received some encouraging feedback', she said.

'When people first signed up earlier this year, we took details of their lifestyles and found that very few of them were eating the recommended five portions of fruit and vegetables a day – the average was two, which is the national average but not enough.

'We were more encouraged by the fat intake, which showed that they were on a par with the recommended level – which is that no more than 35% of food should be fat.'

However, not enough of the volunteers were taking 30 minutes of exercise a day she added, whether it was walking or sporting activity.

'Although the project has not yet been completed, some people have been telling us that they are already making changes to their lifestyles', Ms Hillier said. 'The messages we are receiving are very positive and fit in with our aim to bring about an improvement. Part of the project has been to offer healthy living advice.'

The £500,000 research project for the Food Standards Agency is being supported by Middlesbrough's *Evening Gazette* newspaper, which has helped to get the message out to local residents, and by the Middlesbrough NHS Primary Care Trust (PCT).

University researchers are also working with the PCT to talk face-to-face with 500 people to see if that is a better way of getting the healthy living message across.

One of the people who paid heed to the message and changed her lifestyle was Sheila Dring from Ormesby, Middlesbrough.

The 56-year-old has cut back on sweets, paid more attention to her diet and started regularly using an exercise machine in her home. She lost more than a stone through healthier living and a new fitness regime.

She said, 'I had put on a lot of weight due to an underactive thyroid and had suffered health problems so I decided I had to do something about it.

'I have lost one stone four pounds and am more active. I have joined a walking club, which goes out every week, and I do a few exercises every morning. I feel a lot better. I just wish I had done this years ago.'



When people first signed up earlier this year, we took details of their lifestyles and found that very few of them were eating the recommended five portions of fruit and vegetables a day

Get a better LIFE





It was very difficult to get the interviewees to talk negatively, which is very unusual when people are speaking about their working lives

ICI

RULED OK!

The days when half of Teesside seemed to work at ICI and everyone else for British Steel are now part of recent folklore. But, before memories fade, two initiatives have been capturing the story for future generations. **STEPHEN LAING**, son and grandson of ICI workers, and **HUW RICHARDS** find out how the projects are helping to keep the area's industrial heritage alive.

'Whose dad works for ICI?' asked my primary school teacher. Over half the class, including me, raised their hands eagerly. That was Billingham in the early 1970s. Today ICI Billingham no longer exists.

The chemical company dominated the town. My father and his father, Ernest, both worked at ICI. My Grandad worked there for over 30 years, up to his retirement. My school, Billingham South, was built for the children of ICI workers, the dining hall facing on to the now derelict company offices. At night we heard odd muffled sounds from the works and by day breathed air that might have a strange sulphurous odour. The annual summer show, often in blazing sunshine, was a major childhood event.



• steel river

That world is recalled in a new book, *Life at the ICI: Memories of Working at ICI Billingham*.

Editor Margaret Williamson, senior lecturer in history at the University of Teesside, has similar memories to mine. Her father Bob Routledge moved in the late 1960s from a Durham mining village to work as a process operator. She still lives in Billingham and raised her family there with husband Graham.

The book, which features interviews with 80 former ICI Billingham workers from the 1930s onwards, was initiated by the Teesside Industrial Memories Project (TIMP) – set up by former ICI workers in 2004 to preserve those stories – and funded by a £49,000 Heritage Lottery Fund award. Dr Williamson edited interviews done by TIMP volunteers and added photographs and explanatory text.

She says, 'When I moved to Billingham as a young child I saw wonderful facilities like the Forum sports complex, John Whitehead Park and the art gallery, and knew that ICI offered my father a livelihood, but did not understand that it was largely the prosperity brought by ICI that allowed them to be built. The book re-emphasises the importance of the company to the town's development, to its social and sporting life and the building of schools, and shows how it influenced the rest of the community that lived nearby.'

She found that everybody, from the lowest staff levels to executives, had a positive view of ICI, 'There is a tremendous loyalty to ICI and its legacy. It was very difficult to get the interviewees to talk negatively, which is very unusual when people are speaking about their working lives.'

The oldest interviewee, Dr Kenneth Warne, 101, of Middlesbrough, joined ICI as a 15-year-old school-leaver and worked there for 40 years, progressing from laboratory assistant to research scientist before retiring in 1968.

At the book's launch, he said, 'I'm very happy to see all my young friends, although they're not as young as I am! When I first came to Billingham in 1922 there was no ICI, just green fields and hedges. I'm sorry that ICI itself has finished, all of you here have the company in your hearts.'

Stephen Laing

Margaret Williamson (editor), *Life at ICI: Memories of Working at ICI Billingham*, Atkinson Print, £9.99.

If Billingham was the chemical capital, the Tees was truly Steel River. As ICI memories go into print, lives defined by the region's other great industry are being collected for posterity.



The work is part of the British Steel Archive Project, based on a massive collection lodged in the Teesside Archives in central Middlesbrough.

Project director Dr Joan Heggie, an academic from the University of Teesside, pictured above, is delighted that full-scale work can begin after a long period of planning, publicising and fund-raising. 'At public events we found a lot of interest in what we were doing and people wanting to tell us their stories, but all we could do at the time was take contact details. Now we have the resources and can go back to interview them.'

She points out the industry's influence was felt well beyond the shop floor, 'We also want to talk to office workers and cleaners, to those who had family members in the industry, older people who saw it in decline and the next generation who maybe never worked in it, but had to deal with the consequences of that decline and its impact on the region. It is a part of all of their identities and of the region they live in.'

Interviewing will run in parallel with sorting and cataloguing industry records donated by Corus in the 1990s but dating back to the British Steel Corporation and pre-nationalised companies like Dorman Long. Taking up more than 600 linear feet of shelving, the Archive contains far more

than dry commercial documents – there are more than 20,000 pictures, 80 photograph albums, 100 cinefilms, print blocks, maps and thousands of engineering drawings including Dorman Long's original blueprints for the Sydney Harbour Bridge.

The £1.6m project is based on a £250,000 Heritage Lottery grant, with further support from Corus, Community trade union, the University of Teesside and the councils of Middlesbrough, Redcar and Cleveland, Hartlepool and Stockton on Tees. The Arts and Humanities Research Council has funded a doctoral studentship linked to the Archive.

Interest in the catalogued Archive and digitally-recorded interviews which will preserve Steel River's collective memory extends far beyond Teesside. Visitors have included Japanese economics professor Minoru Yasumoto, whose history of 19th-century Middlesbrough is near publication, with an English translation to follow.

Dr Heggie says, 'We will be able to do a lot more for people like Professor Yasumoto once the Archive is catalogued. A book was published in Australia in 2007 to celebrate the 75th anniversary of the Sydney Harbour Bridge, but included only one item from our Archive. If it had been fully catalogued, we could have contributed a great deal more, but didn't know exactly what was in there.'

Finding out is the sort of exercise of which historians dream.



Huw Richards

website:
www.britishsteelcollection.org.uk



Imagine – instead of buying a heater from an electrical retailer, you purchase a particular temperature for your house from an energy-supply company, which then provides the heater for free – just like the way you can buy texts, talk-time and mobile phones today. DAVID WILLIAMS looks at how European researchers are trying to beat the energy crisis by creating new business models and energy information systems.

Energy is everything today. Through global warming, inflation and security of supply, it has become a player in all our modern preoccupations: in climate change, in the economic downturn and as a cause of war. Conserving energy has become an essential strategy for avoiding the worst of consequences.

