NEXT GENERATION LEADERSHIP DILEMMAS - and How To Solve Them

FROM REFINERY TO FINERY
Why we need strong voices of reason in our volatile world.

THE FLIGHT STUFF
Catherine Baird, of Emirates Airline, on creating a world-class passenger service.

UNLOCKING THE MATRIX
How complex organisations thrive with multiple leaders.

TEMPERATURES RISING IN FROSTY CANADA
Dr Anna Dowbiggin finds out what energy leaders really believe about climate change.
Adam Smith's home is ready to greet the world again.

An Introduction From Professor Heather McGregor

Welcome to the third edition of Panmure House Perspectives, the international business journal of Edinburgh Business School, the graduate school of business of Heriot-Watt University. As ever, we aim to ensure you find something informative and original to read for both business and pleasure.

Since our previous edition, a great deal has been happening at Panmure House in Edinburgh, where we have been able to see for ourselves the finishing touches to the incredible transformation of Adam Smith’s final home.

Before this year’s Edinburgh Festival Fringe, I asked my Financial Times colleague Merryn Somerset Webb, the Editor-in-Chief of MoneyWeek, ‘Isn’t it derive the value with some well-balanced and economic discussions during the Festival. She certainly had the venerable house resonating with the kind of debate Adam Smith would have enjoyed. We also enjoyed a dramatisation of Smith’s life by playwright John Yule in his excellent production, The Invisible Hand. There is no doubt that these events helped set a tone that we hope will continue. Our Principal and Vice-Chancellor, Professor Richard Williams also hosted a gathering of principals and directors of other Scottish institutions to let them see and feel the ambience and spirit of Panmure House. There is no doubt that these trial openings certainly had the venerable house resonating with what Adam Smith himself would have approved.

Meanwhile, in this edition we look at various aspects of modern leadership, particularly, through the research of several of our excellent Doctors of Business Administration, at Edinburgh Business School. We offer, through the inaugural lecture from Professor Benny Higgins at Heriot-Watt University, a perspective on the longest-serving Chancellors of the Exchequer of the UK. We see and feel the ambience and spirit of Panmure House through the eyes of the directors of other Scottish institutions to let them see and feel the ambience and spirit of Panmure House. We are thrilled and delighted that the Right Honourable Gordon Brown, the former Prime Minister, and one of the longest-serving Chancellors of the Exchequer in British history, will be our special guest for the official re-opening of Panmure House. We aim is to ensure you find something informative and original to read for both business and pleasure.

That we have been able to see for ourselves the finishing touches to the incredible transformation of Adam Smith’s final home.

The Invisible Hand

HONOUR FOR LEADING BUSINESS THINKER

Professor David Teece offers his advice to graduates on the moral principles that have guided his career.

CAMPUS PERSPECTIVES

A view from across Heriot-Watt University’s landscapes and were, de facto, Scotland’s first universities.

The Panmure House Perspectives Interview

Professor Robert Macintosh asks whether allowing undergraduates to pick and choose courses from a range of universities will be the shape of things to come.

Professor Oliver Lemon on why Heriot-Watt’s Alana is the perfect partner for Amazon’s Alexa.

Dr Richard Sunderland has opened the lid on the British Council to see how its leadership structure is coping with so-called ‘matrix leadership’. We also enjoyed a dramatisation of Smith’s life by playwright John Yule in his excellent production, The Invisible Hand.

Dr Anna Dowbiggin has studied Canadian energy producers’ perceptions of climate change.

Kenny Kemp writes in Wealth of Nations p.10

A horizon scan that ‘explores’ how the airline industry, talks about why product development and people training are the core of Emirates’ success. She speaks to Kenny Kemp.

Getting ready for the great rollercoaster ride of the future.

Today’s students are making major financial investment in the time of setting out we are preparing for the official re-opening of Panmure House. We have been able to see for ourselves the finishing touches to the incredible transformation of Adam Smith’s final home.

It is an exciting time to be doing so. It is an exciting time to be doing so. As the educational landscape shifts, it is worth asking whether our universities are evolving fast enough. As a pioneering, multi-campus, multicultural university, we are looking to develop a strategy that will position us as leaders in new ways of delivering the transformative power of education to future generations of students. It is an exciting time to be doing so.
Leading business thinker PROFESSOR DAVID TEECE, from the University of California’s Haas School of Business, has imparted some valuable insights into the nature of entrepreneurship.

**Professor Teece’s four principles and their meaning:**

1. **FIRST PRINCIPLE: QUESTION THE STATUS QUO**
   - He spoke about being the champion of bold ideas, taking sensible risks, and embracing ambiguity, rather than being tied by it. When we fail, we need to fail gracefully. To be at the centre of entrepreneurship and innovation, one has to be bold, walk off the beaten path, know when we are off of it, and be respectful towards those that may be trapped and cannot easily get off of it.

2. **SECOND PRINCIPLE: FIND YOURSELF (OR ‘NON-SIBI’ IN LATIN)**
   - It’s also a phrase inscribed on some war memorials. It’s not just about yourself; it doesn’t deny self. Rather, it means “not for one’s self alone”. Moreover, it’s not just for the moment. It’s lifelong.

3. **THIRD PRINCIPLE: CONFIDENCE WITHOUT PROJECTING SUPERIORITY**
   - One must be confident but without arrogance. Arrogant people don’t learn. This leads to the fourth principle.

4. **FOURTH PRINCIPLE: STUDENTS ALWAYS**
   - Professor Teece spoke about the importance of curiosity. ‘By “Students always” we mean that we must commit ourselves to a lifelong quest for personal and intellectual growth. There will never be a time when you have all you need to know, and you must, of course, put your learning to good purpose.’

He explained that these Berkeley-Haas principles were derived from Scotland.

They have deep roots in spirituality, in moral behaviour and in practical wisdom. In fact, they are deeply rooted here in Edinburgh. Moral philosopher and economist Adam Smith was in the inner circle of great minds here in Edinburgh in 1750 until his death in 1790. David Hume and Adam Smith were ringleaders in the Scottish Enlightenment, which illuminated much of the world.

‘The Enlightenment was a movement of ideas and the disruption of ideas. It was a period of great intellectual and scientific discovery. The leaders of this movement asserted the importance of reason combined with moral and practical values that should not be justified by reason. And there was no good reason to undermine thought to the church and the state. ’

‘Adam Smith, there was an emphasis on observation and empiricism and practicality. The key values he advanced were improvement, virtue and practical benefit for the individual and society. There were and there remain great universities here in Scotland that enabled and encouraged this tremendous burst of scientific and philosophical inquiry.’

