

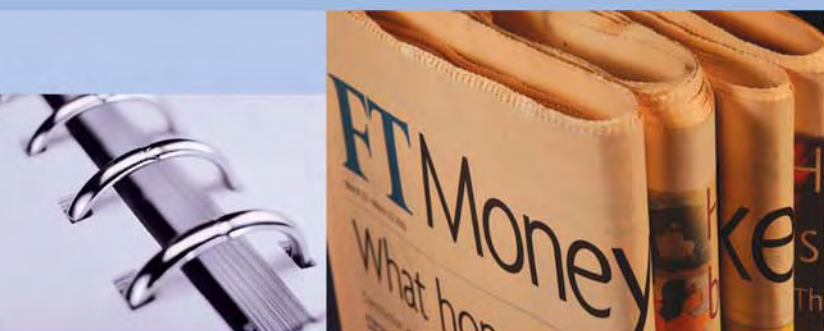
RESEARCH AND ENTERTAINMENT

A UNIVERSITY OF TEESIDE MAGAZINE ISSUE SIX



Enterprise

it's what we do



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Welcome to the sixth edition of our magazine *Research and Enterprise*, which comes out against a backdrop of major national and regional developments.

A new government Department for Innovation, Universities and Skills, major initiatives at regional and national level on closer engagement with employers and the continuing development of the Tees Valley city region as a force for economic growth, all mean that the University's role in meeting the needs of business and contributing to economic prosperity will be of critical importance to our future plans and activities.

But Teesside is a University which has always taken this aspect of its work very seriously, and I am delighted that the stories we bring you illustrate how we have already been working to ensure our research and business development work are both of very high quality, and of direct relevance to the people, businesses and organisations we serve.

These are exciting times here on Teesside with our new Institute of Digital Innovation (IDI) coming on stream as an engine to drive the region's DigitalCity regeneration project and give business access to the digital talent and expertise of our staff and graduates.

Generating new businesses on the back of academic knowledge is a key goal for this University and I'm particularly pleased to have this opportunity to exemplify this through a major 14-page report on the IDI and the scope and depth of the digital work of our University.

The IDI's interdisciplinary focus will see construction experts working alongside virtual environment experts, designers alongside entrepreneurs and researchers alongside business developers. And as the physical home to digital businesses, research teams, commercialisation teams and DigitalCity Fellows, the IDI will be much more than just a hi-tech building. It's a collaborative space on campus allowing business and academe to work together directly in developing the ideas and the applications that will lead to business growth on the one hand, and enhanced academic knowledge on the other.

The IDI embodies Teesside's approach to research and enterprise. It's an approach that I firmly believe is paying dividends and I am sure that when you read this magazine you will agree.

Professor Graham Henderson
Vice-Chancellor
University of Teesside

ECO

GREEN COATING FOR FLIGHTS



Environmental concerns mean the next generation of aircraft will need more powerful electrical generators to reduce weight and improve fuel efficiency. And material scientists at Teesside are playing their part by developing a wiring coating capable of withstanding very high temperatures without melting, as part of a government-backed research programme. **KEITH SEACROFT** reports.

It may be only a plastic sheath to most of us non-electrical specialists, but the covering round the wires in any cable, circuit, plug, component or appliance is the difference between success and disaster.

It's there to keep the wires apart and the current on track. If it fails, there's a short circuit causing fuses to blow, machines to stop and systems to break down. It's bad enough when the fault blacks out your reading lamp but when the wiring is inside a jet engine, generating power for all the electrics in an aircraft, this thin coating becomes a life-support system for all on board. This is why careful research goes into every aircraft component.

And the 21st century is bringing about a new era of air travel where safety is joined by environmental concerns. The UK's former Department of Trade & Industry (DTI) has funded a major technology research project with 16 companies, including Rolls-Royce plc and Goodrich Power Systems, and academic teams from several universities. The overall research programme, called *Advanced Electric Machines through Materials*, sets out six key challenges, all concerned with the two principal requirements for motors and generators – magnets and coils of wire. They have substantial implications for eco-friendly flying, as well as other forms of travel and manufacturing.

Wiring insulation is one of these themes and scientists and engineers at the University of Teesside are working on the solution - a new nanocomposite material, part-plastic, part-ceramic, to replace traditional coatings.

Designs for future aircraft, such as the Boeing 787, will have to be more eco-friendly and carry a much greater range of electrical and electronic systems, for example, in place of the heavy hydraulics that operate flaps on the wings.

These changes will reduce weight, improve fuel efficiency and help reduce emissions. They will also result in more responsive, safer and ultimately cheaper systems. But they need a significantly bigger on-board source of power.

The best place to locate the generators is inside the jet engine, but with traditional materials and methods, the magnets and wiring used for generating power cannot withstand the high temperatures which could exceed 500°C. Existing exotic plastics will go as far as 200°C, but that's their limit. To date this has been an insurmountable obstacle for designers and engineers.

The Teesside team, led by Professor Simon Hodgson, Dean of the University's School of Science & Technology and head of its IDEAS Institute, is developing a coating that will work in such extreme conditions.

His team started work on the DTI project at Loughborough University but moved as a group to Middlesbrough, both to be nearer the chemical process industries and manufacturing opportunities, and to take advantage of new University research facilities. To meet the extreme demands of this application they have devised a new material, known as a 'ceramer', incorporating characteristics of ceramics and polymers.

'The coating needs to be thin but strong, and stable both at high temperatures and under the high forces produced in a rapidly-rotating generator', says Professor Hodgson. 'It has to be very robust to survive the production process and the operating environment, whilst being thin and flexible enough to allow the wire to be tightly and compactly coiled as a component of the generator. And it must have an even thickness and no holes that would cause a 1,000-volt short circuit.'

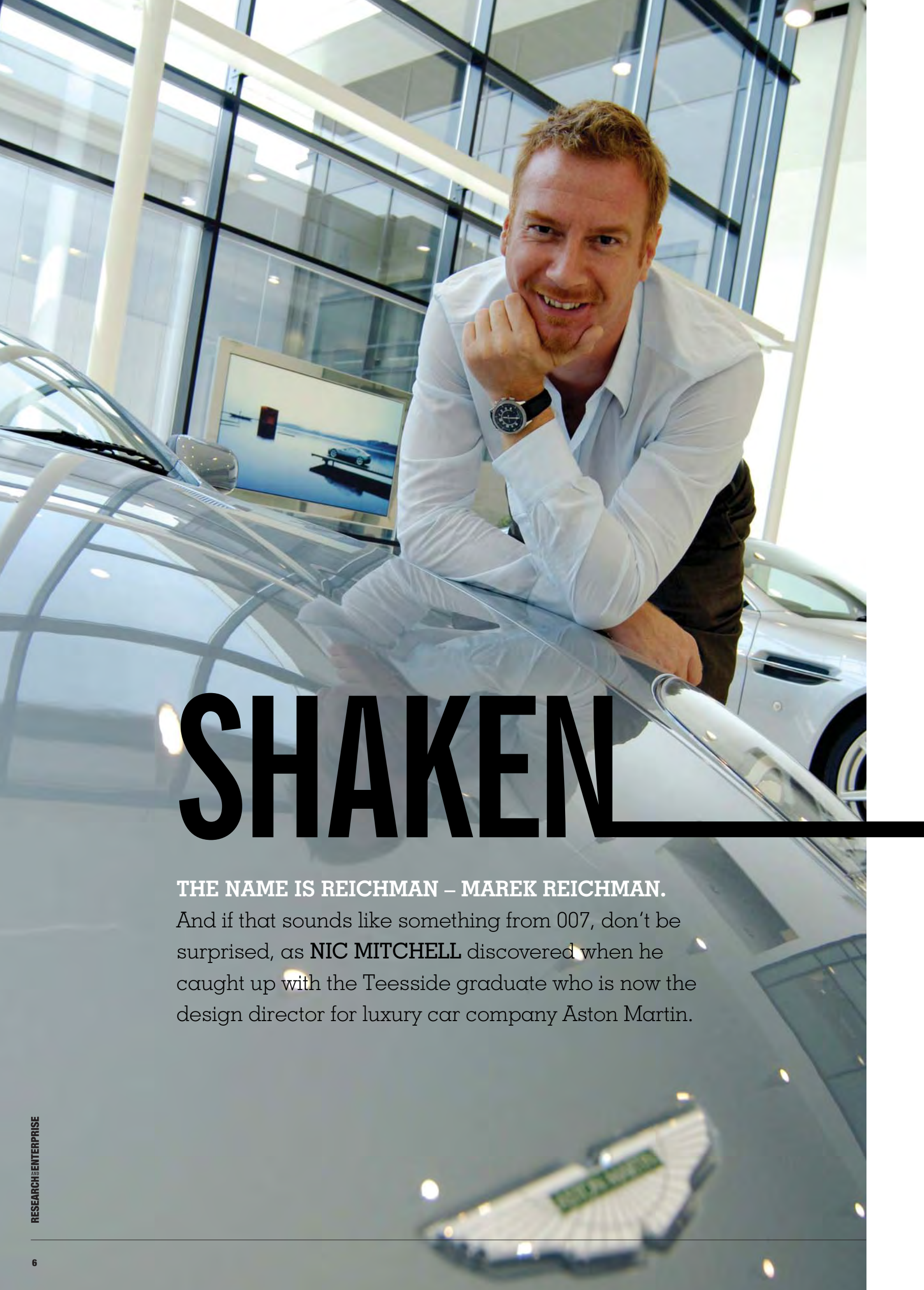
Professor Hodgson likens the properties of the ceramer to 'a soft pencil-lead' that covers the core copper wire to micrometer-scale thickness – a fraction of a hair's-breadth. It is being developed in a high-precision chemical engineering operation. This crucial step – which is Teesside's speciality – is called a sol-gel process. It takes individual molecules of polymer and ceramic and constructs them chemically in solution, where they react together. Initially the product of the reaction is flexible like a polymer, and is suitable for coating the copper and allowing the completed wire to be coiled. In the high temperatures inside the engine, it undergoes a chemical change, 'a controlled decomposition', and the hard ceramic-like qualities take over.

'Although our work at Teesside is specifically geared to allowing power generation in aircraft at higher temperatures, it will have other uses', says Professor Hodgson.

The overall research programme has a broader objective and will have far-reaching benefits for motor transport and other applications in industry and the home.

But above all it will be another step towards achieving the goal of flying greener.



A man with short brown hair and a light beard, wearing a white long-sleeved shirt and a dark watch, is leaning over the hood of a silver car in a modern, brightly lit showroom. He is smiling and resting his chin on his hand. In the background, a large window reflects the interior, and a computer monitor displays a car image. The word "SHAKEN" is overlaid in large, bold, black letters.

SHAKEN

THE NAME IS REICHMAN – MAREK REICHMAN.

And if that sounds like something from 007, don't be surprised, as **NIC MITCHELL** discovered when he caught up with the Teesside graduate who is now the design director for luxury car company Aston Martin.

Designing a car for James Bond must be every boyhood dream come true. And so it was for Yorkshire-born Marek Reichman, who played a key role in producing the new DBS model that 007 drives in the latest Bond movie, *Casino Royale*.

We met after driving halfway across England to the ultra-modern Aston Martin 'factory' hidden away down a leafy Warwickshire country lane.

Looking more like a 21st-century castle, complete with moat and drawbridges, it could have been lifted straight from a Bond screen set. And after navigating our way inside (I was looking for the customer showroom – not realising that all Aston Martin customers are important and we needed the imposing VIP entrance) – we met our man.

Now head of design at Aston Martin, 41-year-old Marek, pictured, was in a lively and friendly mood having just got back from the *Le Mans* 24-hour endurance race. Aston Martin had won the GT1 class for the first time in 48 years and Marek was bemoaning the lack of coverage in the 'Fleet Street' papers for the British success story, much as you'd expect Bond to do.