It is an important strategic target for the European Union (EU) to reduce energy consumption by 20% before 2020. And with 40% of the total energy consumption going into heating and running buildings, this is clearly a key area to concentrate on. EU leaders are, however, well aware that it will not be the conservation-friendly design of new buildings that makes the crucial difference. The turnover of building stock is just too slow and 80% of the buildings which will be standing in 2020 are already in existence. Instead, it is the intelligent use of the energy consumption within existing buildings that is going to help the Union reach this vital goal.

To this end, scientists and researchers all over Europe are collaborating on a project known as IntUBE – the Intelligent Use of Buildings' Energy Information. The aim is to create new business models and neighbourhood management systems which save energy in existing buildings without reducing the comfort or performance that people are used to.

This last point is key. Professor Nashwan Dawood, pictured, is the University of Teesside's Cecil M Yuill Professor of Construction and Director of the Centre for Construction Innovation and Research. He is in charge of a ten-strong team researching the University's contribution to the project.

'Simply telling everyone to cut down on heating and lighting is not likely to work', he says. 'If our offices become unbearably hot, people will reach for the air conditioning, or, if it gets too cold at home, they'll hit the central heating button. The key is to give individuals more information about their energy consumption and more intelligent control systems to allow them to use their energy in a much more efficient way.'

The project has brought together researchers and business partners from nine countries (from both the warmer south and the cooler north) and is financed by the European Union's 7th Framework Programme. The project's overall aim is to examine how energy is currently being used (energy profiling) and then to create new ICT-enabled business models, service platforms and management systems. These will make energy-efficient behaviour natural, easy and intuitively understandable to the end user, whether a householder or a service management company in charge of an office block.

Professor Dawood was invited to join IntUBE because he is an international expert on using virtual technologies to examine energy efficiency, and the University of Teesside is leading both the energy profiling and building-management-systems elements of the project.

'In terms of energy profiling, we are trying to develop a new approach', he says. 'This will integrate real-time data-capturing systems, such as sensors, into energy control systems. It's not about using thermostats to switch heating on and off. What we are doing is building more proactive algorithms which learn the pattern of energy use in a building and then apply what they know to make decisions about what that pattern will be in two or three hours' time. To use a domestic example, it would for example recognise that you are usually only in your bathroom between nine and nine-thirty at night and so switch on the heater for half an hour at eight forty-five.'

IntUBE started in April 2008 and, although the demonstration part of the project is planned to take place in Spain and Finland in three years' time, it may be that Middlesbrough will also be used as a testing ground for the outcomes. Professor Dawood hopes he may be able to use one or two buildings at the Tees Valley Regeneration project in Middlehaven as a case test for some of the methods he is developing.

And Joe Docherty, Chief Executive of Tees Valley Regeneration, comments, 'Professor Dawood's research looks very interesting', adding, 'There's an enormous amount of synergy between his work and the Middlehaven project which might prove very fruitful. These and other projects are all contributing to the emergence of Middlesbrough as a national centre for carbon-neutral developments, energy conservation and renewable energy production.'

Staying comfortable without wasting

ENERGY



Simply telling everyone to cut down on heating and lighting is not likely to work



New helmsman for **CLEMANCE**



Professor Eric Senior, one of the most respected figures in the world of environmental

biotechnology, has taken over as Director of the Clean Environment Management Centre (CLEMANCE).

CLEMANCE has been running for eight years and has established a reputation for its work restoring land through bioremediation, using grasses and trees to remove contaminants from soil, industrial symbiosis, the reuse of materials within industry and sustainable technology, particularly carbon management.

Professor Senior hopes to build on the work to ensure CLEMANCE becomes an important centre for developing new technologies and applications in the environmental sciences field.

He comes to the job after a varied career which has seen him occupy leading roles in universities and research institutes all over the world, including more than ten years at the University of Natal in South Africa. His research has included the fields of landfill, domestic and industrial wastewater treatment and clean-up of chemically-contaminated soil.

Now, he has been appointed to take CLEMANCE to the next stage in its development, using the wide network of contacts which he has developed in the 34 years since he graduated from the University of Liverpool in 1974 with a first-class BSc (Hons) Botany.

Professor Senior, whose links include academics and businesspeople in China, the US, Singapore and southern Africa as well as continental Europe, said, 'It seems to me that the University of Teesside has a sharp focus for what it wants to achieve and CLEMANCE has to establish itself as part of that.

'Part of my job will be to develop international links and work has already started on that process.

'I believe that CLEMANCE is ready to move forward onto the next platform now and we can only do that through conducting high-quality research. We need to be at the cutting edge and develop an international reputation.'

Professor Senior plans to expand CLEMANCE and bring in top-level academics to work with the existing team.

Pioneering project to cut greenhouse gases

A North East environmental project has prevented the release of 17,000 tonnes of CO₂ per year by finding a new application for an industrial by-product which had few uses and was being stockpiled at a County Durham quarry.

The synergy means that a dust known as doloflour is being added to sewage sludge at a treatment plant to produce a beneficial organic fertiliser.

The sewage works are operated by Agrivert Limited on behalf of Northumbria Water on the Tyne and the scheme is being co-ordinated by CLEMANCE (the Clean Environment Management Centre) in collaboration with the Centre for Process Innovation on Teesside as part of the National Industrial Symbiosis Programme (NISP).

The doloflour is a by-product of dolomite production at Steeley Dolomite's Thrislington Works in County Durham and was previously just stored on the site. Now, instead of using 9,000 tonnes of lime in the sterilisation of the sludge to make it usable as an agricultural fertiliser, Agrivert is using the doloflour.

Kirk Bridgewood, NISP project officer, says the synergy has clear benefits for the environment and is a good example of industrial symbiosis.

'This is an excellent example of companies working together to prevent carbon emissions and is not just energy efficient but also saves on production costs. The doloflour is replacing virgin lime, otherwise known as calcium oxide (CaO), which had to be quarried, processed and transported at great environmental cost', said Kirk.



Patent for greener flights

Professor Simon Hodgson, a materials scientist and Dean of the School of Science & Technology at the University of Teesside, has filed a patent on his work with Rolls-Royce plc designed to help make flying more fuel efficient and environmentally friendly.

His research, highlighted in the last issue of *Research and Enterprise*, concerns the insulation of electrical wiring inside aero-engines and is part of a broader long-term government-backed industry and academic project for advanced electric motors and generators.

The aim is to fit aircraft with more electrical and electronic systems which will reduce their

weight and fuel consumption and generate the extra power on board.

Existing plastic insulation will resist up to 200°C, but using the internal environment of the jet-engine to generate power means protecting the wires from 500°C.

Professor Hodgson is working on a new nanocomposite insulation, part-plastic and part-ceramic, to provide the thin, flexible but robust qualities to work in such extreme conditions.

Further development in the research programme may take ten years or so before going into aircraft production, but the new materials will bring spin-off benefits for other branches of transport and for home appliances.

Giant step forward for

DIGITAL CITY

It has been a highly-eventful year for the ambitious project to turn Middlesbrough and the Tees Valley into DigitalCity, as NIC MITCHELL finds out.

The prestigious Phoenix Building has opened its doors and is now the nerve centre for the University's arm of DigitalCity.

Home to the project's Institute of Digital Innovation led by Dr Jim TerKeurst, the Building is starting to buzz with creative young minds and research teams.

