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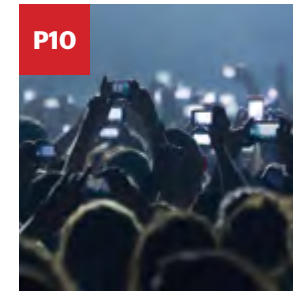
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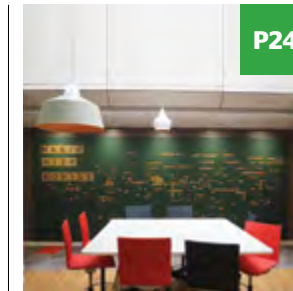


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Introduction



Welcome to the fourth edition of Core and my first as Dean of Warwick Business School.

As Dean of one of the world's leading business schools, at the heart of a world-class university, I am in a privileged position of being surrounded by a wonderful breadth and depth of academic talent.

Core illustrates that diversity of original thought, and will provide you with an insight into some of the impactful and cutting edge research undertaken at the school.

Our vision is to be the leading European based Business School, with global reach. Harnessing the power of inter-disciplinary research, working across schools and organisations, we seek to address the big, complex issues facing leaders and managers.

We engage meaningfully with business and government to create a better society, with our world-class research running through the core of everything we do at WBS.

Professor Andy Lockett
Dean of Warwick Business School.

The fourth edition of Core arrives at a time of great change with globalisation under attack and slow growth testing the boundaries of economics - see *Has the QE experiment worked?* (p12). It may well see some companies go under, others being swallowed up, and some industries disappearing, while others flourish and create new markets with new technology.

The end of capitalism? (p58) looks at how these new markets are being established through digital technology, with companies like Uber and Airbnb challenging not only whole industries but creating a new sharing economy. Such disruption could see some companies acquired or merge, but in *Dealing with destruction* (p22) we find that is rarely a value-boosting exercise.

In such turbulent times *The skill of using luck* (p19) is an intriguing concept; is success more about being in the right place at the right time and realising it?

It is debatable that Volkswagen being embroiled in an emissions scandal was down to bad luck, but we use the German carmaker's troubles to examine how to re-build a brand in *When the smoke clears* (p30). And it is not only companies that need to look after their brand, but countries too as revealed in *Re-building Africa's brand* (p34).

Volkswagen's diesel emissions are contributing to climate change, but in *Moody models* (p16) we look at how assumptions have a powerful influence over how those in power tackle it.

As well as affecting the climate, exhaust fumes are an obvious health concern, but in *Health*



stuck in the slow lane (p64) we investigate why innovations can take years to trickle down into frontline practice, while *Can SMS save the NHS?* (p60) reveals the art of nudging people to make better decisions regarding their own health.

Nudging, based on behavioural sciences insights, is cost-effective and highly innovative, something all companies crave, so dip into *Five steps to make firms more creative* (p29) for inspiration. Fintech is one of the most creative emerging sectors and is hinting at a cashless society, read more on it in *Cash reaches vanishing point* (p56). While many entrepreneurs in the sector are *Putting data to good use* (p10), Pingit is a prime example of an innovative fintech idea and how Barclays produced it is explored, and much more, in *Design enters the C-suite* (p24).

The tech sector has seen a whole host of entrepreneurs, but what is the right stuff when it comes to making an entrepreneur? *The genetic makeup of an entrepreneur* (p8) may have some clues.

Of course everything going



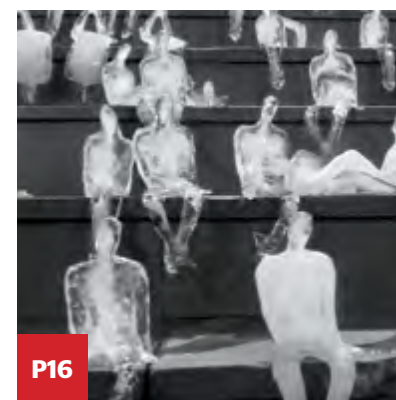
digital is not without its security issues and that is about to become even more complicated with the advent of the Internet of Things, which we explore in the *Wild West of the internet* (p66).

A different approach to investment strategies could emerge from *Game Theory* as explored in *It's more than just a game* (p38). While in *Millennials tip the scales* (p42) we investigate how a new generation want more from work.

For career aspiration there is the journey of Wasim Khan, CEO of Leicestershire County Cricket Club, in *Trailblazer Khan takes his chance* (p50). While fellow WBS alumnus Hugh Thomas, of Ugly Drinks, discusses *Why I love my job* (p54).

On the theme of self-development, we also look at how drama and behavioural science have been combined to create a new you in *Making sense of ourselves* (p62).