**EMPATHIC OBSERVER**

Professor Teece said Adam Smith clearly did not favour seeking wealth for wealth’s sake. It was a stoic and revered hero, and the one he wanted to foster “improvement in Scotland” and, in The Wealth of Nations, wanted to see the ‘best hearts’ balanced with the ‘best heads’.

Smith also suggested that, in finding our moral compass, we need to stand outside ourselves and see our own actions as subjective, what we can in this regard. His advocacy of high self-awareness was consistent with mystical and meditative practices. If you can manage your own anger, you have a chance to deal with it. With one, he was empathetic, although sympathy is virtuous. He believed that we need to listen to it. So life is not just about managing utilitarian, as Jeremy Bentham proclaimed, but about considering the common good.

‘Learn to be an empathetic observer of oneself! It’s hard but necessary and it is the practical moral compass Smith has offered us.’

Professor Teece said thank you to Edinburgh University for continuing to pursue these challenges. The show also featured material about the Scottish Enlightenment, which illuminated much of the world.

The tale helps bring to life the story of Adam Smith and his love for philosophy, and shows how the Scottish Enlightenment has been a catalyst for innovation and entrepreneurship.

**CAMPUS PERSPECTIVES**

**Converge Challenge**

TWO SPIN-OUT COMPANIES FROM HERIOT-WATT UNIVERSITY HAVE COME OUT ON TOP AT THIS YEAR’S CONVERGE CHALLENGE.

Low-carbon brick developer Kenoteq won the Design and Creativity Award at the annual competition held in Edinburgh. The company, nominated for this year’s Converge Challenge, forms from construction waste.

It produced low-carbon bricks made from 90% recycled materials from demolition waste. Two spin-out companies from Heriot-Watt won the top prize at the Converge Challenge.

Hiloes Solutions received a Kickstarter Award after being named joint-best early-stage spin-out company. Hiloes Solutions, established by Vassiliki Voulgaridou, is developing software for ultrasound imaging that produces highly detailed maps of the circumference, allowing for faster and better cancer diagnoses.

A total of four Heriot-Watt projects were nominated for this year’s Converge Challenge, which recognises innovation and entrepreneurship from Scottish academic institutions.

The take有助于生活 Know the needs and values of the people you are serving, and be aware of the challenges they face.

More than £160,000 worth of prizes was awarded to 10 entrepreneurs from universities and research institutes from across Scotland at the gala awards, attended by over 200 representatives from the higher education community, the Scottish enterprise sector. 

**We’re very proud of our reputation as a driver of innovation and industry, and remain committed to nurturing tomorrow’s entrepreneurs, who are vitally important to building inclusive growth in our economy.**

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**Adam Smith:** The Invisible Hand

Adam Smith, the founder of modern economics, is a vital figure in the history of entrepreneurship.

The gentle, brooding character of Adam Smith was brilliantly brought to life in August as Panmure House hosted an activity during the Edinburgh Festival Fringe.

In a series of pre-opening events to allow the curious to sample Smith’s remarkable Edinburgh upbringing, playwright and actor Ian Macallum, famed for his portrayal of the law in the popular television programme ‘Tartan’, offers a powerful portrayal of the lauded economist.

The performance of Adam Smith: The Invisible Hand by In Company Theatres Productions, in conjunction with Edinburgh Business School, was an inspired and appropriate here in Scotland that enabled and encouraged this tremendous burst of scientific and philosophical inquiry.

‘Yule, who intersected the role of Paul Samuelson, was masterful in the character he created, showing Smith’s empathy and shrewdness in intellectual brilliance, at times dimmed by his Scottish idiosyncrasy. Of course the story is fictional, it involves some secret papers found and something of Smith’s sympathies for the French revolutionary cause, but it works well in building an interest in the principles behind Panmure House back into the fold of public life.

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s a rule, I don’t get worked up over oil refineries. But the one gradually taking form on 2,500 hectares of swampland outside Lagos, Nigeria’s Mad Max commercial capital, is not big, so audacious and so potentially transformative that it is like Africa’s Moon landing and its Panama Canal — a Pyramids of Giza for the industrial age.

BUILDING ON A SWAMP

Aliko Dangote, the billionaire businessman behind what even he calls his ‘crazy’ $12 billion project, can pull it off, he will go down as the continent’s John D. Rockefeller, Andrew Carnegie and Andrew Mellon. His name is Dangote’s ‘craziness’. Where it is up and coming — if it gets up and running — it will process 650,000 barrels of oil a day, a third of every drop Nigeria produces and approaching 1% of planetary production. That will make it the biggest oil refinery in its type in the world. As part of scale economies, it will pump up all the plastic Nigeria’s 190 million people need (or imagine they need), plus 3 million tonnes of fertiliser a year, more than all its farmers currently sprinkle on their fields.

To make things more interesting, Dangote is building the whole thing on a swamp. (It’s a tax-friendly swamp, at least.) That requires sinking 120,000 piles, on average 25 metres in length. So in Nigeria is big enough to take delivery of the massive equipment, which includes a distillation tower the height of a 30-storey building, and no mud is strong enough to bear its weight. Dangote has had to build both, including a jetty for which he has dredged the waters for 65 cubic metres of sand.

There is not enough industrial gas in the whole country to weld everything together, so Dangote will build his own industrial gas plant. There aren’t enough trucks, so he’s producing these in a joint venture with a Chinese company. There aren’t enough roads, so Dangote will build his own power plant too. For years — and absurdly — Nigeria has exported all its oil as crude and then reimported refined petroleum, such as petrol and benzene. That has been a lucrative racket for the middlemen who scheme over import contracts and who connect ways to scum a system distorted by subsidies.

‘You may know about this game,’ Dangote says. ‘Because of its reputation for skullduggery, he says, has diminished the oil trade. ‘It is very simple to destroy a name,’ he adds, referring to a family business that stretches back to his great-grandfather on his mother’s side, Alhassan Dantata, a prodigiously wealthy merchant who imported kola nuts from Ghana and exported groundnuts from Nigeria. ‘But it’s very difficult to build it.’ He tries to fast at least once a week, but he has decided to eat 150,000 tonnes of sand a year, more than all its farmers currently sprinkle on their fields.

AMBITION TO MAKE THINGS

Many of today’s billionaires spin their fortunes from intangibles: the internet, the media, banking or hedge funds. Dangote has made his money from more mundane things: salt, sugar, flour and, above all, cement. An awful lot of cement.