The first digital media companies have moved into the business penthouse suites, and inventive young graduates are beavering away under the auspices of the DigitalCity Fellowship scheme on the next generation of digital ideas to wow us all.

A new TV and sound studio, complete with sophisticated visual special effects, provides access to state-of-the-art technologies. And the nearby Athena Building, housing the University's Centre for Creative Technology, has been officially opened to provide the best teaching and equipment for students studying digital media and digital technology.

Construction work is also progressing well on the next phase of the DigitalCity project, Middlesbrough Council's BoHo zone. This will help not only to revitalise Middlesbrough's old Victorian quarter around the train station but also provide space for creative companies to grow and develop in the Tees Valley.

Professor Cliff Hardcastle, Deputy Vice-Chancellor (Research and Enterprise), said, 'We've attracted considerable interest. People want to come and see how a university can play a significant role in helping to revitalise the local economy. In our case, we're working closely with One NorthEast, Middlesbrough Council and Tees Valley Unlimited to create a supercluster of digital companies. And the great thing is that many of these enterprises started off in graduate business units on our University campus.'

Among those making a beeline for Teesside to see the scheme in action have been the European Commission and *The Economist* magazine, looking at how lessons from the Tees Valley can be shared by other regions striving to find new ways to revitalise their economies.

The senior team from the European Commission were clearly impressed, particularly by the DigitalCity concept and how digital technology is supporting new businesses and skills development in the Tees Valley. According to Pat Ritchie, One NorthEast's Assistant Chief Executive (Strategy), the visit showcased the University and the region, and earned the North East a glowing report, with Jonathan Denness from the EU's UK and Ireland Unit telling her, 'You're ahead of the game, and you have the potential to be European if not world class in your approach'.

Dr TerKeurst believes the key is creating the right environment. 'I'm delighted at the way everyone is pulling together. We've got research centres working alongside the DigitalCity Fellows, postgraduate students and the new business tenants. Together we're creating an intellectual and stimulating environment for digital innovation.

'The people already in the Building really love it. The accommodation is commercial class and we've got a number of people from around the region hot-desking here, including Codeworks.

'We're now planning to ramp up our activities as one of the region's innovation connectors and by working alongside other regional initiatives like Science City, the Centre for Process Innovation and Software City, we're going to turn the North East into a world player for digital media and technology.'

To find out more, contact DigitalCity Project Manager Cheryl Evans on 01642 384324 or email info@theDigitalCity.org

Capturing the operation

TEMPO

Animmersion UK Ltd, a professional visualisation studio set up by three Teesside computing graduates, has created an interactive surgical training tool, which could be mass marketed throughout the National Health Service (NHS) and beyond.

The company was commissioned by Mr Raj Naik, a Consultant Gynaecological Oncologist with Gateshead's Queen Elizabeth Hospital, who set up the project via NHS Innovations. They contacted DigitalCity, who in turn contacted Animmersion. The work was funded via an NHS Research & Development grant as a feasibility project.

The Animmersion team – Sam Harrison, Andy Liddell and Dominic Lusardi – launched their digital business in 2005 while Sam was a DigitalCity Fellow, and is now based in the Phoenix Building.

For the NHS project, Sam and Dominic spent an afternoon watching Mr Naik undertake surgery, as part of their research for the simulator.

Dominic said, 'There's an absolutely incredible tempo to an operation that's almost like an orchestra performance which we specifically aimed to capture within our application. The objective was to produce a visually-realistic training manual, to give professionals the knowledge to perform operations. It's extremely flexible and can be accessed in different locations using laptops or mobile phones. It will be trialled soon by over 1,000 doctors.'

+ Animmersion has also created the new interactive 3D rotating campus map on the University of Teesside website, together with visuals for DigitalCity Business, the business support arm of the DigitalCity project. This includes a 'fly-around' of the upcoming BoHo One, the flagship building for the DigitalCity BoHo Zone, which will provide space for new digital and creative companies to grow, network and do business.

See www.animmersion.co.uk



From L-R, Andrew Liddell and Dominic Lusardi from Animmersion, with Pat Allatt, Emeritus Professor at the University of Teesside, and Mr Raj Naik, Consultant Gynaecological Oncologist, Queen Elizabeth Hospital, Gateshead.



We've had fantastic support from the University and we're delighted to keep the link by moving into this impressive new Building

WHIRLWIND

triumph for new media agency

With the Beijing Olympics behind us, Team GB is gearing up for London 2012. But there's more to life than just participating in sporting competitions, as former athlete ANTHONY BORSUMATO tells Nic Mitchell.

When Anthony Borsumato was forced to drop out of the GB athletics squad following an injury in the World Championships in Paris five years ago, his life was turned upside down.

But today he is leaping over one business challenge after another since setting up his own sporting web design company, 13 Strides, with his cousin Kevin Allinson.

They both enrolled on the University's MSc Multimedia Applications degree following Anthony's injury and set up 13 Strides after graduating in 2004.

Initially based in one of the campus graduate business units, the company, which takes its name from the 13 strides required between each hurdle in athletics, became the first business to move into the University's Phoenix Building earlier this year.

And they are having a whirlwind time since moving in, doubling in size after winning a number of major new contracts. The biggest of these is the design of all digital and print work for Nova International, the company behind the Great North Run.

'It is fantastic to be working with Brendan Foster's company and we're already busy promoting their Great Activity Revolution which aims to get millions of people to take to the streets to increase activity and fitness levels', said Anthony.

Neil Hannah, the University's New Business Manager, says he has watched 13 Strides grow in experience and confidence. 'They are innovative, professional and totally committed to meeting their customers' needs. If that wasn't enough they are also very easy to work with. In fact, they are exactly the type of business which is well suited to locate in the Phoenix Building and to work alongside our Institute of Digital Innovation (IDI) and the whole DigitalCity project.'

Dr Jim TerKeurst, the IDI's Director, also praised 13 Strides, saying, 'They exemplify the best of digital entrepreneurship in the Tees Valley. Starting with a terrific idea, they honed their digital and enterprise skills at the University and it's a real pleasure to welcome them into the Phoenix Building.'

As for Anthony, he says, 'We've had fantastic support from the University and we're delighted to keep the link by moving into this impressive new Building.'

+ As we were going to press, 13 Strides relaunched www.taketothestreets.org for Nova International, a campaign to increase participation in activity across the nation and get people healthier.

Is human 'imperfection'

SUCH A BAD THING?

Imagine a world of human perfection where disabled people are a distant memory, edited out by medical enhancement and economic cost-benefit analysis. As genetic selection, medical advances and economic crises continue apace, a world where disabled people are expendable may not be too far off. But is it desirable, asks ALISON UTLEY?

Many people think not, and one artist is creating a high-tech film exploring the range of human movement by focusing on the 'exceptionality' of disabled people. The idea is to reveal their essential humanity and the animated film will use state-of-the-art Hollywood technology more usually associated with super heroes like Spiderman to capture ordinary disabled people in their human diversity.

Simon McKeown, a reader in computer animation at Teesside and one of Britain's most experienced 3D animators, is an artist with 20 years' industry experience in TV and computer games production. His project, *Disabled Motion*, has been awarded a Wellcome Trust grant worth £30,000 to create what will be a unique record of the movements of people with different impairments.

Eight disabled actors will be 'motion captured' and their physically-different movements recorded as animation data. The data will then be mapped onto 3D models – or avatars – which will replicate exactly the movements of the original disabled actor, precisely recreating the nature of the actor's impairments.