If all that is not enough, city guides on *Washington DC* (p46) and *Beijing* (p48) offer some places to see and stay and *A book that inspired me to...* (p44) gives you some more reading material.



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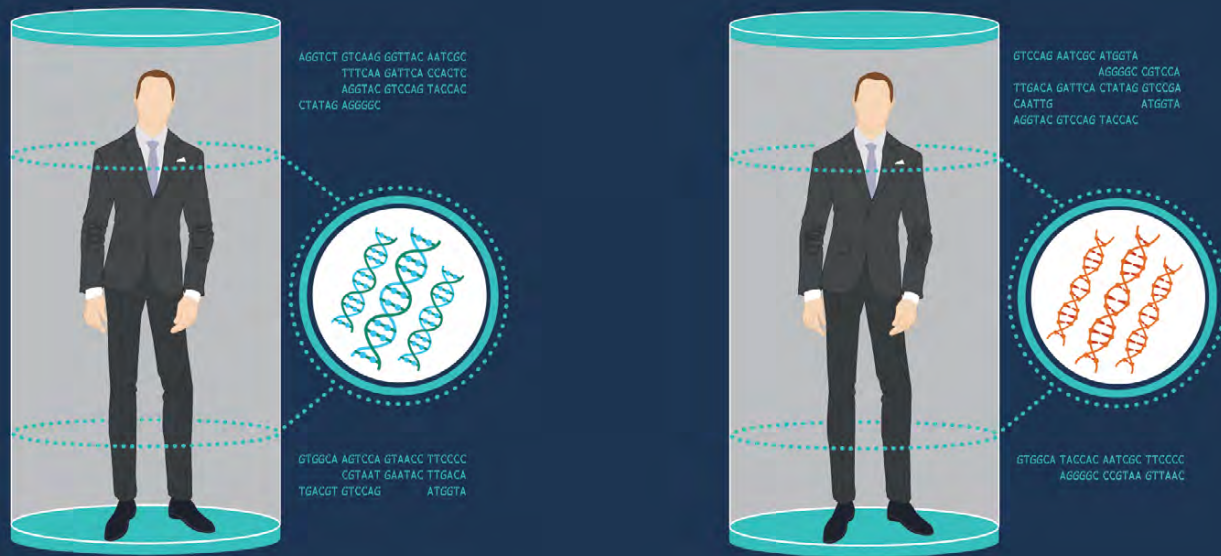
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ANALYSIS



Anna Blackaby investigates whether some people are pre-disposed to becoming an entrepreneur thanks to their genes

The genetic makeup of an entrepreneur

Are entrepreneurs born or are they made? It's a question that has puzzled researchers for many decades.

But Nicos Nicolaou, Professor and expert in the biology of the entrepreneur at Warwick Business School, is shedding new light on the role DNA plays in shaping who chooses to be their own boss. And his results suggest that genes do matter – but only up to a point. “It’s not nature, it’s not nurture – it’s a little bit of both,” he says.

Twins are a fantastic natural experiment which can help scientists tease apart genetic and environmental influences on all sorts of behaviours. Whereas identical twins share

all of their DNA, non-identical twins share around half. Researchers can use this fact to look at twin concordances for entrepreneurship – the probability that one twin is an entrepreneur given that the co-twin is also an entrepreneur.

If this is greater between identical twins than their non-identical counterparts, it suggests nature plays a role in determining who becomes an entrepreneur. But if both types of twins display similar twin concordances, it would suggest that nurture plays the only role.

Nicolaou’s research show genes do indeed make some people more likely than others to become entrepreneurs.

“We found that about 40 per cent of the variance in

entrepreneurship is accounted for by genetic factors,” he says.

However, we won’t be seeing a world where would-be businessmen and women undergo genetic screening before being granted a bank loan.

“It’s important to clarify what that means,” says Nicolaou. “That does not mean that genes determine who becomes an entrepreneur. We’re only talking here about probabilities and likelihoods, nothing else – this is not deterministic.”

In any case, people looking for a specific ‘entrepreneurship gene’ will be disappointed – the genetic tendency to start a business is likely to be due to a large number of genes that manifest themselves in many ways, including through a complex dance with the environmental influences that each individual meets in their life. Perhaps the most straightforward way genes influence our entrepreneurial tendencies is through personality. People with inherited traits like extroversion, creativity or an openness to new experiences, for example, are more likely to go into business for themselves.

Environmental factors might also interact with genetics to influence whether someone becomes an entrepreneur – so a person with a certain combination of genes may react more strongly to an environmental stimulus, such as a better access to finance.

And on a more complex level, genes may lead people to seek out environments that may in turn make them more likely to become an entrepreneur. For example, people who are genetically predisposed to embrace new experiences may choose to follow an adventurous career path where they are exposed to a richer seam of potential business opportunities.

