

PANMURE HOUSE PERSPECTIVES

Developing tomorrow's business leaders for tomorrow's markets

ISSUE 4 2019



AN HISTORIC MOMENT FOR SCOTLAND

The former Prime Minister Gordon Brown declares
Adam Smith's house in Edinburgh officially open
again for discourse and economic debate

MASTER AND COMMANDER

Robin Watson, Chief Executive of Wood plc, a global engineering group, recalls his time at Heriot-Watt.

A CALLING IN AFRICA

In an exclusive interview, Dame Ann Gloag talks about her philanthropic work in Africa.

OVER-THE-COUNTER REVOLUTION

Dr Jan Philipp Wintjes on building an omnichannel strategy in the global fashion industry.

OUR LEGACY OF MECHANICS

Vice-Chancellor and Principal Richard Williams salutes the founders of the world's first institute of mechanics in 1821.

[Welcome]

AN INTRODUCTION FROM PROFESSOR HEATHER MCGREGOR

Adam Smith's home is a vibrant place for liberal discourse once again.



Welcome to the fourth edition of *Panmure House Perspectives*, the international business journal of Edinburgh Business School, the graduate school of business of Heriot-Watt University. Our aim is to ensure you find something informative, original and useful to read for business and pleasure.

As we move towards celebrating our bicentenary in 2021, commemorating 200 years since the foundation of Heriot-Watt as the first institution of mechanics in the world, we continue to look ahead and prepare for an exciting and uncertain future. Our Vice-Chancellor and Principal, Richard Williams, writes about the Scottish visionaries who created the mechanics institute. It's a fascinating read.

As a university, it is our duty to prepare and equip the people who pass through our gates with the ability to meet the multiple challenges of the world. In this issue we have exclusive interviews with two Scots who have helped shape the world around them. Dame Ann Gloag, the Scottish transport entrepreneur and creator of The Gloag Foundation, and Robin Watson, the chief executive officer of Wood plc, one of Scotland's largest engineering groups employing 60,000 people around the world. Robin is an engineering graduate of Heriot-Watt and we are most grateful that Wood plc have chosen to become supporters of Panmure House.

There has been a great deal going on since our last edition and I have been delighted to meet students and their families at our graduations in Edinburgh, Dubai and Malaysia. It is so uplifting to meet talented young people brimming with positive ideas nurtured and inspired by our teaching and administrative staff.

However, the official opening of Panmure House in Edinburgh last November was a historic moment for Heriot-Watt. We were honoured to have former Prime Minister Gordon Brown, who is also a fellow citizen of Adam Smith's birthplace Kirkcaldy in Fife, to officially open our fabulous venue. It was a truly memorable occasion introduced by Lord Vallance of

Tummel, chairman of the business school.

Since then, we have also been pleased to welcome the First Minister of Scotland, Nicola Sturgeon, and Katrín Jakobsdóttir, the Prime Minister of Iceland, as guests at the house. We are encouraged that the Scottish Government feel comfortable about using Panmure House for official government business.

Now we have a whole host of activities including, as we go to press, an international symposium organised by Professor David Teece, which is a call to arms for our future world. Entitled *The New Enlightenment: Reshaping Capitalism and the Global Order in the Neo-Mercantilist World*, the aim is to draw together leading scholars and practitioners who care about the balanced, long-term performance of the economic system, and the survival and advancement of liberal democracies.

This is the first major event of its kind in the house since Adam Smith's passing in 1790 and exactly the kind of gathering that will ensure Panmure House shines as a focal point for international discourse and reflection.

Heriot-Watt Dubai received fantastic recognition by winning 'Best University in the Middle East' at the prestigious *Forbes* Middle East Higher Education Awards 2019. I'd like to congratulate all staff, students and alumni. We are all extremely proud of your achievement.

Finally, our thoughts are with the family of Professor Gavin Kennedy, who died in April at the age of 79. Gavin was a brilliant man who devoted incredible energy to developing Heriot-Watt University, and the creation of Edinburgh Business School. We honour him with an obituary in this edition.

We are always keen for your feedback. Please let us know how Heriot-Watt and Edinburgh Business School feature in your professional journey. Enjoy a wonderful summer.



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Panmure House Perspectives is a twice-yearly publication reflecting on modern global business and the continuing relevance of Adam Smith. Smith's former home – Panmure House, near Edinburgh's Royal Mile – has been restored by Edinburgh Business School as a place of learning, research, reflection and international fellowship. ISBN 978-1-5272-3064-4.

ISSUE 4 2019



Let's find the right blend

across all modes of learning

PROFESSOR ROBERT MACINTOSH, Head of School of Social Sciences, Heriot-Watt University, says the modern degree-level apprenticeships are to be welcomed and encouraged – and are a gentle nod to the foundations of Heriot-Watt as a place of practical, work-related endeavour.

Heriot-Watt University can

trace its roots back to the formation of a night school aimed at allowing those in work to gain new technical skills for the then burgeoning clock-making industry. Relative to the norms of 1821, this was a pioneering new form of education shaped by the needs of industry and offering flexible access to learning.

Over the intervening 198 years much has changed in the university sector which is now a major global industry in its own right. Participation in higher education has grown dramatically and is often seen as an enabler of a knowledge-intensive, high-skill economy. Gaining a degree is a prerequisite in many careers and the uptake of postgraduate study has also risen as people look to retrain or acquire new skills mid-career. Yet the majority of those studying undergraduate degrees still do so on a full-time basis.

There are many positives to full-time undergraduate study. Education of any kind can be transformative. For those living away from home for the first time, expanding their social network, working and studying with a diverse range of international students, the years spent at university are life changing. This isn't entirely without downsides however. Many students incur debt

relating to fees and living expenses while at university.

On graduating, the job market can be competitive and finding a graduate-level vacancy with an employer who shares a genuine concern for your future development can be challenging.

Degree-level apprenticeships offer an attractive alternative to full-time study for everyone from school leavers to those who missed out on the opportunity to study at university first time around. In the UK, an employer levy is being used to fund the growth of degree apprenticeships. Employers are being encouraged to access a fund, into which they have already paid, to support the development of their workforce. Work-based learning offers an immediate and direct opportunity to translate theory into practice. This helps both the learner and the supposedly learned. Students can put new knowledge to work in their organisation. Academic staff have their feet held to the fire by an audience interested in the practical utility of the knowledge being taught.

In many ways then, the new degree apprentice route through higher education is a return to the origins of Heriot-Watt. The focus on in-work education which is directly applicable to real-world settings will appeal to both employers and to

prospective students. With a graduate-level job already in place, income received while studying en route and the opportunity to gather experience en-route to graduation, degree apprenticeships hold an obvious appeal.

Our university, like many others, faces the challenge of (re)introducing work-based learning for undergraduate students. Beyond this immediate task, lies another more fundamental challenge. How can universities create more flexible pathways for students that offer the opportunity to switch seamlessly between periods of full-time, campus-based study and periods of part-time, digital, distance and/or work-based learning? In the fullness of time, individual learners, their current or potential future employers and the university sector will have to work in partnership to deliver education that makes a difference.

Heriot-Watt's new strategic plan is about shaping tomorrow together. As a multi-campus university with students already engaged in the full range of campus-based, work-based and digital learning, we have the right set of ingredients. Our task is to blend and to learn between and across those modes of learning and put the student in the driving seat, able to choose how, where and what they study. In the years to come, students may well wonder what it was like to stick to one mode of study. Changing times indeed. ©

PANMURE HOUSE
PERSPECTIVES
Developing tomorrow's business leaders for tomorrow's markets

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A world-class £20 million centre of excellence for business and innovation officially opens on the campus in Edinburgh in early autumn. It's a truly exciting proposition as GRID – the Global Research Innovation and Discovery centre – at Heriot-Watt University is set to become a hive of industry for the Fourth Industrial Revolution.

It is being primed to help international businesses of all sizes to work with students, and academic researchers to meet the complex challenges of AI, the Internet of Things and the arrival of 5G connectivity.

David Richardson, Heriot-Watt's chief entrepreneurial executive and project manager for GRID, gave *Panmure House Perspectives* an exclusive preview tour.

"This fantastic new facility is about enabling innovative businesses to grow and succeed. We are the enablers here at Heriot-Watt," he said, as the finishing touches were being undertaken.

"My role is to head up enterprise and to help company start-ups, spin-outs and, in some cases, spin-ins to the university so they can benefit from talent and resources that are available. GRID is set to become a central part of this journey."

The key leadership team is Dr Gillian Murray, the Deputy Principal for Enterprise and Business; Professor Steve McLaughlin, Head of School of Engineering and Physical Sciences; Professor Beatrice Pelloni, Head of Mathematical and Computer Science, and Richardson. A new head of commercialisation from a venture capital outfit and an IP licencing professional will soon be joining.

Dr Murray said: "It is much more than a building. It will change how we teach, learn and how we apply our entrepreneurial minds to solving global issues."

Indeed, GRID is a core element of Heriot-Watt's wider strategic engagement with global business, which means it will be working closely with Edinburgh Business School

GRID
SET TO CHANGE
the world

Heriot-Watt's chief entrepreneurial officer DAVID RICHARDSON gives *Panmure House Perspectives* a guided preview of the new innovation and discovery centre in Edinburgh which is preparing to meet the multiple challenges of the Fourth Industrial Revolution and beyond. He speaks with KENNY KEMP.



and Professor Heather McGregor's colleagues in Edinburgh, Dubai and Malaysia.

"We are all working together to see how we create more strategic and industrial partnerships, so there is a talent pool going out into industry," explained Richardson.

GRID, a 5,200 m² facility surrounded by the lush green space at the heart of the campus, overlooking the famous duck pond, will be officially opened later in the year. In the meantime, Richardson and the team will be building partnerships with Heriot-Watt campuses in Dubai, Malaysia, the Scottish Borders and on Orkney to explain how they can interact with GRID. This will be coupled with a programme of global research in the spheres of innovation and discovery.

"We will be helping companies to access the latest technology and talent to grow their business."

Entering on the first floor on the left is the Flex-Lab which has been kitted out with engineering and testing equipment. Students, staff and industry partners will be working together here to physically make innovative new products. On the other side is the data and computing space for digital collaborations.

"We have a focus on business and enterprise and part of our value proposition is that we are bringing the physical engineering together with the digital," said the enterprise chief.

The open-plan atrium, with its Tuk-Tuk coffee shop, is ideal for informal breakouts and relaxation. At the back of the building there is an imagineering suite for visualisation in 3-D, an area equipped for augmented and virtual reality and gamification. Here students will be challenged to create companies that use gamification.

Upstairs, there is large flexible computer lab with around 100 double-screen computer positions, in a space that can be customised to accommodate a competitive hackathon or collaborative project teams. Behind this is a creative studio, a highly customised space that can be turned into a living lab, a living room and studio, or even an art gallery.

"The purpose of this space is to open up a range or different scenarios and create testbeds where people can come in and work with us," said Richardson.

On the opposite side is a boardroom with smart whiteboards where companies can apply their brains, and private meeting space. There is also flexible space set aside for start-ups with shared-screens for conference calls, and glass-screened interview booths where more sensitive discussions can be held.

There is already a pipeline of companies interested in coming to work at GRID, especially with corporate venturing.

Richardson explained that GRID's capabilities in artificial intelligence and intelligent sensors will also play a significant role in the development of the UK's first National Robotarium in 2021; a £35 million joint venture between Heriot-Watt and the University of Edinburgh as part of a data-driven initiative from the Edinburgh and South East Scotland City Region Deal.

On this spring day, GRID is a tranquil setting in the middle of the verdant campus, but it is likely to become a hotbed of activity with the new intake of students in late September sharing these outstanding facilities. ☺

CAMPUS PERSPECTIVES

Business school moves closer to School of Social Sciences

Exciting work is underway to bring Edinburgh Business School (EBS) closer to Heriot-Watt University, within an expanded School of Social Sciences (SoSS).

Principal and Vice-Chancellor Professor Richard A Williams explained: "In recent months, the University and Edinburgh Business School Board of Trustees have considered a number of potential options to restructure EBS and create a unitary business school. Our objective has always been to secure the best outcome for our students and staff."

"Following the meeting of

Heriot-Watt University's Court on 22 March, I can now confirm that the Court approved EBS Board's recommendation for EBS to operate as a fully integrated part of Heriot-Watt University."

The EBS charity will be amalgamated with the Heriot-Watt University charity and the new unitary business school will operate within the School of Social Sciences. All staff, academics and professional services will move into the new structure. The unitary business school will operate under the name and brand of Edinburgh Business School.

"I believe that this decision, reached by the EBS Board and supported by the Heriot-Watt University Court, will ensure greater stability for our students and staff and provide a clear path for the future," said the Principal.

He said the university's strategy places both the unitary business school and distance learning education at the heart of its plans.

"We will continue to work closely with colleagues in EBS and SoSS to ensure a smooth transition to a fully integrated model with new structures in place by 1 August 2019," he added. ☺

Sensor business wins SIE award

A sensor technology capturing 3D images developed by IMERA I was among the winners of the 2018-19 Fresh Ideas Competition at the annual Scottish Institute for Enterprise (SIE) Awards. The start-up is based in the EBS incubator in Edinburgh.

In addition, Loft Boarding Scotland, another EBS incubator start-up, reached the shortlist of the WeDo Scotland Awards in the New Start Business of the Year category.

Alex Bowen, a Heriot-Watt University Computing and Electronics graduate, who is also director and principal engineer at IMERA I, said: "Our new sensor technology has unique applications in robotics and the Internet of Things as an alternative to intrusive cameras and expensive LiDAR. The technology is now being used to develop an innovative smart home security solution that protects residents while automating the smart home around them."

"The SIE Fresh Ideas Award means a great deal to us as an early-stage business, as it validates our proposition and lets us move forwards confidently on our growth journey. It has also given us the momentum we need to think big and take the new opportunities that are in front of us," said Mr Bowen.

The company's plans include securing investment and expanding the team. Alex said: "We are now moving towards our first investment round and are looking to build out our team from our base in the Edinburgh Business School incubator. We are also developing our first product to be ready for release in 2020."

Andrew Johnstone, the founder of Loft Boarding Scotland, noticed a gap in the market a few years ago and set up his company in 2017. Now, his business is the largest installer of LoftZone in Scotland, the only raised storage flooring product to have achieved independent certification for new build homes.

"Many home builders advise against loft flooring, based on the traditional method of placing boards directly on joists or building up the joists with timber. This reduces airflow, causing damp, or squashes insulation making it far less efficient. The system we fit, LoftZone, is approved by the British Board of Agrément (BBA) and does not affect new home warranty." ☺

VIP visitors

Senior representatives from the Senegal government in West Africa visited Edinburgh Business School and the Institute of Petroleum Engineering in April.

Professor Cheikh Ahmadou Dieng, the Senegal Ambassador to Great Britain and Northern Ireland, and First Secretary, El Hadji Cheikh Diop, met with Professor Heather McGregor, Dr Barbara Jamieson, Jared Philippi and University Chief Scientist, Professor John Underhill.

"IT WAS FASCINATING TO LEARN MORE ABOUT THE TRAINING AND RESEARCH CHALLENGES THAT SENEGAL FACES AND TO EXPLORE WAYS IN WHICH HERIOT-WATT CAN POTENTIALLY ASSIST."

The meeting included a visit to the Lyell Centre where the visitors saw the Ogilvie-Gordon 3D Audio-Visualisation Centre in operation and met with the University's Principal and Vice-Chancellor, Professor Richard Williams.