It was a theme Marek returned to as he contrasted the British approach to enterprise and innovation with what he had found in the United States. Like many young enterprising graduates Marek was keen to make his mark, but found his room for expression restricted in the British car industry he entered in the early 1990s.

NOT STIRRED

His lucky break arrived after winning an in-house design competition following BMW's takeover of Rover. The prize: three months working in the Californian car market! Those three months in the States turned into three years as Marek lapped up the sun, lifestyle and refreshing enthusiasm for new ideas. And he returned in 2000 for five more years working on flashy American Ford models before landing his dream job with Aston Martin.

'People there are incredibly different. They might speak English, but their approach to innovation and risk-taking is a world apart. They like to celebrate success. We're too reserved. We don't do a lot of praise and tend to be a bit conservative. In America, I had people jumping up and down and giving me high fives. Everyone was so enthusiastic,' said Marek.

'That's what bugs me so much about the lack of positive publicity about us winning things. We live in a culture that just doesn't celebrate success, and that's why we end up with two lines in the *Daily Telegraph* for a UK victory at *Le Mans*, our first for 48 years.'

Marek was back in Middlesbrough last year to collect an honorary Master of Science degree from the University of Teesside – 17 years after graduating with a First in Industrial Design from Teesside Polytechnic.

Amazed at the new-look campus and shiny new buildings, Marek recalled with fond memories his time as an undergraduate here.

'I was just 19 and torn between industrial design and a career as a martial artist. I was very into being fit, but decided to move away to study design. Leeds was too close to Sheffield for me and I was impressed with the warm welcome I received when I met Bob Clay, Tim Platt and other lecturers at Teesside. They were so enthusiastic. That's important to me. It also was a fun place and I had a very good peer group, one of whom – Julian Wiltshire – is now working with me as one of the four Aston Martin designers. That's half our design team being Teesside graduates.'

He loved the degree's emphasis on product design. Of course, he designed a Porsche-type SUV, but he also came up with a dishwasher for single guys (he hates dirty pots in the sink) and a flat-screen TV. 'If only I had pursued that idea further, but perhaps it was ahead of the times', he recalls.

So what are his tips for making UK industry more enterprising and better able to compete with the US?

Well, apart from praising people with good ideas, he believes in shining a light on inventors. 'It always seemed bright and sunny in California. Although we can't do much about the weather in the UK, we can design the places people work in to encourage innovative thinking', he says.

His own all-glass surround design studio is open to every possible natural light source, and it overlooks the VIP showroom and its four top-of-the-range Aston Martin models which are also bathed in a sea of light.

Marek's 3Ds for good designers:

Dive in – that's where you research and understand your market and what you are going to do with the product

Design – that means thinking outside the box and trying to improve not just the aesthetics but also the functionality and uniqueness of the product

Develop – that's when you get your idea into manufacture.

Of course, you also need tenacity and the ability to be a fabulous team player, but without the 3Ds you are unlikely to succeed in your Bond-like mission to save British industry.



LESSONS IN REGENERATION

Following cars and flat-pack furniture comes another Swedish export capable of becoming an integral part of British life – the culture-led model for urban regeneration, writes **HUW RICHARDS**.

Malmo, a city of 250,000 on Sweden's southern coast, suffered problems similar to many of Britain's industrial centres as mid-century prosperity gave way to chronic recession and the rapid collapse of traditional industries.

But the way in which it has revived itself has lessons for North-east England as it seeks a similar route to renewed prosperity – symbolised on Teesside by the new Middlesbrough Institute of Modern Art (mima) – suggests Natasha Vall, a lecturer in modern European history at the University of Teesside.

Dr Vall, a native of Stockholm, pictured in front of mima, did her doctorate – just published by the University of Malmo as *Cities in Decline?* – on a comparison between Malmo and Newcastle. This year she is turning her focus onto Middlesbrough.

Katarina Friberg from Sodertorn University, Stockholm, will be joining her as Leverhulme Research Fellow for a comparative study of cultural regeneration in Malmo and Middlesbrough.

The two will also be organising an international conference to pull in the experience of other cities.

Dr Vall explains that initial attempts by Malmo, the cradle of Sweden's historically-dominant Social Democrat Party, to combat de-industrialisation were unsuccessful. 'In the 1970s the response was to offer state subsidies and expand the public services, but this did not work very well.'

In the 1990s Malmo found a better formula, whose flagship was the Konsthall gallery directed by Sune Nordgren. As Dr Vall says, 'Nordgren was a highly-effective self-promoter. He put on high-profile shows by artists like Keith Haring and Louise Bourgeois. People began to talk of Malmo as a cultural metropolis'.

Nordgren has moved on, and in 1998 became the first director of the Baltic in Gateshead, but renewal has continued in Malmo with the creation of a new university in the former shipyard area and an emblematic towerblock known as the 'Turning Torso'. Dr Vall is not



FINDING ONE'S OWN CULTURAL IDENTITY

To be an art historian might seem to be a job as far away from the tensions of everyday modern life as you could possibly get. However, Matthew Rampley, editor of the forthcoming *Cultural Heritage in Central Europe*, knows differently.

As he travels around Europe pursuing his discipline, he gets a close-up view of the intense national feelings that have so transformed its map over the past two decades.

He says, 'Newly-created states are using their art history as a way of asserting their identity' and he is sceptical about how well this works. 'It takes you back to a 19th-century form of nationalism and people arguing that there are "national schools" based on which country artists work in.'

He believes that ideas and styles have no great respect for national boundaries, but points out that the reaction of new states is understandable. 'When your history has been dominated by a much larger neighbour, you want to assert what makes you different', he says.

Professor Rampley, Assistant Dean for Research at the University's School of Arts & Media, sees this particularly when he works as a visiting lecturer at the Arts Institute in Tallinn, the capital of Estonia. There were violent clashes between protesters and police after a controversial Soviet war monument, pictured, was removed from Tallinn's city centre.

'A young generation of scholars is trying to rewrite the history of Estonia and rescue it from Sovietisation', he says. 'They're producing a six-volume *New History of Estonian Art* – the first came out last year.' Estonia also has a new national gallery to present the best of its artistic heritage, located in the elegant Kadriorg Palace in Tallinn. As Professor Rampley says, both projects have a problem – they have to decide who or what is Estonian.

Similarly, Slovenia, which emerged from Yugoslavia two months before Estonia gained its independence from the former Soviet Union in the summer of 1991, has complex issues to deal with. When it seeks to claim what it sees as its artistic heritage, it faces the contesting claims of other nations.

Early 20th-century architect Joze Plecnik, whose distinctive idiom contributed much to the charm of capital Ljubljana, was previously seen in relation to contemporaries working in Vienna. 'Now he is seen as distinctly Slovene, rather than just another Austro-Hungarian', says Professor Rampley. 'And then you have the 19th-century artist Jozef Tominc, also now claimed as Slovenian, but who is known to Italians as Guiseppe Tominc and has had major exhibitions in Trieste.'

This, though, is merely the modern expression of an old practice. Most of us would readily accept the identification, proclaimed by generations of German politicians and cultural commentators, of the Gothic style with Germany. Yet, as Professor Rampley points out, 'It actually has French origins and the building which originated the style was Chartres Cathedral'.

suggesting that cultural regeneration has solved all of Malmo's problems. 'There are still pockets of poverty and high unemployment.' It has, though, brought clear benefits that offer lessons for Middlesbrough and other cities.

She warns that Malmo did have advantages that Middlesbrough and North East England do not enjoy. 'Stockholm does not dominate Sweden as London does England. Malmo was able to raise its own taxes, to decide its own policies and to see them through without interference from the centre. You can't do that here.'

It also has the geographical good fortune of proximity to Denmark's prosperous capital, Copenhagen. It has been linked by a bridge since 2000. And while they did not bring the hoped-for revival, those job-subsidising measures in the 1970s and 1980s have had their benefits. 'It means you don't have the large numbers of people who are long-term unemployed that you have here.'

Malmo also had stronger traditions of participation in cultural events than England's north-eastern cities. Dr Vall warns that effective regeneration has to have local roots. 'You have to find your talent locally. You don't parachute in experts from London or abroad. You need local knowledge and legitimacy. Nordgren had spent the 1980s in Stockholm, but he was originally from Malmo – he knew, and was known in, the region.'

mima is still in its first year, but she has been impressed by what she has seen so far. 'There is an architectural similarity to the Malmo gallery. It also shares the advantage of being right at the heart of the city. The first exhibition had good reviews and was well attended, and one of the challenges is to get people here into the habit of going to events like this. It has a chance to be somewhere that reaches a lot of people and makes a difference to the district, not just a box put down in the middle of it.'

AN
UNHEALTHY

GROWTH

CURVE

Obesity is the root of numerous health risks, from heart disease to cancer. But obesity can also be life-threatening to pregnant women and has major repercussions for the health service as **ALISON UTLEY** reports.

Obesity is set to overtake smoking as the greatest cause of premature loss of life. So it comes as no surprise that maternal obesity is also on the increase, leading to more serious complications throughout pregnancy. The Confidential Enquiry into Maternal and Child Health, for instance, reported that 35% of all maternal deaths in 2000-02 were in obese women.

Until recently there was an absence of national, regional or local statistics on the extent of maternal obesity, making planning and budgeting for health services very difficult. But now research carried out by the University of Teesside shows that the problem is particularly acute in the North East and is putting a strain on health services there.

As a result, maternity services in the region are tackling obesity as a priority. Lead researcher Nicola Heslehurst, from the School of Health & Social Care, said the research team was alerted to the growing problem by anecdotal evidence from midwives and other staff in maternity units in the region who were extremely concerned about the apparent increase in numbers of women who are obese at the start of their pregnancy.

‘Doctors and midwives in the region have expressed concerns about the increase in complications that can arise when mums are obese’, she said. ‘One of the problems is that sometimes you can’t see the ultrasound scan of the baby properly in obese pregnant women and this can lead to clinical problems as well as being upsetting for the parents who are not able to see a picture of their baby.’

The researchers carried out interviews with all the maternity units in the North East. They found there were more obese mothers encountering problems during their pregnancies. This impacted significantly on the antenatal care requirements.

Diabetes and high blood pressure were common complications. But other difficulties arose from the additional procedures needed to monitor and manage obese patient care. One interviewee said:

‘The excess layers of fat make it more difficult to palpate to determine fetal lie when the mother is obese, and there are difficulties when doing ultrasound scans and listening to the fetal heart. During labour it is more difficult to pick up the contractions and fetal heart rate, and this can lead to misinterpretation of what is being picked up, which determines the outcome. For example the labour might be misinterpreted as being abnormal which could lead to an unnecessary change in the plan of action, caesarean etc.’

Another highlighted practical complications stemming from obesity. Obese women tend to stay longer in hospital, typically

five days, because they’re more likely to develop pre-eclampsia, or complications with wound healing and wound infections after surgery.

Many of the complications and restrictions addressed by the health-care professionals were significant throughout the entire pregnancy, the researchers discovered.

Reduced mobility also added to the risk factors and required more frequent administering of pain relief. Difficulties with lifting and handling for staff were also highlighted, along with the difficulty of administering pain relief and analgesia.

Professor Carolyn Summerbell, head of the University of Teesside's Centre for Food, Physical Activity and Obesity, said, ‘We’re not trying to blame or stigmatise obese pregnant mums and we would certainly not recommend that they go on crash diets. But our initial findings show reasons for concern, and there is a lack of weight management guidance and support readily available for obese pregnant mothers’.