“In a way we partly create our own environment based on our genes,” says Nicolaou.

Twin research can only give us an idea of the role genes play at the population level. But when we zoom in to look at individuals, it is impossible to say whether any one person’s entrepreneurial zeal is down to nature or nurture.

It would be nice to know, for example, how much influence genes had on Warwick Business School MBA alumnus John Dymond, who seems to be the classic born-entrepreneur. He comes from a very business-minded family where his father and uncles have all at some stage run their own ventures.

Dymond is now co-founder and CEO of DocDelta, a US-based tech start-up that he describes as a talent search engine for healthcare professionals. He previously spent several years working for another healthcare start-up, where he came on-board at a very early stage and helped to grow it to a multi-million dollar company. He points to a key personality trait he believes he has inherited from his father.

“There’s definitely an element of drive that is inherent in what I’m doing,” says Dymond. “I don’t like to settle. I like to be pushing forward all the time – it drives everyone mad, including my wife.”

Similarly, the career to date of Neil Hutchinson, another Warwick Business School alumnus, is testament to that same kind of drive. But, unlike Dymond, Hutchinson doesn’t come from a family of entrepreneurs – his father was a university

librarian and his mother a teacher.

“I think, for me, it’s probably more shaped by my environment,” he says.

Having made his name in the internet marketing industry with TrafficBroker and then acquiring energy comparison website uSwitch, his firm Forward now focuses on both early-stage venture capital and later-stage private equity style investment. His personal investment vehicle Neon Adventures also has many projects on the go, including a boutique hotel in Marrakech, a professional cycling team for promising young cyclists and a philanthropic project called The Kindness Initiative, which aims to make the world a better place by helping people to be kinder to one another.

He wonders whether it was his upbringing, particularly his father’s love of sport, which gave him the drive behind his multifaceted entrepreneurial career.

“I did a lot of sport growing up so I was used to competition,” says Hutchinson. “I think having a competitive element is

probably a key trait in an entrepreneur.”

Hutchinson’s story is an inspiration for those people who don’t come from a particularly entrepreneurial family but who dream of launching their own business. And, hearteningly, Nicolaou’s research backs up Hutchinson’s experience.

“Environmental factors are actually more important than genes,” says Nicolaou. “Even though genes do matter, pretty much anyone can become an entrepreneur with the right training, opportunities and so on.”

That’s where people like Deniz Ucbasaran come in. As Professor of Entrepreneurship at Warwick Business School, she definitely believes the entrepreneurial mindset is something that can be learned.

“Given the proliferation of entrepreneurial education, there’s obviously a large proportion of society that believes it can be taught,” she says.

Ucbasaran points to some of the key hallmarks of an entrepreneurial mindset – identifying opportunities and selecting the most promising ones: lean and agile thinking, and knowing how much you can afford to risk. And these can easily be learned, she believes.

“There is probably a form of entrepreneurship for many people,” she says. “It may not necessarily be a start-up, it may be within an established organisation or it may be a social enterprise. It’s finding a match between the individual, their skills, their passions and the opportunity.”

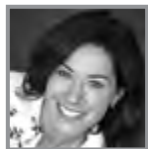
Ultimately both Ucbasaran and Nicolaou agree that it doesn’t really matter whether the drive to be an entrepreneur is down to nature, nurture or a little bit of both. Nicolaou says: “What is more important is to demystify entrepreneurship and make people believe it’s possible and that it’s not rocket science.” ■

“Even though genes do matter, I believe that pretty much anyone can become an entrepreneur with the right training, guidance, opportunities and so on”

ANALYSIS



Watch Neil’s film ‘What I did next’ at wbs.ac.uk/go/core



Helena Pozniak finds out what we can do with the tsunami of information on our phones, the internet and the ever expanding digital world

Putting data to good use

What makes us healthy? How will large crowds behave? Who's got 'flu' at the moment? What will stock markets do next? Scientists are only just beginning to decipher secrets offered up by huge masses of information left behind on the internet and mobile phones, and the potential to understand the present and predict the future is tantalising. "There's no shortage of data," says Suzy Moat, Associate Professor of Behavioural Science at Warwick Business School. "The main challenge is to ask the right questions - questions to get the most out of the data left in our own digital exhaust," says her colleague Tobias Preis, Associate Professor of Behavioural Science and Finance. Since Moat, Preis and PhD student Federico Botta published

research showing a remarkable correlation between crowd numbers at football matches and mobile phone interactions, the phone at the Data Science Lab at WBS, which the two academics direct together, has barely stopped ringing. Many different stakeholders are interested in unpicking the secrets that such new data sources can offer - from policymakers to businesses to health authorities.