He was born in Kano, an ancient trading town in northern Nigeria, where he was brought up by his grandparents after his father died when Dangote was eight. Many of today’s billionaires spin their fortunes from intangibles: the internet, the media, banking or hedge funds. Dangote has made his money from more mundane things: salt, sugar, flour and, above all, cement. An awful lot of cement.

A distillation tower the height of a 30-storey building

The plant will need 480 megawatts of power, about one-tenth of the total that electricity-starved Nigeria can muster. You guessed it. Dangote is building his own power plant too. For years — and absurdly — Nigeria has exported all its oil as crude and then reimported refined petroleum, such as petrol and benzene. That has been a lucrative racket for the middlemen who scheme over import contracts and who connect ways to scum a system distorted by subsidies.

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A NETWORKER EXTRAORDINAIRE
In person, he is charm itself, a soft-spoken man with a pleasantly round face, close-cropped hair and a greying mustache so delicately trimmed that it is almost not there. He projects integrity and humility, even piety. I’ve met more millionaires with more swagger than him, but Dangote is a billionaire 14 times over and the 100th richest person in the world, according to Forbes.

He is a networker extraordinaire. To watch him work a room is to witness a kind of genius. He irradiates a Dickensian kind of goodwill — and intelligence — with each pressing of the flesh.

New Africa’s undisputed King of Cement, he produces in 14 countries, I hear that the business makes 60% margins, I say. He swears the number away. ‘We have a margin of 47%,’ he says, as if that were a mere bagatelle.

No one else can compete on efficiency, he says. Critics say Nigeria pays more for cement than it ought to, owing to importation. Muhammadu Buhari, the current president, despairing of the government needs to bring a draconian policy to stop others he is a villain: a ruthless monopolist who squeezes gouging the country with high prices and raking in ludicrous profits. ‘People throw a lot of mud at you and you have to see through all these emails, not minding that here is a very, very busy person,’ he says mumfally.

Often he’s firefighting. Problems erupt in one country or another and he is constantly crisis-crossing the continent by jet. In Tanzania, where he’s built a $600 million cement plant, he’s battled with the president over a threat to seize assets. Not long after I met Dangote, his country manager in Ethiopia was murdered.

‘When he’s not dealing with crises, he’s fending off friends and relatives, who are often seeking well of pecuniary favours from the government of the day and crass competition like limousines in a cement mine. Some accuse him of avoiding taxes by invoking an investment incentive known as a “pioneer status”.

Oftentimes he is more of a statesman than an entrepreneur, grovelling the country with high prices and raking in ludicrous profits. ‘People throw a lot of mud at you and you have to see how you can clean it up,’ he says of his detractors.

Nigeria still imports 4.9 million tonnes of wheat, which does not make sense. Nigeria still imports 97% or 98% of the milk that we consume.

The government needs to bring out a draconian policy to stop people importing milk, just like they did with cement.

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Smith's ideas still have the capacity to take our breath away, through their ambition and brilliance on a scale that is not often matched today. They are essential to any attempt to address these challenges, and they need to be widely and fully understood.

But, far more than any other thinker, Hume is Smith's imagined interlocutor; and, though no real philosophical correspondence between them survives, there are several pages of Smith in which one does not sense the shadow, if not the influence, of Hume. But, far more than any other thinker, Hume is Smith's imagined interlocutor; and, though no real philosophical correspondence between them survives, there are several pages of Smith in which one does not sense the shadow, if not the influence, of Hume.
INSPIRATIONAL LEARNING

Eleanor’s eldest brother, also Willie, had been at Herriot-Watt College, training to be a compositor and a printer, before his call-up to the RAF. Eleanor was the baby of the clan, but her brother, who was nearly a decade older, and her other brother, Norman, persuaded Eleanor to adapt at science and maths, that she must, must go to the college. They understood Heriot-Watt’s reputation as a pioneering institute which welcomed and encouraged women. ‘I was delighted to get the opportunity to do something like this. I really matters,’ she told me when we spoke recently in her Aberdeen home.

She met her husband Robert ‘Bob’ Weddell on the course. He had won a certificate of merit for mathematics and physics at George Heriot’s School in 1947–8, and he was a clever, kindly man with a gentle sense of humour. Love was in the air at the Watt. Call it ‘chemistry’ of another type. They were married in October 1955 at the Old Parish Church in Corstorphine. Bob, who passed away three years ago, went on to have a distinguished career with Shell Expro. He worked in Indonesia, setting up some of the major infrastructure projects for the fledgling oil industry, and came back to work with Shell in Ellesmere Port. The family lived in Chester. In the latter part of his career he worked in Aberdeen, where he and Eleanor retired, moving to Cults, on the outskirts of the city.

Why chemistry really matters

Eleanor Kemp was a short one, she ensured that all four of her children were inspired by science. While Eleanor’s career as an industrial chemist was a short one, she ensured that all four of her children were inspired by science. She met her husband Robert ‘Bob’ Weddell at Heriot-Watt College to undertake a chemistry diploma. She was a shy Edinburgh lassie from Italian Irish stock and brought up in Montgomery Street, off bustling Leith Walk. Her father, Willie Kemp, was a stretcher-bearer for mathematics and physics at George Heriot’s School in 1947–8, and he was a clever, kindly man with a gentle sense of humour. Love was in the air at the Watt. Call it ‘chemistry’ of another type. They were married in October 1955 at the Old Parish Church in Corstorphine. Bob, who passed away three years ago, went on to have a distinguished career with Shell Expro. He worked in Indonesia, setting up some of the major infrastructure projects for the fledgling oil industry, and came back to work with Shell in Ellesmere Port. The family lived in Chester. In the latter part of his career he worked in Aberdeen, where he and Eleanor retired, moving to Cults, on the outskirts of the city.

WOMEN IN SCIENCE

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FORTH BRIDGE PAINT

Eleanor was awarded her diploma in applied chemistry and admitted as an Associate of the College in November 1954, when the College Principal was Hugh Millet. Armed with her diploma, she secured a job as an industrial chemist with Craig & Rose, the paint makers who made the famous coatings for the iconic Forth Bridge. This was a time when acrylic paint was taking over from distemper, and she was responsible for its development. However, as a woman, she was barred from going onto the bridge to test her new concoctions. Instead she experimented by painting panels outside the Leith Walk factory. She was made an Associate of the Royal Institute of Chemistry in March 1955.

I recall the classes and the labs we had were practical and placed us in good stead for working in post-war industries.