Professor Underhill said: "It was fascinating to learn more about the training and research challenges that Senegal faces and to explore ways in which Heriot-Watt can potentially assist." ☺



A Great Day for Heriot-Watt

OPEN FOR BUSINESS

THE OFFICIAL OPENING OF PANMURE HOUSE

GORDON BROWN reflects on the life and times of Adam Smith as he declares Panmure House open again as a place of discourse and debate.

PRIME MOVERS: Former UK Prime Minister the Right Honourable Gordon Brown, with Professor Heather McGregor, Executive Dean of Edinburgh Business School, and Lord Vallance of Tummel, the chairman of Edinburgh Business School.



Adam Smith was a leader of the Scottish Enlightenment whose moral observations about our communities and global commerce remain entirely relevant to today's world, guests at the official opening of Panmure House, in Edinburgh, were told by the Right Honourable Gordon

Brown, former Prime Minister of Great Britain and Northern Ireland. He spoke with eloquence and a deep understanding of Adam Smith on Thursday, 8 November 2018.

Mr Brown was introduced by Professor Heather McGregor, Executive Dean of Edinburgh Business School, and welcomed by Lord Vallance of Tummel, Chairman of the School. In her opening remarks, Professor McGregor said: "It has been a very long road through a lot of planning and with a lot of people's help, both financially and practically, to get this wonderful building completed... It has been an extraordinary privilege to do this and an even greater privilege today to welcome the Right Honourable Gordon Brown to officially open the building."

She also paid tribute to Professor Keith Lumsden, the founder of Edinburgh Business School, who was in attendance, for his vision in saving Panmure House from demolition.

Gordon Brown, who was Chancellor of the Exchequer from 1997 to 2007, the longest-serving chancellor in modern history, was raised in Kirkcaldy and served as an MP between 1983 and 2015, first for Dunfermline East and later for Kirkcaldy and Cowdenbeath. Professor McGregor said that Mr Brown, the United Nations Special Envoy for Global Education, had attended the same secondary school as Adam Smith in Kirkcaldy, which prompted hearty laughter when he quipped: "But not at the same time!"

INVESTMENT IN CIVIC SOCIETY

The former premier began by saying it was a privilege to be invited to what is a 'great day' for Heriot-Watt University, for Edinburgh and for the whole of Scotland. He congratulated everyone – including the architects, designers, building contractors and planners – involved in the Panmure House renovation. He also congratulated Heriot-Watt University's Principal Richard Williams, in attendance with his wife; Edinburgh Business School, including Professor McGregor and Lord Vallance of Tummel; and all those who had the idea that Adam Smith's final home should not be knocked down and turned into flats but preserved as a living monument to his work. He said Panmure House was now restored at the heart of Scotland's cultural life.

"This is not simply an investment in bricks and mortar; this is an investment in our culture, in our history and in civic society. This will be a centre for debate, for new ideas and new thinking, with research fellows coming from all over the world to be here. It will be as Adam Smith intended it to be and was when he lived here: a place for debate and a forum for great dialogue on the future of our society."

The former Prime Minister said the opening was in the spirit not only of the Scottish Enlightenment but also of Heriot-Watt University, formed in 1821, two years after the death of Scottish engineer James Watt, whose name is associated with it. By this time, he said, the Enlightenment, fostered by the likes of Lord Cockburn, was inspiring the flourishing of Sir Walter Scott and, later, Robert Louis Stevenson. It fitted with the development of Heriot-Watt as a place of useful learning as the first mechanics institute in the world.

► “Since then, it has gone on to pioneer many different things, including the first research park and the first online MBA. This is a great day for Heriot-Watt University, but it is typical of the history of a university that has been at the centre of innovation.”

Mr Brown said Heriot-Watt has also helped rescue Adam Smith from what historians might call ‘the condescension of posterity’. He spoke with passion about being brought up in Kirkcaldy and how, during the 1960s, the local council allowed the original Custom House building, where Adam Smith was brought up, to be demolished.

“When I was young there was a sign on the road as you entered the town which said ‘Birthplace of Adam Smith’. Then that disappeared and it became ‘Kirkcaldy: Twinned with Ingolstadt, Germany’. Then they undertook a poll in the town and more people thought Adam Smith was a pop singer rather than an economist,” he lamented.

Kirkcaldy now, with the Adam Smith Foundation, the Adam Smith Lecture and the Adam Smith Trail, is trying to recover both the reputation of and an appreciation for Adam Smith.

“Panmure House being restored by Heriot-Watt University, and particularly by Edinburgh Business School, is a huge statement and affirmation of both our history and the importance of Adam Smith, both as an economist and a scientist of political economy.”

Mr Brown said, when considering Smith’s work, we must look at what he told us about the kind of economy that makes for a good society and the kind of society that makes for a good economy.

“When I was growing up in Kirkcaldy, you could see how Adam Smith developed his theory of the wealth of nations, because you looked out on a two-mile esplanade, looking out at the sea from the port of Kirkcaldy. From his Custom House window, as he grew up, he could see the ships coming in and out of the port. He could see the importance of trade, and you can see why his book *The Wealth of Nations* is about trade being the engine of growth and the key to future prosperity.”

CIRCLE OF EMPATHY

Mr Brown also emphasised that Smith was a great moral thinker who gave us *The Theory of Moral Sentiments*, with lessons on how to build a society based on trust and cooperation.

“We were not simply traders and merchants, but we were communities, and his idea of moral empathy; his idea of a ‘circle of empathy’, his idea that we were part of a community and that there had to be a moral foundation to the economy is something that was often forgotten in the writings of the last 100 years, but it is something that is exactly at the centre of his work.”

He said the writer, who spoke about the ‘invisible hand’ of the market, also spoke about the ‘helping hand’ of communities and our duties and obligations to each other. Panmure House will be celebrating the richest traditions of the Scottish Enlightenment, and not purely economics



When I was growing up in Kirkcaldy, you could see how Adam Smith developed his theory of the wealth of nations because you looked out on a two-mile esplanade, looking out at the sea from the port of Kirkcaldy.

From his Custom House window, as he grew up, he could see the ships coming in and out of the port.”



KENNY KEMP is an award-winning business writer. He is Editor-at-Large of Panmure House Perspectives.

and commerce but the theory that the economy is underpinned by ethical foundations.

“I think he has a lot to tell us about the struggles and debates that we have today, particularly because we are no longer national economies with national flows of capital and goods, but global flows of capital and goods, and what Smith says about the importance of trade and commerce is critical to the functioning of the global economy. What he also says about how markets and states must work together is important for a good society.”

Mr Brown said we must not forget that Smith talked about public works and the importance of free and universal education, and of fair taxation.



ADAM SMITH PANMURE HOUSE

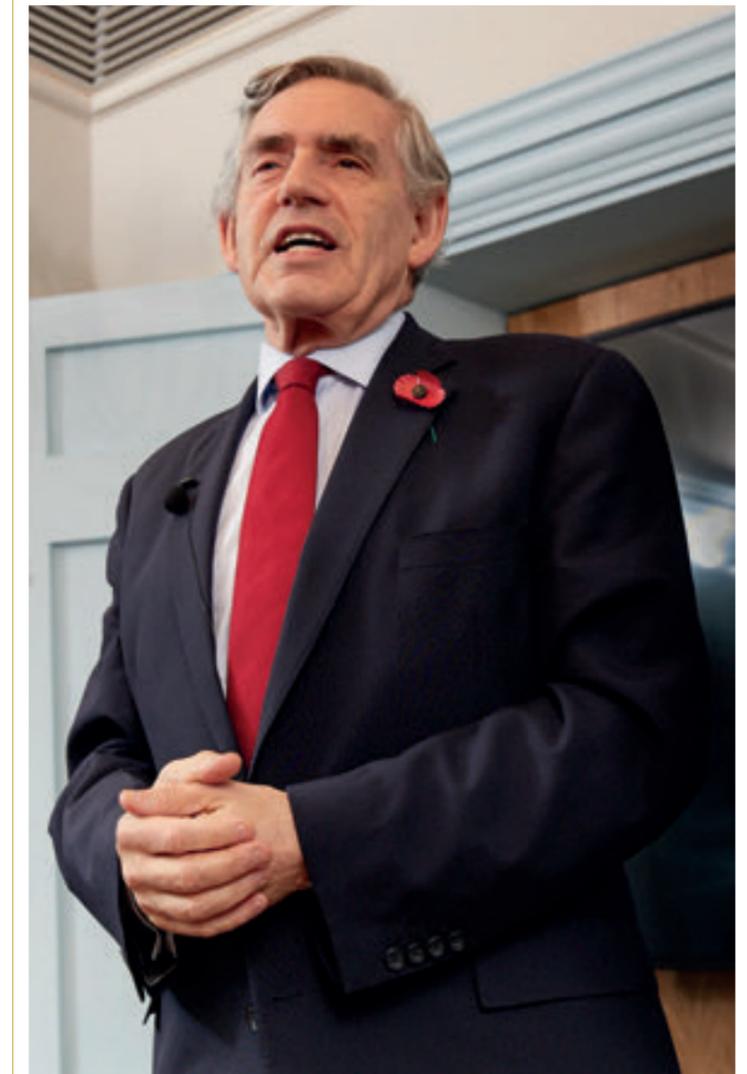
SPECIAL MOMENT: Gordon Brown explains to guests his admiration of Adam Smith and why the re-opening of Panmure House is a special occasion for Scotland. (Below) Gordon Brown and Professor Heather McGregor unveil the official commemorative plaque.

UNVEILING OF A PLAQUE

Lord Vallance of Tummel thanked the many donors, with a particular mention for Edinburgh World Heritage and the Garfield Weston Foundation, and praised the Master of Panmure House, Professor Keith Lumsden, “Without whose vision and determination we wouldn’t have had an Edinburgh Business School, and without whose foresight this would not be what it is, but a derelict ruin.”

Lord Vallance also thanked Heriot-Watt University, for the ‘patient support’ of a parent institution that has a “strong mutual interest in making it a success”.

Gordon Brown unveiled a plaque that will be fixed onto the outside wall of Panmure House, pending planning approval. 📍



It is a dreich and blowy afternoon in early April when I step into a modern office complex in Justice Mill Lane, off Union Street in Aberdeen. In the spacious executive suite up on the second floor, there is a warm welcome from Robin Watson, an experienced executive of slender build in a neat lounge suit, who exudes a sense of friendly calm. Watson is down-to-earth, fiercely smart and proudly Scottish. An honours graduate from Heriot-Watt University, he is at the helm of Wood plc, Scotland's leading engineering company.

Wood plc may be unknown to many Scots, yet it is one of the nation's hidden industrial gems. On 6 October 2017, this dynamic company undertook a game-changing deal when it snapped up Anglo-American business Amec Foster Wheeler (AFW) for £2.2 billion.

That deal has been 'transformational' for the company and its leadership team, led by Watson and chaired by Ian Marchant, the former head of Scottish & Southern Energy (SSE). Now, 18 months on, Wood plc has completed the integration of AFW, giving the company revenues of \$11 billion, and earnings of \$630 million.

Although Wood has its headquarters in Aberdeen's Justice Mill Lane, it operates in over 60 countries around the globe, ranging from the Middle East to South America, Australia, Mauritania and Papua New Guinea. The company also has a significant presence in the US where the majority of revenue stems from. It was Sir Ian Wood, a psychologist rather than a trained engineer, who transformed the former fishing trawler repairer into an international engineering support business.

Speaking as he delivered his company's results in March 2019, Robin Watson said: "Wood delivered good organic growth in 2018. We completed the integration of AFW at pace, increased cost synergy targets by 24% and found new opportunities across our broader range of capabilities and sectors to secure revenue synergies of over \$600 million. We have built a unique platform and are in the early stages of what we can achieve. Our performance has strengthened our conviction in Wood's potential, and we are excited about our prospects. We are confident of achieving further growth in 2019."

ROBIN WATSON is the Chief Executive Officer of Wood plc, Scotland's leading engineering business, with a global footprint in 60 countries. He speaks to **KENNY KEMP** about his unusual path to the top via the Merchant Navy – and his time at Heriot-Watt University.

From Officer to Commander

 I worked offshore on the Beryl field. The stuff that we did was so pioneering and I feel people have forgotten that.

The influence of the Scottish oil industry and working offshore cannot be understated."

The AFW deal means that Wood Group's 29,000 people were joined by 35,000 from Amec Foster Wheeler. In March 2019, the average number of employees was almost 60,000, with circa 13,500 in the UK, 19,000 in the US, and over 25,000 in the rest of the world.

So how did this Heriot-Watt engineering graduate end up leading this international organisation? He is clear that being a Scottish-trained engineer who spent several years at sea in the Merchant Navy as an engineering officer gave him the grounding to succeed.

"Even today, a Scottish-trained engineer still has a great reputation around the world. We have some significant home-grown capability. In oil and gas, I worked on the Beryl field with some young engineers when we were all in our twenties. Many of them have moved on to positions of influence," he says, sitting at a table in his tidy office.

The Beryl field, which is situated over 330 km off Aberdeen, was discovered in 1972 and named after Beryl Solomon, the wife of Mobil Europe's then president. It was a massive discovery with 28 oil and three gas wells, producing nearly two billion barrels of oil. Production began from Beryl Alpha in 1976 and from Bravo in 1984. Watson said that two of the top four people in ExxonMobil Liam Mallon (president of ExxonMobil Development Company) and Neil Duffin (president of ExxonMobil Global Projects), worked on Mobil's Beryl field, and both are Heriot-Watt graduates. Watson himself became the Offshore Installation Manager (OIM) on the Beryl Alpha in his late 20s.

"I worked offshore with these guys on the Beryl field. The stuff that we did was so pioneering and I feel people have forgotten that. The influence of the Scottish oil industry and unlocking offshore hydrocarbon reserves cannot be understated," he says.

"Deepwater Gulf of Mexico happened on the back of what we did in the North Sea between the 1970s and the 1990s. If you look at deepwater engineering now, it would never have been envisaged if it wasn't for offshore. There is something about having the blessing of hydrocarbon reserves to the tune of 40 billion barrels. That was a big asset for Britain. However, one of the other things was unlocking this asset and I think the ingenuity we developed, supplemented by some of the ideas brought in from the United States, very quickly made us world leaders in the industry."

He says the complexity of the technology in the North Sea was far superior to the nodding donkeys of the land-based Texas and Louisiana oilfields.



\$11 billion
COMPANY REVENUES

+

\$630 million
OF EARNINGS

"Before we get too congratulatory, this transition was marked by the terrible Piper Alpha disaster (the production platform exploded and killed 167 people in July 1988), which became a landmark for the North Sea. Lord Cullen's report was a studious piece of analysis with a set of very structured recommendations which have transformed operations and health and safety regulation. This became the template for good corporate practice across the global oil and gas industry," he points out.

Scots, on the whole, are pretty hard-working and Calvinistic in approach, says Watson.

"We're modest, head-down types but we are also innovative. When I look at everything that Sir Ian Wood achieved, he is an inspirational figure for me and a really good role model for all of us."

"Personally, I travelled the world at sea when I was in my teens but to take the business to where it is now, it has been from the great vantage point which Sir Ian created for all of us."

He recalls the bleak days after the de-industrialisation instigated by Margaret Thatcher, when engineering in Scotland was in the doldrums. "I pinch myself to think that 35 years later, I'm in a company that does this much engineering, is Scottish, headquartered in Scotland, and is the largest integrated engineering company in the UK, doing pioneering engineering work around the globe. It's wonderful and in many respects, it is in spite of the challenges and the political rhetoric of that time."