After football fans flocked to cheer AC Milan and Inter Milan at the San Siro stadium in Milan in 2013, the researchers were handed a gift in the form of two months of phone data, made available to them by an Italian mobile network.

By looking at ticket sales for football matches, the team established the precise number of people in the stadium at a given time - and discovered this correlated perfectly with

Veneridia Vasilis/Shutterstock

data on usage of mobile phones in the area. They could use this mobile phone information to estimate with reasonable accuracy how many people were at a game.

In other situations, such as protests where no ticket sales data is available, such estimates of crowd size would usually fall to human judgement.

"We found that the best indicator for estimating the number of people in a restricted area is the number of internet connections that phones open or maintain via the mobile phone network," says Preis. "Every time you make a call or message, it's logged. Every time you look up information on a website, it's logged. But crucially, even if you leave your phone in your pocket it will still check for new messages and updates - and those checks are logged too.

"All this information is collected by mobile phone carriers, who can also determine where you are while these interactions are going on."

This does all sound slightly sinister, but Moat says it's important that people realise what they are unwittingly revealing about themselves every day.

"There are many ethical questions society needs to ask about what use we'd like to see made of all this data, and what safeguards we need to protect privacy," she says. "The more we understand what information we're giving away, the more informed decisions we can make."

The team largely work with publicly available data - from the likes of photo sharing website Flickr or social networks such as Twitter.

In fact, they were able to map movements of people around the world by analysing millions of photos uploaded to Flickr between 2008 and 2013.

By trawling through these geotagged photos, Moat, Preis, postdoctoral researcher Daniele Barchiesi and other collaborators at UCL showed that they could estimate which country tourists to the UK had spent the last 12 months in.

Such data is traditionally gleaned by members of the Office for National Statistics poised at UK airports with clipboards and traveller questionnaires, a careful process which costs considerable time and money.

"We get a glimpse into movements of crowds over time," says Preis. "If we compare our own estimates of visitors to the UK to those from the clipboard surveys, there's an excellent match."

Moat adds: "This provides an example of the sort of statistics that could potentially be generated from information that's freely and rapidly available online."

Who wants to know about the size of crowds? How can this information be put to use?

"Much of this data is available in near to real-time," says Moat. "So in certain crowd scenarios, for example, you might be able to draw on these data sources to identify early warning signs of problems before they occur."

Such data might also help us avoid the usual disputes over crowd counts at protests and similar events.

At the Million Man March in 1995 in Washington DC in support of African-American rights, police said just 400,000 demonstrators took part. Organisers pored over photos of the march to refute these claims; information from internet and phone usage might have given an immediate and more accurate picture.

And for these new forms of data to remain reliable, models of analysing it need constant recalibration, says Preis.

Take Google Flu Trends - once the shining example of the power of big data. From the numbers of people searching for flu and related symptoms online, researchers estimated how many people were actually suffering - a couple of weeks ahead of official figures released by the US Centers for Disease Control and Prevention in Atlanta. But at some point, online data on flu-related symptoms appeared to lose reliability - in one winter pointing to double the number of flu cases actually recorded by doctors. Analyses suggested that internet users had started to search for flu-related terms because they were concerned about the risk of contracting the disease, rather than because they had already been infected. The practice of using online data to measure real-world quantities in this fashion was subsequently questioned.

Preis says: "Importantly, our own analyses suggested that it wasn't in fact the data that was at fault: it was the analysis. We need to build models that constantly adapt and update their use of various data sources. We can't assume everything will stay the same."

Making sense of this information has roused interest across commercial and government parties - from investment banks interested in understanding how markets might behave, to policymakers interested in crowd behaviour, to retailers keen to understand how individuals engage with targeted adverts.

Not only can online data offer practical help for policymakers and businesses by cutting delay and expense in comparison to

costly surveys, but Moat says it can also help us measure parts of our world that previously escaped measurement.

She points to their new research with another doctoral researcher in the WBS Data Science Lab, Chanuki Seresinhe, which suggests that more beautiful environments might be good for our health. Drawing on health ratings from the UK census and more than 1.5 million votes from an online game ScenicOrNot, in which players rate photographs taken across the UK depending on how 'scenic' they are, the team find that people who live in more scenic environments report their health to be better. "These results provide initial evidence that aesthetically appealing environments might not only be a 'nice-to-have', but may impact on something as important as our health and wellbeing," says Moat. Being able to uncover such relationships could lead to better use of resources and more informed policies.

"Something has really changed over the past few years, and won't change back again," she says. "The world is now a different place in the face of all this data." ■

“... it's important that people realise what they are unwittingly revealing about themselves every day... The more we understand what information we're giving away, the more informed decisions we can make”

ANALYSIS



ANALYSIS



The financial crisis plunged central banks into a new sphere of monetary policy with the deployment of quantitative easing. **Brian Groom** investigates its impact

Has the QE experiment worked?