ELEANOR WEDDELL (née KEMP)
Professor Higgins referenced how artists over centuries, faced with changing pages. He prefers reading biography, literature and poetry or reading literature or poetry. They are all things that add to the breadth of your mind; you can get your mind intellectually fit by thinking about lots of things, including Scotland’s leading financial figures who thinks through business issues brilliantly, but a genuine and active pleasure in the enjoyment of art, music, theatre and that there is profound truth in art in both its creation and how it is appreciated.

Lumpur, at an event sponsored by Edinburgh Business School.

Heriot-Watt University lecture on the imperatives of culture to business leaders, trustees, and former chief executive officer of Tesco Bank, delivered his inaugural

beyond the discipline in which they are involved. ‘People who have got leadership roles to have a depth of interests that go way beyond the discipline in which they are involved.’

first’s diamond encrusted skull, For The Love of God, with over $400,000 in diamonds, cost $14 million to produce and was up for auction at £50 million. I choose this as an extreme example to show the changing nature of the art world and how it responded to change.

Professor Higgins’ lecture then touched on other artists and how they adapted to their changing environment with lessons for business people to consider. He spoke about how Titian, the 16th century painter of the Venetian school, managed to ‘penetrate the market’ dominated by Titian, who was the most renowned and well-known painter of that era. He did this by adopting painting techniques which produced smaller artworks more quickly aiming for a different market, which was the less wealthy. This was therefore more economically, he said.

with the widespread emergence of photography in the mid-19th century, and the ease of travel which brought the influence of other cultures into Europe, visual representation of art had to change once again to represent more abstract ideas. Impressionist painter Vincent Van Gogh gained inspiration from Japanese woodcuts and adopted Japanese art into his work, which at that time, which at that time was unheard of in Europe. He mentioned how Paul Gauguin, the Post Impressionist, travelled to Tahiti in French Polynesia, and developed a more primitive style. He adapted his painting with a very different style and influenced the likes of Pablo Picasso, who was prepared to take on all kinds of artistic influences.

Artists have to share the kind of same choices as those in the business world. So, for me, it is interesting to see how they adapt and how they adapt different thinking, developing creatively.

understanding ambiguity

Professor Higgins then turned his attention to the key competencies as he felt are important for people in leadership positions.

One of these competencies is curiosity and the world of art is a source of enhancing natural curiosity, while another is communication. There are very few people who write well, who don’t read well. He believes reading literature, and in this he includes poetry, enables people to express ideas beyond the ordinary, and how the poet translates, combines, and expresses the experience of the poet, and how his observations at the Edinburgh International Book Festival shows, he believes, that the book is a great unifier, an omnipotence and almighty penman helper leading politicians communicate more effectively. It shows that there is a deeper interest and understanding of poetry, which is often ambiguous, also have a better understanding of ambiguity in life.

Reading poetry over time sharpen your mind and your ability to cope with ambiguity because you are a very important thing in business and politics.

A particular favourite is the American poet Robert Frost. He referred to his poems, such as ‘The Road Not Taken’ and ‘Wood Road’ by himself. Here, the reader makes assumptions about whether the writer is leaving or arriving. But it is deliberately ambiguous, so the reader can conjure up their own narrative and draw their own conclusions. He also felt that lyrics by great songwriters such as Bob Dylan can perfectly encapsulate on a theme in an poetic way in his lecture, he recited several pieces of writing including William Shakespeare’s Sonnet 18. ‘Shall I compare thee to a summer’s day?’ Thou art more lovely and more temperate. Rough winds do shake the darling buds of May.

Mr. Higgins then turned to the world of art and its role in business. For me, it is a very healthy situation for people who have got leadership roles to have a depth of interests that go way beyond the discipline in which they are involved.’

top management roles to have a depth of interests that go way beyond the discipline in which they are involved.’

A tribute to Dave Cohen

The work of internationally renowned ceramic artist has been selected to locate in Malaysia. Six ceramic masterpieces by the late David Cohen are to be unveiled at the Panmure House Malaysia, an event sponsored by Edinburgh Business School.

Professor Higgins, who passed away in 1991, was a passionate, dedicated and generous teacher with a love of creativity.

For the Love of God, Damien Hirst:

8000+ JEWELS

£14M COST

£50M PRICE

A TRIBUTE TO DAVE COHEN

Dave Cohen, born in Wimborne in 1932, arrived in Scotland in 1958 having served with the US Navy. He was a welder and apprentice carpenter, old, that served in World War II. He ran his own workshop and was involved in the arts. He exemplifies the materials are from Scotland, he said.

His work evolved around three themes: prime geometric shapes, the human figure and colour. Professor Higgins, chairman of the National Galleries of Scotland, unveiled the ceramics and congratulated his former colleague on his project on the arts and the culture and use it to help them define their own lives and society. His inaugural speech was warmly received by the guests.

Sadly, he died in North Berwick in East Lothian in 2008. He was a passionate, generous and dedicated teacher with a love of creativity.

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It’s an exciting time for our Alexa Challenge team in Edinburgh as we enter the final stages of the competition for the second year running. This is a fantastic achievement for our team, which is the only UK university in the last three. Heriot-Watt was one of only eight universities selected for the 2018 semi-finals, out of nearly 200 international entrants, then whittled down to three.

The winner will be announced in Las Vegas on 27 November. Our team is headed by Amanda, Aleksandra, Igor, Ioannis, Xinnuo, Shubham, Verena and me, as faculty advisor.

CONVERENT COHERENCES

The target set by Amazon was to create an entertaining and engaging conversational AI system for its Echo devices that can talk about any topic the user desires. This is a huge challenge that pushes the state of the art in AI and understanding and generating human language.

Our conversational AI system, called ‘Alana’, has been developed at Heriot-Watt University over the past 18 months and so has engaged in hundreds of thousands of conversations with people on all sorts of topics. For example, people can talk about music, movies, the news and politics, as well as general chit-chat. At the end of each conversation, the users give us a rating out of five stars, and humans for 20 minutes with a 4.0 or higher rating.

The second- and third-place teams will receive prizes of $100,000 and $50,000, respectively. Additionally, a $1 million research grant will be awarded to the winning team’s university if their system develops the best conversational AI system for its Echo device that can talk about any topic.

Alana has developed many different skills in the areas of natural language processing, machine learning and data science generally. Our student team members have also become experts in developing large-scale real-world conversational systems that are used every day by members of the public.

We use the Alana system in teaching our very popular hands-on course on conversational AI at Heriot-Watt, which is equipping a new generation of students with development skills in AI and human-computer interaction.

A $50,000 prize will be awarded to the team selected for creating the best socialbot.