The research uncovered a series of implications for maternity services, including:

- need for stronger equipment such as delivery beds to support heavy-weight mums
- reduced patient choice and discouraging home births
- more referrals to consultants rather than midwifery-led care
- ruling out the use of birthing pools or alternative delivery methods
- an increase in caesarean sections.

Professor John Wilkinson, Director of the North East Public Health Observatory, said, ‘We knew there was a problem with childhood obesity and with older adults but maternal obesity is something that has crept up on us. We had some evidence and were aware that heavier women were coming in to book a pregnancy, but we needed some hard evidence’.

Until the late 1980s the height and weight of pregnant women was regularly monitored, he added. ‘This became unfashionable in recent years as it was felt this caused unnecessary concern and worry to women who had gained a couple of extra pounds. But the study now recommends that a routine system of monitoring the height and body weight of pregnant mothers is extended to all maternity units.’

NICOLA’S RESEARCH WINS TOP AWARD



Postgraduate research student Nicola Heslehurst of Teesside’s Centre for Food, Physical Activity and Obesity recently gained a prestigious Student Researcher Award from the Association for the Study of Obesity.

The Association is the UK’s foremost organisation dedicated to the understanding and treatment of obesity.

It also highlights important research on the subject. Competition for the award was fierce this year. Nicola’s study measured rates of obesity amongst expectant mothers. The results

revealed that obesity is an increasing problem for mothers-to-be.

The study, which involved interviews with 33 health-care practitioners within 16 maternity units in England, also found that mothers most at risk of being obese tend to live in the most deprived areas.

Nicola said, ‘I am delighted to receive this prestigious award for my research and feel that it has provided me with an excellent opportunity to show the quality of the research being carried out here at the University of Teesside’.



OPENING UP THE 'IRONOPOLIS' ARCHIVES

No community is more identified with a single industry than Middlesbrough is with iron and steel and its history is worth preserving for future generations, writes **HUW RICHARDS**.

It was the discovery of local iron deposits on the Cleveland Hills along with new techniques to produce steel in the 1870s that turned Middlesbrough into the last of the great Victorian boom towns – growing from a population of 25 in 1800 to a few thousand mid-century to close to six figures when the Queen died in 1901.

In the 19th century Middlesbrough was known as 'Ironopolis' and by the 20th century the town and companies like Dorman Long became famed for building steel structures like the Tyne, Sydney Harbour and Auckland Bridges. In 1929 this single district was producing around one fifth of Britain's national steel output. An entire suburb, Dormanstown in Redcar, was built out of steel.

History has left that world behind, but it remains the decisive element in how Middlesbrough emerged and what it is like today. And much of that story is to be found in a giant archive in the keeping of the Teesside Archives which is being opened up with the help of University of Teesside academics Joan Heggie and Barry Doyle.

The British Steel Archive was gifted to Teesside Archives in the 1990s by the former British Steel Corporation (BSC). It contains

records dating from long before the formation of BSC in 1967 to the heyday of Dorman Long, the private company which came to dominate locally, and others like Bell Brothers, Bolchow and Vaughan and Cargo Fleet Iron and Steel Company.

The sheer size is daunting. Dr Heggie, research fellow in the School of Social Sciences & Law, says, 'There are about 600 linear feet of shelving and once everything has been taken out, classified, repackaged and cleaned it will take up around twice that'.

This is much more than a dry commercial archive. There are lease and partnership agreements and a wealth of material illustrating every aspect of the companies and their workers. Dr Heggie says, 'There are 20,000 pictures, 80 albums of photographs, 100 cinefilms, boxes of print blocks for catalogues, maps, plans and 16,000 engineering drawings, including the original blueprints for the Sydney Harbour Bridge'.

Following a University-funded feasibility study, she and Dr Doyle have put together a programme for opening up the archive to the public, preserving, conserving and cataloguing it. The whole project will cost around £1.5m. Corus, the successor to BSC, and Community, the union of the iron and steel industries, have each



KEEPING AHEAD OF INTERNET CRIMINALS

Coming up with ways to predict crime is the Holy Grail for police officers and it is especially difficult when it comes to the internet.

Now, a Teesside-led team is well on the way to cracking the problem, having gone back to the theories of investigation into more terrestrial crimes such as serial murders.

Their work is based on the idea that all online use leaves a trace and analysing the resulting patterns can lead investigators to predict incidents 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.

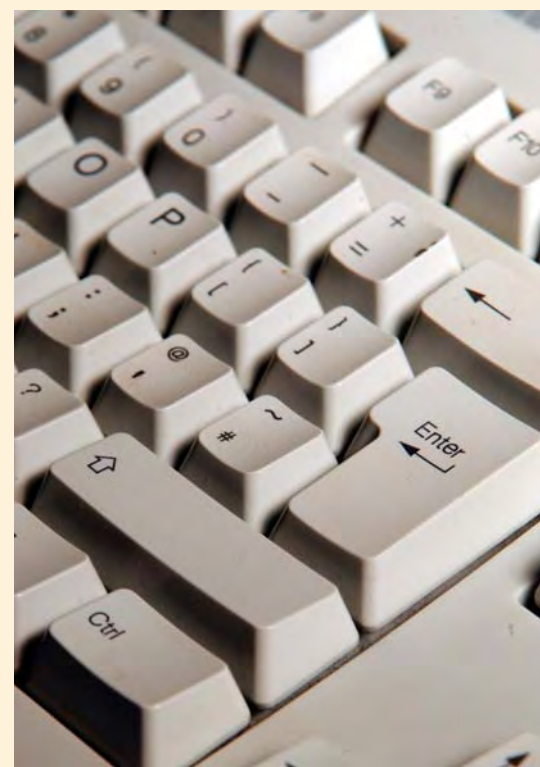
Leading the 15-month £150,000 project – funded by the Engineering and Physical Sciences Research Council and involving the Universities of Hull, Sheffield and Teesside, the Office of the Information Commissioner, Humberside Police and North Yorkshire Trading Standards – is Teesside senior lecturer in forensic science Angus Marshall.

He specialises in digital evidence and said, 'At the moment, we have to wait for internet activity such as computer viruses to become a noticeable problem. What we have done is devise mathematical ways of analysing patterns of behaviour so that we can work out when things are happening in their earliest stages'.

Viruses are a case in point. Public perception is that these are written by lone teenage hackers, hiding in their bedrooms. The reality is very different.

Mr Marshall's team is convinced that organised crime gangs are posting online 'kits' which help novices, known as script kiddies, to create new attacks.

'We think organised crime is doing this to create background noise which masks their own activities and distracts attention away from what they are doing', he said. 'What we want to achieve ultimately is to create a system that detects patterns of such criminal activity before it becomes too much of a problem.'



And to do that meant going back to basics. 'We took a step back and looked at the way investigators deal with conventional crime such as serial rapists or murderers', Mr Marshall said. 'It is possible to predict what kind of person is likely to commit the crime and the sort of geographical area they prefer. It is similar with the internet, except we have hundreds and thousands of possible suspects in an ever-changing landscape. We can never get to the point where we can say "it is Joe Bloggs from 53 Acacia Avenue" but we hope to be able to detect unusual patterns of behaviour on the internet and say what kind of person we are dealing with.'

The team, which is now seeking funding to develop its work further, is also working on a system which would allow police hi-tech units to analyse seized computers much more quickly.

'At the moment, police can take weeks examining computers without even knowing what's there', Mr Marshall said. 'We hope our disc profiling tool will be able to analyse within minutes what kind of evidence is present and what kind of crime it relates to.'

donated £60,000 and Dr Heggie hopes further funding will be raised from various grant-giving sources. If this is successful she hopes that the nine-strong team she envisages – incorporating conservationists, archivists, a micrographic technician and two learning and access officers – could start work this autumn.

'Community involvement will be central to the cataloguing process', says Dr Heggie. 'We have thousands of photographs and we want to know who is in them, what they are showing and when and where they were taken. We'll be looking for former steelworkers, going into workingmen's clubs and asking the pension funds to send out fliers asking people to get involved. It will enhance the cataloguing process. If 10 or 12 people in a position to know reckon that a picture is of the North Side of the Clarence Works, we will be pretty sure that is what it is.'

They will also want to record memories of Middlesbrough as a steel town, using those oral histories to teach school pupils about the community where they now live. Regular temporary exhibitions will be used to raise awareness. Dr Heggie says, 'There is such a story to be told and a sense of identity to be built on the pride people can take in their local heritage'.



The £12m Institute of Digital Innovation opening this autumn brings together the research and enterprise strengths of the University of Teesside to help drive forward the ambitious DigitalCity initiative, as Professor CLIFF HARDCASTLE, Deputy Vice-Chancellor, explains to Nic Mitchell.

The beating heart of

DIGITAL

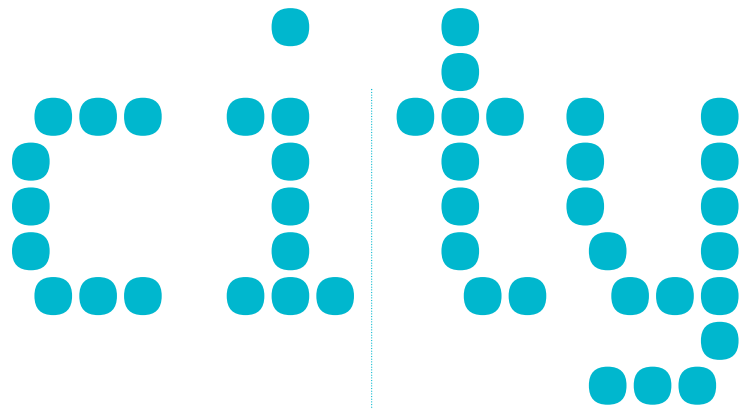
The Institute of Digital Innovation (IDI) embodies a new kind of regeneration project that puts high-quality research alongside business to build a high-growth economic base.

This is the goal not just of the University of Teesside, but also of its partners Middlesbrough Council, Tees Valley Unlimited and regional development agency One NorthEast.

It's a partnership that puts the University right at the heart of one of the most fertile digital and creative industry clusters in the UK.

For us, it's an ideal position. The IDI means that our best postgraduates can hone their professional and work-based skills on challenging projects with industry. It means our talented young companies can thrive in a cutting-edge environment. And it means that established companies can work with our research teams to develop world-class digital technology products and recruit their people from our unique talent pool.

It all adds up to a coherent vision of a University using its knowledge and resources to support the region – putting our postgraduates and researchers alongside those supporting and nurturing young companies. It is what distinguishes our regeneration initiative from so many others and why our clear strategy is shared by our partners. They have seen the potential of the way we are creating digital innovation and given us their full support, and we in turn are giving our support to the development of the BoHo zone in Middlesbrough to help attract digital companies to come and grow in the region.



The foundations for DigitalCity were already there before the completion of the impressive Phoenix Building which will be the nerve centre for the IDI.

Our researchers are harnessing all aspects of digital innovation to support fields as varied as the construction industry, medical imaging and interactive storytelling.

And the far-sighted DigitalCity Fellowships have been encouraging talented graduates from across the region to develop new ideas on our Teesside campus, many of them launching their own companies with the help of the University's graduate enterprise scheme.

So while the IDI is based in a fantastic high-quality new building, we hope it becomes more than just the cement holding DigitalCity together.

We see it as the mechanism to promote and encourage more collaboration and innovation, such as the pioneering research by our Centre for Construction Innovation led by Professor Nashwan Dawood. This was highlighted on the government's Number 10 website as an excellent example of applied research being taken up by industry.

There are many other examples of this approach including the work of d|lab, our centre for research, development and innovation in design. Another highlighted in this magazine is the research led by Professor Marc Cavazza which is pushing at the frontiers of virtual reality for art and entertainment. Work of this calibre will be based within the IDI.