From the animations created there will be a series of short films which will form an initial exhibition installation piece to be revealed at Wolverhampton Art Gallery in January 2009. To coincide with the exhibition screenings there will be an education seminar and debate. The disability arts organisation Outside Centre – based in Wolverhampton and run by Dr Paul Darke – is also involved with the project, as is Teesside's Professor Robin Bunton, who is providing sociological expertise.

Disabled Motion is not a tick-box exercise, Mr McKeown explains, but a mainstream intellectual and artistic exploration of the very nature of what our societies of the future may not contain: difference. 'As medical technology advances, society has sought to overcome physical and intellectual impairments', he says. 'Through the creative use of an animation process, this film aims to start a debate on whether society's use of bioscience and medical enhancement is creating a landscape of merely ordinary bodies. Art is to make people see their surrounding society differently and *Disabled Motion* will do this with wit, intelligence and technology like no other project or art work before.'



Walking on the moon

Leading lights from the Royal Television Society's (RTS) North East and the Border Centre found themselves virtually walking on the moon when they visited the University of Teesside's new digital TV and sound studio, complete with sophisticated visual special effects, as NIC MITCHELL discovers



Situated inside the University's new Phoenix Building, home to the Institute of Digital Innovation, the state-of-the-art broadcast quality surround sound and high-definition video production facilities are among the best in the North of England.

And the RTS bigwigs were certainly impressed, especially after being invited to take centre stage in the studio's green screen set for an out-of-this-world experience.

For while they appeared to have their feet firmly based on ground Earth, the special effects video recording facilities transported them on to the surface of the moon, as our picture shows.

Tony Edwards, a producer/director with a string of broadcasting credits and honorary secretary of the RTS Centre, said, 'It is really earth-shattering what the University of Teesside has developed here and the RTS is proud to be associated with this venture. This is as good as anything I have seen in the region and means students and independent film makers here in North East England have unique

sound and vision facilities on their doorstep.'

Among the facilities is a £75,000 top-class high-definition track-based motion control camera system, which is capable of creating amazing visual effects such as those created for the Harry Potter films. 'Ours is one of the only systems of its type in UK education', said Simon McKeown, a reader in the School of Computing.

But that's not all for the studio doubles up as a sound studio and includes a state-of-the-art mixing desk, which according to Jay Chapman, Principal Lecturer in Digital Music, catapults Teesside into the elite of educational establishments as it provides the most advanced hi-tech recording and editing systems available.

Eric Joseph, Managing Director of Mediaspec, one of the UK's leading professional audio specialists, who joined the RTS moon walk, said, 'Teesside has created a wonderful studio that will be the envy of educational establishments up and down the land.'

Virtual moon walkers, L-R, Eric Joseph, MD of Mediaspec; Tony Edwards, from the RTS; Simon McKeown; David Girdlestone, MD of specialist equipment supplier f451; and Andrew Longbottom, senior project engineer from AVC Electronics who was responsible for the installation.

Three of the actors used in the motion capture sessions will be Matt Fraser, Steve Graham and Frank Letch; disabled people with very different impairments. Matt Fraser, who is a well-known TV personality, suffers from the effects of thalidomide, Steve Graham, a web developer from Teesside's School of Computing, has cerebral palsy and Frank was born without arms (see box story).

Steve Graham will be riding a static bike whilst Matt Fraser will be doing some of his martial arts training. 'Often, in discussions of bio-diversity, the basics of human diversity are overlooked', Mr McKeown says. '*Disabled Motion* enables the viewer to understand that diversity is all around them and, as such, is rather beautiful.'

The possibility of eradicating many of the major disabilities like Down's syndrome by 'genetic enhancement' – and in the future our ability to pick and mix genes – could be creating a homogenous landscape according to Mr McKeown. 'I am critical about that potential because it means that many disabled people will be edited out of society – let alone life.'

One of the key aims for *Disabled Motion* is to create a catalogue of perfectly-animated motions – a record of different body movements – which could become a valuable historical reference point in years to come. The fear is that in the future *Disabled Motion* will merely show future generations what it was like to be disabled, in a future where most disabled people will no longer exist.

welcometrust

Frank Letch is already something of a media star having featured in national TV documentaries as the Devon mayor born without arms, who has succeeded in many walks of life using his feet to do everything an able-bodied person might do.

He can peel potatoes, drink a pint in his local bar, write and type and even change a baby's nappy using his bare feet.

He was delighted to take part in the disability art project after hearing about it from Simon at a conference they were both attending in Wolverhampton. The theme: how people had perceived disability in the news media over the last 50 years.

Frank, 64, Mayor of Crediton in mid Devon, pictured, caught Simon's attention by telling the conference, 'If a surgeon walked into this room now and said he could graft perfect arms on me if I wanted, I'd tell them I want to stay the way I am because I think it's made me a much more interesting person. I am not disabled. It's just that I have an inability to do some things the way other people do', said Frank.

He said, 'I came up to Middlesbrough for the filming at the University and was put in this motion capture suit. I went into a room with infrared cameras and was asked to walk and run and do all the regular movements I do every day, things like act as if I was driving a car and clean my teeth with my feet for the film shots. I've been told the University will translate my movements to create an animated character.'

Frank says of the disability art project, 'I think it is a case of "Three cheers for diversity" and I hope the film will help the crusade to challenge society's way of looking at people who are "not perfect" in their eyes'.

Sadly the preponderance of low-paid, low-skilled and insecure employment – so called poor work – means that for some people getting a job will not constitute a step on a ladder up and away from poverty.

While many of us in different walks of life may be feeling the effects of the credit crunch, people in temporary work or in low-paid jobs without hope of progression are well used to harsh times. For them the low pay/no pay cycle is a way of life – a result perhaps of competitive pressures and business needs, but unsatisfactory nonetheless.

Now a new project, which builds on the University's previous studies of the lives of young adults living in the Teesside area, will explore the phenomenon of 'recurrent poverty' and the social exclusion which tends to follow on. Recurrent poverty refers to the experience of individuals and households moving into and out of poverty over a period of time when they may find themselves in low-paid jobs – which tend not to last – followed by periods of worklessness.

All too often this pattern seems to become established amongst certain groups of workers. So the research, funded by the Joseph Rowntree Foundation, will look in detail at the problematic 'low pay/no pay' cycle and will try to understand how recurrent poverty becomes the norm amongst the working population.

Adults aged 30 to 55 who are in the labour market but are nevertheless trapped in poverty will be studied using in-depth, biographical interviews, says lead researcher Dr Tracy Shildrick, from Teesside University Youth Research Group based in the School of Social Sciences & Law.

The research team, which also includes Professor Robert MacDonald of the University of Teesside and Dr Colin Webster of Leeds Metropolitan University, will question some 60 individuals about their working lives and try to build a broader understanding of their circumstances.

'We hope to shed light on the ways in which the 'low pay/no pay cycle' may add to people's cumulative disadvantage in respect of health, education and skills', Dr Shildrick said.

The approach will look at the ways in which people manage to escape recurrent poverty – and the implications for policy and practice development, she said.

Professor MacDonald said the study would help to understand how policy developments – such as the government's Employment Retention and Advancement programme and the Local Employment Partnerships 'jobs pledge' – were working, chiefly by offering a deeper understanding of the complex lives of poor people.

'Recent socio-economic changes make Teesside a particularly-interesting place in which to investigate recurrent poverty', Professor MacDonald said. 'We want to try and find out whether people ever escape recurrent poverty, how they do it, and if not, why not.'