When the company moved into shale gas in America, it quickly learned more about this booming sector and broadened the company's operational footprint in an innovative and emerging environment.

"We went on a journey and we've grown that business. We are quite thoughtful and we're not complacent. We don't assume anything; I think that's this rigid Scottish upbringing again."

HIS PATH TO THE TOP

Robin Watson was not born into any industrial dynasty. Indeed, he has rather humble origins, with hard work as his hallmark. He was born in Campbeltown on the Mull of Kintyre and was the youngest of three children. The family home was a two-bedroom top floor flat in a 1950s block and his dad was a joiner who was able to convert the roof space into a play area.

"It was a fairly modest upbringing. I went to the local Dalintober primary school at four and a half, then to Campbeltown Grammar School, which sounds very grand but it was the only senior school in the town."

"My uncle John was a captain on the Western Ferries' ships *Sound of Jura*, *Sound of Islay* and the *Highland Seabird* and, like many young men living on the coast, I had a massive fascination for ships.

"Despite getting enough qualifications at school to go to university, I was determined to join the Merchant Navy."

Watson left home at 17 after doing his Highers in 1984. He joined the Edinburgh shipping company Ben Line, then with a fleet of ships that were taking cargo around the world. The head office, now a Travelodge, was in St Mary's Street and the ships sailed mainly from Southampton, around the European coast and across the Indian Ocean to the Far East. He began an engineering officer cadetship which entailed attending the Glasgow Nautical College for two years, followed by a year at sea, before a final year at the college.

"I loved my time at the nautical college and I loved my time at sea. It was quite formal and we wore our blazer and flannels. The college was well run and had great facilities. We had many interesting projects, like stripping down a ship's steering gear and then putting it back together again. We designed, fabricated and commissioned a closed-loop water pumping system and a refrigeration system."

"Then I did a year at sea. By the time I was 19, I had been around Europe and off to the Far East, through the Suez Canal. It was a really good experience going to countries like Japan, Hong Kong, and Singapore. Seeing the world and learning much about marine engineering in the process."

In the mid-1980s, the Ben Line fleet was a modern fleet of 60,000-tonne, 300-metre twin-screw container ships such as the *City of Edinburgh*, the *Benavon* and the *Benalder*.

"There were fitters on the ships as well. Sometimes there was a bit of work on the lathes to fix a valve or undertake some other machining activity. I've always been quite good at organising things. I remember being in the middle of the Indian Ocean, and when ships break down there, you don't just sit on your hands and wait for help to arrive. There was something very practical; if you had a problem with one of the main cylinders in the engine, you would take two cylinders out to balance it up, so at least you could hobble into port."

During his four years in the Merchant Navy he was given a lot of responsibility at an early age and, with superior grades from his Higher National Diploma (HND), Robin gained access to the third year of a four-year honours degree in Offshore Mechanical Engineering at Heriot-Watt University.

"At sea, you kind of grow up quickly. I've been self-sufficient since I was 17 and during the summer holidays, I went back to sea to fund myself to go to university. I joined an ore ship in Japan and sailed to Australia and crossed the equator for the first time on that journey. The following summer I went from Southampton to Canada with a couple of trips across the Atlantic."

Another key skill that Robin Watson developed at sea was the ability to handle different types of people in different situations. "You were at sea with folk whose average age was 40. They were all mischievous, shipyard types and there was madness all around you. I was brought up to try and engage with people and get along with them. At long stretches at sea, it kills the time better when you have something in common and enjoy working and socialising together."

After leaving Heriot-Watt University (see sidebar) and with an interesting CV, he landed a job with Mobil North Sea as a graduate engineer. He moved to Aberdeen and began life as a petroleum engineer, rotated around all the different parts of the business, and got his first experience offshore.

"I took ten days off after finishing university and then started work in Aberdeen. The Mobil Graduate scheme was a really good programme which allowed me to learn, especially about engineers working in the office rather than in the field."

He lived in a rented company flat in Holburn Street, Aberdeen.

"I was desperate to get offshore and back into the industrial environment. My ambition was to become an offshore platform manager. There was a technical and a managerial ladder, and at that point you didn't have to commit to either of them," he recalls.

He went out onto drilling rigs and experienced 'spudding in': when the rig comes over virgin seabed, the anchors go down, and the drilling begins. With some irony, it was on a drilling rig owned by Ben Line, which was by then moving from container ships into oil industry jack-up, drill-ships, and semi-submersibles.

THE OIL INDUSTRY BECKONS

Robin Watson spent a decade with ExxonMobil from 1990 to 2000. Meanwhile, he undertook a distance-learning MBA at the University of Strathclyde in Glasgow. "I thoroughly enjoyed doing this and it broadened my learning beyond the sphere of oil and gas and helped me with other corporate skills. It was so enriching."

During this time, he rubbed shoulders with people from the Forestry Commission, the Scottish Prison Service and other institutions which gave a different level of insight. He finished his degree just in time to get married to Lorraine.

"During that period, I became a platform manager, which had been my ambition. As I worked my way up I thought it would be great to be an OIM (Offshore Installation Manager). I was doing this by the time I was 30 on the Beryl Alpha. It was a big platform (500 000 tonnes) with 170 people on board, producing 110,000 barrels of oil and 200 million standard cubic ft of gas a day."

He came back onshore, started a family with Lorraine and began to consider his next career step.

"I really like working with people and taking on new challenges. I like developing a strategy and then delivering against that."

When Exxon acquired Mobil in 2001, Watson joined PGS Production Services as an operations manager, which was then acquired by Petrofac and subsequently floated in an IPO on the stock market in 2005. The operations environment was changing as the big oil companies began sub-contracting to the emerging integrated service companies under the term 'duty holders'.

"The proposition was that the service company could manage the entire facility, lock, stock and barrel, which even included tax and oil accountancy, and everything else. There was a range of BRINDEX members who bought assets."

There were new exploration and production entrants coming in with a range of deals,



ABLE SEAMAN: Robin Watson joined the Merchant Navy and spent several years at sea as a ship's engineer before returning to Edinburgh to study at Heriot-Watt University. He maintains this practical life experience held him in good stead as he pursued his academic study.



I was desperate to get offshore and back into the industrial environment. My ambition was to become a platform manager and a superintendent of this offshore.

There was a technical and a managerial ladder, and at that point you didn't have to commit to either of them."

which gave Watson the ability to grow the services company from a £10 million to a £500 million business by 2005.

"That was phenomenal growth and a new model. You get a real buzz out of that kind of strategy and action," he says.

After undertaking a number of senior roles including in the investment division of Petrofac, where he looked after global assets, it was a case of 'what's next?' The Wood Group, which has been listed on the stock market since 2002, beckoned.

"In 2009, I started speaking to Sir Ian and Allister (Langlands, who was chief executive), who felt there was work to be done to move the company forward. I joined in 2010 and we acquired PSN that same year."

When Sir Ian retired, Allister took over as chairman and Bob Keiller (head of PSN and then chairman of Scottish Enterprise, and another Heriot-Watt graduate) became Wood Group chief executive.

"I took over from Bob in a restructured PSN division in 2012 and we grew this pretty rapidly," he said.

Robin Watson joined the main board in 2013 and very quickly Sir Ian, Allister Langlands and Bob Keiller moved on to allow the new team to take the business to the next level. It was all change at the helm, with Watson charting his own course, and choosing not to proceed with oil sands in western Canada, looking instead at the opportunities in the shale gas industry in the US.



KENNY KEMP is an award-winning business writer. He is Editor-at-Large of Panmure House Perspectives and has been working on a history of Scottish Television, set up in 1957, due for publication later in 2019.

"I'm fairly clear about things. I was keen to enter shale and this has become the engine of Wood Group growth from 2013 to 2015. PSN grew 25% per annum in that period, and we had established a \$1 billion business from scratch – in what was a hugely exciting time for us" he said. Shale gas extraction, which involves the pumping of hundreds of thousands of gallons of high-pressure water into the rock formation, is highly controversial. Watson emphasises that the US and the UK are two different markets.

"It's a tricky one, there is always a balance. The question is: have you got natural resources that can be put to good use for your country, either your GDP, with trading or with primary energy use, and balance that with what it means environmentally and logistically? And it is always essential that we apply the appropriate science in our thinking as to opportunity and applicability," he said.

When Robin Watson became Chief Operating Officer, business life at Wood Group was turbulent. He reset the strategy around transforming the business as the company entered a cyclical downturn when capital expenditure dropped off a cliff, along with the oil price.

"This was a significant headwind for us when the price of oil dropped dramatically from \$130 to \$30 in 2015 and into 2016.

We had to reduce our headcount by a third during the worst of it. But we drove this quite quickly to survive. We are an asset-light business, which is good because owning drilling rigs and exploration equipment is a drain on capital. It also allowed us to act swiftly to address the new operating environment."

It was a tremendously harsh time with a staggering \$65 billion of bankruptcies among oil field services companies' assets around the world, and the loss of 500,000 jobs, with over 100,000 of them in the UK alone.

Since 2002, Wood Group has completed 60 acquisitions but the AFW deal in 2017 was the largest by far.

"We have a good functional team to contemplate an acquisition of this scale, from myself to our Executive leadership, the lawyers, tax experts, accountants and operational leaders; many with experience working on mergers and acquisitions. We do know how to foster a good culture in the business, with the bedrock set by Sir Ian, where there was much activity around acquisitive growth."

The company did its detailed analysis on AFW and found that it was a very good strategic fit and would help to accelerate growth.

"We determined that Amec Foster Wheeler really accelerated the delivery of our strategy more quickly in one single deal. A class 1 transaction is not without its risks. In acquiring AFW we took on a very large downstream business plus a big E&I (engineering and



infrastructure) business, an EPC (engineering, procurement and construction) project capability and a process technology business. We paid a premium of 15% on the share price (around £2.2 billion) but adding it all up, it was well worth it. Much of the Foster Wheeler operational delivery and expertise in refining, petrochemicals and crude oil is world leading," he says.

Meanwhile Amec have a large presence in the smart city infrastructure of the built environment in terms of water treatment systems, architectural engineering and transportation systems, in the US and Canada. There is also a mining projects consultancy and projects business working on gold, lithium, copper and cobalt, all necessary metals for the next generation of battery technology which will be key to the growth of electric vehicles.

"The industrial logic is compelling. It broadens our footprint and reduces our volatility. We think it is a good operational business that needed stronger leadership."

Robin Watson says he was very pleased with the integration and how the cultures of Amec Foster Wheeler and Wood plc have come together. Perhaps it's just the straight-talking Scotsman, who tells it like it is, without hype and with a clear grasp of the existing facts. There is still plenty more for Watson and his team at Wood plc to do. You can't help basking in a radiant glow from this Scottish business as you step back out into the Aberdeen chill. ☺

ROBIN WATSON: MY MEMORIES OF HERIOT-WATT

"I was at Heriot-Watt University from 1988 to 1990 when I undertook the final two years of an honours degree course in Offshore and Mechanical engineering. I survived the transition from being at sea. I looked on my education as a long game"

All my pals in the Merchant Navy came to visit me with their new cars and lots of time off; while I had an old banger and very little time off! They had stayed in the navy and I'd come to university. It was quite a stretch but I graduated and from there I was in the natural selection ground for the North Sea oil and gas industry.

"I was 21 and I shared a flat with another Merchant Navy friend who did the same as me. We stayed on campus at Riccarton. I hadn't really lost time because I went to school early (at four and a half) and left after 5th year, where many of my university peer group went to school later and also attended 6th year; the net effect was that I was about a year older than the peer group – but with a great experience base from the Merchant Navy to pull on.

"It was a nice transition. We were on a pretty rigorous nine to five timetable with lots of mathematics, my strongest subject. However, going straight into third-year engineering maths was a stretch. Jumping into Laplace transform equations and complex variable functions, and all that good stuff, meant that my first semester was pretty tough."

Here his father's hard work ethic came into play: if it doesn't kill you, it will make you stronger was one of my dad's favourite lines. With Robin's footnote, 'Unless it kills you, dad.'

"The Laplace transforms became so engrained that a guy called K.A. Stroud wrote a (very chunky!) book the size of a small child on the secrets and methodology, and I actually learned that back to front. I like numbers, and enjoyed maths and I was au fait with it."

He reflects on his time. He met Lorraine, his wife, who was working with the Royal Bank of Scotland, in the West End branch, while studying at Heriot-Watt. They now have three children. His middle son has been accepted for Edinburgh University and his eldest is currently at Heriot-Watt.

"My definite objective was to get a degree. I was task-focused, but I don't want that to sound like I was a paragon of virtue and it was all work, work, work. I had a good time but work was predominant. I'm not sure that's always the way people look at university today. I was definitely doing it to get a good job, first and foremost."

"There was a very neat offshore department with a senior lecturer called Rob Strong. He was good at making you welcome at university and recognising the transition."

In 1989, in his final year, Prof Grant, a senior lecturer in the offshore division, encouraged Robin to highlight the fact he had arrived at Heriot-Watt from a different background.

"He offered me an opportunity to go and pitch to a variety of colleges in Scotland to highlight a university degree from HND. We brought final HND students to the campus and managed to enrol some students for the following year. It was probably widening access before they termed it widening access."

At the end of his final year, he and his mate, Ally Routledge, arranged the Engineers' Ball, which was held at the Maybury Roadhouse, in nearby Glasgow Road. It was a remarkable night. He managed to sell all the tickets and encouraged all the engineering department to come along. They actually made a small profit, which was left for the following year's engineers. They didn't take it on with the same gusto.



Panmure House prepares to
welcome
you all

When Professor Heather McGregor inherited the Panmure House project in 2017 as Executive Dean of Edinburgh Business School, she was clear and decisive about its mission.

The home of Adam Smith must become a global 21st century sanctuary for enlightened, collaborative, global socio-economic and geopolitical thought leadership. It should be a place to celebrate and consider Smith's life and works and their relevance today and it must become a centre for research into sustainable capitalism, promoting the benefits of long-term investment and its relationship with radical technological innovation.

Alongside, the house should be a venue for scholarship and debate, bringing together academics, business leaders and policymakers to influence tomorrow's world, just as it did in Smith's time.

As the newly appointed programme director of Panmure House, it is my privilege to assist Professor McGregor in realising this vision.

DR CAROLINE HOWITT, the programme director of Panmure House, gives a taster of the seminars, symposia, Festival events and other activities bringing Adam Smith's house back to intellectual life.

As recorded on pages 6-9 in this magazine, Panmure House was formally opened by former Prime Minister Gordon Brown, who spoke eloquently about its great potential as a renewed centre for the Scottish Enlightenment and its influence on a global stage.

Our range of engagement programmes is now putting this into practice. From the *Adam Smith Lecture Series*, which will see Nobel Laureates deliver keynote lectures of global relevance, and the *Visiting Fellows' Programme*, which brings academics to Edinburgh for several months of research and industry collaboration, to the suite of *Fringe Festival Events* (see sidebar) that are making the house accessible to the public.

To inspire the next generation there is the *Panmure Educational Outreach Programme*, an initiative that allows schoolchildren to spend a day in the house learning about Smith's life and works. *The Panmure House Prize*, a prestigious academic prize of \$75,000, is to be awarded for the best scholarship into long-term investing, with the prize money dedicated towards furtherance of the winning research.

The PhD Scholarship Programme will bring talented EBS scholars to Panmure House to conduct the second year of their research there.