It is more than seven years since the term ‘quantitative easing’ leapt from the dry world of monetary economics and into public consciousness.

This unconventional tool for increasing the money supply is widely credited with helping to save the

world from a deflationary spiral after the financial crisis of 2007–08. Since then, questions have grown about its long-term effectiveness and consequences.

Central banks insist that this policy, coupled with ultra-low interest rates, has brought stability

to the financial system and created a stimulus to economic growth that debt-constrained governments were unwilling or unable to provide.

Critics, on the other hand, accuse it of promoting a range of ill-effects including overvaluation of asset prices, inducement to risk-taking

Illustration: Rebecca Cutts

behaviour, misallocation of resources, wealth inequality, penalising of savers and currency wars.

“Perhaps it is not clear to the general public that monetary policy is not as powerful as we would expect,” says Lei Mao, Assistant Professor of Finance at Warwick Business School. “If you think about the economy as a tree, monetary policy can fertilise it, but the tree has to grow by itself. Monetary policy sometimes will be effective in the short run, but in the long run it is not effective at all.”

Kebin Ma, another Assistant Professor of Finance at WBS says, quantitative easing (QE) was started for a good reason.

“We learnt a lesson from the Great Depression,” says Ma. “One mistake the US Federal Reserve made then was to contract the money supply instead of expanding it. If you compare the last subprime crisis to the banking crisis in the 1930s and compare the rate of recovery, I think we are certainly doing better than that.”

Under quantitative easing a central bank uses money it has “printed” – or, more accurately, created electronically – to buy assets, typically government bonds, from commercial banks and other financial institutions. This raises the price of those assets and lowers their yield, thus pushing long-term interest rates down across the economy. A more debated question is whether the extra money available encourages banks to lend more, allowing businesses to invest and consumers to spend.

QE was in effect born in Japan, a country plagued with deflation, in 2001. The Bank of Japan injected money into the banking system for five years, but commercial banks held on to it rather than lending it to consumers, while everybody waited for economic conditions to improve. This undermined its effectiveness.

Helicopter Ben

The US Federal Reserve under Chairman Ben Bernanke – dubbed “Helicopter Ben” for his desire to drop money out of the sky – embarked on QE in November 2008

in response to the financial crisis.

As the economy improved, bond-buying gradually slowed from \$85 billion a month to \$15 billion. By the time the programme ended in 2014 the Fed had added \$3.7 trillion worth of assets to its holdings, an eightfold increase.

The UK created £375 billion of new money in its QE programme between 2009 and 2012. Debate has raged ever since as to whether the policy was the best and fairest way to get out of the credit crunch. The Bank of England itself said wealthy families had been

“QE was in effect born in Japan... The Bank of Japan injected money into the banking system for five years, but commercial banks held on to it rather than lending it to consumers, while everybody waited for economic conditions to improve. This undermined its effectiveness”

the biggest beneficiaries, thanks to the resulting rise in value of shares and bonds, but argued that everyone had benefited from the boost to the overall economy and jobs.

The European Central Bank (ECB) began its QE programme in January 2015: recently it expanded it from €60 billion to €80 billion a month and included the purchase of corporate bonds in addition to government debt. Mario Draghi, ECB president, has argued that half the eurozone’s recovery in the past two years could be ascribed to monetary policy.

Since April 2013 Japan has also embarked on a further large-scale QE programme as part of expansionary policies known as Abenomics, pursued by prime minister Shinzo Abe. The amount injected was raised in 2014 from 60–70 trillion

yen to 80 trillion yen a year, though the jury remains out on how far this has helped to lift the economy from its torpor.

Negative rates

In the absence of fiscal stimulus from governments, central banks in Sweden, Switzerland, Denmark, the eurozone and Japan have dipped deeper into the box of unconventional tools by introducing negative interest rates in an attempt to stimulate growth. This means they charge commercial banks to deposit money with them.

This policy has proved even more controversial in financial markets than QE, prompting fears of a new banking crisis because it hampers commercial banks’ ability to make a profit. However, some economists believe even more radical policies could be adopted in future – such as ‘helicopter money’, coined by Milton Friedman in 1969, whereby central banks disburse cash directly to households.

Mao believes QE has helped to avert problems after the financial crisis because “liquidity in the asset market would have dried up and nobody would have been willing to trade any assets.”

“No liquidity is the worst-case scenario, even worse than low prices,” he says.

Some of the fears expressed when QE began, notably that it would spark high inflation, have not come to pass: if anything inflation remains too low, especially in the eurozone.

In the US Mao thinks QE has created a bubble in asset markets such as the stock market. That is less a factor in the eurozone, where most finance for business comes from banks rather than capital markets.