The Order of Time by Carlot Bowles looks like an amazing read. It seems we are already living in the past and when we stopgap we are always looking at stars that may be millions of years old. Having constantly explained that heritage is what we carry into the future rather than the past, I feel like my world will be turned upside down when I read this book, which seems to suggest that time varies according to where we are.

Gary Stegmann is a favourite author. His recent novel Come, Come, Come, which is an exploration about a hedge-fund manager who has a nervous breakdown at the same time as Trump’s campaign is sweeping across the US. As a child, Stegmann was ambitious to make money but now finds meaning in an economic world which seems dominated by ideology.

With the writing team by our own senior splits, Farah’s memory of The 80s is a particular feature of mine. As an interdisciplinary academic, Farah’s work has been so influential that I can be an uncontrollable place to live, but I am also conscious that the most amazing insights can occur on the frontier rather than in the mainstream.

Our team generates a lot of interesting data, design new system features and develop methods for generating coherent conversation. We often have day-long ‘hackathons’, involving plenty of pizza, where we develop the system together before we release an updated version of Alana to the US market.

Why is Alana the perfect partner for Alexa?

PROFESSOR OLIVER LEMON is Director of Heriot-Watt University’s Centre for Artificial Intelligence Research, R & D, and Computer Science (PACIFIC), Heriot-Watt University.

PROFESSOR MÁIRÉAD NIC CRAITH is Professor of Social Science, Heriot-Watt University. Earlier this year she was named a Visiting Scholar at Harvard University. She is a garage legend in the forthcoming Research Excellence Framework metric.

What books are on your bedside table at the moment?

I read a broad spectrum, which includes academic-related material but also delves into philosophy, spirituality, fiction and poetry. One book on my table is Milkman by Anna Burns (which has since won over the 2018 Man Booker Prize). I worked for nine years at the University of Stirling and have never, ever, been more popular. As a child, Shteyngart was a Russian émigré whose family moved to the US in 1979, his recent novel Lake Success is an amazing read. It seems we already live in the past and sweepings from the past, but I am also conscious that the most amazing insights can occur on the frontier rather than in the mainstream.

What is the one website/blog you can’t be without?

I’m lucky to be married (for 25 years now) to an amazing academic (Dr Nicole Kettler). I started life as a manager in the oil industry but now focus on the relationship between culture and economy, particularly on the cultural conditioning of economic perspectives. It’s a theme that is much neglected in an economic world dominated by statistics. I’m also a great admirer of Regna Dandi, who works for the Man Booker Prize. Ghosh argues that climate change is not just a global crisis, but a personal one, and his team found a strong co-relationship between metrics and quality in most of the STEM subjects and humanities. The most urgent challenge facing humanity, such as European science or languages, is AI and human language technology. The use of metrics in these areas is simply bad judgement.

What is the one book you can’t be without?

My favourite book is one written by our own students in Heriot-Watt. Have a look at www.rockstarcheckpoints.com. This blog is written by undergraduate and postgraduate students and is a fantastic resource. The writing is a brilliant example of how students have been using the Interdisciplinary Research Centre, the brain behind thinking, and it has been a real pleasure to see it grow.

Who are the authors/poets that you most admire and return to for inspiration?

The high phi loaded John Cleese is a winter amazing books. His Anec Dog: Spiritual Wisdom from the Celtic World was hugely popular. He had the unusual gift of being able to write very simply about complicated matters. This Divine Beauty: The Eucharist is imbued with the spirituality of Meister Eckhart and gets a very easy read. He died far too young.

What is your favourite book?

Out of Place is a particular favourite of mine. As an interdisciplinary academic, Barthes by Anna Burns [which has since won the 2018 Man Booker Prize]. I worked for nine years at the University of Stirling and have never, ever, been more popular. He had the unusual gift of being able to write very simply about complicated matters. This Divine Beauty: The Eucharist is imbued with the spirituality of Meister Eckhart and gets a very easy read. He died far too young.

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Q: Hello, Catherine. Tell us something about your position and your main responsibilities.

A: I have been in the aviation industry for 30+ years. My career has focused on people, particularly the frontline in the air. I've had responsibility for cabin crew recruitment, training, career development and management across a number of airlines. My current role at Emirates encompasses cabin crew training and development - from induction, safety and emergency procedures (SEP), image and uniform (I&U), medical, security, service and hospitality across all cabins. And, career development for inflight leadership roles. We also provide services to our Pilots for SEP and I&U for all Emirates uniform wearers across the group.

PHP: How did you get into the airline business and what attracts you about it?

CB: I spent many years in Education, teaching in Australia. Like all good Aussies I put on a backpack and never looked back! While in London I joined British Airways (BA) as long-haul cabin crew on the Boeing 747. In BA I moved into crew training and recruitment as a dual role with flying around the world and the rest is history.

It’s all about the people – the people I get the privilege to work with and people, as customers, who all have amazing narratives to share – you grow and learn so much in this industry.

PHP: Emirates is recognised as one of the world’s leading airlines for customer service, why is this?

CB: I believe our success and reputation comes down to two key elements -

• An unswerving commitment to product and service innovation, with our customers at the very centre of everything we do, and

• Our people. We have over 160 nationalities who speak over 60+ languages in the Emirates Group. I am constantly humbled by the amazing people who work with us, people with exceptional qualifications, experience and inspiring stories to tell.

PHP: Who have been the people you admire and have encouraged you in your career?

CB: I have been inspired and encouraged by the myriad of talented people I’ve had the great fortune to work with across the globe. The people I admire lead with clarity, authenticity, compassion, courage and integrity. I’ve also discovered that the greatest learning often comes from the most unexpected places!

And, I am constantly inspired by the bold and courageous leadership of HH Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai. I am an avid reader of this writing – books and poetry.

PHP: What advice do you give to people who join the airline?

CB: Aviation is a dynamic, challenging, ever-changing and demanding industry. The industry has people at its heart. So you’ll need a passion for people, for going out of your way for others and, resilience and grit sets you apart.

PHP: How does an organisation retain its culture as it expands? What have you put in place to ensure that the culture is carried on?

CB: It is imperative that you’re very clear about your purpose and where you’re going, where would this be undertaken – and with whom?

CB: No surprise, to travel. I love to explore new destinations with my husband and, equally, I love to visit well-trodden paths to be with our family and the amazing friends we have all over the globe.

PHP: The airline industry is a people business. What should any leader understand about working in a people business?

CB: I believe, as a leader you are only as successful as the team around you. Your role is to nurture and develop each and every one of your team to be the best possible version of themselves. At the core, it doesn’t matter where we come from, our age, gender, background or experiences – we are all human. And, for humans to thrive and trust we need to feel valued, recognised, encouraged and developed and, the key ingredient, kindness.