And, of course, there are the summits, seminars and debates, the lifeblood of Panmure's day-to-day life, bringing together academia, industry and politics to debate and find solutions to today's biggest issues. These are all supported by the *Founder Sponsors' Programme*, made up of our selected corporate and governmental partners, which include the Scottish Government and six global businesses to date.

Finally, there is the *Society of Panmure House* – the annual membership platform for supporters of our mission. Members have privileged access to news and events at the house, as well as an automatic subscription to *Panmure House Perspectives*.

For readers who would like further information on any of the above, or to join the Society of Panmure House, please visit www.panmurehouse.org. Alternatively, email panmurehouse@ebs.hw.ac.uk, or call me, Caroline Howitt, on 0131 451 3959.



PANMURE HOUSE EDINBURGH FRINGE FESTIVAL PROGRAMME 2019

The Butcher, the Brewer, the Baker... and the Commentator (above)

Confused about money? Concerned about the economy? Join editor-in-chief of *MoneyWeek* and *Financial Times* columnist Merryn Somerset Webb and/or financial writer and comedian Dominic Frisby as they interview, talk over and argue with a well-known group of economics, politics and finance gurus (with a few comedians chucked in for fun). Got a burning question on anything discussed? Audience participation very welcome.

August 3, 4, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25 at 2pm. Tickets cost £12.

Adam Smith: The Invisible Hand

Four actors present a dramatisation of the life and works of Adam Smith, performed in the house in which he lived and died. Join Jean Jacques Rousseau, Voltaire, Robert Burns and Smith's mother, Margaret, for a journey that resonates from the 18th century to the present day.

August 1 (preview), 2, 3, 4, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25 at 4pm. August 3, 4, 10, 11, 17, 18, 24, 25 at 12pm. Tickets cost £12.

Dominic Frisby Presents Adam Smith: Father of the Fringe (left)

Nowhere has Adam Smith's invisible hand been harder at work than at the Festival itself. In Smith's own front room, *MoneyWeek's* Dominic Frisby, author of *Life After the State* and *Bitcoin: The Future of Money?*, presents a lecture on the economics of the Fringe and how it has proved the realisation of everything Adam Smith believed.

August 9, 10, 11, 15, 16, 17, 18 at 12pm. Tickets cost £12.

To book tickets for any of our shows, please visit www.edfringe.com



PROFESSOR PHIL GREENING, Deputy Director of the Centre for Sustainable Road Freight and professor at Heriot-Watt University, considers the challenges and the options for future vehicle fleets in a zero carbon world.

The UK government has committed in law to reducing CO₂ emissions by 80% by 2050 compared to 1990 levels. Recently, many have reached the conclusion that this reduction is not enough, and that the UK must commit to net zero carbon emissions by 2050.

While there are many areas of economic activity that contribute to CO₂ emissions, the biggest contribution is made by transport. This sets the context for the government's latest initiative 'Road to Zero', which outlines potential pathways to net zero emissions from road freight.

Road freight can be differentiated from passenger cars because it involves a driver who is usually paid, and furthermore, it is concerned with moving large weights or volumes over long distances. This makes road freight an energy-intensive business, and for the last 100 years, the overwhelming majority of road freight vehicles have been powered by diesel internal combustion engines. Although diesel has an attractive energy density, it also generates large volumes of CO₂, and is, as such, not suitable for our future needs as a decarbonised society.

Logistics operations are currently constrained by time (both in terms of the load leaving the warehouse and the preferred customer delivery time), the need to minimise inventory in the supply chain, and vehicle capacity. When considered together, these constraints provide a context for the planning of transport and warehouse operations; these limitations will change when vehicle charging times and reduced vehicle range are subsequently considered.

ELECTRICITY PEAKS

Despite this, electrification is generally accepted as the long-term solution for the decarbonisation of road transport; this is because clean electricity generation is the cornerstone of decarbonising a wide range of economic activities such as manufacturing, the service sector, and even domestic buildings.

BY REMOVING THE COST OF THE DRIVER, WE DECREASE THE OPERATIONAL COSTS OF FREIGHT VEHICLES, BUT IF THAT VEHICLE IS ELECTRIC WE INCREASE ITS CAPITAL COSTS.

This presents two new challenges: firstly, the use of electricity in new applications, such as transport, will generate increased demand. However, the current demand for electricity is defined by peaks that are multiples of average demand, occurring in the morning and in the evening. During the rest of the day there is surplus generating capacity which could be deployed to provide electricity for transport.

NEW SUBSTATIONS

Secondly, the demand for transport electricity is also likely to occur in the morning and evening periods, requiring us to find ways of storing energy on vehicles so that we do not need to greatly increase electricity generating capacity.

This forces us to consider the operational implications of electrifying road transport, and in particular the infrastructure requirements for charging large volumes of vehicles in short periods at centralised locations such as warehouses. This is not trivial: charging a fleet of 50 articulated trucks from an existing warehouse supply will not be possible without significant reinforcement of the electricity distribution network, in particular the building of new substations.

In short, the need to electrify road freight will require new vehicle designs that incorporate energy storage, which will require trade-offs between vehicle payload and the weight of batteries or other energy storage solutions. In any event, the development of suitable charging infrastructure presents a significant challenge.

The cost of an electric freight vehicle is currently around double that of its diesel equivalent, and while the energy costs associated with electrification are considerably less than those associated with diesel, the energy costs of operating a diesel freight vehicle are only about 20% of the overall operating costs, because the driver accounts for approximately 60% of these costs. In broad terms, there is no economic case to move road freight to electric vehicles, and therefore in the absence of government regulation and policy we can anticipate low adoption rates for electric freight vehicles. This will not address the environmental imperative.

However, this narrative can be reshaped if we consider the opportunity of autonomous vehicles and their impact on cost structures. By removing the cost of the driver, we decrease the operational costs of freight vehicles, but if that vehicle is electric we increase its capital costs; over a seven-year life, the total cost of ownership will approximate to that of a current diesel truck. In essence, the lowest cost way of delivering the UK government's 'Road to Zero' is to accelerate the development of autonomous electric freight vehicles.

This will drive a revolution in material handling concepts, particularly in those parts of the supply chain closest to the consumer that currently rely on the driver to provide the means of loading and unloading the vehicle.

Electrification of road freight presents many challenges but offers the elixir of decarbonisation, and a new competitive landscape in which some organisations will adapt to thrive and others will fall short.



PROFESSOR GREENING is Deputy Director of the Centre for Sustainable Road Freight, a collaboration with the University of Cambridge, and Westminster University. The Centre has received a total of approximately £15 million research funding from EPSRC, Innovate UK, and industry partners.

A CALLING IN

Africa

There are an estimated two million women and girls in Africa suffering from obstetric fistula – often condemning them to a painful life of shame and isolation. DAME ANN GLOAG, the Scottish entrepreneur and co-founder of Stagecoach and a former nurse, has devoted a large part of her energy and fortune over the last 30 years to helping women in Africa. KENNY KEMP meets Dame Ann in her Edinburgh office.



HOLDING THE BABIES: Dame Ann Gloag began her career caring for children in Scottish hospitals before becoming one of Scotland's most successful transport entrepreneurs. Today her charities help thousands across Africa including Kenya, Sierra Leone, Malawi and Madagascar.

We pop a few coins in the tin. We may set up a standing order for a charity of our choice – or run a half-marathon to fight cancer or end heart disease. Then we go back to our normal lives. Long-term philanthropy is a very different matter.

For Ann Gloag, who is the founder of two Scottish charities, Freedom from Fistula (FFF) and Kenya Children's Homes (KCH), as well as a supporter of Mercy Ships through her

Gloag Foundation, long-term philanthropy is a way of changing the lives of tens of thousands of people in Africa for the better.

Ann, who was made a Dame by the Queen in the 2019 New Year Honours list, has served on the Mercy Ships International boards for over a decade and was instrumental in the launch of the Africa Mercy – Mercy Ships' floating hospital. A second £160 million vessel is being built in China.

Her story is another chapter in Scotland's long involvement with improving healthcare across Africa. An example of this is her work in Malawi, where Freedom from Fistula opened a dedicated Fistula Care Centre in the grounds of Bwaila Maternity Hospital in 2012.

The impact of Freedom from Fistula, which celebrated its 10th anniversary last year, speaks volumes. Since it was launched in Sierra Leone in May 2008, 120,000 women and children have received help and more than 500 nurses and doctors have been trained in Africa. In Sierra Leone, the fistula unit heals women and girls in hospital and runs an outpatient clinic for children treating more than 15,000 people every year. In 2009 FFF moved into Kenya where it partnered with Kenyatta National Hospital for a number of years, followed by Malawi.

CHARITABLE ENTRY POINTS

Here there is no escape from the massive sensitive issue of Western charities helping African nations, such as Kenya, Sierra Leone, Malawi and the island of Madagascar. Ann Gloag is undeterred and remains focused on offering care where it is needed. She is an experienced fundraiser and charity chief who understands this delicate dichotomy.

"It really depends what you are doing. Our FGM (female genital mutilation) work would have been very difficult to undertake, but because we already had an orphanage with a history it was easier to become involved," she said.

"I'm always very careful to say, and I think you need to be: 'I'm a visitor in your country. Please tell me what you would like me to help you with'. You need to create a feeling that you are here to help and you're not a threat. Another thing I always say is that I'm apolitical; I will work with whoever is in power and I'm careful never to make any judgments based on the political situation in a country."

MERCY SHIPS
FLOATING
HOSPITAL
IN NUMBERS:

£160m

SHIP

102

ACUTE CARE BEDS

6

OPERATING ROOMS

7

ICU
ISOLATION BEDS

90

SELF CARE BEDS

Indeed her charitable entry point in Kenya nearly 30 years ago remains a watershed for Ann Gloag. Stagecoach, the Scottish-based bus company which she set up with her brother Sir Brian Souter, expanded its business operating coach and bus services in Kenya as it grew its global roadmap. She learned about the nation and grew to love its dynamism and people.

"Fourteen years ago there was a major drought and we were made aware of all these children who were dying. We went out to the Maasai Mara plains to see a local chief, Mr Shah, who had 12 wives. He and the men were cattle breeders whose herds had died through lack of grazing. The kids were in a terrible state. We took about six into our orphanage. He had 78 children. I spoke to him and assured him we would send his children food and for 18 months we fed the children."

The village was sent maize and beans each week which prevented starvation.

"It never surprises me now how quickly this situation moves from viable subsistence to drought and famine," she said.

At the end of the drought, she returned to see Mr Shah in the middle of the Mara plains in his baked earthen house. He thanked her for her support and said, "What can I now do for you?" Ann Gloag replied she would like to rescue some of the girls from FGM.

"We had a discussion about education. I said we could start small with a pilot scheme, educating the women, which would be better for the chief in the long term. We talked about the economic benefit. You have to be cognisant of the cultural issues. He understood this and because we had fed his tribe during the drought, he knew I was not saying this for any sinister reasons. I had taken care of the girls for a couple of years by then and he could see the difference in their lives."

She said she would build a Masai school, which is what was done. The chief, who could not read or write, used a thumb print to agree a deal and gathered the whole family around to celebrate.

"I don't speak Maasai but I was curious when he got up and brought back this little girl called Aleshia, who was perhaps two or three. Agnes, my guide who translated, said she was a gift. I carried her around thinking it was only for a while and she would be returned to her mother. But it became clear they wanted me to have Aleshia. I thought, 'I cannot get into the car and take this child', but I did not want to offend the chief."

EARLY MARRIAGES

Ann asked Agnes to say that she really liked Aleshia but was not going to take her away. Instead, she said, it was better for her to go to school and stay in her community with her mother.

"I said I would take care of Aleshia financially and she went to the school. It's a difficult one because this is a cultural issue."

Aleshia is now a young woman who has gone to school and is able to read, write and count.

Nevertheless, the subject of FGM in Sierra Leone, West Africa, remains a hot political issue. In a recent television interview, Fatima Maada Bio, the First Lady of Sierra Leone, spoke about how gender issues – particularly the issue of men with multiple wives – should be tackled first.

"I cannot talk against FGM. I'm a circumcised woman. I have seen the consequences of what early marriage does to children and how it has destroyed people's lives. I have seen the worst things that have happened to a child, who is 12 or 13 years old... but, as a circumcised woman, I do not have a problem with FGM. I have four children. One has died but my pregnancies have been very successful!"

She asked why people from the West come to her nation and talk about FGM but not polygamy.

Ann Gloag, who had just returned from Kenya a few days

WHAT IS AN OBSTETRIC FISTULA?

We are fortunate that obstetric fistulas are very rare in Britain today. They have been eradicated in most

cases by and the provision of quality maternity care and timely access to C-sections, as well as active help with childbirth and the antenatal involvement of midwives and other health professionals.

Many women end up with a fistula after prolonged obstructed labour with no hope of medical assistance. A fistula causes incontinence in some cases and is most prevalent in remote parts of

Africa, where there is little or no trained midwifery. Women suffering from obstructed labour often struggle until the baby dies. During this agonising process, loss of circulation causes tissue to die, leaving large gaps between the birth canal and bladder or rectum, causing incontinence.

In Africa, an obstetric fistula subjects women to lives of degradation, taboo, shame and suffering.



A HERO IN AFRICA: (Left) For nearly 30 years, Dame Ann has devoted her charitable work to helping young women and children in Africa. (Above) A young Ann Gloag as a nurse working in the Royal Hospital of Sick Children, Glasgow, in Scotland.

WHEN PUSH COMES TO SHOVE: Even when the Land Rover is stuck in the tropical floods, Dame Ann is willing to help get the transport back on the track.



before this interview, spoke more about the orphanage, school and a rescue centre for Maasai girls that saves them from FGM.

"FGM has come up the political agenda recently. It is an African tribal thing, some do it, some don't but we've had the rescue centre. We tend to rescue more orphaned girls who would come from slightly more disadvantaged backgrounds."

Sierra Leone's First Lady has a valid point: most young girls are married to an older man with many wives.

"For them, their lives are over and they are baby machines," explained Ann Gloag. "So it is about educating them and giving them an opportunity. Once they have undergone FGM, it's the tribal leader who decides whose wife they are going to be."

Ann Gloag might be petite in stature but she is feisty, candid and not easily intimidated, and she can laugh at being offered a marriage necklace after helping another tribal leader who had 12 wives. "That would be the biggest mistake he would ever make – I still have the necklace and choices, so let's not forget I have an opportunity," she jokes heartily.

Apart from the Maasai school, she is immensely proud of the school in Kenya's capital Nairobi, which takes children from three until 14. The Jonathan Gloag Academy, named after her son, was opened in 2002 and offers a primary education to children of the Kenya Children's Home and also local fee-paying children of parents of Nairobi's burgeoning middle class.

"Probably the worst thing that can happen in your life is becoming an orphan. Right from the start you are so disadvantaged, even to the extent of not having a birth certificate. Therefore, you are not due an identity card. So I decided to build a school on the compound of the orphanage, which is in a good part of Nairobi."

She wanted to ensure the school was recognised as a great place for education. In addition, it has top sports facilities and

pupils participate in a 'learn to swim' programme.

"Middle-class Kenyans pay to send their children to the school. All the money from the school goes to fund our charitable activities in Kenya. If I was knocked down by a bus tomorrow, I think that's an excellent funding model that we have put in place," she said.

She is a firm believer that more of this kind of charitable work can be done in Africa as the continent grows in wealth and stability with an up-and-coming middle class able to support local initiatives.