He says QE is important there because commercial banks were overloaded with government debt, which restricted their ability to lend to the private sector. By buying back bonds, Mao says the ECB will “stimulate private banks to lend and in that sense it makes the economy better.”

Mao disagrees with the view that QE has increased inequality.



Empty highways, Kowloon, Hong Kong

“The welfare of low-income people should be better off when we have easy monetary policies,” he argues. “Governments will have more money to spend on low-income groups.”

As to whether QE has encouraged excessive risk-taking, Mao says we will not know until another financial crisis occurs.

“In the short run, countries are competing in how easy their monetary policy can be,” says Mao. “That could be dangerous, but perhaps the negative side of these policies will be limited. If you look at a five to 10-year horizon, global growth is not going to be dramatically changed by monetary policies.”

Among factors that have caused turbulence in financial markets this year is a fear that central banks are running out of policy options.

“Perhaps the focus should not be on central banks and monetary policy any more,” he says. “We should pay more attention to how we

can boost private sector innovation and investment.”

He suggests that could be done by reducing corporate taxes, alongside some loosening of banking regulation in Europe.

“If the economy is in recession and people don’t want to make investments and firms don’t want to expand production, there is basically no demand no matter how much cash you give to banks”

He is unimpressed by a call by the OECD, the Paris-based club of mostly rich nations, for collective

fiscal stimulus, taking advantage of low borrowing costs to increase investment in infrastructure.

“That would most likely waste taxpayers’ money,” he says. “China, for example, has spent lots of money on infrastructure during the past 20 years. There are roads and highways with no-one driving on them. What is the point of those? The Government does not know what demand there is in the market. On this perspective, I am a true believer in the free market.”

Ma says that compared with traditional monetary policy, QE can be more successful in lowering long-term interest rates. As for stimulating bank lending, he says: “Some people don’t buy that story because you not only need the supply of credit, you need demand.”

“If the economy is in recession and people don’t want to make investments and firms don’t want to expand production, there is basically

Jorg Greuel/Getty Images | Illustration: Rebecca Curtis

no demand no matter how much cash you give to banks.”

QE has succeeded in sustaining asset prices, he suggests, but one consequence could be to push them too high. The fact that wealthy families have benefited most from asset price rises may have restricted QE’s effectiveness.

Ma says: “Their propensity to consume may be lower than that of middle or low-income families. In that case the demand-effect might not be all that big.”

He believes it is “possible” that QE is having a diminishing impact. Ma adds: “The magnitude of QE was more unexpected from the perspective of market participants when it was first introduced. In terms of changing market behaviour, that first round would have had a stronger effect than subsequent rounds.”

Negative side-effects such as asset bubbles can be contained by using other policies, he suggests.

“We have prudential policies that control a bank’s leverage for real estate bubbles,” says Ma. “Plus, we have policies on the borrowers’ side such as requiring a higher down-payment.”

On whether central banks are running out of firepower, Ma points out that they have proved creative in finding complementary policies such as ‘forward guidance’ – used to communicate future monetary policy – and ‘operation twist’, where the Federal Reserve sells short-term government bonds and buys long-dated Treasuries, in an effort to push down long-term interest rates.

“People have been talking about the central banks running out of policy options ever since the crisis, but I think central banks are being rather creative in using non-traditional monetary policy tools,” says Ma. “It could be a problem, but in the end central banks always manage to find a way, one way or another, out of there.”

Zero-sum game

Critics of QE include William White, chairman of the OECD’s review committee and former chief economist of the Bank for International

Settlements, who warned that ultra-loose monetary policies were putting the global economy at risk and had led to a build-up of public and private debt.

Those debts had become a “potent cause for mischief,” he says, adding that almost every major country had indulged in the “zero-sum game” of currency wars.

David Mackie, chief European economist at JP Morgan, thinks QE has “worked in a sort of measured way.”



“Those debts had become a ‘potent cause for mischief’, almost every major country had indulged in the ‘zero-sum game’ of currency wars”

“I don’t really subscribe to the idea that it led to a massive overvaluation of asset prices, induced risk-taking behaviour, misallocation of resources, things like that,” says Mackie. “I would argue that QE, in substance, has been a bit disappointing.”

He suggests that countries who adopted QE early have done better economically than those that delayed. “If you compare the UK and US performance with the eurozone, one big difference between those economies is at what point they began to do QE,” says Mackie.

He adds QE has had “modest effects” in terms of lifting asset prices and improving balance sheets, while also improving the

transmission mechanism by which monetary policy affects economies, and lifting demand slightly.

He disagrees with the idea that it has provoked currency wars, saying countries have adopted it for domestic reasons rather than primarily to engage in competitive devaluation. He argues there are diminishing returns to doing more QE.