Some 20 interviews will also be held with employers and other 'stakeholders' to gather their perspectives on the research questions and help build a fuller picture of these entrenched working patterns. The hope is that eventually, perhaps, the patterns may be broken.

Is employment the best route out of poverty? Social scientists are asking the question as part of a Joseph Rowntree Foundation-funded research project into the 'low pay/no pay' cycle facing so many people in the North East. ALISON UTLEY reports.

The working poor

Poorly-paid work is alive today and has not been banished from our parents' and grandparents' era. Photograph is taken from a 1950 edition of *Picture Post* and shows Johnnie McGuirl, 2nd left, a railway worker who earned an average of £4 15s 6d a week and found the rail canteen too expensive for a married man with three children on his wage.



Getty Images



A remarkable social enterprise project, which is about to celebrate its 21st anniversary, is attracting interest as far away as Japan owing to its hugely-successful approach to helping the homeless, as NIC MITCHELL finds out.

Helping the young **HOMELESS**

Community Campus '87 is a Stockton and Middlesbrough enterprise which now employs 36 people, has 30 volunteer workers and an annual turnover of £1.2m. And, since the late 1980s when it was launched, the enterprise has housed over 5,000 young people and bought 50 houses on Teesside.

Sociologists at the University of Teesside are now analysing why the enterprise has worked so well so that its formula can be replicated elsewhere.

'We want to elicit the success factors of Campus '87 – and consider the constraints on its future effectiveness', said Rob MacDonald, Professor of Sociology and a key member of the University's Youth Research Group.

Professor MacDonald said the idea for Community Campus came from young professionals disillusioned by working in the social welfare field and wanting 'to do good and get back at Thatcher'. And, although Campus '87 is now much more business orientated, it hasn't lost its people-centred approach, he said.

His fellow researcher, Judith Brown, agrees. 'Community Campus '87 is one of the North East's most long-standing social enterprises and is an excellent example of how to combine business principles with strong moral and

ethical values. It is a real inspiration and when a group of Japanese academics came to Teesside last year to look at social enterprises they were very keen to see Campus '87', she says.

Carl Ditchburn, Campus '87 project co-ordinator, pictured right with Judith and Rob, says, 'Looking back over the last 21 years, I am astounded by the vision, resolve, dedication and courage which has enabled us to build and sustain the size and scope of the current activity. I believe Campus has thrived on the sense of involvement and ownership of the young people we house and the leadership role they play in an organisation which is making a difference to the life chances of hundreds of young people across Teesside.'

The report, *Growing up with Campus*, is written with fellow researcher Judith Brown and is due out later this year. It will also be available online from Carl@cc87.co.uk



Everyone knows the tough times the construction industry is going through at the moment. One firm however is bucking the trend, and it is doing so by harnessing the highest standards of engineering research to protect the health and safety of workers.

Billingham-based Netting Services specialises in preventing deaths or serious injuries caused by falls at building sites. The nets and other safety systems supplied by the company are used by building firms throughout the country.

Three years ago, the company asked experts at the University of Teesside to ensure its equipment and fixing procedures met the exacting standards demanded in the industry.

However, instead of just getting their standards rubber-stamped, the company has found that its association with the University is helping it win new business.

'To enable us to prove a safe system of work, we have worked with the University to test specific situations', says Netting Services' Kevin Lloyd. 'For example, the University has looked at how much additional load a fall from a specific height into a net will add to the structure onto which the net is secured. This is very important in, for instance, domestic construction, where the net will tend to be fixed to the building that is being worked on.

'The University's work allows us to let the client know our imposed loads on their structures and enables us to prove our fixings are capable of taking these loads.'

The project was facilitated by Knowledge House, an organisation which works with all five North East universities to promote partnerships with local companies. Testing was carried out in the University's Materials Suite and Heavy Structures Laboratory under the direction of Dr Paul Shelton and Senior Technician Tony Bonner. 'This type of work is a win-win scenario for industry and the University', says Dr Shelton, now Assistant Dean with responsibility for promoting business engagement.

'Students can benefit from these collaborations and one of our final-year students has been heavily involved in testing the netting. Being able to provide this kind of hands-on industrial experience is invaluable to students and it is one of the factors that was instrumental in mechanical engineering at Teesside coming top in the country in *The Guardian* league table.'

'It was a great experience', agrees 23-year-old Neil Rees Davies, a final-year undergraduate student who did much of the testing work and who has just graduated with first-class honours in mechanical engineering from Teesside.

'The fact that the project had such practical, life-or-death implications helped me realise how responsible engineers have to be.'

Pictured, L-R, Kevin Lloyd, of Netting Services, Julian Taylor, Technical Director of Structherm Ltd and Tony Bonner from the University of Teesside

Safety NETTING

Expertise at the University of Teesside has helped a building firm win new business despite widespread recession in the construction industry, as DAVID WILLIAMS finds out.

When danger lurks

IN THE PALM OF YOUR HAND

It may only be a small piece of equipment, but the hand-held device underlines the massive task facing Angus Marshall and his team from the University of Teesside.

At first glance, it looks like a mobile phone, but it is actually a web-enabled computer small enough to slip into your pocket.

Mr Marshall, Senior Lecturer in Forensic Science, said, 'Devices like this illustrate just how rapidly technology is developing.'

'Computer hardware changes every 18 months, sometimes more often than that, and software changes even more quickly.'

'The problem is that the latest trend in digital crime is targeted at hand-held devices. Investigators have to keep up with these changes in technology and understand that just as they provide great opportunities for people using them, they also provide opportunities for criminals.'

Those abuses can include using mobiles to spread viruses, hacking into personal files to steal identities and perpetrating scams.

To help law enforcement track down the criminals, Teesside University offers courses on preserving, retrieving and interpreting evidence of digital crimes.

The latest tool to support this work is the University's new Digital Evidence Lab, opened earlier this year by the Home Office's Forensic Science Regulator, Andrew Rennison.

Mr Marshall said, 'This is one of the largest facilities of its type within any university in the UK and should not be viewed as a student-only domain. It can be used for research and supporting police forces and other organisations with their training and casework investigations.'

'A big advantage is that it has an isolated network so we can release the kinds of nasties that are out there on the internet without putting anyone at risk.'

The team has also been looking at a range of ways to predict internet crimes.

This work is based on the idea that all online use leaves a trace, and that analysing the resulting patterns can lead investigators to predict incidents such as virus attacks before they happen.

This is becoming increasingly important because organised crime gangs use the internet to run lucrative rackets including child pornography, money laundering, drug dealing, fraud and identity theft.

Angus Marshall's book, *Digital Forensics*, is being published by Wiley-Blackwell.



The latest trend in digital crime is targeted at hand-held devices

Strengthening engineering links

Links between engineering companies and the University of Teesside have been strengthened with the signing of an agreement for the University to provide training, skills development and technology transfer directly to the Tees Valley Engineering Partnership (TVEP).

The Partnership of over 60 companies recently set-up a limited company, called Teesside Engineering Alliance, and moved its base to the University. One of its subsidiaries is responsible for workforce development and this will be led by the University.

Professor Simon Hodgson, Dean of the School of Science & Technology, said, 'Companies will be able to access us directly through TVEP if they need to and we will be appointing a workforce development account manager who will work part time for them as their education co-ordinator.'