She is a regular attendee at the school's prize-giving where she thanks parents for choosing the school and making provision for the most disadvantaged.

"I always say to them: if you have an orphan in your child's class, please take them home for a sleepover or a birthday party, because this lets an orphan see what 'normality' is. Without this, the orphans will have no role models."

After they turn 14, children go to secondary school. At this stage, Ann Gloag does not have a secondary option but feels her pupils have a good educational grounding.

PATIENT AMBASSADORS

Her multi-faceted philanthropic work continues with Mercy Ships, where she saw the suffering at first hand while working as a nurse in the floating operating theatre. Before becoming a transport entrepreneur, Ann trained as a nurse in the Royal Hospital for Sick Children, Glasgow, and worked in Bridge of Earn Hospital as a theatre sister. She still keeps up with some of her former nursing colleagues.

"It was tough but I really loved my job in nursing. It's very social. I thought it was a great job to do."

In 2016, the Mercy Ships vessel sailed to the island of Madagascar when the Ebola outbreak struck the mainland.

"After the ship arrived they discovered that 50,000 women had this fistula problem. So the Mercy Ships' medical team did surgeries while they were there. Mercy Ships always undertakes a land project, so they decided to refurbish one of the wings of the local hospital, and create a fistula centre. I was called and asked if I would take it over, which is what we did."

Today FFF has a dedicated fistula unit at CHUT Hospital in Toamasina/Tamatave, on the east coast of the country, where the charity is still working its way through the backlog of thousands of women who require treatment.

"We are very busy. Sometimes if the ship identifies a particular need we can follow it through," explained Dame Ann.

What has been deeply heartening is the work of local patient ambassadors who are able to travel to remote villages and offer help to those needing similar treatment.

Felicia Voniarioa Miadanaharivelo is a patient ambassador in Madagascar. In a short BBC film, she said: "I endured pain and labour for three days and still hadn't given birth." She lost her baby and ended up with an obstetric fistula and was rejected by some of her family. Felicia was treated for free at a Tamatave clinic run by Freedom from Fistula. Her recovery story and testimony is being used to help others in remote villages. Doctors operate on up to three women per day in the clinic.

An essential aspect is the patient rehabilitation, education and empowerment programme (PREP) which includes family planning, literacy and numeracy classes as well as business training. Once they have recuperated, the women in Malawi are given a portable solar-panel mobile phone charger, which they can then use to make some money.

BALANCED BEHAVIOURS

Ann Gloag is very coy about how much she has donated to her charities. At a conservative guess she has signed cheques for an estimated £5 million a year for the last 25 years, which works out



Mercy Ship always undertakes a land project, so they decided to refurbish one of the wings of the local hospital, and create a fistula centre.

I was called and asked if I would take it over, which is what we did."

PRIZE-GIVING: A highlight of the year; Ann Gloag is presenting the prizes to pupils, many of them orphans, at her school in Nairobi.



at a hefty lump of philanthropy, making her one of Scotland's major benefactors.

"Do we need more money for our work? Of course, we do. Up until now it has pretty much come from my funding but I do now feel strongly that I should get funding from DFID, the department for foreign aid and development, which is UK taxpayers' money. When I look at the way they spend money and the poor value they get, I get upset. If I had a fraction of their funding, we could double the work that we undertake," she said.

Gloag has made a major difference to tens of thousands of lives, she has met presidents and prime ministers, and worked with other philanthropic organisations such as the Bill and Melinda Gates Foundation. She was involved in maternity health in Malawi, and did her very best to alleviate suffering where she sees it. It is a deeply personal mission, yet she remains relative modest about the work.

"I don't think I have changed any of the thinking at senior level, partly because of the high level of institutional corruption, but I think I have helped a lot of people along the way. Being realistic, I haven't moved the thought much on any big issues but we have certainly helped a lot of children. There are a lot more children called Ann in Africa!"

This remains her own measure, which can only be viewed as a worthy one.

A NEW SHIP FOR AFRICA

Since the launch of the Africa Mercy in 2007, Mercy Ships has planned for another ship of equal or greater capacity to be added to its fleet.

The Mercy Ships International Board approved a contract for the construction of a purpose-built hospital ship, drawing upon over 40 years of organisational experience and over five years of specific study on the outcomes of the Africa Mercy in serving the people of West and Central Africa. This new £160-million ship will more than double the ability of Mercy Ships to deliver hope and healing, while significantly increasing capacity-building and training potential.

The new ship represents a global collaboration. The 37,000-tonne hospital ship is under construction at China Shipbuilding Industry Corporation (CSIC) in its Tianjin Xingang Shipyard. The new vessel has been designed by Deltamarin of Turku, Finland, and Stena RoRo of Gothenburg, Sweden, will manage the construction. The French ship brokerage company Barry Rogliano Salles (BRS) was instrumental in helping to negotiate the contract. The new ship will be classed by Lloyd's Register of the UK, and it will be flagged by Malta.

The hospital covers most of decks 3 and 4 – approximately 7,000 square metres containing supply services, six operating rooms, 102 acute care beds, seven ICU/isolation beds and an additional 90 self-care beds. The hospital area includes dedicated classroom/conference spaces as well as simulator labs for more effective training. All pre-operative and post-operative work can be done on board rather than ashore, which minimises the Mercy Ships' footprint when operating in busy ports.

"The new ship will more than double our annual medical capacity and is designed to carry out a wide range of surgeries including, but not limited to, maxillofacial and reconstructive surgery, tumour removal, cleft lip and palate repair, plastics, orthopaedic surgery, cataract removal, and obstetric fistula repair," said Ann Gloag.

The ship will provide accommodation for 641 people including crew and medical staff. The ship services are designed to host up to 950 people when the hospital is working and additional day-crew serve on board in various functions such as translators.

Discovering light at the end of the QUANTUM TUNNEL

QUANTUM COMMUNICATIONS IS THE FUTURE OF OUR WORLD – AND IT IS BEING CREATED TODAY BY PHYSICISTS AT HERIOT-WATT UNIVERSITY. PROFESSOR BRIAN GERARDOT FROM THE INSTITUTE OF PHOTONICS AND QUANTUM SCIENCES EXPLAINS THE SIGNIFICANCE OF A RECENT BREAKTHROUGH.

Physicists from Heriot-Watt University, together with their international partners, have created a device consisting of just a few sheets of atoms that can load single particles, such as electrons, one-by-one. Researchers around the world are investigating materials which could be used in 'hardware' for future technologies which exploit the bizarre properties of quantum mechanics.

Control of quantum particles – down to a single particle – is an important step towards processing, storing, and communicating quantum information with this emerging technological platform.

The Heriot-Watt research team found a single sheet of atoms offers the ultimate limit in miniaturisation of flexible electronic and photonic devices. Beyond just physical size, two-dimensional (2D) crystals are intriguing due to highly unique optical, electronic, and mechanical properties.

How does this research fit into the wider picture of quantum communications?

Professor Gerardot explained: "A quantum communication network will enable communication which cannot be hacked, protected by the laws of quantum mechanics. To realise this over distances larger than a few kilometres requires one to build a so-called quantum repeater, in which flying particles of light (called photons) can be linked quantum mechanically (or entangled) to stationary particles like electrons – in particular their 'spin'-degree of freedom."

He told Panmure House Perspectives: "Engineering such a spin-photon interface is very challenging, and our result shows that this may be possible in a new type of material system based on single sheets of atoms which we combine to make a device just a few layers of atoms thick!"

The work has been carried out by the Quantum Photonics Laboratory at Heriot-Watt University by Mauro Brotons-Gisbert, Artur Branny, Santosh Kumar, Raphael Picard, Raphael Proux, and Professor Brian Gerardot from the Institute of Photonics and Quantum Sciences.

The team collaborated with Mason Gray and Kenneth Burch from Boston College in the US and Kenji Watanabe and Takashi Taniguchi from the National Institute for Materials Science in Japan.

Dr Mauro Brotons-Gisbert explains: "According to quantum mechanics, when the quantum tunnelling is highly likely, a single particle's position can be described by a probability that it is located on both sides of a solid barrier. In our device, the solid barrier or 'wall' was a single sheet of atoms, so the probability that it could be on both sides was very high, and we were able to tune this simply by changing a voltage to a device. This led to dramatic effects when the light was emitted from the quantum dot."

Professor Gerardot, added: "Our results show that we can make such devices at the quantum level – controlling a single trapped particle in a deterministic way."

What kind of applications might this work lead to? "Similar to how electronic transistors followed Moore's Law over the last 50 years and enabled pervasive computing in society, a similar revolution will occur with light. In addition, these integrated photonic chips will enable technologies based on single particles of light (photons) which can harness the bizarre properties of quantum physics for a range of new quantum enhanced technologies."

The researchers believe these quantum photonic technologies could transform cyber security, drug discovery, machine learning, communications systems, magnetometry, navigation, and more.

This research is likely to surpass the much-vaunted arrival of 5G communications, heralding the Internet of All Things. "As we are still at the fundamental research stage, we are likely aiming for 6G or more," said the professor.

The next steps for the collaborative team of about 15 people is working on many facets: engineering new devices such as integrated photonic chips with spin-photon interfaces, investigating the fundamental quantum properties of the materials, and combining the sheets of atoms in completely new ways to realise entirely new types of quantum materials.

This research is likely to surpass the much-vaunted arrival of 5G communications, heralding the Internet of All Things."

• The related paper has been published in: Brotons-Gisbert, M., Branny, A., Kumar, S., Picard, R., Proux, R., Gray, M., Burch, K.S., Watanabe, K., Taniguchi, T. and Gerardot, B.D. (2019). Coulomb blockade in an atomically thin quantum dot coupled to a tunable Fermi reservoir. *Nature Nanotechnology*.





PROFESSOR RICHARD WILLIAMS
Principal and Vice-Chancellor of Heriot-Watt University,
Edinburgh, delivered this address to the Association of
Institutes of Mechanics, Australia, in November 2018.

The year 2021 will mark the 200th anniversary of the first Institute of Mechanics, first known as the Edinburgh School of Arts. This pioneering educational institution, which later became Heriot-Watt University, has transformed the world in a way that is barely perceived today. For Heriot-Watt, the pioneering global reach of the first Institute of Mechanics and its focus on widening access to education remain embedded values.

[THE PUREST OF INSTITUTES?]

The world's first INSTITUTE OF MECHANICS

Leonard Horner was one of those truly extraordinary individuals who did not complete a formal university education, was largely self-taught and acquired deep knowledge of society, geology and significant proficiency in French, Dutch, German, Italian and Latin.

The notion of a 'formal' education needs to be seen in the context that in the late 1700s students paid to attend lectures by professors, and they were in effect offered great choice and exotic pathways of study. Whilst at Edinburgh, Horner took great pleasure in learning chemistry, mathematics and philosophy, but left aged 19 to join the family business.

This was a period when science was expanding horizons and feeding intellectual and practical endeavours. Horner was an avid reader and debater and in 1804 was well acquainted with Adam Smith's book *The Wealth of Nations* and associated debates of this enlightenment period that was such a feature of life in Edinburgh. He was soon to move to London but returned to Scotland after some ten years, subsequently travelling widely over Europe in part as an underwriter for Lloyd's Insurance and later as a linen trader. Horner's legacy was to be profound not only in the establishment of inaugural Institutes of Mechanics in Scotland and England, but also as a driver of education and industry and a geologist of repute. His passion for education ensured that the Industrial Revolution, giving rise to manufacturing factories across the UK, was not executed at the expense of child labour. He was the overseer of the Factory Act (1833) for over a quarter of a century.



As President of the Geological Society of London he took great delight in geological field work and the discoveries made in earth and natural sciences. He is also known as the first warden of the University of London. His life has been the subject of several accounts, most notably the biography by Patrick O'Farrell (*Leonard Horner: Pioneering Reformer*, 2010), of Heriot-Watt University's Edinburgh Business School.

I draw attention to Horner's passion and journey as a backdrop to my assertion that the development of the first Institute of Mechanics arose from a warmth and concern for the development of human talent to meet local business needs, not from a political or religious movement or other external drivers. Horner has been described as a force that set out to humanise urban capitalism – and indeed from my reading this describes him well. It was this intense passion that became ignited on the meeting of Horner and Edinburgh clockmaker Robert Bryson.

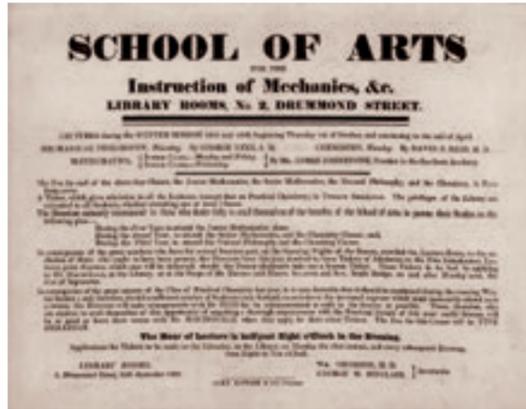
When Horner called into 8 South Bridge Street in Edinburgh's Old Town he spoke to the owner Robert Bryson about his relatively new clockmaking business. Bryson was an inventor of scientific instruments and an horologist. They had much in common since Bryson had an interest in the cosmos and had designed a sidereal clock (used to enable astronomers to locate celestial objects at the Calton Hill Royal Observatory in Edinburgh). He knew about the deployment of gravity using mercury, weighted wind-up clocks and novel clocks such as the rolling-ball clock. He had an eye for precision and also developed compact pressure barometers in the family business.

Horner and Bryson talked of the difficulty of developing mathematical skills in employees, since knowledge of physics and maths was so important to the design and manufacture of these technical objects. There were two issues: the cost for the individuals and also the timing of existing classes in mathematical education. As Horner developed the concept, Bryson was highly supportive of the notion of a new night school for technical arts.

THE FIRST PUBLIC CHEMISTRY LECTURE

Within just a few weeks Horner had developed the plan with a wider group that met on 19 April 1821. They then published a prospectus for fundraising. ▶

THE CLOCK-MAKING GENIUS: Robert Bryson joined self-taught Leonard Horner in the foundation of an educational institution for mechanics. This portrait was taken by photography pioneers David Octavius Hill and Robert Adamson and is part of the Edinburgh Photographic Society Collection, gifted in 1987 to the National Galleries of Scotland.



► The spirit of the business plan was to enable wide access to a scientific education but with students being expected to contribute something towards the cost and the wider business community providing the start-up and some operational funds. The prospectus was published and through the network of the enlightenment a strong list of subscribers emerged, supported by wealthy Edinburgh citizens such as Sir Walter Scott, Lord Cockburn, Robert Stevenson, Alexander Nasmyth, William Playfair and the Craig family of Riccarton. Many agreed to give annual subscriptions to help pay for the cost of classes and so to set up evening classes with fees that working men could afford. It is interesting to scan some of the well-known names in the full list of subscribers provided in the first Annual Report in May 1822. One might also comment that such reports were very full in length and detail, suggesting the voracious appetite for and dedication to reading in that era. Following the rapid raising of funds, notices appeared advertising the new classes. Prospective students purchased tickets in instalments (from Bryson's shop) and within a month over 450 students had enrolled. The institute had been established in just a few months!