PHP: What’s your favourite leisure time activity and where would this be undertaken – and with whom?

CB: No surprise; to travel. I love to explore new destinations with my husband and, equally, I love to visit well-trodden paths to be with our family and the amazing friends we have all over the globe.

CELEBRATING A CABIN CREW SUPREMO

CATHERINE BAIRD

The flight stuff:

CATHERINE BAIRD: an accomplished woman in today’s global airline industry. As a Senior Vice President with Emirates in Dubai, she is recognised as a leader in people development at the pinnacle of her chosen profession. To commemorate Catherine’s achievements, she will be receiving an honorary doctorate from Heriot-Watt University in Dubai at the forthcoming graduation ceremony. We caught up on the move in Australia.

CATHERINE BAIRD

Senior Vice President Cabin Crew Training for the broader Emirates Group and Airport front line internal leadership.

Education: Bachelor of Education, working as a teacher in Herriot-Watt, University in Dubai at the forthcoming graduation ceremony. We caught up on the move in Australia.

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Who Takes on the Leadership Roles in Professional Environments
Where All Are Equal? Gordon Jack’s Study into ‘Distributed Leadership’ Among Doctors, Academics and Local Politicians Shows There Is a Great Deal Still to Understand. Kenny Kemp Reports.

Don’t you tell me what to do – YOU’RE NOT MY BOSS!

Consider an eminent heart surgeon operating in a busy city hospital who clashes openly with a senior clinician who is also a respected cardiologist. The fall-out in the department is toxic and impacts on the healthcare of patients. Or imagine a long-serving council chief bristling when an obstreperous elected leader rebukes him for funding cuts that impact thousands. And think of a big-ticket professor asked to represent his university instead of promoting his individual research. He refuses point-blank, saying it’s not his job. Such areas of potential conflict are legion, and they are common in almost every professional walk of life.

Although some environments involve workers ‘doing what they are told’ by their bosses, or following orders like unquestioning soldiers, today’s workplace is increasingly nuanced and sophisticated, and demands collaborative and consensual leadership.

Gordon Jack, who holds a PhD in management from Heriot-Watt University, has been exploring leadership in ‘low-authority environments’. His research backs up anecdotal stories about feuding doctors, irascible academics and intransigent politicians. He points out that many people from these groups are ‘massively underprepared’ for leadership, which can lead to negative perceptions of elevated responsibility and general levels of dissatisfaction. In turn, this discourages many from stepping forward to become leaders and can sometimes result in the widespread disparagement of those who are prepared to take on such positions.

Dr Jack sees a solution in understanding the multiple motivations of those working at equal levels in an organisation. It is about finding the common ground in which two equals both gain something from a leadership situation. This, he concludes, is an under-researched area requiring further study.

This is in contrast to leadership, management and organisational structures across disciplines, which have been researched and contextualised for many years; the bases of these concepts can be traced back thousands of years to their crudest forms.

‘Vast amounts of literature on leadership and management revolve around the assumption that people do as they are told without confrontation, with threats of sanctions being one key driver. Historically, in large militaristic and religious organisations, this may have been an accurate account of what happened. Soldiers, for example, joined the army and were commanded by senior officers to carry out orders and missions, which they did without dispute,’ says Dr Jack.

However, in modern practice, this is no longer the case even in the military. As every organisation seeks to deal with constant change, one of the roadblocks to achieving successful transition is the reluctance of the people expected to do things differently. Change is often contentious and difficult to instigate, and this leads to people questioning whether leadership or management is even possible within such environments.

Today’s workplace is increasingly more nuanced, sophisticated and demands collaborative and consensual leadership.
and whose focus was instead on personal research, which
be easier to manage a class of primary school children,

boss. Among the responses was:

questions expose an ambiguity about who is managed, who

THE IVORY TOWER POWER: ACADEMICS

individual rather than a team,’ says Dr Jack.

heroic figure, acting to apportion success and blame to one

that stage of the procedure.

operations depending on the situation and skills demanded at

out by the group’. Members of a surgical team take turns in

a group quality, as a set of functions which must be carried

direct employer.

Council than to their local NHS Trust, which may be their

are no formal entry requirements, despite the fact that

extensive amounts of training to attain professional status,

and organisations with high levels of professional

and to professional organisations whose commitments are

politicians with professional qualifications are elected to local

are included in nine secondments, including nine lead clinicians and six clinical directors),

boards (including 14 lead clinicians and 13 clinical directors), and 14 local councils (including nine

and the Scottish court system, part of the

secondment in the

is continuing his

confusion by as to the identity of the employing authority for

clinicians, perhaps indicating an inclination toward a

multiple, rather than singular, view of the organisation.

The difficulty with both consultants is that we are employed

by the health board to deliver certain aspects of a service, but actually, the management structure goes to the

General Medical Council).

Another stated:

The management structure here has really not got an

awful lot to do with me. If I behave as a reasonable
doctor, and I trust my patients, it doesn’t matter what the

management structure here thinks. So it’s a strange

process.

Clinicians suggested that it was difficult to lead consultant

colleagues, and even more so if colleagues were not

interpersonally or emotionally as colleagues.

There appears to be an engineered culture within the

NHS where the general, medical management and clinical

work in harmony, consequently having a detrimental

effect on team dynamics. They less likely to

entirely with the leadership process but also outwardly

consideration given to the wider institution. Further, some ‘awkward members

in the practice… One of my

leaders colleagues said, ‘What is it? 666?’ So I thought there’s a view

he gave me 007. I went back to the practice… One of my

job or not.

management mantras and suffer from a lack of respect and

some leaders are labelled as ‘failed surgeons’ who take on

Distributed leadership, with leadership responsibility divided

between the clinical and non-clinical teams, has been

found to be a constituent aspect of healthcare delivery,

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Energy producers and the utility companies that supply electricity in Ontario have differing views on how they must tackle climate change. Kenny Kemp reports on research undertaken by DR ANNA DOWBIGGIN, who has recently completed her DBA at Edinburgh Business School. She suggests the industry should work more closely on its future narrative.

Long-range weather forecasters predict a dramatic increase in the incidence of extreme weather that will have a destructive impact on electrical power supply around the globe. So do those who work to keep the lights on, and our homes cool in summer and warm in winter, fully understanding the multiple dangers of this potential disruption to our energy supply – and how does this impact on the work they are doing now?