To give strategic direction to the IDI, we have appointed Dr Jim TerKeurst to lead the Institute. Jim has the respect and experience of the digital industries to take our ambitious plans forward. He has worked both within a research environment and as an entrepreneur, in the United States, Europe and the Far East, and we are delighted he has taken the helm of the IDI.

We're confident that with the full and active support of so many key players in the region, we can help deliver our key goal of generating and sustaining a thriving cluster of digital and creative industries, making the Tees Valley once again the by-word for world-class creativity and innovation.

One NorthEast believes Teesside's new Institute of Digital Innovation is 'an important contributor to the goals set out in the Regional Economic Strategy' while Tees Valley Unlimited says it 'cements the University's place at the heart of the future of the Tees Valley'. Here we hear from key partners and talk to Dr Jim TerKeurst, the Institute's Director.

Rekindling

the spirit of enterprise

It has been several years in the making, but at last the Institute of Digital Innovation – known by its IDI acronym – has arrived.

Based in one of the University's two new showpiece buildings, the IDI will occupy all four floors of the £12m Phoenix Building on Woodlands Road, Middlesbrough.

Its Director Jim TerKeurst says the IDI has been deliberately designed to create a stimulating environment. 'We want the IDI to take people beyond their comfort zones and to stimulate new ideas', he says. 'I call this "disruptive innovation" and believe it helps the Tees Valley make a major contribution to not just the local, but also the regional and national economy.

The IDI has received generous financial support from One NorthEast and the European Regional Development Fund through Government Office North East, who together have contributed over £5m towards the building.

The top floor will be focused on supporting the digital industries, and companies seeking to develop or strengthen links with research and enterprise in the University can lease high-quality office units of up to 1,000 sq ft each.

The second floor will include studio space for up to 32 DigitalCity Fellows at a time, with specialist software provided in flexible labs. Postgraduate studios will also be based on this floor.

The first floor will have specialist facilities for research groups, such as Professor Marc Cavazza's team from the School of Computing, d|lab from the School of Arts & Media and the

Centre for Construction Innovation and Research led by Professor Nashwan Dawood.

The ground floor will house the DigitalCity offices and a specialist sound stage, conference room and innovation room for future foresight and strategic thinking by companies.

'The IDI and the whole DigitalCity project are going to demonstrate the potential for innovation in the Tees Valley and the wider region', says Dr TerKeurst.

'I believe they are going to help rekindle the spirit of enterprise that made Middlesbrough such a powerhouse for innovation in the industrial revolution of the 19th and early 20th centuries. Now we want to harness this potential for innovation again, gear it towards the needs and demands of the 21st century and make a major contribution to the region's economic strategy', he said.

And the IDI has been warmly welcomed by many of the key figures involved with regional regeneration.

Alan Clarke, Chief Executive of regional development agency One NorthEast, said,

'As a key partner and funder, One NorthEast is delighted to support the impressive and exciting Institute of Digital Innovation. It is an important contributor to the goals set out in the Regional Economic Strategy.

'The University of Teesside has gained a reputation as a major player in the digital sector, and this exciting project will ensure its academic excellence can be converted into

business creation and growth, both of which are vital to the continued success of the Tees Valley and North East England as a whole.'

Mark Elliott, DigitalCity Business Director, who is leading the BoHo economic regeneration project, Middlesbrough Council's contribution to DigitalCity, said, 'I'm delighted to see the IDI forming such an integral part of the wider DigitalCity project, and I'm looking forward to further schemes and initiatives being developed in the coming months'.

Jonathan Spruce, Senior Assistant Director of the Tees Valley Joint Strategy Unit, speaking on behalf of Tees Valley Unlimited – the body bringing together key players for the City Region business case – also welcomed the IDI.

'When we presented our business case to government last year we stressed that developing the University of Teesside was fundamental to our long-term aspirations for the Tees Valley. So the completion of the IDI as our first key project since making the City Region case cements the University's place at the heart of the future of the Tees Valley.'

Businesses wishing to discuss becoming a tenant of the IDI should contact Neil Hannah, New Business Manager, Department of Academic Enterprise, University of Teesside, Middlesbrough TS1 3BA. Email n.hannah@tees.ac.uk or telephone 01642 384646.



Digital Pioneer heads new Institute

It is not every day that business people move into academe - so Jim TerKeurst, the new Director of the Institute of Digital Innovation at the University of Teesside, is something of an exception.

Dr Jim TerKeurst, pictured above, ran his own media production company in Michigan in the US for 12 years before moving into higher education.

Now 49, he was one of the early pioneers of using computer graphics in advertising and company makeovers in the early Eighties. Before moving to Teesside, Jim developed his expertise as programme tutor of games production management at Abertay Dundee University, where he was Research and Business Development Manager for IC CAVE. He also worked in a research environment in both the Middle East and South East Asia.

His move to Teesside coincides with new two developments on campus: the £12m Institute of Digital Innovation (IDI) to house commercial and research activities in the digital field, including those linked to the DigitalCity initiative; and a £10m Centre for Creative Technologies bringing together animation, computer games, design and media undergraduates.

'What attracted me to Teesside was the vibrancy of the University which I knew had worked hard to define its role in the community', said Jim. 'I liked the way it reaches out to business and knew about its innovative Meteor programme with local inner-city schools. There is a natural connection between this University and the community. It is really engaged with Middlesbrough in a way I haven't seen before.'

'And, of course, I was also impressed by the DigitalCity Fellowships and the University's graduate business units, as well as its Animex international festival of animation and computer games. 'I've been involved in the computer games world for quite some time and Teesside is widely respected for the quality of its graduates.'

So he jumped at the chance of being involved in Teesside's digital world of opportunities.

'There's tremendous potential here and, when you take the digital technology developments on campus together with Middlesbrough Council's exciting regeneration plans for the BoHo zone, around £37m has already been pledged or invested here in a very short period. I think this makes us the second biggest project of this kind.'

'And DigitalCity is already a huge success. The IDI is built and there's a team in place to make things happen.'

'After all, it's one thing to start projects, but we have people who are really engaged and we're meeting our targets for more DigitalCity Fellows, more start-ups and new courses. Additionally, all of these will benefit from bringing together the computing, design and media programmes within the Centre for Creative Technologies.'

'There's a great depth of talent and skill here at Teesside in key areas for digital growth – and that's from across the academic Schools. My aim is to bring together these talented people from both inside and outside the University to create our own eco-system that maximises all these advantages and shapes the way the new technologies are developing.'

Jim describes the Institute as a nexus between industry, research and higher education. 'It provides the means to develop not just new programmes, but also the opportunity to help build a stronger research culture around digital innovation. This is what will help the local and regional business community and make the University a major contributor to the region's economic strategy,' he says.

DigitalCity Fellows are playing a key role in creating one of the country's most fertile and successful digital and creative media clusters, as **ANASTASIA WEINER** finds out.

FELLOWS DRIVE FORWARD

Innovation

Business is booming. All the start-up units are let, and there's an impatient queue building up – all thanks to the joined-up efforts of the University and Middlesbrough Council in delivering a scheme that helps talented graduates turn digital ideas into digital business.

The pioneering DigitalCity Fellowships Programme provides would-be entrepreneurs with vital business advice and professional support, much of it through intensive mentoring by industry specialists.

Fellows who go on to set up in business can join the University's well-established start-up programme, which has supported some 85 companies and 300 jobs to date.

According to Gareth Edwards, DigitalCity's Creative Director, the Fellowships are going from strength to strength.

'By March 2008 we expect to have completed over 200 Fellowships', he says.

'They're unique in allowing graduates to decide if entrepreneurship is for them through an intensive support programme', explains Cheryl Evans, DigitalCity Project Manager.

'Not everyone who gains a Fellowship – awarded to talented graduates from the region and lasting from three to six months – wants to set up their own business immediately', says Cheryl.

'Some need space and time to decide whether to do a research degree based on a project started on their first degree or to go on and create a "portfolio piece" to make them more employable. Perhaps they want to complete an animation or a graphic design or a work of art if they are a creative. This is what's so great about the Fellowships. They're tailored to individual circumstances.'

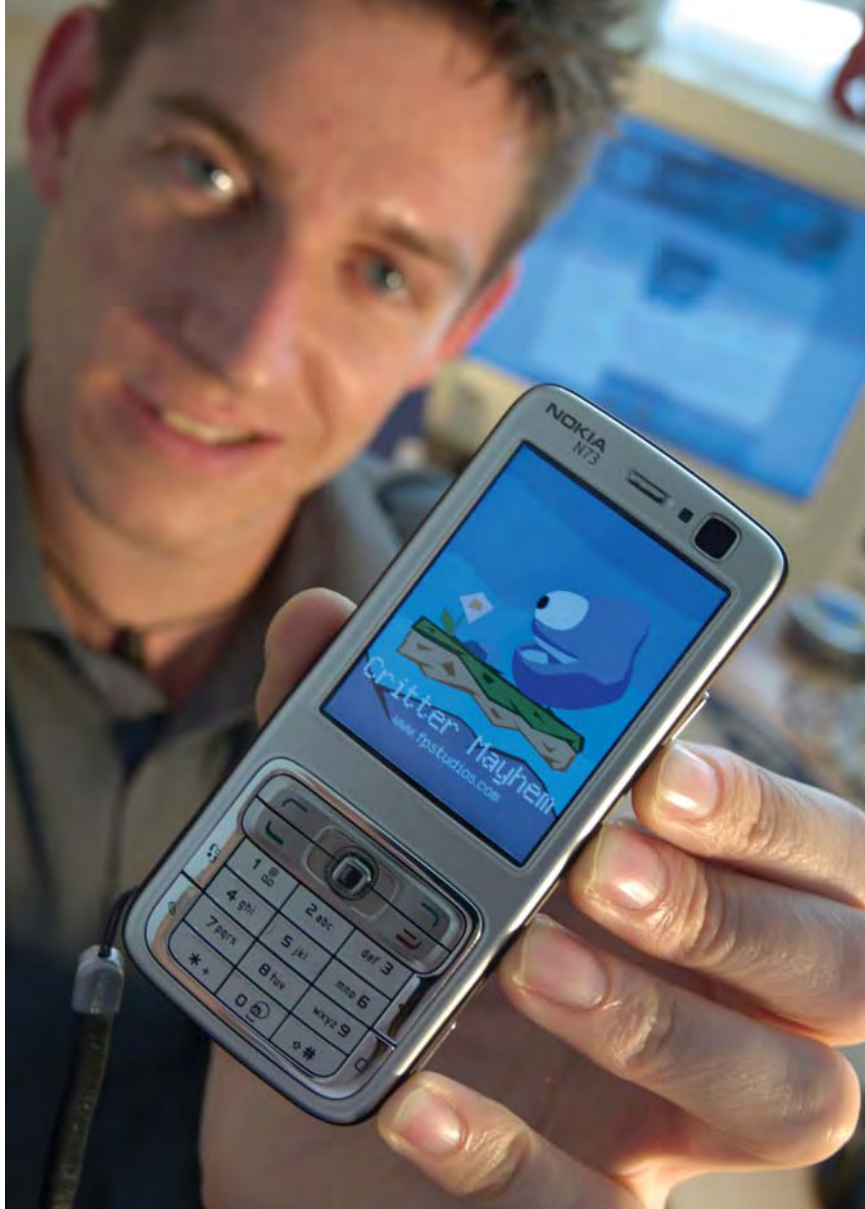
Her team looks after the scheme on a day-to-day basis – finding mentors for fledgling graduate start-up companies and customising the support to fit the individual needs.

Fellows – and there have been over 150 to date – receive grants of between £1,000 and £5,000 plus advice on how to take their ideas forward. And in the Institute of Digital Innovation (IDI) they will have even more studio space and access to the latest technology.

Gareth and Cheryl stress that the Fellowships and other DigitalCity initiatives are all about sustainability.