So on 16 October 1821 the Edinburgh School of Arts "for the instruction of mechanics in such branches of physical science as are of practical application in their several trades" held the first lecture in chemistry at St Cecilia's concert hall in the Old Town, the home of the Grand Lodge of the Freemasons of Scotland. It was indeed a grand location for the new students. The curriculum was resolutely focused on mechanics, physics and chemistry (that included earth sciences). Later it included a broad range of mathematics. Attendees could also borrow books. This first Mechanics Institute had a simple curriculum that focused on a scientific syllabus. Some have commented that it was 'not applied' or based on 'speculative philosophy'. For this reason the Edinburgh institute has been called the purest expression of the original idea of a Mechanics Institute. My examination of the curriculum would draw a slightly different conclusion since, with subjects such as farriery, smithery and the motion of machines, these were all issues of direct relevance to the emerging life of the Industrial Revolution. The education was focused on practical professions. Whatever the taxonomy, it was clear the education had an impact. Within 30 years there were 700 Mechanics Institutes in Britain.

THE FLOURISHING OF AN INSTITUTE

Over the years the syllabus was extended to include English, French and drawing. Other significant developments included the first working-class representatives joining the School's Board of Directors in 1835, and in 1837 the School moved to new larger leased premises in Adam Square. As the posters advertising the School showed, the syllabus remained in its purest form and tickets could still be obtained from Bryson's shop. However, as time progressed, the School encountered financial difficulties as donations dwindled. A solution was found through a subscription fund which was set up in the name of James Watt. The late engineer was considered an inspiration to staff and students, and indeed proved to be a very successful

TICK TALK: Professor Williams with an original Bryson grandfather clock in Hermiton House, and an announcement of the School of Arts in 1835.



The Watt Institution was some 20 years ahead of other Scottish universities, where women were only allowed to graduate following an Act of Parliament in 1889.

The adoption of a 'positive education' model and mind-set will This heritage for widening access and equality of opportunity remains a strong value for the university."



FOUNDING FATHER: The only known image of Leonard Horner, the extraordinary individual inspired by Adam Smith and the Scottish Enlightenment to create a new place of learning.

motivation. In 1851 enough revenue was generated to allow the purchase of Adam Square and in 1852 the name was changed to the Watt Institution and School of Arts. Watt had become a world-renowned name for his work on power systems and engines. His work was very visible in the inaugural years of the School of Arts, as shown powerfully in paintings that depict the arrival of George IV in the port of Leith, in a sailing ship that is being tugged into the port.

Initially most students of the Institute were from poorer backgrounds, but there were some wealthy scholars such as James Nasmyth, son of landscape and portrait painter Alexander Nasmyth. James Nasmyth was one of the first students of the Watt Institution and later invented the steam hammer. As the School of Arts developed, it became clear that there was one glaring omission – all the students were male. Pioneering local campaigner Mary Burton led a successful campaign to admit women in 1869. The Watt Institution was some 20 years ahead of other Scottish universities, where women were only allowed to graduate following an Act of Parliament in 1889. This heritage for widening access and equality of opportunity remains a strong value for the university. Burton became the first woman on the School's Board of Directors and a Life Governor of (the latterly named) Heriot-Watt College.

Further financial difficulties were encountered by the Institution following widespread city redevelopment, including the demolition of Adam Square and an enforced move to premises in Chambers Street. In 1873 the directors of the Institution agreed a merger with the George Heriot's Trust endowment. George Heriot had been a jeweller and goldsmith in the late 16th and early 17th centuries, and had become wealthy due to patronage from the royal family. Upon his death his estate was largely left to philanthropic causes forming the endowment trust. The main consequences of the financial agreement with the George Heriot's Trust were a repositioning of the Institution to become a technical college, and a renaming to become the Heriot-Watt College in 1885.

The College's links with industry had inspired and fuelled the growth of new specialist departments: Pharmacy, Brewing, Physics and Civil Engineering, each with its own professor. The College's power to appoint professors was a relatively rare accolade in non-university institutions, with only two other colleges in the UK having this ability at that time. Lack of space at Chambers Street led Heriot-Watt to expand yet again, into the Grassmarket beneath Edinburgh Castle. The Department of Mining used this extended space

to open a mine rescue station, which enabled the teaching of vital lifesaving skills to engineers from collieries across southeast Scotland.

The College had also forged academic partnerships with Edinburgh University. This included teaching Mining, Electrical and Chemical Engineering, and delivering Building Science courses to the architect students at the Edinburgh College of Art. Over time the College moved its focus to degree level and postgraduate studies. The printing department moved to Napier College in 1964, signalling the end of an era, and the evolution from college to university was almost complete. In 1963 the now famous UK government committee chaired by Lord Robbins made momentous proposals for the expansion of higher education. In 1964 the government announced that Heriot-Watt was to be one of the first of 'a new breed of technological universities'. The University gained its Royal Charter in 1966. With this new status, the College Principal Hugh Nisbet became Heriot-Watt University's first Principal and Vice-Chancellor. In line with the significant status change, but also in the historical spirit of the institution's pioneering approach, a new degree course in Computing Science was launched. It was the first in Scotland and had a profound impact on the economy and global digital industry. Like so many things, the University was pioneering in the frontier programmes it offered.

Further expansion continued, including the opening of the Mountbatten building in the Grassmarket in 1968 for Electrical engineering, Management, Languages and a ground-breaking new television centre. But there was precious little room in the crowded Edinburgh city centre to build new research and teaching laboratories. A new campus community was needed to combine academic buildings with sports and social facilities and student accommodation. The University needed a new home and one was provided in the west of Edinburgh in the wonderful grounds of the former Riccarton Estate comprising over 280 acres of land.

THE CONTINUING ETHOS

The new campus accelerated new opportunities for research, again based on the 'pure' sciences of Mathematics, Physics and Geology that gave rise to world-leading capabilities in Laser Science (and now Quantum Science), Petroleum Engineering, Civil Engineering, Actuarial Science and Artificial Intelligence. In the usual spirit of the Institute of



Looking ahead, the University has plans to ensure equality of opportunity for access to excellence in discovery and learning.

The adoption of a 'positive education' model and mind-set will ensure development of a flourishing community of staff and students yielding resilient graduates suited for the global and digital world."



SUBLIME TIME: The exquisite rolling-ball timepiece designed and engineered by Robert Bryson, and on display in the National Museum of Scotland. (Below) Heriot-Watt University is Scotland's largest provider of Graduate Apprenticeship degrees, supported by Skills Development Scotland, and central to the university's continuing ethos of practical learning.

Mechanics, the University retained an uncanny knack of deep scholarly excellence in research coupled with a passion for application to professions and society. In 1990 it pioneered the UK's first ever online MBA through the establishment of the Edinburgh Business School, which today is still the largest online business school in the UK.

The University had a strong sense of international reach and was amongst the earliest in the UK to develop a substantial campus in Dubai, and later in Malaysia. Currently the footprint of the University involves around 30,000 students with one third studying in Scotland (at three campuses in Edinburgh, Galashiels and Orkney), one third online and one third at either Dubai or Malaysia. These have evolved not as a series of branch campuses but as an integral part of a global university in which, for many programmes of study, students can choose to study at multiple locations and take identical examinations and receive a single degree certificate. This extraordinary and unique model is distinctive to Heriot-Watt and exemplifies its roots.

Heriot-Watt has also retained a strong sense of public mission and partnering, again in keeping with the educational outreach to businesses and communities associated with the Mechanics movement. For example, it has developed a national performance centre for sport ('Oriam', meaning 'gold I am') and a collaborative research centre for geosciences with the British Geological Survey (the 'Lyell Centre', named after Sir Charles Lyell, a famous geologist who was married to the eminent conchologist and geologist Mary Horner Lyell, the eldest of the six daughters of Leonard Horner). A further example of the University's intent on outreach and connectivity was the purchase and care of a famous building, Panmure House, the home of the economist and moral philosopher Adam Smith, just off the Royal Mile in the Edinburgh Old Town. It is now refurbished to its almost original state as a place of debate and economics research for Edinburgh Business School.

Just as the Edinburgh Institute of Arts initiated a night school for employed workers, the University continues to focus on what is often referred to as 'work-based learning'. In recent years it has facilitated a cadre of graduate apprentice degrees, in which students study whilst employed in a company. The class has a wide range of ages working with 70 companies from across Scotland. The spirit of the Mechanics Institute is still very much alive.

Looking ahead, the University has plans to ensure equality of opportunity for access to excellence in discovery and learning. The adoption of a 'positive education' model and mind-set will ensure development of a flourishing community of staff and students yielding resilient graduates suited for the global and digital world. 2021 will mark the bicentennial anniversary of the University and, of course, the Institute of Mechanics movement.

Who could have guessed that a conversation in a clock shop that triggered the creation of the world's first Mechanics Institute would have this impact in the world! 🕒

The themes of this article have been adapted from Professor Williams' address to the Association of Institutes of Mechanics, Australia, in November 2018.

ON THE PATH TO
leadership



The compelling story of a global citizen embracing education at Heriot-Watt University as she develops as a leader of the future is a deeply personal one for Michelle Liu. Michelle Liu studied part-time for an MBA with Edinburgh Business School in Dubai and appreciates the multiple benefits of completing such a varied course.

"It is very important to have the fundamental knowledge of each subject including project management, strategic planning, organisational behaviour and finance. It helps you to take everything into consideration, giving you the ability to make rational and comprehensive decisions," she explained to *Panmure House Perspectives*.

Originally from Sichuan province, China, she has lived in Dubai for over six years and took the decision to enrol with Heriot-Watt University in Dubai. She already had an undergraduate degree in English translation from SISU, the Sichuan International Studies University.

"My first job was working for a packing company in Hong Kong and I was travelling back and forth within China."

MICHELLE LIU, who graduated with her MBA from Edinburgh Business School, Heriot-Watt University, last November, talks about her inspiring journey and the challenges of working and studying in Dubai.
Interview by KENNY KEMP.

Her move to Dubai, her first trip outside of her homeland, was inspired by a former college friend who pointed out a job opportunity for her.

"There was a company in Dubai recruiting from China, and she encouraged me to try. I wasn't that interested in the beginning because I wasn't familiar with Middle Eastern countries or culture. However, I was young and ambitious and my friend said there was no harm in trying."

Michelle landed the job and thought it was too good a chance to pass up. "I thought I'd give it a try and if it didn't work out, I could always return

to China. I worked for the British fashion brand Burberry in the Middle East for a while but learned that retail was not for me. I started looking around and uploaded my CV online, then a television station called me. I went for the interview and got an offer to join the City 7 English TV channel in Dubai."

Michelle became a news presenter on City 7's Mandarin channel. "I was on camera five days a week. I was having a good time and I liked my colleagues a lot. I presented a news programme for two years and it was a great experience until I got a call from my current organisation. I made the move from media into education. It sounds like a big jump. For me, education is more meaningful and sustainable."

She joined KHDA, the knowledge and human development authority which is responsible for the regulation of private education in Dubai. The organisation supports private education in early learning centres, schools, higher education and training institutions.

"It was after this that I started to think about undertaking a Masters degree. It was the environment and the vibe, and people you are

dealing with in education. I felt what I knew was not enough to have strategic conversations with the people and customers. It was about confidence building as well as professional development."

Michelle is involved in building inter-governmental relationships between China and Dubai.

"We are here to make people aware that Dubai is a study destination. I'm heavily involved in a programme called Developing the Future Accelerator. These initiatives are run by the Dubai government to make the country the most innovative place in the world."

Michelle is also involved in the Dubai Wellbeing Census with KHDA partnering with the South Australian government to carry out at census across all private schools in Dubai to help improve wellbeing.

She enrolled at Heriot-Watt in Dubai in 2016 and her postgraduate journey began.

"The hardest subject was accounting and finance. I finished eight subjects on my own without too much help, although I was greatly encouraged by my Heriot-Watt tutors. But I struggled with the finance course. It was my last subject and I didn't want to fail, so I studied with a group of my classmates. I also spent more time studying in the university library. Our group are all still in touch. I became good friends with three classmates in particular, who really helped me a lot," she said.

Michelle Liu believes self-discipline and determination helped her to achieve her goals. "It was not as easy as I thought it might be. In the beginning, I took it very lightly, but I soon realised how important this was to me. I studied for two and a half years without a proper break," Michelle said.

"It is very hard, especially when your work becomes demanding. Sometimes on a Friday morning I thought I'd like to sleep late and not go to school, then I thought 'I've paid for this. If I don't get up, it is a waste of money'."

An honest conversation with a colleague who had completed a distance-learning MBA at HULT in Boston, hit home. "They said to me 'OK, you're on your second subject, if you don't think you are ready, you'd better quit now'."

This galvanised Michelle into a fresh sense of purpose. She adopted her own mantra of 'just one more day' as her incentive to keep trying.

"My feeling was that I have walked this far and all I needed was to take one day at a time. When I was studying, my friends were out having fun and travelling. But I never doubted that I made the right decision coming to Heriot-Watt. However, it takes effort to pass."

At the halfway stage, her mindset began to change. "I thought I'd passed three or four courses and I just need to continue. Then, as I did my last two course, I realised I was coming to the end of this incredible journey and I became a little bit sentimental."

She wanted to have a connection with Heriot-Watt in Scotland, so she came to the Riccarton campus in Edinburgh.

"I decided to study one of the subjects in Edinburgh to get to know the university. I really enjoyed the course in Scotland. But before I knew it,



I didn't know before my EBS journey that leadership can be a course,

but after studying it I feel I already have some of the skills. There are some aspects I don't have yet, but there is a way to form such skills to become a good leader."

I took my last exam and it was time to move on."

She returned to the Scottish capital in November last year, accompanied by her father, Deyi Liu, and her uncle. Graduation was one of the highlights of her life.

"My father was very happy to see me being awarded my degree. Afterwards we went to Edinburgh Castle and then took a trip north to visit a whisky distillery. I heard Game of Thrones was filmed here and I am a big fan of the series. It was very special for us all."

Being equipped with a first-class MBA and knowledge enabling her to take on any professional challenge, Michelle is applying her skills in her Dubai workplace.

"What I'm most proud of is that I had the discipline to see it through and that I know if I put my heart into something, I can do it. I know some people who started the journey and quit; I wouldn't blame them because it really is not as easy as you think."



MICHELLE LIU: "I never doubted that I made the right decision coming to study at Heriot-Watt."

Michelle believes everyone should have equal access to education and if there is one thing she could change about the world, it would be 'education scarcity in developing countries', as well as offering 'equal access to education for refugees'.

Michelle added: "I currently work in the education industry, and by nature, it is a meaningful field – I hope I'm already making a positive difference to the communities that I serve."

"One day I want to be a leader. Before my EBS journey I didn't know that leadership can be a course, but after studying it I feel I already have some of the skills. There are some aspects I don't have yet, but there is a way to form such skills to become a good leader."

"The MBA journey has been amazing. It is good to have the degree and it adds value to my career options now and in the future." ☺



Edinburgh Business School of Heriot-Watt University is best known for its globally successful Master of Business Administration programme and has been offering this on-campus in Dubai since 2006, starting with a cohort of 23 students.

Now, with an average of 100 on-campus students each academic year and hundreds of graduates, it continues to be one of the most popular programmes in the Middle East.

The MBA programme can be studied on-campus in Dubai on a full-time basis over a one-year period or on a part-time basis over two years, with the flexibility to switch between the two to suit the needs of students' professional and personal lives.

The state-of-the-art £42 million (AED 200 million, Emirati Dirhams) campus, in Dubai Academic City, provides students from the Gulf and surrounding areas with the opportunity to study their chosen programme in a beautiful modern setting. It is home to 4,000 students in various disciplines.

The on-campus students benefit from high-quality teaching in English from visiting lecturers from our Edinburgh campus as well as faculty who are based in Dubai. Both pathways offer the students the opportunity to study an elective course in Edinburgh to collaborate with the Edinburgh cohort, grow their network and gain further international exposure.