“It gets hard to push asset prices beyond a certain level relative to where the real economy is,” says Mackie.

Frances Coppola, a commentator on banking and economics, argues that QE is a “pretty weak stimulus.” She says: “We have to do an awful lot of it to have much in the way of a noticeable effect on the real economy.”

The technique is effective at propping up asset prices but less so at restoring growth, she adds.

Coppola says: “We have ended up with doing an awful lot of it because we have got the idea that there isn’t really anything else much that we can do.”

Among its drawbacks, she says, is that markets have got used to constant monetary reflation and panic when it is taken away, such as when the Federal Bank raised interest rates in December 2015 for the first time since 2006.

“It is like an addiction: the more heroin you take, the more you need it and when you withdraw it, you become ill,” she says.

Coppola adds that QE increases inequality, not only by raising asset prices for the wealthy, but also by giving governments scope to pursue fiscal austerity, which mainly hits those on lower incomes.

She argues that the distinction between fiscal and monetary policy is false and that policymakers should look at a range of potential measures, including “helicopter drops” of money to citizens and a co-ordinated write-down of countries’ debts.

As QE’s impact diminishes, how long can the world continue to place its faith in monetary policy alone?

Mao says: “We have to give up thinking that central banks can help the economy to grow.” ■

Moody models

ANALYSIS



In the problematic world of climate science where assumptions have to be made **Robin Yapp** finds

out how levels of pessimism could have huge implications for the planet

Speaking just after 196 countries approved the Paris Agreement on climate change reduction measures last December, the chairman of the Intergovernmental Panel on Climate Change (IPCC) was in no doubt.

“The science is very clear,” said Dr Hoesung Lee. “We must act now. Economics also makes it very clear that we can build a better world by addressing climate change problems right now.”

So, if science makes an unarguable case for counteracting climate change – and every nation now appears to agree – then to what extent can it also guide us on how we should act?

While 15 of the 16 warmest years on record have come in the 21st Century, confidently predicting the rate of future climate change remains problematic even for climate experts.

Tigran Melkonyan, Associate Professor of Behavioural Science at Warwick Business School, conducts research into decision-making in conditions of risk and uncertainty.

He believes the growing consensus

that anthropogenic global warming – that is the man-made carbon dioxide in the atmosphere – must be addressed is not likely to be matched by agreement about the resources it requires.

“Could reluctance to confront uncertainty when we must weigh-up a wide range of potential outcomes... stem from an irrational but indisputable part of human nature?”

In his research Melkonyan has found that underlying assumptions about the likelihood of different scenarios, risk tolerance and the importance placed on future generations could lead to starkly different policy conclusions.

Climate change assessments are “inherently subjective” due to the

long time lags involved, imprecise existing scientific knowledge and the unpredictable nature of technological development, he says.

This is especially true for estimating large increases in global temperature, where knowledge depends on extrapolations from complex models.

Could reluctance to confront uncertainty when we must weigh up a wide range of potential outcomes – arguably a hallmark of failed past climate agreements – stem from an irrational but indisputable part of human nature?

Melkonyan invoked the Ellsberg Paradox, which arose from a series of thought experiments carried out in 1961 that showed how strong “ambiguity aversion” is for most people – that is a tendency to prefer known risks over the unknown.

Imagine, you are asked to pull a marble from one of two large, covered urns, and will win \$100 if the marble is black.

You are told that one urn contains 50 black and 50 white marbles, while the other urn also contains 100 marbles that are black or white. You don’t know the ratio, but every ratio is as likely as any other, so there could be 99 black or 99 white marbles in it.

If people behaved perfectly rationally, they would not have any preference for either urn. But people overwhelmingly choose the urn that gives them a 50/50 chance of success, even though there could be 99 black marbles in the other one.

The results, which have been replicated many times since, demonstrate an inherent preference for the known over the unknown.

“Given our ignorance about the nature and magnitude of climate risks, decision-makers responsible for designing climate change policies face an ambiguous decision situation akin to betting on Ellsberg’s urns,” says Melkonyan. “The unfortunate difference is that the stakes are now immeasurably higher.”

Paris agreement

The IPCC was established to provide policymakers with a “clear scientific view on the current state of knowledge in climate change



Climate change ice sculpture 'Minimum Monument' by Nêle Azevedo

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and its potential environmental and socio-economic impacts.” Its Fifth Assessment report, finalised in 2014, said global surface temperatures would increase by between 3.7°C and 4.8°C by 2100 if the world remained on its present path.

But it could be kept to 2°C or less if greenhouse gas emissions were cut by 40 to 70 per cent compared to 2010 levels by the middle of the century and to virtually zero by the end of it.

The Paris Agreement set a long-term goal of keeping the increase to “well below 2°C” – and attempting to limit it to 1.5°C.