'Our aim is to turn the North East into a magnet for digital and entrepreneurial talent, creating high-value businesses and jobs', says Gareth. 'We're not into "flash in the pan" schemes. We're committed to helping creative businesses flourish', he adds. 'It's not an easy ride, but we know the formula works.'

So let's meet some recent DigitalCity Fellows!



Fluid Pixel Studios

Being a pioneer in an emerging technology is a daunting prospect for any company, let alone a start-up. But Stuart Varrall of Fluid Pixel Studios, pictured above, is relishing the challenge. Not only is the 24-year-old quickly realising commercial success, he's winning awards for his entrepreneurial skills.

His company, based in a University start-up unit, specialises in creating mobile phone games, screensavers and wallpapers using Adobe Flash Lite – a new generation technology with a high standard of visual effects.

Since founding the company less than a year ago, Stuart and co-founder Paul Ivorra have already been approved by mobile phone giant Nokia to sell games and wallpapers through the company, and are hoping to secure similar agreements with other firms.

'We are one of only a few British companies in this field', said Stuart. 'It's challenging working with unproven new technology. But the download market is huge and the big firms are keen to adopt it.'

Stuart won a DigitalCity Fellowship in 2005, along with a prestigious Insight Out award from the National Endowment for Science, Technology and the Arts (NESTA).

He has gone on to win national recognition through a Kauffman Entrepreneurship Fellowship, which will see him spend six months in the US working alongside like-minded IT experts, universities and thinkers.

'I will continue building my portfolio in the US and look forward to making business contacts too', he said.

The Maidenhead-born businessman, who has always wanted to start his own digital media company, says that DigitalCity is the perfect environment for entrepreneurs, not just because of its business support, but because it provides direct access to the best talent on offer.

'We've been working with Jeremiah Alexander of Babel Digital, who is based in the Victoria Building alongside us', explains Stuart. 'Being able to work together and bounce ideas off each other is really important in this business.'

Size doesn't matter

Gaming software firm Halch is yet further proof that size in the gaming industry doesn't matter.

The nine-strong Middlesbrough-based company, founded just two years ago by Teesside computing graduates Marc Williamson, below right, and David Hankin, below left, is just weeks away from completing games under licence for both Sony Play Station 2 and Nintendo DS Lite.

Halch has also been commissioned by music channel MTV to produce online animation.

The high-profile projects have led to regular approaches from European and Japanese firms, according to David, and the company is set to grow. 'We're looking to move to the IDI or Middlesbrough's digital enterprise BoHo zone', says David, who specialises in comic art and character design.

'We have plans for recruitment in the near future, and are looking to Teesside graduates.'

For the entrepreneurs, the financial and business support offered by DigitalCity and the University was key to their success.

'It gave us our first round of money to develop and promote ideas', says Marc, who is keen to emphasise the valuable camaraderie offered by fellow tenants in the University's business start-up units.

'It's great to have the support of like-minded people who are just down the corridor from you – especially when you're just starting out.'



For further information on the DigitalCity Fellowships scheme email: info@thedigitalcity.org or call 01642 384334.

A 19th-century classical French novel has been brought into the high-tech world of Virtual Reality by researchers at Teesside, as **NIC MITCHELL** finds out.

Virtual

MEEETTING



It's not every day you have the opportunity to step into a key role in a piece of classical French literature, but that's what's on offer when you meet Professor Marc Cavazza.

His research group has created a virtual reality (VR) environment at the University of Teesside in which not only are key characters from Gustave Flaubert's 19th-century literary masterpiece *Madame Bovary* brought to 'virtual' life – but you can become one of the leading characters!

It is all down to six years of hard work by a dedicated research team within the University's School of Computing – Marc and Teesside graduates Fred Charles, Jean-Luc Lugin and David Pizzi – who are pushing at the frontiers of virtual reality for art and entertainment.

'We used a commercial game engine as a development environment to support real-time visualisation and created new artificial intelligence components to control virtual actors', said Professor Cavazza, a world-renowned expert in the new discipline of interactive storytelling whose team will be moving into the new Institute of Digital Innovation.

He described the stage created by the VR system as 'an immersive interactive storytelling environment'. It has three walls and a floor used as screens, and is operated by a computerised system using dedicated software to support real-time stereoscopic visualisation.

Into this VR CAVE you step, wearing lightweight shutter-glasses to see the full effect, and interact with the virtual characters taken straight from Flaubert's famous love triangle.



As the adulterous affair between Emma Bovary and Rodolphe develops, you – the user – play the part of Madame Bovary's lover.

What's so immersive and interactive is that your responses will determine the outcome of the affair. You can influence the subsequent unfolding of the narrative. You don't have to follow the original script to the letter.

At present only three chapters of Flaubert's *Madame Bovary* have been built into the immersive storytelling environment, which Professor Cavazza likens to a Holodeck™ – familiar to *Star Trek* fans in which characters entertained themselves in virtual worlds.

'We're still at the experimental stage, but we've created a small-scale, yet complete, integration of a real-time immersive interactive storytelling system which puts us among the leaders in this field', says Professor Cavazza.

'This work has been well received in the scientific community and presented at major international conferences, such as ACM Multimedia', said Professor Cavazza. 'We believe it could be the next big thing in interactive TV and digital entertainment. We are currently collaborating on interactive storytelling with both Eidos Interactive and the BBC as part of two externally-funded research projects.'

Professor Cavazza says he deliberately took Flaubert's tale of illicit love and potential betrayal as the ideal storyline because it is a psychological novel in which relationships between the characters and their feelings play such an important role.

A key factor was that he managed to get hold of the author's original preparatory work on the novel which gave him greater insight into the characters' feelings, allowing them to be built into the programme.

'To reflect that the characters' behaviours are driven mostly by their psychological states, we use conjunctions of elementary feelings as goals for the emotional planner', explained Professor Cavazza. 'This allows new situations to emerge as a result of other characters' action – including the user.'

Although most action is driven by Emma's desires, the user's role will influence the emotional states of the main characters and affect the future storyline. So, if Rodolphe says he plans to leave Emma, this generates a feeling of anger in Emma. She reassesses her situation and gradually removes herself from his influence and pursues future happiness in family life with her husband.

'We have achieved short interactive storylines of between two to three minutes so far and we know our work is pioneering and has a long way to go', says Professor Cavazza, who is convinced his Teesside team has made significant strides forward.

The VR system was built at a cost of less than £200,000, which Professor Cavazza says is 'incredibly good value thanks to a close collaboration with our supplier'. Original funding for the installation came from the Higher Education Funding Council for England's 'SRIF3' initiative, from the Institute of Digital Innovation's 'concept testing' fund and from part of a previous research project funded by the European Union.

This work also benefited from wide-ranging collaborations. 'We worked together with colleagues at the University of Pittsburgh and at the VR Centre of Laval in France to design specific software and hardware components and the project's visuals were sub-contracted to a graduate business created by former students of the School of Computing who set up 3rd Dimensions Creations Ltd on the campus', said Professor Cavazza.

For more information go to

<http://www.scm.tees.ac.uk/f.charles/publications/publications.htm>

Some of the most sophisticated computer animation techniques developed for the gaming industry are starting to be used in the decidedly-serious world of medical imaging and even for planning major construction projects, as **ALISON UTLEY** and **NIC MITCHELL** report.

Games technology
helps the



REAL WORLD

Virtually image perfect

The idea that you can practise dangerous diagnostic techniques in a virtual 3-D world before being let loose on patients has long been an ambition of Philip Cosson. For training students to carry out procedures like X-rays safely has become a headache for lecturers in recent years since fewer and fewer patients are prepared to be treated by students.

Philip, a senior lecturer in medical imaging at the University of Teesside, said his interest was aroused in 2001 after a casual conversation on the way home from a conference. 'I remember saying wouldn't it be great if we could train radiographers using computer simulation', he recalled. 'After all, airline pilots learn to fly jumbo jets using simulators.'

Six years later – and after thousands of hours of difficult computer programming – Philip's University spin-out company, Shaderware Ltd, has now sold its first batch of software overseas. And radiography students at Teesside are privileged to be using the only virtual radiography training facility in the UK.

'Now we can do it, we are starting to discover simulation's great potential', he said.

It couldn't have been done, he added, without the help of a series of master's students from the School of Computing who used the research as the basis of their projects.

The real breakthrough came when Neil Willis, a graduate from the MSc Computer Animation and Graphical Technology Applications, got involved. 'Most students on my course were interested in computer gaming, or perhaps the film world, but that wasn't my focus', said Neil, pictured above right with Philip.

'I was interested in the more scientific applications and, after speaking to Phil, I helped him realise his vision of creating a virtual training environment for radiographers.'

But it was a big challenge since Neil had to simulate real-time moving images at a rate of 30 times per second – much faster than anything being offered by any existing technology. A human body had previously been scanned and photographed in the US and this data was used in the software to simulate a patient so that

students can look at an X-ray room, move the patient and equipment around, and take a 'real' or virtual X-ray.

The project went on to win a British Computer Society prize and Neil was keen to develop what had been an academic exercise into a commercial product.

Grants from the University of Teesside Enterprise Development and DigitalCity helped, and work on the project continued until the company was launched. 'I was very driven, probably because I was a mature student and had given up a lot to do this', Neil explained.

Philip is optimistic. 'On-screen simulation can't replace clinical experience but it does give students a very controlled and safe environment in which to develop their skills. And of course with a simulation we can expose students to rarer situations than they are likely to see on any of their clinical placements.'

+ Shaderware Ltd has made it through to the regional finals of the Blueprint awards – a competition for the best and most innovative business ideas from university students and staff.



Construction innovation on the IDI building. Professor Nashwan Dawood, centre, with Derek Lawson, Project Manager, left, and Robert Cranmer, both from HBG.

Saving the construction industry millions

It has always been difficult for architects, engineers and project managers to predict each stage of the construction of new homes or offices.

But now computer games technology and artificial intelligence are being harnessed to develop 'virtual prototyping' in a bold move which could save the construction industry millions of pounds.

The initiative, led by researchers in the University of Teesside's Centre for Construction Innovation and Research, has featured on the government's Number 10 website (<http://www.pm.gov.uk/output/Page10323.asp>) and been taken up by major players in industry.

The new software tools give planners and builders the chance to rehearse different phases of a major construction project over and over again on a PC screen before building work begins – everything from putting in the foundations to installing pipework and electrical equipment.

The team has already tried out the system on several major construction projects, including a new bridge over a London Underground line and at the new North Sea gas-receiving facility at Hull.

Professor Nashwan Dawood, the Centre's Director, said, 'The software helps everyone involved in a major project to go into the minute detail of construction activities and look for the most efficient way of tackling a contract. This is particularly important when lots of different trades are working on a multimillion-pound project in a tight location and where delays can cost big money.'

The Teesside Professor worked closely with the international project management and construction consultancy, F+G, on the Hull gas-receiving project and estimates that about 5-7% could be cut from the £100m-plus project by rehearsing it using the University's 4-D planning tool (3-D + real time).

Now his team is perfecting the computerised virtual construction (VIRCON) site instrument with the help of F+G's Stockton-based national planning manager, Ian Mackenzie. They are looking at the possibility of offering it to help in the decommissioning of nuclear power stations. The firm employs over 2,000 worldwide.

Professor Dawood has also been using the virtual reality technology to assist HBG, the company building the University of Teesside's new £12m Institute of Digital Innovation (IDI) – the new landmark for the DigitalCity project.

HBG's project co-ordinator Robert Cranmer said, 'The IDI is a good site to choose because the building is being constructed in a very tight defined space. We've used this software tool from the early stages to rehearse the project and make changes to our plans to overcome any foreseen problems with the construction sequences.'