In addition to the full-time and part-time on-campus MBA programme, Edinburgh Business School also offers a distance learning pathway for the Masters programmes, where currently over 850 students in the Middle East enjoy the flexibility of studying whenever and wherever it is convenient.

Heriot-Watt University has recently been awarded 'Best University' at the *Forbes* Middle East Higher Education Awards 2019. The University and the Business School are delighted to celebrate this achievement with our staff and students and are proud that our excellence has been recognised as the best in the region. The award further inspires us to continue offering quality education that transforms lives.

Technology has changed the way we shop but how do retailers respond? Using Tommy Hilfiger as a case study, DR JAN PHILIPP WINTJES, a DBA from Edinburgh Business School, proposes a 10-point plan on how to build an omnichannel strategy in the global fashion industry. KENNY KEMP reports.

AN OVER-THE-COUNTER



The global apparel retail industry might be massive – worth an estimated £1,300 billion in 2019 – but it is in the throes of a revolution. The rapid march of digital technologies, which enables shopping via smartphones and tablets, is changing consumer behaviour beyond all recognition. In today's retail environment, promiscuous consumers are increasingly influenced by Facebook, Twitter and Instagram, and hop between brands and between off- and online distribution channels without pre-defining which one they will eventually use. Consequently, retailers are having a rough time. They are struggling to know how best to respond to the needs and wants of each individual consumer. Companies need to provide their consumers with new channels of information and purchasing in order to stay in touch.

Demanding consumers now expect all retailers to offer an 'omnichannel' shopping experience, which delivers seamlessly across mobile, online and in-store merchandising platforms. But how does the fashion-conscious apparel industry, characterised by short product life cycles, numerous product varieties and unbalanced consumer demand, respond with any degree of certainty?

The retail fashion industry is not only fast moving but also complex and continuously affected by numerous multifaceted challenges and changes. It relies on a global supply chain consisting of the textile industry that develops the raw materials and supply, the garment-making design and distribution sector, and the retail distribution to the consumer. Vertical integration means many brands and retailers are involved in every step of this chain, from design concepts and manufacturing through to sales in their own retail outlets.

Dr Jan Philipp Wintjes, who worked at Tommy Hilfiger, was granted permission to examine its omnichannel strategy and look at how it will be implemented over the coming years. Prior to this academic examination, he set out to determine what was meant by omnichannel engagement.

"The fashion apparel industry is characterised by complex decision-making processes at its various stages. These include decisions concerning where and when to produce, the planning, scheduling, controlling and forecasting of production as well as the ongoing analysis of fashion trends. The request for short bulks of production, rapidly changing demand and squeezed costs pushed by an increasing demand of just-in-time production lead to an even more complex and difficult process of decision making," said Dr Wintjes.

WHAT EXACTLY IS OMNICHANNEL?

Omnichannel has certainly become an industry buzz word, but how does a fashion brand implement a strategy?

"The topic of omnichannel is gaining greater attention from practitioners and researchers alike. However, many retailers still struggle to transform their businesses towards omnichannel. As research is still in its infancy, this study devotes special attention to the research question of 'What is the best way to build an effective and holistic omnichannel management strategy for fashion retail brands?'" said Dr Wintjes.

An omnichannel retailing fashion brand must aim to engage consumers everywhere via integrated, seamless experiences.

For example, Tommy Hilfiger's stated goals for 2020 include piloting services for 'click and collect', which enables consumers to order from the Tommy.com online shop and collect items from one of its brick-and-mortar stores, and 'stock visibility online', which allows consumers to check online if certain items are available offline. Other pilot services include 'order-in-store', enabling shoppers to buy items from anywhere in-store and have orders shipped to their store or their home. Additional services include allowing consumers to return online purchases to physical stores, to reserve items in-store from the online shop via 'click and reserve', and to fulfil orders from physical stores in order to shorten lead times.

To remain competitive in the digital age, traditional brick-and-mortar retailers face the challenge of reacting to ever-changing consumer behaviours.

"Omnichannel management is one of the major topics discussed in current literature; studies focus on single facets only but rarely on the big picture. Accordingly, there are hardly any process models that guide organisations in determining an appropriate omnichannel strategy and therefore many organisations struggle to implement an omnichannel strategy successfully," argues Dr Wintjes.

 Omnichannel management is one of the major topics discussed in current literature; studies focus on single facets only but rarely on the big picture.

Accordingly, there are hardly any process models that guide organisations in determining an appropriate omnichannel strategy."

His research question of 'what is the best way to build an effective and holistic omnichannel management strategy for fashion retail brands?' resulted in a 10-step guide on how to achieve omnichannel implementation. Key focus areas included consumer focus, omnichannel definition, rolling vision statement, role of the channel strategy, IT infrastructure, change management, strategy implementation, organisational set-up, wholesale business, and omnichannel test field.

Tommy Hilfiger is set up as a matrix organisation, structured in terms of regions, divisions and support functions. The regions include Europe, which contributed 45% of global sales, and the Americas and Asia, while the divisions are separated into menswear, womenswear, jeans, kids, underwear, footwear, accessories, Tailored, and Collection. Support functions include the departments of HR, marketing and communications, retail and E-Com, legal, logistics, IT, finance, and central operations.

In 2015, 59% of Tommy Hilfiger's European net sales were generated through its wholesale distribution channels, 36% through its operated retail business, and 5% through the brand's own online shop, Tommy.com. ▶

REVOLUTION



Tommy Hilfiger's stated goals for 2020, it include piloting services of 'click and collect', which enables consumers to order from the Tommy.com online shop and collect items from one of its bricks-and-mortar stores; and 'stock visibility online', which enables consumers to check online if certain items are available offline."



THE OMNICHANNEL STUDY

The research involved both formal and informal interviews with key team members and departments within Tommy Hilfiger who were working on the omnichannel strategy. A series of questions was also formulated asking about the considerations involved in deciding to go omnichannel. It was clear from respondents that this is interpreted differently by different stakeholders, even within the same organisation. However, all agreed that the business had to be consumer centric and focused on delivering change.

Dr Wintjes concluded that secondary initiatives such as click and collect can only be decided on if companies have a clear definition of their strategy. Yet, fashion industry companies need to respond rapidly to customer demands and are therefore often pushed towards short-term implementation to get something online as soon as possible. Fashion retail brands have little choice but to press on with this solution, often without conducting a readiness check.

As one respondent said: "If fashion retail brands do not offer advanced omnichannel services and innovations, they miss [the chance] to stay relevant and run the danger that they disappear".

Pointing out that all companies should analyse their processes and systems, Dr Wintjes asked what kind of analysis Tommy Hilfiger undertook before deciding to go omnichannel. Again, it was shown that in such a fast-moving industry, it was not possible to do an exact return on investment (ROI) calculation. Several respondents said an ROI calculation was difficult because there were too many assumptions and a clear outcome was not easy to calculate. As one respondent emphasised: "staying relevant was more important than calculating ROI".

THE IMPERATIVES OF IT AND DATA

Furthermore, it was argued that all IT systems and processes needed to be aligned to implement omnichannel initiatives. Using big data wisely can help develop better thinking. One respondent said good project management preparation is the key for omnichannel success. In order to set up and implement an omnichannel strategy across the company and between all departments, a strong team or person with a direct link to the CEO is needed. This team or person is responsible for overseeing all processes and coordinates and manages the entire transformation across the company.



TRADITIONAL
Customers shop at bricks-and-mortar stores.



E-COMMERCE
Customers shop online, using laptops and computers.



MULTICHANNEL
Customers shop via multiple channels, using mobile phones and tablets.



OMNICHANNEL
Customers engage anywhere via integrated, seamless experiences.

Source: Author's own illustration, October 2017.

ABOUT TOMMY HILFIGER

Tommy Hilfiger was founded by its eponymous designer in New York in 1985 and is one of the world's leading designer brands. With its classic American cool style, Tommy Hilfiger's products are well known for premium styling, quality and value. In the fashion market, Tommy Hilfiger is positioned in the 'accessible luxury segment'. This is the premium segment below 'haute couture' and 'pure luxury fashion brands' such as Chanel, Burberry or Armani, but above 'middle and mass market' brands such as Esprit, Zara, or H&M. It competes with the likes of Polo, Ralph Lauren and Hugo Boss.

The company sells fashion products and merchandise, still designed by Hilfiger, including Tommy Jeans, Tommy Sport and several lines of products in menswear, womenswear, childrenswear, accessories, underwear and footwear. In addition, numerous product groups, including fragrances, eyewear, watches and home furnishing, are managed under licensing agreements.

The company sells to third-party retailers and distributors, either in stores or online. The European consumer range consists of large department stores such as Peek & Cloppenburg in Germany, El Corte Inglés in Spain and Printemps in France, international online pure players, including Zalando, Asos and Amazon, as well as smaller independent retailers.

Tommy Hilfiger, which was acquired by PVH Corp. in 2010, employs around 15,000 associates globally, while managing 1,800 freestanding stores around the globe in over 100 countries. The brand's anchor stores can be found on some of the most famous high streets such as Fifth Avenue in New York, Regent Street in London, and Omotesando in Tokyo. Global retail sales reached approximately \$7.4 billion in 2017.

Tommy Hilfiger has defined its goal as becoming an omnichannel retailing fashion brand engaging consumers everywhere via integrated, seamless experiences. Tommy Hilfiger follows its defined rolling vision to be the world's favourite American designer brand, with its mission to excite and inspire consumers. Tommy Hilfiger focuses on being consumer centric, adapting to change and to making products the priority. The company has the ambition to become a \$10-billion global retail sales brand in 2020. ☺

All interviewees stressed the necessity of building an omnichannel transformation team, consisting of project managers and distribution channel specialists, as well as IT solution architects. It is recommended that this core team is directly linked to the CEO, as change management has to be driven from the top. Key questions were: is the company able to operate an integrated system across different distribution channels and consumer touch points? Is there an omnichannel transformation team in place that consists of the right people with a direct link to the company's CEO?

THE INVOLVEMENT OF THE WHOLE BUSINESS

What became clear is that the whole organisation needs to be on the omnichannel journey once a fashion retail brand decides to implement its strategy. The biggest challenges are culture and mindset, and adopting an omnichannel philosophy in all parts of a business.

The study found that companies which have full control over their distribution channels find it easier to implement an omnichannel strategy. Once the strategy is clearly defined, an action plan is required. At Tommy Hilfiger a discussion took place about what such a plan should look like. One view was that there was no magic formula which companies can copy and paste in order to make an omnichannel strategy work for them.

"Companies need to start, try, test and learn, adjust and repeat"

Or as someone else put it: "There is no cookbook. Consumers change all the time. You need to trial and error."

Companies need to find and create an environment that allows them to try different initiatives and to analyse what works. They should not be reluctant to start without having a full strategic plan in place. Rather, they need to be able to jump in.

"This causes some stress, workarounds, and is certainly no ideal situation or set-up, but it is part of dealing with the fast-changing environment"

However, there was also a need to make assumptions and analyse the potential of each tested omnichannel initiative. It was important not to run blindly but to measure from day one.

Dr Wintjes used his findings to identify 10 key stages in creating an omnichannel strategy: (left)

Once a fashion retail brand decides to implement its strategy, this has to be done within the entire organisation.

The biggest challenge is culture and mind-set with companies and to adopt an omnichannel philosophy in all parts of a business'.

THE RESEARCH OUTCOMES

This thesis was successful in developing a standardised omnichannel process model which can be used in different channel combinations.

Dr Wintjes also developed a road map for Tommy Hilfiger which includes recommendations concerning how to implement an effective omnichannel set-up. This successfully addressed the research question of how to build an effective management strategy for fashion retail brands, in particular, a holistic and effective omnichannel management strategy based upon the case study of Tommy Hilfiger.

The Development of a Strategic Omnichannel Strategy for Fashion Retail Brands: the Case of Tommy Hilfiger, by DR JAN PHILIPP WINTJES. Submitted for the degree of Doctor of Business Administration at Edinburgh Business School, Heriot-Watt University, November 2018.

10 STEPS FOR DEVELOPING AN OMNICHANNEL STRATEGY



1. CONSUMER FOCUS

Findings confirm advancement of consumer shopping behaviour towards being experiential pushed by digitalisation. Findings recommend to revise any theory by incorporating changing consumer focus.

2. OMNICHANNEL DEFINITION

Findings discover need to expand any omnichannel strategy approach by a clear and common definition. As omnichannel is pushed by digitalisation, the definition should incorporate digital focus.

3. ROLLING VISION STATEMENT

Findings confirm need for formulating and calling out vision statement. Findings refine approach by outlining need for creating a rolling vision statement.

4. ROLE OF THE CHANNEL STRATEGY

Findings confirm need to define channel-specific strategies. Findings refine strategic theories by adding importance of holistic omnichannel view.

5. IT INFRASTRUCTURE

Findings confirm functional business process system as prerequisite for successful

implementation. Findings add detail of efficient master data management to be key prerequisite.

6. CHANGE MANAGEMENT

Findings confirm top management involvement as essential. Findings expand approach by combining change management and common target setting.

7. STRATEGY IMPLEMENTATION

Findings confirm customer and format strategy as being prerequisite for implementation. Findings add third pillar of channel strategy as prerequisite.

8. ORGANISATIONAL SET-UP

Findings outline necessity to establish core team to follow successful and efficient strategy implementation within any organisation.

9. WHOLESALE BUSINESS

Findings recommend expansion of any theoretical model by incorporating the distribution channel of wholesale.

10. OMNICHANNEL TEST FIELD

Findings extend existing solutions on implementation by introducing way towards an omnichannel test field.

Source: Tommy Hilfiger documents, September 2016.



DR MARINA ARNAUT, who concluded her Doctor of Philosophy at Edinburgh Business School, Heriot-Watt University, in March 2018, delivered her thoughtful findings on business culture in the UAE.

The study of entrepreneurship within existing organisations is highly relevant today. Around the globe, businesses and organisations are working to release more innovation and value from their existing workforces. This is particularly true for the Middle East and for the entrepreneurial region of the United Arab Emirates, where the economies have been among the fastest growing in the world over the past 25 years. Yet how does companies' emphasis on entrepreneurship and individualism agree with the dominance of collectivist culture in the Gulf region?

This conundrum attracted the academic interest of Marina Arnaut who was deputy director in the Dubai office of Swiss textile company Paul Reinhart AG from 2000 until 2006. Previously she had been working in the company's Turkmenistan office.

"I was involved in various contract negotiations and building public relations with local and international authorities, as well as expanding visibility of the company in the region and building customership," she explained.

Marina Arnaut was one of the first students to complete a Master of Science at Heriot-Watt University's Dubai campus in 2008. She decided to continue her academic journey and enrolled on the MSc programme in Strategic Project Planning.

"Initially I thought that this would help me with my career growth but it has opened up a new academic road for me," she said.

"I have a BA and MA from Turkmen State University, which at the time was part of the Soviet Union. Then I worked in quite a few foreign companies such as the Turkish construction company Uçgen and the Argentinian construction company Libra, before joining Paul Reinhart in 1995."

Marina Arnaut then decided to pursue a PhD, dedicated to her two children, Alexey and Amina.

"I truly enjoyed studying at Heriot-Watt. Despite the hard times and pressure, the level of education and knowledge I obtained from my tutors, in particular my dissertation supervisor Dr Tom Chadwick, and my PhD supervisor, Dr Umit Bititci, has played a big role in my deeper understanding of the competitive business environment such as the UAE."