Anna Dowbiggin, a native of Canada, undertook her Doctor of Business Administration with Edinburgh Business School, Heriot-Watt University, to find out more about the electricity sector’s perception of the risks involved, drawing some important conclusions that can be shared across the world. She chose to focus on Ontario, Canada, a highly populated region in a country of extreme hot and cold weather. Her research was supported by David Butters, the president and chief executive officer of the Association of Power Producers of Ontario (APPrO), who says that the study of the accumulated views of producers and suppliers will help ‘to inform policy and practice and assist in the process of advancing corporate adaptation measures for future climate change in Canada’.

Dr Anna Dowbiggin knows her work has immediate relevance: ‘Climate change has already affected Ontario electricity suppliers through heat waves, severe flooding and ice storms. Risk effects of the physical manifestations of climate change have left businesses and households without power, heating or air conditioning on many occasions. Yet little work has been done on examining the additional risk effects associated with secondary and indirect impacts of climate change on industry.’

She explained that the pressures are intensified because of the ageing infrastructure of the power producers and network grid operators, with key assets, such as transformers, conductors, wires, poles and cables, reaching the end of their life cycle. Extreme weather forecasting done in 2001 suggested Ontario was at high risk for flooding and freezing temperatures. Fifteen years later, the Canadian Electricity Association (CEA) reiterated the same claim, asserting the sector is increasingly more vulnerable to climate risk due to aging transmission equipment, lack of capital investment for infrastructure renewal and lack of planning for climate change impacts. CEA documents state that recent Canadian government infrastructure planning did not include considerations for ‘climate hardening’ or the technical and structural modifications to protect electrical power plants and equipment from specific physical impacts of flooding and extreme hot and cold temperatures.

In her research, she raised the question of how the electricity sector will be able to cope with such unpredictable increases in extreme weather. She was keen to learn the extent to which power producers and utility companies manage climate risks depending upon their current management beliefs and interpretations. Climate risk management is particularly salient for the electricity sector in Ontario. District utilities and their upstream generation partners are noted time and again for being vulnerable to potential extreme and sudden weather impacts, she said.

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She was keen to learn the extent to which power producers and utility companies manage climate risks depending upon their current management beliefs and interpretations. Climate risk management is particularly salient for the electricity sector in Ontario. District utilities and their upstream generation partners are noted time and again for being vulnerable to potential extreme and sudden weather impacts, she said.

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VULNERABLE TO EXTREMES

Canadians are the third highest consumers of electricity per person among the OECD countries, surpassed only by Norway and Iceland, and the seventh highest consumers of electricity in the world. She selected Ontario precisely because it has the highest per capita usage of electricity in the country and the largest infrastructure network of electrical utilities. Population intensification in the southwest continues to increase electricity demand, so future outages will have severe impacts on lives and quality of living.
Through her research, Dr. Dowbiggin was keen to identify the precise perceptions of the leadership groups. Using an inductive research approach, she conducted 20 in-depth case studies to examine how electricity executives and senior managers perceive the risks. She used personal construct theory (PCT) and its related repertory grid technique (RGT) to explore individual perceptions and risk beliefs. Participants were senior decision makers from the natural gas-fired power producers that generate electricity from a fossil fuel base and municipally owned utilities that transmit electrical power to end-users. The individuals were selected based on the breadth of their responsibilities to participate in the study, their corporate commitment to managing and analyzing climate risks, and their active engagement in climate risk working groups with industry associations, such as APRO and the Canadian Electricity Association.

Due to the complex and often controversial nature of climate risk perceptions, decision makers are dependent on scientists and professional experts to deliver what evidence is seen to be relevant. Dr. Dowbiggin’s interviews involved reviewing eight elements – instances of inexperience and indigenous climate risk – to confirm the saliency of such for the interviewees. The inexperience risk effects comprised climate change itself (climate predictive data, ageing infrastructure, government policy and greenhouse gas emissions regulations), while the endogenous risk effects were technical knowledge, organisational capacity and organisational resources. The eight elements used in the study were:

- Sudden, direct climate events. This encompasses the weather-based risk assessment technical knowledge, organisational resources and organisational capacity. The eight greenhouse gas emissions regulations, while the endogenous risk effects were technical knowledge, organisational capacity and organisational resources. The eight elements used in the study were:

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Unlocking the Matrix
A fresh angle on the leadership tangle

86% of FTSE 50 and 94% of Fortune 50 companies deploy some form of matrix structure.

Future scholarly enquiry could build on these points and seek to further examine these constructs and attempt to determine any causal links between them.

Because the Council formally adopted a matrix structure in 2012, and is experiencing many of the associated challenges as it transitions, Dr Sunderland felt it represented an interesting case study to provide lessons for similar not-for-profit organisations. His research is a single case study drawing on data and interviews from the Council. The primary sources include a managerial practices survey, a focus group discussion and key informant interviews.

These sources are complemented for triangulation purposes by secondary sources, which include such documents as corporate plans, annual reports, HR data, internal financial and non-financial data, and organisation charts, as well as publicly available government records published by the Foreign Affairs Committee and Public Accounts Committee of the UK Parliament. The sample selection was selected from three of the Council’s eight regions: the Middle East and North Africa (MENA); Sub-Saharan Africa (SSA); and South Asia (SA).

PERCEPTIONS OF GOOD LEADERSHIP

These regions represent around 30% of the global network in terms of number of countries and 40% of regional and senior country posts. The regions have more mixed business portfolios and, arguably, experience more aspects of matrix working. All three regions represent a mix of large, medium and small operations, which makes them ideal to offer insights into the matrix structure. These regions are culturally diverse, which provided some interesting insights into how the matrix is viewed by different national or regional groupings.

The key aim was to see if a ‘good’ matrix leadership could increase the quality of communication, make more effective use of shared resources, lead to faster decision making, increase innovation, and prevent teams from working in silos. Dr Sunderland found that, in the 200 pages of transcripts and over 80,000 words of data, there were no significant differences between perceptions of ‘good’ leadership behaviour across the regions studied. Equally, there were no substantial variances in perceptions between those in regional leadership roles, professional services or country leadership.

His research concluded that ‘good matrix leaders’ demonstrate similar patterns of behaviour irrespective of role type or geographical location. Dr Sunderland found that public sector leaders at the British Council exhibit good levels of external behaviours such as networking, which were cited as positive indicators of effective matrix structures. The British Council has an appropriate focus around people and external relationships to deploy a matrix structure successfully. This, he suggested, shows that other public sector bodies with a comparable people focus have similar potential.