The next step is to see if it can be used to help cash-flow forecasts and make the software more interactive and user-friendly. To help, Professor Dawood's team has just been awarded £100,000 to set up a Knowledge Transfer Partnership with F+G. This will help pay for a research associate and a PhD student to work on the projects and to see what other heavy capital projects the VIRCON tool could be applied to.

Ian MacKenzie said, 'We like to be at the leading edge of new developments helping the construction industry to become more efficient. This is a very important tool to help our clients improve on project delivery and save costs.'

For more information contact Professor Dawood at n.n.dawood@tees.ac.uk

1st choice for

2ND LIFE



The world of learning is crossing the threshold into a new dimension. The landscape consists of sophisticated computer graphics and the animated figures represent real people who are in real places, interacting with one another in real time and controlling the on-screen action, as **KEITH SEACROFT** discovers.



Welcome to Second Life (SL) a rapidly-expanding metaverse, or alternative universe, where the simulated situations are said to have massive potential for teaching. It could be especially effective for distance learning at higher levels and professional training, and for pupils at all stages who find it less intimidating than real life.

Universities, colleges, schools and the suppliers of educational materials have had barely a year to explore it, but they are already working fast to harness its power and develop uses for it.

Edinburgh University is trying it out for lectures and tutorials, Harvard Law School has built an SL courthouse for mock trials, Leicester, Oxford and others are giving it a whirl – literally since the avatars, the 3-D on-screen figures, fly and swoop around the SL world like so many Peter Pans and Wendys. The University of Teesside, which has a strong track record in virtual environments, games and computer animation, is already in there with a research-cum-business project to develop an application that could be the basis of many uses for SL in schools.

Brian Wilson, Assistant Dean (Enterprise) in the School of Arts & Media, who is supervising the Teesside project, says that with SL pupils can experience 'accelerated learning'. Through their avatars, pupils can quickly sample many situations, examine options, gather and study information, make choices, see the consequences and effectively travel through time to become their future selves in a new set of situations.

'We are working on ways of managing very extensive data and creating opportunities within the SL environment in ways that mean pupils are less self-conscious about getting involved than they would be in the real world', says Brian. 'It frees learning from the

restrictions of time and geography.' The work is under way at the University's d|lab, which was set up in late 2006 by the School of Arts & Media to be a centre for research, development and innovation in design.

d|lab will be moving into the new Institute of Digital Innovation this autumn and Brian, the director, says, 'Its aim is to be an enterprise-led research facility capable of engaging with the global economy. As well as developing knowledge-based products, d|lab is a conduit to the business world to put the results into the marketplace.

'Our current interest is in transformative technology. That is, technology which will radically change and reshape processes and markets. It's risky, but the benefits and the potential are great. Compare it with the iPod which has massively changed the relationship between producers and users of music.

'With SL the pace of learning is quickening in an exciting way. Pupils can project themselves into the technical environment and explore it in ways that most of them are already familiar with because they are computer literate, they've played computer games and used the internet and other applications.'

Pupils can be disruptive or idle in the real world but SL learning systems will have ways of dealing with them too. The metaverse is made up of distinct islands with border controls so the owners know who is visiting and what they are doing. The educational applications will have a teacher or tutor in charge. Any troublemakers will get their avatars grounded. Anyone who is inactive, either through shyness or by intent, can be identified.

The potential of SL also reaches beyond school and university settings into industry, manufacturing and service-sector operations. It can be a market research and training tool, for

example, testing customer preferences in different settings – such as the layout of a bank or pub. You can tweak the design and test the behaviour again – all much faster than with focus groups and role play. All this has serious business implications in an age when technology already makes customer loyalty a fragile but precious commodity.

SL has the potential to take computer innovations off in new directions with far-reaching consequences for life, work, leisure and even culture.

But providers of education and training have always harnessed new technology to help both tutor and learner. Teachers in ancient Greece scratched diagrams in the sand with a stick and medieval scholars used slates. In the 15th century printed books caused a revolution in learning. The pace quickened 400 years on with photography, electricity and the birth of modern science. Sound recording, film, the overhead projector, the photocopier, video, CD-rom, DVD, presentation software and the internet all made it easier to store and share information. SL looks very much like the next leap forward.

The phrase 'Brave New World' is often trotted out to describe technological breakthroughs. It comes from Shakespeare's *The Tempest*, where Prospero tinkers with reality and creates illusions. Towards the end he makes his famous speech 'Our revels now are ended'. His description of make-believe cloud-capped towers, solemn temples and the great globe itself are a kind of prophetic vision of Second Life.

The difference, Prospero, mate, is that the revels are far from ended. The show is only just beginning.

If you want to find out more email
DLAB@TEES.AC.UK



Siobhan Fenton and Clive Tonge are following up the success of their first animated film, a scary nine-minute tale about Emily and a cannibalistic cantankerous old Baba Yaga, with a full-length animated feature for cinema release.

Infrared animation for

the shadow stealers



Teesside computer animation lecturers Siobhan Fenton and Clive Tonge won a string of international plaudits with *Emily and the Baba Yaga* and are joining forces once again for Lynchpin Productions' new feature, *Miina and the Thief of Shadows*.

Working with executive producer Claire Jennings, one of the Oscar-winning people behind Wallace and Gromit's *Curse of the Were Rabbit*, they have high hopes of breaking into the big time.

The new production will follow the adventures of Miina, whose magical powers allow her to escape the clutches of a band of skin-crawling baddies who appear through cracks in the earth to steal shadows in a bid for world domination.

'The film will explore the magical qualities of our shadows and how they can be represented as a metaphysical dark side that keeps us in balance.

'Although still in the development stages it looks set to deliver a unique visual style, setting it apart from traditional animated fantasy features', explains Siobhan, the producer.

Of great interest is the textured 3-D world created thanks to director Clive Tonge's fascination with infrared photography. The result is a surreal, weird world which combines

infrared photography with digital colour photos of the same scene. 'Helped by groups of our students and new graduate businesses like Seed Animation and Real World Interactive, we have developed the techniques into infrared animation', said Clive.

'Some of our graduate companies with the technical expertise carried out most of the research and now the colours can be broken down to create the kind of image we are after. The best way to describe it is to take an oak tree. Instead of leaves it has got these glowing rose petals. That's the look we're after.'

Pump-priming for the new production has come from the University of Teesside's Enterprise Fund and Northern Film & Media. The 50-second trailer was also screened to possible financial backers at Cartoon Movie in Germany, the premier European animation forum, in February.

And the highly-rated Canadian animator, Vincent Marcone, has agreed to oversee the visuals as Art Director.

To see a trailer of *Miina and the Thief of Shadows* go to www.tees.ac.uk/computing/

back to the future

for Teesside's top animator

The eighth Animex Festival once again brought the cream of the animation world to Middlesbrough – including one of the University of Teesside's home-grown animators, Andy Lomas.

For internationally-renowned animator Lomas, pictured right, his triumphant return to Teesside brought back memories of his early days in the film-making business.

Now Head of Computer Graphics for leading animators Framestore, Andy was a keynote speaker at the University's Animex International Festival of Animation and Computer Games in February 2007.

The Festival brings together some of the top names from the industry and has helped to cement Teesside's place as a leading international centre for digital innovation – a process already under way when Andy enrolled on the University's MSc Computer Aided Graphical Technology Applications 16 years ago.

A mathematics graduate from Cambridge University's Trinity College before doing his master's here, Andy, now 40, recalls, 'I had been working for a small video production company, experimenting with simple graphics and realised that computer animation would allow me to combine my video production skills and my mathematics degree. It was as if a light bulb came on.

'Teesside University was one of the few places doing those kinds of courses back then and it gave me opportunities to try things out. We were always the ones working late when everyone else had left for the day.'

After graduating, Andy worked for several London-based production companies and joined Framestore - the company behind hit television series *Walking with Dinosaurs* and *Prehistoric Park*. He worked on Emmy-winning series *The Odyssey* and *Alice in Wonderland* and dinosaur-based series *Dinotopia*.

'I have always been interested in details, which comes from my mathematical background. I like problem solving and my role at Framestore was asking 'how on earth are we going to create things like a dinosaur's muscle and skin?'



After moving to the US six years ago, he became a key member of the computer graphics team working on the second and third sequels of hit film *The Matrix*.

He returned to Framestore in May 2006, where recent projects have included *The Tale of Despereaux*, Europe's largest computer-generated feature animation project which comes out next year. And he was also involved in the latest Harry Potter film, *The Order of the Phoenix*.

Andy, who received an honorary degree from Teesside in 2004, says, 'I like the way the industry is always evolving. You are learning new things all the time. Projects are getting bigger, teams are getting bigger and there is a constant need for new techniques to solve problems. For all that, I still use many of the things I learned at Teesside.

'The UK has become an important centre for the industry and a lot of people who studied at Teesside are now working in the industry. The University has an international reputation because of that.'

Animex director and University animation lecturer, Chris Williams, said, 'To have people like Andy Lomas graduating from the University and then going on to do so well gives us great satisfaction'.

**Animex will be held again on 4-8 February 2008.
See www.animex.net**

Award-winning North East Company of the Year, Wellstream International in Newcastle, is working closely with the Teesside Manufacturing Centre based in the University of Teesside. It's a partnership that demonstrates the benefits of industry and academe working together, as **NIC MITCHELL** finds out.



PIPELINE

TO SUCCESS

The success of Wellstream was hailed as 'evidence that the region's manufacturing industry can still lead the world' when the Tyneside oil and gas pipeline maker carried off the prestigious Company of the Year prize earlier this year.

And not surprising, for the Tyneside-based company, which floated on the Stock Exchange with a market capitalisation of more than £300m earlier this year, has grown rapidly and attracted many admirers.

Judges of the North East Business Awards organised by the Newcastle *Journal* and its sister paper, the Middlesbrough-based *Evening Gazette*, praised Wellstream for its innovative designs,

strong business model, technological excellence and success in building its business.

Now employing nearly 500 people at its River Tyne base, Wellstream has been operating under its present management since 2003 when it was bought from US multinational Halliburton.

It was about a year after the buy out that the first contacts were made between Wellstream and the University's Teesside Manufacturing Centre (TMC) based in the School of Science & Technology.

'They were growing fast and wanted to improve their business and management systems across the board to allow for expansion. They were gaining clients all over the world', recalls Dr Ahmed Abbas, Head of TMC.

'We gave a presentation to the board and they were very interested in what we could offer. And, after they visited three of our former clients to check us out, they asked us to do a major enterprise-wide review.

'What we offer is a total enterprise integration package. We look at the whole operation with an engineering as well as a business eye. And this is what manufacturers are looking for, ways to improve the management of technology across the whole organisation', explained Dr Abbas.

'Specifically Wellstream asked TMC to help them select what they needed in terms of hardware, software and training', said Dr Abbas, who set up a team of four working on the project.

'We identified possible suppliers, got them to do presentations and helped with the choice of software. We have been involved every step of the way and one of the TMC team, Suhail Aslam, was seconded to Wellstream as project manager.'

Suhail is an Industrial Design graduate from Teesside who was doing an MBA at the time with Teesside Business School.

Now the project is developing further and Wellstream and the University have strengthened the partnership by appointing two Knowledge Transfer Partnership (KTP) associates.



A BUSINESS LEADER OF TOMORROW

Mohammed Shahnawazuddin, pictured below, a 27-year-old mechanical engineering graduate employed by the University of Teesside and a Darlington-based engineering company, has been named as one of this year's 'Business Leaders of Tomorrow'.

The national award is the second in a row secured by a Knowledge Transfer Partnership (KTP) project between the University and a North East company in the government-backed flagship initiative. Shahnawazuddin worked for Malcolm Engineering Company of Darlington for 18 months as a KTP associate production engineer before being appointed production manager.