Dr Arnaut's study looked at the balance between induced and autonomous strategic behaviours. The autonomous strategy process involves an individual or a group of individuals, who create a new business entity or bring about innovation inside the organisation but outside the scope of the company's current strategy. Induced strategic behaviour, on the other hand, is a top-down approach that aligns with the corporate strategy. Corporate entrepreneurship can take two forms:

strategic renewal that happens within the organisation, or corporate venturing, which leads to the creation of new business, the exploitation of new markets, and the development of innovative new products.

The entrepreneurial zeal of middle managers is impacted by autonomous and induced factors.

To answer the research question 'How do middle-level managers address the balance between autonomous and induced entrepreneurial behaviour in the UAE context?' Dr Arnaut used five case studies of large multinational organisations along with analysis of 15 middle managers in different jobs. Employing a qualitative methodology, empirical data was gathered through observations and interviews. The qualitative analysis was then triangulated through a research matrix to build a thesis.

DRIVER OF DESTRUCTION

Some middle managers perceived a sense of strong management support and encouragement to extol the virtues of new innovative ideas. However, Dr Arnaut's findings suggest that the size and span of a corporate organisation can heavily impede a middle manager's entrepreneurial initiatives. Dr Arnaut highlighted that



Navigating through complexities in laws, cultures, languages, ethnicities and customs is a daunting task

for the UAE companies trying to develop their business ideas in the organisations' mosaic of cultures."

companies wishing to remain adaptive to change must find a balance between 'autonomous' and 'induced' entrepreneurial behaviour.

In 1934 the Austrian political thinker Joseph Schumpeter identified the vital importance of an individual's actions in the sphere of entrepreneurial activity in his work *The Theory of Economic Development*. The entrepreneur is a 'driver of creative destruction' which is an essential element in the cycle of capitalism. The innovative entrepreneur, as opposed to the inventor, capitalist and business manager, moves capitalism forward through 'a new combination of resources and ideas that become powerful as well as profitable'.

Schumpeter later went on to say that the entrepreneur and the individual were threatened by the rise of the American corporation. He argued that giant bureaucratic industrial organisations oust not only small and medium sized businesses but the entrepreneur as a class. His eventual assertion is that socialism will succeed unless the entrepreneurs inside organisations are given the room to flourish. He regarded talented individuals as the driving force for shaping capitalist economies.

According to Schumpeter, 'regenerative forces' have been the drivers of economic development.

The growth and dissemination of knowledge, innovative monopolistic competition, free trade, external and internal environmental factors have all influenced innovation and the entrepreneurial talent of an individual.

The term intrapreneur was coined in 1985 for a person within a large corporation who takes direct responsibility for turning an idea into a profitable, finished product through assertive risk taking and innovation. However, Dr Arnaut argued that an intrapreneur is generally an independent and isolated person who is not always best suited for collaborative entrepreneurship within large corporate organisations.

In looking at the economic complexion of the UAE states, it was clear that the early development was driven by political will and powerful elites, with a monarchy based on the traditions of Islam, rather than the emergence of an entrepreneurial class. For many years economic activity has been heavily dependent on expatriates, particularly in the oil industry. But as the economies have evolved with ambitious entrepreneurial programmes, this has changed.

Dr Arnaut said: "the status of the United Arab Emirates as an emerging market makes it an ideal place for entrepreneurship. At present, the UAE government is taking steps to establish and promote entrepreneurial activities among Emirati nationals, and is encouraging companies to hire them."

However, the demographic imbalance shaped by the country's previous labour economics created a number of constraints for entrepreneurship at the corporate level.

"Navigating through complexities in laws, cultures, languages, ethnicities and customs is a daunting task for the UAE

companies trying to develop their business ideas in the organisations' mosaic of cultures," said Dr Arnaut.

However, there is evidence to suggest that sharing a common culture and language is an important part of those 'regenerative forces' which is vital to increase entrepreneurial activity in the UAE. A new breed of 'flexible' citizens is emerging, typically in the form of young Dubai professionals who are confident operating in different cultural worlds. Research suggests that companies' emphasis on entrepreneurialism, individualism and cultural flexibility entails not a rejection of traditional patriarchal structures but a reinterpretation of them'.

In the study, the author observed that employees of Dubai multinational companies frame their values according to individual merits, entrepreneurialism and willingness to self-improve. These are 'flexible' citizens who will play a significant part in the UAE's future.

One middle manager, discussing a critical incident, asserted: "Employees are rewarded in a systematic way. It is not only directors or project developers but line managers and low-level managers who are directly in contact with day-to-day business problems. One of them succeeded to reduce DEWA bills by reducing waste water (600,000 Dhs)."



IT'S AN

inside

[ENTREPRENEURSHIP IN THE GULF]

Multinational companies are increasingly seeking to unlock entrepreneurial activity from their existing workforce. **DR MARINA ARNAUT**, who gained her PhD from Edinburgh Business School, examined several companies in the United Arab Emirates (UAE) and found that the creation of the right business culture was central to success. **KENNY KEMP** reports.

THE FINDINGS

The key findings from the companies involved with the study were:

1. THE IMPORTANCE OF PROPER TRAINING.

Entrepreneurial behaviour is primarily encouraged by training and development courses. Middle managers' corporate entrepreneurial behaviour is influenced by the combination of internal factors and the specificity of their job function. All middle managers use top management support that encourages them to undertake entrepreneurial initiatives and adopt autonomous behaviour. Middle managers are actively engaged in idea-sharing using open communication and enthusiastically participate in training programmes for identification of new business opportunities.

2. THE ALLOWANCE OF RISK-TAKING.

Entrepreneurial endeavour stems from risk-taking, with senior management bearing responsibility, as is normal in UAE organisations where risk assessment is controlled from the top. Innovation also stems from project failure and learning from previous mistakes. Limited work autonomy and decision making coupled with the companies' risk-averse attitude can often be balanced by a localised problem-solving approach within the team or department, and the freedom to choose the right environment to accomplish their tasks, such as working from home, or engaging with co-workers and clients in business lounges or coffee shops. Fast action can have a significant impact on sales when individuals are given freedom to lead online marketing initiatives with intensive interaction on different marketing platforms and active collaboration with offices in the UAE and around the globe.

3. THE IMPLEMENTATION OF PROPER REWARD SCHEMES.

Support for innovation through a reward system is crucial component of individual motivation to engage in innovative activities, and while such extrinsic and intrinsic inducements motivate employees, financial accolades are seen as poor remuneration for non-existent career growth prospects, with many middle managers considering departures to other companies. To address such an eventuality, some companies promote only those managers whose ideas work and are profitable. Middle managers' entrepreneurial efforts particular the ones which bring profit to the company are recognised and generously rewarded by well-established rewards and reinforcements system. All managers agreed that various rewards and reinforcements significantly motivate them to pursue to be creative and think outside the box.

4. BETTER MANAGEMENT OF EMPLOYEE'S TIME.

People need enough time to do their jobs. Increasing workloads can result in health problems which in turn can affect an individual's ability to produce innovation. However, middle managers have the freedom to use their time as required, including longer 'after hours' or during weekends, to work on projects of interest to them.

Inadequate workload and time constraints coupled with limited work autonomy and inflexible structure were central impediments to corporate entrepreneurship causing numerous negative effects.



In order to maintain control over workload and to meet deadlines, many middle managers become proactive by creating plans to deal promptly with critical issues.

5. THE ESTABLISHMENT OF A FLUID HIERARCHY.

Centralised organisational structures greatly benefit companies and protect them from unnecessary risk. However, the inflexible structure also hinders the ability of middle managers to balance the company's top-down induced entrepreneurial behaviour with the autonomous behaviour of creatively minded employees. The result, in contemporary business environments, is to frustrate the entrepreneurial process. The issue originates from a centralised structure common in the UAE and GCC (Gulf Cooperation Council) states. Organisations that are successful have tended to develop new business models where the hierarchical structure of rules and procedures, which can easily constrain entrepreneurial activity within the workforce, has been steadily improved and amended. Complicated and sometimes unclear rules, regulations and standards, most of which were observable in structure-related documentation, caused ineffective decision making and hindered entrepreneurial initiatives.

6. CREATION OF A FLEXIBLE WORKFORCE.

Middle managers advocate more agile networking structures where boundaries are still tightly defined and compliance with the rules and regulations is expected but where they can also capitalise on and experiment with prototypes. All managers in the sampled UAE companies embrace diversity and hire people from different nationalities and with different expertise in order to create new business models to pursue new business strategies. National culture had a strong effect on corporate culture, influencing employees not to admit their mistakes. Where the national culture had no tolerance for failure, it stifled decision making due to its historical tendency towards hierarchy, but was supportive of entrepreneurship as a new programme initiated by the government.

WHAT DO MIDDLE MANAGERS WANT?

From the middle manager's side there are five points to achieve a balance between induced and autonomous behaviour:

1. The support of the boss: Top management approval and a positive attitude towards entrepreneurialism, encouragement of idea sharing and open communication, reinforced by high-calibre training programmes, give middle managers confidence to undertake entrepreneurial initiatives enthusiastically.

2. The motivation of rewards: Middle managers pursue innovative ideas knowing in advance what rewards they will get once their ideas are approved.

3. The ability to make own decisions: When middle managers have freedom to set their own goals and objectives for innovation targets, approved by senior management, this is perceived as a vital mechanism for prevention of unnecessary risk.

4. The opportunity to set own time: Most middle managers use about 10% of their time to develop personal contacts, networking and outside-the-office business meetings. Other managers use about four to six extra hours after work or at weekends to develop innovative ideas and to think beyond the confines of their jobs.

5. The chance to problem-solve as an individual: Middle managers take a cross-disciplinary problem-solving approach to find a balance between a hierarchical structure with high bureaucratic intensity and their sole responsibility for the assigned tasks to a situation where problems can be solved locally by the members of the department.

In conclusion, Dr Arnaut said: "A well-placed promotional system opens an opportunity for middle managers to act more autonomously and to have greater freedom in decision making. The free flow of information and open communication across all levels of the company encourages a high level of entrepreneurialism and the sharing of new ideas."

Reward programmes which are well defined are one of the strongest constructs for motivation of entrepreneurial ideas among middle managers.

Dr Arnaut pointed out that there are often tensions between induced and autonomous entrepreneurial behaviour. She said companies must also be aware of the influence of national local culture on organisational culture and entrepreneurial intentions in a multinational company.

Among her recommendations, she stated: "ensure that HR policies are in place such as clear job description, comprehensive procedures establishing working hours, and describing under which particular circumstances overtime is allowed. Various training programmes must be focused on building employees' capabilities and aligning entrepreneurial activities efficiently."

On the wider front, she stated that special attention must be paid to corporate governance and culture. Compliance with global standards is crucial.

"The mistake from industry is that it does not ask the regulator questions, and the regulator thinks that all rules are understood and all requirements are achievable."

The challenge is how to establish open channels of communication between governmental regulations and industry.

"On a bigger scale, the UAE business environment is facing a huge challenge today: the government's role as a regulator must achieve the balance between entrepreneurial spirit of UAE-based companies and governmental laws and regulations. To find this balance is not easy but must be done," she concluded. ☺

An investigation of how middle managers address the balance between autonomous and induced strategic entrepreneurial behaviour in the UAE context, Dr Marina Arnaut, Doctor of Philosophy, Edinburgh Business School, Heriot-Watt University, March 2018

A polymath in Adam Smith's footsteps: PROFESSOR EMERITUS GAVIN KENNEDY

GAVIN KENNEDY, one of the enthusiastic instigators of the Panmure House project and a modern interpreter of Adam Smith's work, passed away on Thursday, 25 April 2019. He served as Professor and Director of Contracts at Edinburgh Business School from 1998 to 2005. He was 79. PROFESSOR ALEX SCOTT writes.



Gavin Kennedy was one of the most dazzling and influential thinkers of his generation. He was a genuine Scottish polymath as an economist, author, political thinker, innovator and business figure. He would have been at home, holding his own, in the drawing room of Panmure House in the 1780s.

Born in Yorkshire and of Scottish descent, it was not until his 20s that he arrived in Glasgow to study economics at Strathclyde University, graduating with a BA in 1965. His secondary education was at London Nautical School which he left at the age of 15 with no qualifications. He emigrated to Australia, where, as a young Marxist, he discovered the writings of David Ricardo, who invented the economic theories of comparative advantage and economic rent.

After graduating from Strathclyde University, Gavin taught at East London College where he attended a lecture by the human resources manager of Shell Oil. The manager invited him to attend union negotiations to see how wage bargaining worked in practice. He wrote an MSc thesis on collective bargaining and the seeds of his later work on negotiation were sown.

He went to Brunel University where he stood in as a lecturer at the National Defence College. This sparked his interest in defence economics and Gavin completed a PhD on the measurement of defence expenditures in

developing nations. He served first as a member, then as chairman of the UK standing commission for UNESCO and subsequently as Professor of Defence Finance at Heriot-Watt University.

He returned to Strathclyde as a senior lecturer in 1973. He was, and remained, a most gifted and inspiring teacher and his 9 am lectures in the Royal College in George Street to over 350 students, repeated in the afternoon, were a masterclass not only in economic theory and practice but also in presentation.

As a radical economic thinker, he helped shape the Scottish National Party's economic policy in the 1970s and 1980s. He edited the book *The Radical Approach* which looked at Scotland's future and an independent nation.

He was inspired by the reawakening of Scottish nationhood and was part of the 79 Group calling for a Scottish socialist republic. However, his views mellowed and he was elected to the SNP's party's national executive, and he stood unsuccessfully in the General Election of 1979 as an SNP parliamentary candidate for Edinburgh Central.

While he was waiting for economic statistics in the Public Record Office in Kew, he noticed on display the log of the Royal Navy ship *Bounty*, of *Mutiny on the Bounty* fame. Conventional wisdom had it that Captain

Bligh was a tyrant and Fletcher Christian, the leader of the mutineers, was a saint. Gavin reckoned that Captain Bligh had been unfairly maligned and wrote *Bligh*, which exploded the myth that Bligh had been a tyrannical captain.

Gavin turned his attention to Adam Smith's *Wealth of Nations*, discovering it afresh and his revelations develop the stages of effective negotiation.

A stream of books, such as *Negotiation, Strategic Negotiation and Influence, Kennedy on Negotiation*, followed.

In 1980 he left Strathclyde for a professorial chair at Heriot-Watt University, and in 1986 he founded a company, Negotiate, to commercialise his teaching. He would train thousands of managers in the techniques that remain a part of the curriculum at Edinburgh Business School.

Gavin guided the transition of The Esmee Fairbairn Research Centre into Edinburgh Business School and was the architect of the charitable structure which made it possible for EBS and Heriot-Watt University to develop together. In 2013 the University awarded Gavin the honorary degree of Doctor of Letters in recognition of his accomplishments and his continuing support of Edinburgh Business School and the development of Panmure House. ☺

“The
qualities
most useful
to ourselves are, first of all,
SUPERIOR
REASON
and
understanding,

by which we are capable of discerning the remote consequences of all our actions, and of foreseeing the advantage or detriment which is likely to result from them; and, secondly, self-command, by which we are enabled to abstain from present pleasure or to endure present pain, in order to obtain a greater pleasure or to avoid a greater pain in some future time.”

The Theory of Moral Sentiments, by Adam Smith, Third Edition. 1767.



 **ADAM SMITH**
Economist, philosopher and author
1723–1790