'I think this marks the start of a new kind of university-business relationship and will give local manufacturers unprecedented access to technology support, along with the opportunity to work closely with us and other providers to ensure that education and training needs are met by developing customised packages for Alliance members.'

Robin Davison of The Wolviston Group, one of the partners, said, 'We believe this is a ground-breaking partnership with the University and the first of its kind for the UK'.

For more information contact Dr Paul Shelton, Assistant Dean (Education Partnerships and Opportunities) and a director of the Teesside Engineering Alliance, on 01642 342497, email p.w.shelton@tees.ac.uk.



Blowing the WHISTLE

The concept of whistle-blowing is well-established and its practitioners vividly portrayed in print and on screen. Films like *Silkwood*, *Serpico* and *The Insider*, which drew on Michael Wiegand's revelations about the US tobacco industry, have given whistle-blowers a heroic tinge. British examples include Clive Ponting, the civil servant who became an academic after being cleared of all charges under the Official Secrets Act in the mid 1980s. HUW RICHARDS reports.



**I don't want yes-men around me.
I want everyone to tell me the truth even if
it costs them their jobs – Sam Goldwyn**

**Whistle-blowers can make a real difference – Enron
and Worldcom's spectacular financial abuses were
revealed by disillusioned members of staff.**

Little wonder they have attracted academic as well as media and Hollywood attention. But John Blenkinsopp, Reader in Management in Teesside Business School, argues that focusing exclusively on whistle-blowers tells only half the story.

He says the question which needs asking more often is not why whistle-blowers do what they do – there has been a lot of work on that – but why most people who become aware of wrongdoing and abuses remain silent.

As a former National Health Service manager, he cites the example of the enquiry into children's heart surgery at Bristol Royal Infirmary which found many staff had serious concerns about the way the unit was being conducted, but didn't speak up.

His research on the subject has led to international collaboration with partners in Australia, Turkey and Korea, articles in the *Journal of Business Ethics* and a book chapter.

There are, says Blenkinsopp, 'considerable incentives for individuals to learn to accept the unacceptable'. The work of American political scientist Fred Alford, author of *Whistleblowers: Organisational Power and Broken Lives*, has revealed just what a bad career move blowing the whistle can be. Some of the best-known cases illustrate this. Israeli Mordecai Vanunu has spent most of the 22 years since he revealed his country's secret nuclear programme in gaol. Ponting was put on trial and Alford's own research shows that around 50% of whistle-blowers lose their jobs, a third their marriages and a quarter their homes.

Blenkinsopp is fond of quoting the legendary American film magnate Sam Goldwyn's remark 'I don't want yes-men around me. I want everyone to tell me the truth even if it costs them their jobs.'

As so often Goldwyn's idiosyncratic formations – he was also credited with offering 'a definite maybe' and warning that 'verbal agreements aren't worth the paper they're written on' – betray a deeper truth.

Whistle-blowers who expected official gratitude for exposing wrongdoing are famously wont to discover that it is they, and not the abuser, who are regarded as the problem.

But as Blenkinsopp points out, there are grey areas in this. 'A manager seen by one person as a bully might be regarded by another as a firm and active manager. At what point does smart financial management become cooking the books?'

These ambiguities apply to the individual as well as the organisation. A question any potential whistle-blower will ask themselves is 'while I can see what I think I see, how dodgy is it?'

Describing his work with Australian academic Melissa Edwards on employee silence, Blenkinsopp quotes the Cowardly Lion in the *Wizard of Oz*, who after explaining his brave plan to rescue Dorothy says to the other characters that he only needs them to do one thing – 'Talk me out of it'. In the same way, he argues, employees with concerns 'are very often keen to talk themselves out of doing anything. They will ask themselves whether the problem really is serious, whether they are the person who should be doing anything about it, what the consequences of their doing so might be and if anything will change anyway. The answer to any of those might be seen as a reason for doing nothing.'

Does any of this really matter? Blenkinsopp, pictured below, acknowledges widespread distaste for 'sneaking'.

It is, he acknowledges, sometimes possible that whistle-blowing may be personally motivated. 'But the fact that somebody is regarded as a malcontent does not mean that they are not raising legitimate issues of concern.'

He argues that companies need to create mechanisms which allow employees to raise worries. 'They need to know two things – that their complaint will be considered by somebody at a senior level, and that it will be taken seriously. Too many companies consider complaints in terms of how the person making them is regarded – those coming from people who are regarded as moaners, or simply too junior, may not be taken seriously.'

But such mechanisms need to be part of a management culture which is open to comment and criticism from below. Such an attitude, Blenkinsopp argues, would benefit the companies more than anybody. He points to two examples. 'In the airline industry the Australian airline Qantas has an excellent safety record. One reason sometimes cited for this is that Australians are famously not deferential, so staff at any level are willing to raise concerns which can alert their superiors to potentially serious problems.'

And he cites his own memories as a young lab technician at ICI. 'They had a highly-intelligent and qualified staff, many of whom had ICI shares and watched closely how the company was developing. Many of them had deep misgivings about the strategies adopted by the company in the early 1990s, and clear ideas about what the company might do to survive and prosper, but their views and concerns weren't heard. The Board was only interested in the views of the City.'



As Animex International Festival of Animation & Computer Games prepares to celebrate its tenth anniversary, the event's Director CHRIS WILLIAMS is focused firmly on the event's future, as Michelle Ruane finds out.

10

years in the

SPOTLIGHT

Animex has evolved from the drawing board to become one of the biggest festivals of its kind in the world – bringing the cream of international animation and computer games talent to Teesside.

From animation legend Ray Harryhausen, whose stop-motion artistry revolutionised a genre, to Pixar's Mark Walsh, one of the brains behind *Finding Nemo*, Animex has continued to bring to Teesside the best in established and emerging industry talent who have provided expertise for countless award-winning animation, games and box-office movie hits.

The very first Animex – a one-day event at the University of Teesside in 2000 – was organised in just two months after Chris Williams took a call from the organisers of the British Animation Awards, who wanted to know if the University planned to submit any films. Chris asked if they were screening in the North East and after hearing that they didn't have a venue, the seed was sown for Animex.

Chris, Principal Lecturer in Animation at the University, said, 'Seeing this opportunity I approached colleagues and then my boss, whose initial reaction was to take a sharp breath. We managed to get some cash from the University to enable us to bring in animators from the UK to start what has become Animex.'

'We had film screenings and one day of talks. It was free and was packed out. It only seemed logical to do it again the following year. It has grown beyond belief.'

Animex now runs for a week and involves screenings, professional talks and workshops from some of the world's best-known animators and animation companies, computer games events, along with school and community activities. Emerging international talent is also showcased with the Animex Student Animation Awards which attracts entries from around 25 countries, including America, France and Germany.

Among his personal highlights of the past ten years of Animex, Chris points to Teesside honorary graduate Ray Harryhausen – 'he is so revered by everyone, being able to sit and have a chat with him was fantastic', welcoming the voice of Bart Simpson Nancy Cartwright along with Oscar and Bafta award-winning Bob Godfrey, and securing involvement from Pixar and Disney.

Chris said, 'In the early days it was more difficult to get people to come, but once we started to secure people who everyone knew it was easier. When you see we have the likes of Ray Harryhausen, Nancy Cartwright and Bob Godfrey, people in the industry understand that there is something going on.'

'A major breakthrough was in 2004 with Pixar. They had just released *Finding Nemo* and I found out that one of the senior animators, Mark Walsh, was going to be at a presentation in London. I went along and managed to grab him and invite him to Animex – I literally had a 30-second pitch.'