The KTP is concerned with implementing enterprise-wide changes across the whole organisation, comprising the introduction of a new Enterprise Resource Planning (ERP) system and the embedding of updated processes and working practices.

And Dr Abbas is keen to stress it is a partnership that benefits both. 'We're not just there to help the company, but by working so closely with a company like Wellstream it really helps our teaching and research at the University of Teesside', said Dr Abbas. '

Chris Pickering, Wellstream's Supply Chain Manager, agrees. 'We're delighted to have the two KTPs on board. This is part of our overall programme to implement our new ERP system – the engine that drives the business.

'The University has been our partner for two-and-a-half years and during this period our relationship has been very good. They have steered us through the assessment and selection process and we believe we've ended up with the best system to meet our needs, which is making bespoke flexible pipe products for the oil and gas industry. I'm delighted that we can keep the partnership going through the two new KTP associates.'

Pictured above: Professor Graham Henderson, Vice-Chancellor of the University of Teesside, left, with Frank Buck, Wellstream's Senior Manager, Pipe Manufacturing, centre, and Dr Ahmed Abbas, Head of TMC.

NEIL'S NEW BUSINESS ROLE

Neil Hannah, who has been appointed the University of Teesside's New Business Manager, will be playing a key role in developing relationships with new and expanding businesses.

He will head up the campus-based business start-up service which offers accommodation and support for graduate entrepreneurs. In addition, he will be responsible for the high-spec serviced business accommodation on the top floor of the new £12m Institute of Digital Innovation (IDI).

'I'll be working with colleagues and DigitalCity partners to attract companies to the IDI, particularly those which can draw real benefit from the expertise and facilities we have to offer', he says.

'I'm passionate about the opportunities offered through encouraging entrepreneurship at all levels, both in and outside the University', adds Neil. 'We want the cluster of companies in the IDI to act as a magnet for others who can see the business benefits of DigitalCity. All of these developments are vital for the regeneration of the Tees Valley region and I'm keen to play my part in this process.'

To contact Neil Hannah, email n.hannah@tees.ac.uk or telephone 0642 384646.

Who or what is to blame when children misbehave in school? Is it always a sign that kids are simply 'out of control' or losing respect? **ALISON UTLEY** reports on work which suggests that sometimes the cause may lie deeper.

C NTROL

IN THE CLASSROOM

Maybe the stubborn refusal to co-operate was just because the little angel was having a bad day and felt like taking it out on his teacher. Or was something else going on?

For naughtiness in a child can sometimes be a sign of poor mental well-being. The World Health Organisation estimates that in a lot of countries as many as 25% of adolescents have symptoms of mental disorder. And mental distress can often show itself as conduct or behaviour problems inside as well as outside school.

'PERHAPS WE NEED SOMEONE TO DO FOR MENTAL HEALTH WHAT JAMIE OLIVER HAS TRIED TO DO FOR KIDS' EATING HABITS AT SCHOOL'

According to Janet Shucksmith, Professor in Public Health at the University of Teesside, schools need to be able to accept that children's mental well-being is a part of their welfare responsibility. She is exploring how schools are dealing with a new tide of challenging behaviour thought to be triggered by poor mental health. The behaviour may be disruptive in the classroom. Or it may equally result in the child being withdrawn and unco-operative.

As a former teacher herself, Professor Shucksmith is no stranger to the demands of the classroom. And while she stresses there is no magic bullet, she believes that the key to improving children's mental well-being involves schools offering 'a real commitment to the task'.

Professor Shucksmith has a longstanding research interest in whether schools are the right place for health interventions and health promotion activities aimed at young people. Having recently arrived at Teesside after several decades of work in Scotland, she says she found Scottish schools had a more committed approach to delivering good health. 'Being a "health promoting school" is a defining dimension of what the good school should be north of the border, and this is reflected in the inspection regime. In England it is still more of an optional extra.'

'If we don't want problems to stack up into later life we have to start spotting young people's distress at an earlier age and acting to remedy it', she says. Schools are in a good position to act as this first line of attack on the problem. 'If there is really a willingness to take on the task, schools can do much in the way they organise themselves and the relationships they have with pupils and parents to promote good mental health as well as all the current emphasis on physical health. Perhaps we need someone to do for mental health what Jamie Oliver has tried to do for kids' eating habits at school.'

So far the research has explored the different strategies in use throughout Scotland's schools for working with children who are disruptive or withdrawn. The results indicate that professional understandings about mental health have shifted from talking of mental 'illness' to the more positive notion of mental 'well-being'.

However the researchers found the notion that teachers and schools might have some responsibility for working to improve young people's mental health and well-being is still relatively new.

Professor Shucksmith said teachers should not be frightened by the new responsibility since there is a range of different

professionals willing to share their experience and skills. While clinical specialists are there to support the most needy pupils, the whole school community benefits from having staff trained to lend a sympathetic ear to children's troubles and to act robustly to support them. Health workers, social workers, parent support workers and in-school support staff each have a distinctive contribution to make and these people need to work alongside teachers in order to reach a shared understanding of the problems and the remedies.

'Through integrated working, professionals from different backgrounds learn new perspectives and develop more rounded understandings of the problems faced by some children and young people', Professor Shucksmith said.

In one school in Aberdeenshire, for instance, the researchers found a specially-designed programme which allowed teachers to access internal school support to develop new responses to children's challenging behaviour in the classroom. Rather than viewing the children as the sole cause of the problem, the teachers were encouraged to think in terms of how they could change the classroom or other school environments to reduce the likelihood of such behaviours. Teacher support was delivered through a school co-ordinator who was trained to take a counselling style approach and, although this service was primarily intended to enhance the well-being of pupils, teachers also reported a very positive effect on their own well-being.

Professor Shucksmith says that in order to take ownership of the links between mental well-being and behaviour, schools should undertake fundamental reviews of their structures and cultures, placing well-being 'at the very heart of their value systems'.

She wants to be able to offer teachers practical steps which can enable them to offer children the emotional support they need and, with her team at Teesside, she is currently undertaking some work for the National Institute for Clinical Excellence which aims to offer public health guidance on how primary schools could be intervening to tackle pupils' mental health.

'This is the start of a long process in which we need to change hearts and minds in order to promote good mental health for children', she said. 'While teachers – particularly at secondary level – may think of themselves as subject specialists, we want them to also take on responsibility for the well-being of the whole child – in partnership with parents of course'.

WORRYING NEEDLESSLY?

A generation ago we all relied on our own sense of well-being as reassurance that we were in good health. But now an increasing reliance on health screening could be making us ill with worry.

ALISON UTLEY reports.

As a means of picking up signs of cancer or other serious illness – hopefully in time to make treatment more effective – health screening can be a lifesaver, literally. And for many people, a normal result is a welcome reassurance, one less thing to worry about.

But increasingly, with the huge technological advances taking place in medical science, screening results can highlight potential anomalies in our bodies, many of which are completely harmless. Nevertheless, the message that your results are ‘outside the normal range but probably nothing to worry about’ creates a level of anxiety about our bodies which is unhealthy.

Sociology professor Eileen Green, pictured right, is researching the impact of screening – which she believes is now becoming so routine that many of us are starting to think of our own bodies as something ‘risky’, to be endlessly checked and measured against some false notion of a normal body. Midlife women in particular are subject to a huge range of screening checks, for breast cancer, cervical cancer and bone density for example. But despite hoping for precision, women often find the results very complicated, consisting of ‘population-based risks’ which can raise many more questions than they can answer.

Such over-medicalisation, of women’s bodies in particular, is likely to lead to problems. ‘I am concerned we are starting to lose confidence in our own bodies’, said Professor Green. ‘What we tend to forget is that risk factors are pointers to a potential, unformed eventuality. But they are interpreted as certainties – by women and by health professionals!’

Professor Green, Director of the Centre for Social and Policy Research at the University of Teesside, has been working with Dr Frances Griffiths, a clinician and sociologist at Warwick University, as part of a large study of innovative health technologies and their impact on women. The research, funded by the Economic and Social Research Council, has involved interviews with almost 100 women and 58 health-care workers – including doctors, nurses and radiographers. Many clinical consultations were recorded and painstakingly analysed, and the researchers uncovered a great deal of concern about the interpretation of results amongst both patients and doctors.

The results of the study indicate that screening is increasingly blurring the boundaries between the healthy and the diseased, categories which have become subsumed under a more general category of ‘risk factors’ that can point to some future health problem. However, many women in the study – and the majority of doctors – seemed to think the advent of screening was a positive development. This was a typical comment from a 62-year-old woman, ‘For me it’s been brilliant, it sort of stops something getting worse. I think it is a very effective service’.

It was the actual experience of getting the results which was often very negative, Professor Green found. Being given a statistical probability of your chances of suffering from, say, osteoporosis at some point in the future is a confusing and often meaningless process which can simply result in needless worry. ‘The wish for certainty from technology for reassurance – while understandable – is unrealistic’, Professor Green said.

The analysis indicated clinical consultations became too focused on ‘where I am’ on the graph of possible outcomes. On hearing the term ‘risk factor’, women seemed to conclude that this particular health problem will affect them personally, rather than being a statistical probability.

‘THE MESSAGE THAT YOUR RESULTS ARE ‘OUTSIDE THE NORMAL RANGE BUT PROBABLY NOTHING TO WORRY ABOUT’ CREATES A LEVEL OF ANXIETY ABOUT OUR BODIES WHICH IS UNHEALTHY’



‘The old fashioned idea of relying on how you are feeling is being downgraded by technologies which almost seem to be assuming their own voice during medical consultations. We are in danger of over-interpreting the results and regarding them as the future of how we manage our health – whereas in fact they are just one element of modern health care.’

Many women in the study simply came away with the idea they were abnormal and had something wrong with them, even when they were told there was nothing to worry about, Professor Green said. ‘Screening is creating an artificial fragmentation of our bodies which encourages us to think of ourselves as different bits that can go wrong rather than seeing ourselves more holistically.’

One woman articulated the anxiety of many, ‘I really cannot tell you why I’ve missed the appointment ... at the back of my mind is that I don’t want to find anything else wrong with me’.

There are important lessons to be learned, according to Professor Green, about the way results are communicated, and about the place and value of technology in looking after our health. For the picture according to the research findings is currently very patchy.

Another woman said, ‘the first person I spoke to was my GP, she was so easy to talk to and very understanding ... But some health professionals ... when I went to the hospital for testing ... it was a man and, and he was very dismissive’.

For Professor Green, it is important to recognise and debate the fact that technology is providing us all with more information than we can understand at the moment. ‘We need to start putting technology in its rightful place rather than assuming it can solve everything’, she said. ‘The results must be treated with more caution.’

GREEN EVOLUTION

University scientists are playing their part in the green revolution that is sweeping Teesside, as **JOHN DEAN** finds out.

It's a revolution – and Tees Valley is at the heart of it.

Companies all over the area are adopting new renewable energy technologies, developing hydrogen as a power source, producing green biofuel for vehicle engines and recycling waste on an industrial scale.

One of the most exciting ventures is Wilton 10, a £60m biomass power station, the first of its type in the UK, which began generating this summer and is capable of producing energy for 30,000 properties.

Operated by SembCorp Utilities UK at the Wilton International chemical complex, near Redcar, it burns wood, a classic example of an infinitely renewable fuel which is also 'carbon neutral'.

Wilton 10 is helping to sustain the planting and harvesting of woodland and is a development which neatly ties in with a pioneering research project from the University of Teesside's Clean Environment Management Centre (CLEMANCE), based in the School of Science & Technology.