However, detailed examination of primary and secondary sources highlighted that the Council is struggling to realise other purported benefits associated with matrix structures. It was evident that the potential is not always matched by leadership behaviour. In fact, clear gaps exist between the most commonly observed behaviours and the behaviours associated with perceptions of ‘good’ leadership. This disparity relates primarily to empowering behaviours (consulting, delegating and developing), all of which were observed relatively less by research participants but highlighted as key behaviours of those perceived as ‘good’ leaders.

Future scholarly enquiry could build on these points and seek to further examine these constructs and attempt to determine any causal links between them.
The research showed relatively low scores for leadership behaviours associated with the effective sequencing of work, sharing of knowledge across teams and the successful implementation of activities, despite those behaviors being discussed by researchers as those demonstrated by ‘good’ leaders.

The study has been illuminating for the British Council. Organisations deploy matrix structures expecting to realise benefits such as an ability to respond to multiple priorities, improved quality of communication, more effective use of shared resources, faster decision making, access to more diverse skills, and better integration between teams. However, detailed examination of primary and secondary sources highlighted that the Council is realising few of these purported benefits. A staff survey showed limited evidence that the quality of communication had improved since the deployment of the matrix structure. This confirmed that, while the quantity of communication may increase following the implementation of a matrix structure, an increase in quality does not necessarily follow.

**FINDING THE RIGHT MINDSET**

Dr Sunderland’s conclusion was that an evolution towards a matrix structure is not merely a change of organisational form; it must be supported by the revision of wider HR practices and the right mindset and organisational culture to succeed.

Structural, systemic and cultural challenges remain for the British Council to better realise the benefits of its matrix structure. There is a wide range of implications for the Council as a result of this study in terms of developing management practices. Some of this work has already begun. However, much more is required to disseminate the research findings and use the insights to further redesign management practice. Some of this work has already begun. However, much more is required to disseminate the research findings and use the insights to further redesign management practice. Some of this work has already begun. However, much more is required to disseminate the research findings and use the insights to further redesign management practice. Some of this work has already begun. However, much more is required to disseminate the research findings and use the insights to further redesign management practice. Some of this work has already begun. However, much more is required to disseminate the research findings and use the insights to further redesign management practice. Some of this work has already begun. However, much more is required to disseminate the research findings and use the insights to further redesign management practice.

**SUMMARY OF SIMPLE MATRIX STRUCTURES**

<table>
<thead>
<tr>
<th>Type of matrix model</th>
<th>Brief description</th>
<th>Example organisation(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate functions vs business unit</td>
<td>Matrix structure to combine corporate functions (e.g. finance, HR, marketing) and business areas</td>
<td>Nestlé, General Electric</td>
</tr>
<tr>
<td>The two-hat model</td>
<td>Corporate functions have a second role of a line manager to service customers who interact with the organisation</td>
<td>General Electric, Citibank</td>
</tr>
<tr>
<td>The indirect management model</td>
<td>A hybrid structure that combines facets of both of the above models to address the issue of two management positions</td>
<td>ABB, Mars Pet Food</td>
</tr>
<tr>
<td>The line matrix model</td>
<td>A traditional matrix structure incorporating functional and business areas</td>
<td>IBM</td>
</tr>
<tr>
<td>The diagonal matrix model</td>
<td>A matrix structure with a diagonal function (e.g. finance) to provide support to areas of the organisation</td>
<td>Shell, Accenture</td>
</tr>
<tr>
<td>The hybrid model</td>
<td>A hybrid structure combining multiple functional areas to support each other</td>
<td>GE Healthcare, Nestlé</td>
</tr>
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Source: adapted from Galbraith (2009)

The research showed relatively low scores for leadership behaviours associated with the effective sequencing of work, sharing of knowledge across teams and the successful implementation of activities, despite those behaviors being discussed by researchers as those demonstrated by ‘good’ leaders.

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**If “good” matrix leadership is a combination of leadership approach, behaviour, traits and skills, future scholarly enquiry could build on these points and seek to further examine these constructs and attempt to determine any causal links between them.**

**SUMMARY OF COMPLEX MATRIX STRUCTURES**

<table>
<thead>
<tr>
<th>Type of matrix model</th>
<th>Brief description</th>
<th>Example organisation(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The two-dimensional matrix</td>
<td>A matrix structure with a grid layout that isolates business areas from corporate functions, allowing for greater flexibility in decision making</td>
<td>Shell, Accenture</td>
</tr>
<tr>
<td>The three-dimensional matrix</td>
<td>A three-dimensional matrix structure incorporating functional, products, markets, functions, geography and time</td>
<td>GE Healthcare, Nestlé</td>
</tr>
<tr>
<td>The dynamic matrix</td>
<td>A matrix structure that changes over time to meet the needs of the organisation</td>
<td>IBM</td>
</tr>
<tr>
<td>The hybrid matrix</td>
<td>A hybrid structure combining multiple functional areas to support each other</td>
<td>GE Healthcare, Nestlé</td>
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Dr Richard Sunderland, a researcher at the University of Heriot-Watt, has been working with HR professionals at the British Council in unlocking the matrix. He has shared insights from the research with similar organisations in the private sector. Referring to his experience of doing a doctorate, Dr Sunderland said it had been challenging yet hugely satisfying with a great deal of professional and personal learning, not to mention a great example to set to his children of being curious about the world around us.

**LEADING THE MATRIX**

An exact method can only study one independent variable. During the establishment of a matrix structure in the British Council, Richard Sunderland, Director of Business, highlighted the importance of understanding the leadership approach and behaviour of the leaders who had been the driving force behind the matrix.

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**2030 and beyond:**

**GAZING INTO THE FUTURE**

What does a university need to do to secure its future? A horizon scan project commissioned by Heriot-Watt University discovered eight themes:

- **THE WORLD IS GETTING OLDER**
- **POLITICAL/ECONOMIC STABILITY IS NOT A GIVEN**
- **TECHNOLOGY IS CHANGING HOW WE LIVE AND WORK**
- **AI WILL BE TRANSFORMATIVE**
- **SECURITY MATTERS**
- **HEALTH AND WELLBEING REQUIRE PROACTIVE CARE**
- **DIVISIONS BETWEEN OLD AND YOUNG WILL BECOME INCREASINGLY UNCOMFORTABLE**
- **THE WORLD NEEDS A LOW-CARBON FUTURE**
Society & conversation, therefore, are the most powerful remedies for restoring the mind to its tranquillity:

if, at any time, it has unfortunately lost it; as well as the best preservatives of that equal and happy temper, which is so necessary to self-satisfaction and enjoyment.