Impressed with what Chris had to say, Mark – who has worked on *A Bug's Life*, *Toy Story 2*, *Monsters Inc*, *The Incredibles* and *Ratatouille* – came to Animex and has returned three times to packed audiences.

Chris said, 'He keeps coming back as he has such a great time here. For somebody of his stature to take time out of his schedule with Pixar is a great testament to what we are doing.'

Animex also allows those involved to see the careers of emerging animators flourish, including Jason Schleifer who visited Animex in 2003 having worked on the hugely-successful *Lord of the Rings* and its equally big sequels *The Two Towers* and *Return of the King*. He went on to work on other big screen hits such as *Madagascar*, *Over the Hedge* and *Shrek The Third*.

David Sproxton, co-founder of Wallace and Gromit creators Aardman Animations



Regular Animex visitor Mark Walsh was joined in 2005 by Pixar colleague Rob Russ, with whom he worked on *The Incredibles*

Voice of Bart Simpson,
Nancy Cartwright appeared
at Animex in 2003



**I was thinking about
2009 two years ago
with a view to making
it a spectacular and
memorable occasion
for all involved**

Chris said, 'I have to admit that despite my ambitions for the event, I didn't expect that ten years later we would be where we are now'.

He added, 'A lot of educational outreach work is done during the year, along with work with councils and other education providers. It is about inspiring the children of Middlesbrough and encouraging them to see that they can work in an industry which they might not have considered otherwise, and at the same time letting them see that the University isn't such a scary place!'

Plans for the tenth anniversary of Animex, to be held from 2-6 February 2009, are now being drawn up with announcements expected as the event approaches.

Chris said, 'Once again we've got some very big names lined up, and because it's our tenth year, we're being very ambitious. We took eight weeks to organise the first Animex, but now the organisation is a year-round activity. I was thinking about 2009 two years ago with a view to making it a spectacular and memorable occasion for all involved.'

For more information about the 10th Animex International Festival of Animation & Computer Games visit www.animex.net

Collective looks set for more film success

More animation success looks set to be heading Teesside's way with the latest film by Linchpin Productions, the collective of staff, students and graduates from the University's highly-rated School of Computing.

Bus Stop Boogaloo is a quirky, four-minute animation with richly-textured backgrounds, endearing characters and an unusual flat cut-out style. The film was originally conceived while writer/director Gus Hughes, from Dublin, was completing his computer animation degree at the University of Teesside in 2007.

He teamed up with fellow talented graduate Paulina Brinck, from Sweden, who took on the role of animator/editor to develop the idea. And after a successful one-minute pilot about the central character, a 75-year-old granny, the team expanded to include Digital Music graduate Steve Hancock, from England, who looked after the sound, and fellow Dubliner Aodhan O'Brien, who did the special effects. Senior Animation lecturer Siobhan Fenton was the producer.

Siobhan said the film project received financial backing from the DigitalCity Fellowship scheme and the UK Film Council and was made using the University's new TV and sound studio.

'I think the stunning designs and distinctive script will impress the judges at international animation festivals. We're entering *Bus Stop Boogaloo* into all the major events and hope it will follow in the footsteps of *Emily and the Baba Yaga*, which won a prestigious Royal Television Society award in 2006.

'The new film is about a man at a bus stop trying to resuscitate what he thinks is a granny having a cardiac arrest. But all is not what it seems and a bus full of commuters soon get the wrong idea! 'The pilot film *The Big Push* also featured the same granny – this time struggling to push a pram up a hill and the next moment coming flying down inside the pram.'

Siobhan says if *Bus Stop Boogaloo* is as successful as they hope, the next step is an internet series based around the granny character, aimed at the young at heart. 'I am sure they will enjoy watching our character getting up to all sorts of mischief.'

- As we were going to press, *The Big Push*, directed by Siobhan's partner Ian Fenton, designed by Gus Hughes and animated by Paulina Brinck had been short-listed for the last 12 in the Virgin Media Shorts national competition, which attracted 1,400 entries.



It's such a simple idea you wonder why no one has thought of it before. Put a low-cost laser into the handle of an ordinary saw and it becomes a precision tool that will show you exactly where it is going to cut, as DAVID WILLIAMS found out when he met the University inventors behind it.

The saw that shows you where you're going



They call it the Predator, and this latest product from tool manufacturer Spear & Jackson is now in the shops. With no fancy fixing and no power leads, this revolutionary product is a basic handsaw with a laser concealed in its plastic handle.

With a beam to show you where the saw will go, you can start your very first stroke certain that you know where the last one will end.

Even the most hopeless DIYer will see any deviation from the right line. And in difficult situations, such as working with rough or wet timber or when cutting two angles simultaneously, it will enhance the skills of even a master carpenter.

While lasers are sometimes included in expensive precision power tools, no one before seems to have considered using the technology to enhance the performance of one of the most basic tools going.

And for Brian Wilson, Director of the University of Teesside's D-Lab and leader of the team that created the Predator, it is no accident that the idea came from a university.

'Perhaps unlike commercial product designers, we are not embarrassed as academics to go back and ask the most fundamental questions', he says. 'In this case we asked ourselves what a saw really has to be. This made us realise it has to be more than simply sharp and straight: to work well it also has to be accurate. Until now this accuracy has been located in the experience and skill of the user; now it's in the saw.'

'It seems a simple idea, but it is not just a question of marrying a laser with a handsaw. It has to be manufacturable, cost-effective and marketable in an incredibly-competitive business environment. By working closely with Spear & Jackson we were able to create a product which we all believe will revolutionise the market for this simplest-of-all woodworking tools.' The real benefit to us is that the D-Lab team can bring a fresh pair of eyes to product design', agrees Tim Hearn, Marketing Manager of Spear & Jackson. 'Where we might innovate by changing the teeth profile or making a minor ergonomic adjustment to the handle, they can go back to basics and ask the simplest of questions without their minds being clouded by years of experience. And, while we did talk to other universities and to independent product-design agencies, what set D-Lab apart was the enthusiasm and passion they showed for what they are doing.'

The actual inventor of the Predator was 26-year-old D-Lab designer Gordon McWilliam. 'It was the idea of accuracy that really set me thinking', he says. 'I realised that to gain accuracy you usually put down the handsaw and move to a laser-guided power tool. I jumped on that thought and within an hour I had strapped a couple of batteries and an off-the-shelf laser onto one of the company's saws. This is the first time I have seen a product go from the crudest prototype to a fully-marketed and manufactured product and it is such an amazing feeling. What's more, we are working with Spear & Jackson on other products which we hope will have a similar impact.'

Award for bright idea



Maureen Scott's job is to go into homes and bathe the ulcerous legs of patients unable to do it for themselves.

But the standard procedure – getting the patient to put their leg into a bag-lined bucket of fluid – is fraught with difficulty. People with poor mobility have a huge struggle to lift their legs high enough, while the community nurses have to deal with the weight of liquid and the possibility that much of it might spill and spread contamination.

So when Maureen had an idea to make life easier she submitted it to NHS Innovations North, who then got in touch with the University of Teesside to find out if it could be taken further.

Brian Wilson, Director of the University's D-Lab, explains, 'It seems simple now, but it was a very

tough problem to solve. We knew other teams had failed before us, and it took five months to find a solution.'