The team, which aims to deliver environmentally-sustainable solutions, is using willow to clean up derelict industrial sites – a process known as bioremediation. When the willow has been coppiced, or cut back, the resulting timber could help feed Wilton 10's voracious appetite for 300,000 tonnes of wood a year. Forty per cent of the station's required timber will be recycled and a

similar amount will eventually be sourced from energy crops, such as those planted by CLEMANCE.

The trees are crucial for the CLEMANCE team, which staged its first field trial three years ago at Fyland's Bridge, between Shildon and Bishop Auckland, County Durham, where willow, miscanthus, reed canary and switch grasses were planted to see if their roots could clean up the soil.

And it worked – the plants absorbed a range of potentially-harmful substances including zinc and copper. CLEMANCE is now repeating the exercise on ten sites across the Tees Valley, after winning a €1.2m grant from the European Union's LIFE-Environment research programme (www.bioregen.eu).

CLEMANCE project manager Dr Richard Lord said, 'This is exciting and challenging research. We are planting on five hectares at the moment, including a former sewage works and a steelworks slagheap, which, at 1,400 plants a hectare, gives an idea of the potential scale of our project. With 1,250 hectares of derelict brownfield land in the Tees Valley, we could be planting millions of trees in the future. We are helping to create the "Trees Valley".

'And Wilton 10 could provide a real opportunity to commercialise our work by using willow trees as an energy crop. It's a classic example of sustainability. Wilton 10 has already generated national and international interest.'



Dr Richard Lord with Janet Atkinson, CLEMANCE's BioReGen Project Officer, on one of the brownfield sites under renewal on Teesside.

'A lot of what is happening here is pioneering work', says Steve Bishop, the biomass manager for SembCorp Utilities UK, who recently achieved a Master of Business Administration at the University of Teesside.

'The Tees Valley is becoming a centre of excellence for these kind of technologies and we are seeing a lot of interest. What is happening has to be good news for the economy of the area. Wilton 10 created 15 new jobs and also helped create business and job opportunities for those supplying us.'

There's another twist to this sustainability story, because the beginnings of Wilton 10 can actually be traced back to a pilot CLEMANCE project which has now been adopted nationally.

The Tees Valley Industrial Symbiosis project involved companies finding new uses for their waste products. For instance, a company which produced sand as a by-product supplied it as a raw material to another business, and a Billingham company uses its excess energy to grow tomatoes.

Paul Jackson, commerce manager at Renew Tees Valley (RTV), which supplied the funding for the initial pilot, said, 'The project shows that if you can get companies talking to each other, you can

achieve success. What one company may regard as waste can be put to good use by another. Wilton 10 is a classic example – companies whose waste timber would otherwise have gone to landfill can now find a way of re-using it. It's what symbiosis is all about.

'If you look across the Tees Valley, we already have a large industrial infrastructure of plants, pipelines and companies; what we have to do is harness that network to the benefit of all.'

'The words "green" and "Tees Valley" are becoming inextricably linked now, a particularly pleasant change from the historical perceptions of a "black and smoggy" Teesside, particularly poignant to a born-and-bred Boro lad such as me', said Paul.

Dermot Roddy, until recently RTV chief executive, said, 'In some of these technologies, the Tees Valley is leading Europe and the world. The new green power station is an example. It brings together five technologies that exist already but which have never been brought together.'

For more information contact Dr Lord at CLEMANCE, School of Science & Technology, University of Teesside, Middlesbrough TS5 8ST, mobile 07852177234 and e-mail r.lord@tees.ac.uk



SOCIAL DIVIDE

IN HEARTBEAT COUNTRY

It used to be a relatively-quiet moorland community – then along came the hit television series *Heartbeat* and things were never the same again for the village of Goathland.

The tensions created in the North York Moors community by vast numbers of tourists have long fascinated University of Teesside academic Dr Tom Mordue, who believes they reveal much deeper social conflicts.

Dr Mordue, Acting Assistant Dean of Research for the Business School, believes the massive influx of tourists has brought to the surface age-old conflicts between the upper and lower classes.

Heartbeat, a nostalgic police series set in the sixties, began filming in 1991 for ITV with Goathland doubling as Aidensfield village, where much of the action happens.

Once the series became a hit huge crowds flocked to the village, many brought on tour buses, eager to see the post office, tea shop and other familiar sights from the programme.

Dr Mordue said, 'It has been phenomenal. Before *Heartbeat*, the village received 250,000 visitors a year, after *Heartbeat* the number went up to 1.4m. The villagers say that the influx of tourists has absolutely ruined Goathland.

'My interest came about because, as a geographer, I had been researching the way the landscape was being themed through initiatives such as the Land of the Prince Bishops and Cookson Country – it was the subject of my PhD. I needed a case study and Goathland was a good example.'

Dr Mordue said, 'The argument the villagers put forward is that day trippers have ruined their rural way of life and that the influx of tourists has damaged the character of the village. They say the village has lost much of its real identity as *Heartbeat* tourists regard it as Aidensfield rather than Goathland. The villagers say that the rural



landscape is being changed by all these people from towns cluttering up the village who do not have a true appreciation of the countryside.

'However, the reality is more sophisticated than that. For a start, I did not find a villager who had been born in Goathland. They had all come into the area to live or to buy second homes. Many of them had first visited as tourists, or they owned second homes. They had been attracted by the lifestyle and bought into it. It was their idea of a rural idyll.'

Talking to the tourists, Dr Mordue found that many exhibited irritation at the villagers' attitude, regarding them as middle-class people trying to exclude lower classes from their community. Indeed, some questioned the authenticity of Goathland's community façade, stating that it was probably a commuter or a retirement village.

Dr Mordue said, 'This is actually a class issue wrapped in cultural projections of what authentic rural England is all about. It is more complex than the villagers realise themselves but they are trying to defend the middle-class rural life they have constructed for themselves.'

'Although measures have been taken to minimise the impact of the tourists, such as double yellow lines, you can never really bring this to an end, not even if *Heartbeat* stopped being filmed. This goes deeper than a television programme.'

To be a Premiership footballer is a dream granted to only a tiny minority. However, it is now possible to be treated like one at a chain of sports injury rehabilitation clinics being developed across the North East, as HUW RICHARDS finds out.

STAR TREATMENT



The Teesside Sports Injury Centres are the brainchild of Steve Smelt, who has applied the expertise developed in his time on the staff of Middlesbrough and Sunderland Football Clubs.

'Injured players at top clubs are offered the whole complement of expertise and rehabilitation techniques', he explains. 'Injuries are examined and diagnosed and they then go into rehabilitation to ensure they recover as fully and quickly as possible. But those facilities have not been available to the public – they got the examination and diagnosis, but there was a dearth of specialised sports rehabilitation facilities.'

Steve, senior lecturer and programme leader in sports therapy at the University of Teesside, pictured, has now branched out from offering services at the University, to opening satellite centres at the Billingham Forum, Stokesley Leisure Centre and the Paramount Redworth Hall Hotel near Darlington. There are more to come in the near future. 'I'm negotiating to open a centre at Bedale Leisure Centre and

am having discussions with York Rugby League Club. I'm also hoping to open in the Sunderland area in the next two to three months', says Steve.

But the University remains the nerve centre. 'People who come to us have access to a huge range of specialised expertise', he says. 'There are experts in diet, psychology, physiology, mechanics and other essential elements in fitness for sport, and facilities like the environmental chamber.'

The expansion in the business is also providing jobs and work experience for the University's sports therapy graduates. All of his four staff are Teesside graduates – two working full time and the others combining the work with lecturing and postgraduate study.

The University has a 24.9% share in the company, which is run from its Innovation Centre on a social enterprise model. 'The aim has never been me for me or the University to make money, but to give our graduates work experience and at the same time provide a service', says Steve. Sixty per cent of income goes to the therapists, with the rest recycled into the business.

He and his team reckon to see 40 to 50 clients in an average week. They have a contract with the Redcar Bears speedway club, but the majority are individuals keen to ensure they recover fully from injuries by tapping into the range of analysis on offer. He explains, 'You get people with lower back or gluteal pain as a result of muscle imbalance which may mean working on correcting technique, using video analysis to assess where the problem is starting'.

For details of the service, see www.teesside-sports-injury-centre.org

It sounds like the plot for a television series, but Noel Dennis really exists. What's more he and academic colleague Michael Macaulay have found a way of combining the two parts of his life in a way that generates income, better organisations and serious academic research. **HUW RICHARDS** finds out more.

A black and white portrait of Noel Dennis, a man with dark hair, smiling and wearing a dark suit, white shirt, and striped tie.

TEAMWORK

NEEDS

HARMONY!

Jazzmen may have an image of raffish anarchism, but they do require significant disciplines. So says academic-cum-band leader Noel Dennis.

And he should know, coming from a jazz family. His father Kel, who died in May, was a drummer. Dennis plays trumpet and flugelhorn with his own band, in which brother Adam is the pianist.

'You play within a framework, but you respond to other players and also to the audience', says Dennis. 'You have a plan, but you need to keep on reacting, adapting and changing it. It is very much a team performance, a dialogue between the players. You are all soloists, but you have to be selfless. If you have somebody selfish in a group, it all very rapidly falls apart.'

Given his parallel interests – he has lectured in marketing at the University of Teesside since 2002 – it is hardly surprising that he



realised these demands echo many of the challenges facing modern companies and their workforces. 'They have to be able to plan, but also to be adaptable and to be able to improvise in order to react to unexpected developments and to customers' needs and demands. Like a band, the people within a company need to communicate with each other to work effectively. You want people to take initiatives and think for themselves, but within a broad framework.'

Dennis, pictured right with Macaulay, devised a one-day training course designed to make use of the jazz band as a template for developing companies. The programme, which costs around £2,000 for up to 20 people, is run through the Teesside Business School.

Around a dozen courses have been run over the last couple of years. Macaulay says, 'We respond to customer requests. We started off with public-sector clients like a local college of further education, but more recently have also run courses for private companies like Newcastle Airport. The idea can be adapted to any sort of company'.

The course starts with an introduction to the ideas behind it and a couple of numbers from Dennis's four-man band plus a specially-imported guest player 'to get people into the

mood'. Macaulay says, 'The idea is to give people a different way of thinking about how to operate in teams, to see the benefits you can get from trusting people, giving them more autonomy and having good communication – the conclusion they always reach is that the simpler the lines of communication are, the better'.

Course participants are encouraged to think about these issues, then guided through how a band works together. The band then demonstrates how much difference teamwork makes by playing the same piece twice. 'Once without the communication musicians give to each other – mostly nods and taps – and then with it to show the difference', explains Macaulay.

In a further exercise, course participants are divided into groups – each one controlling a single member of the band as they play a piece together. Macaulay says, 'This is a difficult exercise and the results can be pretty cacophonous at first, but you can see a real improvement after a couple of times as people start to understand how the band is structured and fits together'.

Dennis says, 'You take people out of their organisations for the day and get them both to think about the way they do things and to look at other ways through the medium of the jazz'.

Feedback from customers has been remarkably enthusiastic. Macaulay says, 'We expected some scepticism, but even people with no real interest in jazz have said that they've got a lot out of it'.

They have discussed the possibility of getting participants to play instruments, but have not yet found a practical way of doing this. It hasn't just generated income and goodwill. Findings from the courses have informed a forthcoming article in the *European Journal of Marketing* on an improvisation matrix they have constructed, and they are in the process of completing a piece for the *Journal of Marketing Education*. They have also collaborated on an article on the size of the market for jazz in the UK, concluding that there are up to six million potential consumers, while Dennis has compiled an online guide to marketing for jazz bands.

Already a nationally-known musician, Dennis hopes that his allied talents will eventually carry him to similar academic heights. 'I want to be the first professor of jazz marketing, if such a thing is ever possible.' And he's found that benefits are not completely on the side of his customers. 'I think it has made us a better band, thinking more about what we are doing and becoming more sympathetic players', he says.



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