Eventually, however, and with more input from Maureen, the D-Lab team were able to satisfy all the parameters and the new product won first prize in the Innovation Technology or Device Category at the NHS Bright Ideas Awards 2008.

'It was an absolutely fantastic evening', said Maureen, who attended the event with the D-Lab team. 'I never thought we would win as we were up against people as eminent as the head of physics at a major hospital.'

Brian added, 'Winning the award shows how important the central involvement of the end user is to good design'.



MALMO lessons for Middlesbrough?

Modern history postgraduate students from Malmo, a city of 250,000 on Sweden's southern coast, are undertaking a joint research project with their counterparts from the University of Teesside to investigate how urban regeneration is being tackled on either side of the North Sea.

Both Malmo and Middlesbrough suffered from the sudden collapse of traditional industries after mid-century prosperity. But the way the former Swedish shipbuilding capital revived itself may have lessons for the North East. To find out, parties of staff and

master's students from both cities have visited each other.

Dr Natasha Vall, lecturer in modern European history at Teesside, said the two groups of students worked on an MA History module called North European Cities – Space, Place and Identity.

'Working together, the students are looking at regeneration, identity, culture and memory and comparing the two cities. By exchanging information and visiting each city they will be able to tap into the experience of arriving in and seeing their own city as a visitor,' she said.

The Swedish students, pictured above, noted one immediate difference: Malmo began renewal

with a brand new university on the main former shipyard site while Middlesbrough re-located its football club to the Riverside Stadium. Now, with the Middlesbrough Institute of Modern Art (mima) and the new Middlesbrough College campus at Middlehaven, the two regeneration schemes may be moving closer to each other.

Robert Nilsson, 28, said, 'Compared to Malmo, Middlesbrough seems to be an inverted city with working-class housing in the centre and richer areas on the outskirts. It is the other way round where we are from. Malmo has changed its image through education, design and being high-tech and we are looking to see if this could work in Middlesbrough.'



FAIM comes to Teesside

Teesside will become the focus next summer for world experts from the business sector and academic research in harnessing the best computer input in manufacturing.

The 19th International Conference on Flexible Automation and Intelligent Manufacturing (FAIM 2009), hosted by the University of Teesside and co-sponsored by the Institution of Mechanical Engineers, will take place on 6-8 July 2009.

It is targeting key figures in industry and science to forge strong links and share the latest thinking, developments and good practice. The main theme

is lean manufacturing and service but other topics will include sustainable enterprise, globalisation, lean thinking and adding value.

Professor Farhad Nabhani, who will chair the event, said, 'Manufacturing covers a wide spectrum of activities, products and services, which are being improved and strengthened by rapidly-changing technical sectors. FAIM 2009 will be an international forum aiming to share the latest developments and facilitate the transfer of ideas into practice.'

Further information: www.faim2009.org/



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We can look to see, for instance, whether wearing boots that are too tight creates greater stress on the metatarsal

‘I just want England to win the World Cup’, says IAIN SPEARS. He is hardly alone in that desire. But, unlike the vast majority of football fans, he can offer more than exhortation or prayer in advancing the cause. Huw Richards reports.

Tackling the fractured

METATARSAL

Iain Spears believes he can come up with a method of preventing – or at the very least reducing the incidence of – that most fashionable of football injuries, the fractured metatarsal. It is a mishap which entered the national consciousness when David Beckham was hurt shortly before the 2002 World Cup and embedded itself firmly when Wayne Rooney was similarly afflicted in the run-up to the 2006 tournament.

Spears, Reader in Biomechanics at the University of Teesside and a prolific inventor, explains that there are five metatarsals among the small bones which make up the complex mechanism of the human foot.

He says, ‘We don’t really know what causes metatarsal fractures, but they appear to be overuse injuries which occur more frequently towards the end of the season’.

Different groups of sportsmen are particularly prone to specific fractures. ‘Long distance runners get injuries to the second metatarsal, which also occur frequently among army recruits who do a lot of marching. Footballers – and American

footballers as well – suffer particularly from injuries to the fifth one. As it happens neither Beckham’s nor Rooney’s was a fifth metatarsal break, which may be why they both recovered more quickly than initially forecast. One reason why a fifth metatarsal fracture is particularly feared by footballers is that it can take a long time to heal.’

As Spears seeks an explanation for this scourge of Premiership stars, his suspicions focus on their boots – and in particular the way that modern players regard them. ‘I have talked to Middlesbrough’s physio. He tells me that many Premiership players wear new boots for every match. The manufacturers want to see their boots looking good and their logos as clear as possible on television.’

It is a very different attitude to the amateur footballer, for whom boots are an annual – or still less frequent – purchase to be treated with care and conserved for as long as possible.

Spears has teamed up with researchers at the University of Salford to create simulations of the impact on the foot of different types of boot. ‘We can look to see, for instance, whether wearing boots that are too tight creates greater stress on the metatarsal. We’ll look at the differences in the stiffness of the sole or of the material making up the outside of the boot. It may be that modern lightweight materials, though advantageous in other ways, make players more vulnerable. Another possibility is to reduce pressure by changing the alignment of the studs.’

While the manufacturers do research of their own on such issues, they are inevitably wary of sharing commercially-sensitive information. Spears is in the process of applying for research funding for a project not only to increase understanding of the human body and its fragilities but also to look at the significant implications for such a high-profile industry.

football PASSION

under the microscope

If a tradition of heavy industry and a distinctive regional accent are the main signifiers of North Eastern identity, then a passion for football comes in a good third.

Half a century ago Arthur Appleton, a veteran observer of the region's clubs, identified this in the title of his history *Hotbed of Soccer*. More recently, Teessider Harry Pearson showed early evidence of his talent for mixing sport with acute humorous social observation in his *The Far Corner*.

Now the region's fans have come under academic examination. And sociologist Kevin Dixon, lecturer in sports studies at the University of Teesside, has added some fresh nuances to that traditional image of dedicated fanaticism.

Enthusiasm certainly remains. Among the 450 fans Dixon surveyed, 81% said that their

club was an important part of their identity, only just behind the numbers for nationality and home town.

But that support is not always expressed in the manner generally expected, Dixon says. 'Only 46% said that attending live matches was an important indicator of "real fandom". I'd have expected that to be a lot higher.' One reason, he suggests, is that 'Most previous studies have concentrated on extreme fans – hooligans or the sort of fanatic who never misses a match. I'm interested in getting a broader view of fan experience.'

While doing the study online may have had some impact on findings, he was also struck by the extent to which those fans regarded the internet as the most important source of news – '55% use the internet, more than use newspapers, television and radio combined. They divided evenly between users of official and unofficial club sites and there's evidence that the fans like unofficial sites because they

feel a sense of ownership in them – they can contribute to the sites where they are mostly passive consumers of radio and television.'

He found fans of the region's smaller teams, Darlington and Hartlepool, were happier about their relationship with their clubs. Followers of the big three (Middlesbrough, Newcastle and Sunderland) were particularly prone to feel they were being charged too much and Dixon points to Middlesbrough's recent introduction of low-priced season tickets for young fans as an intelligent response.

He has now extended his research, conducted via his website football.tees.ac.uk, to fans across England and Wales and also already sees scope for a potential follow-up. And he says, '76% say they build their schedules around going to matches or watching them on TV. There's something to be learnt here about the family members and others who are not fans, but are affected by this. There are a lot of football widows and widowers out there.'

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Fans of the region's smaller teams, Darlington and Hartlepool, were happier about their relationship with their clubs





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