“Climate change is happening but there will always be a range [of temperature increase forecasts] primarily because there are so many uncertainties in our predictions,” says Melkonyan.

“No matter how long or how hard we study those things, some unknowns will stay unknown.”

Extreme positions

Melkonyan’s new research, co-authored with Robert Chambers, of the University of Maryland, examines whether policy conclusions can be influenced by behavioural traits in economic models used to assess the case for climate change action.

They looked at three models – the subjective expected utility (SEU) model, the maximin expected utility (MEU) model and the incomplete expected utility (IEU) model.

The latter two represent opposite extremes: the MEU model sees the worst as highly likely and seeks to insure against it as fully as possible; the IEU interprets doubt about outcomes as a reason not to act or to take far less action.

It is the SEU model, lying between the other two, which has been most widely used in economic assessments of climate change even though it has come under fire from some economists.

SEU thinking recognises the need to act but the details of how depend greatly on the decision-maker’s risk tolerance and concern for future generations, and its robustness has come in for criticism. It has also been criticised for not taking into account

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our natural bias for known risks spotted by Ellsberg's urns so the newer MEU and IEU models were developed as early alternatives to the criticised SEU model.

"The newer models recognise that in real life we might not know the odds of something happening, so our pessimism or optimism also plays a role," he says.

When examining the policy outcomes of these models Melkonyan found they produced polar opposite recommendations. He believes this is because the MEU and IEU models reflect two different types of pessimism.

Broadly, applying MEU thinking to climate risks involves pessimism about things as they stand and will accept substantial costs now to avert even a small possibility of future disaster.

IEU thinking is, instead, pessimistic about alternatives to the status quo and favours 'business as usual' unless changing path would have a definite benefit in all potential resulting scenarios.

Bottom-up policy

The models show how people can respond very differently to the same decision-making environment due to their attitudes to ambiguities within it.

Melkonyan says in this respect we should see the differences as behavioural, rather than ethical, although he believes a hard-line IEU position "is risky for society," especially as 196 countries have agreed to finally act. Though as Frederik Dahlmann, Assistant Professor of Global Energy at WBS, points out, just how is yet to be decided. But he believes the Paris Agreement's commitment to progress reviews every five years may spur greater action in China, India and other developing nations.

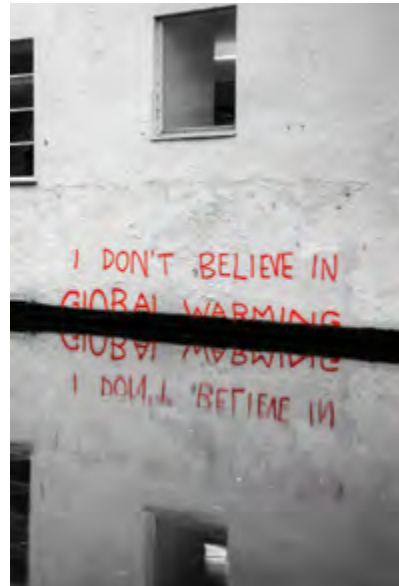
"Questions about sovereignty and who makes decisions were a big sticking point in the past," he says.

"Now each country must think about what they will commit to and there's hope that this bottom-up approach will lead to a positive self-fulfilling prophecy. From a policy perspective it's insufficient but it's

still a big step forward."

The agreement also stipulates that developed countries will continue to help developing nations to reduce emissions and build resilience to climate change.

Melkonyan says expectations inside China were also important with a growing focus on deaths attributed to pollution.



A decade ago, China seriously considered a Green GDP measurement to capture the environmental costs of its development, even announcing that in 2004 the cost had been equivalent to 3.05 per cent of GDP.

The figure was lower than many economists had anticipated, but the policy was quickly dropped as authorities came to view the story it told as politically damaging.

But could the old view that tackling climate change acts as a brake on growth be changing and could jobs created by clean energy help sway doubters and deniers?

"The consensus on the role of human actions in climate change is growing," says Melkonyan.

David Elmes, head of the WBS Global Energy Research Network, believes most business sectors have factored an assumed carbon price into investment decisions for years.

"We have a growing body of business and economic evidence that supports acting on climate change now and we have the insurance industry paying out more on

insurance claims related to weather events," says Elmes.

"On current assumptions, the commitments countries have made are not going to get us to the 2°C target, let alone 1.5°C.

"But we're starting to break the old rule that more economic growth means using more energy and things are changing quickly in terms of the falling cost of renewables."

Much of the discussion about the appropriate way to tackle climate change centres on discount rates, which essentially seek to convert potential impacts on future generations into current monetary values.

Economists typically assume we will spend less than a dollar today to prevent a dollar's worth of damage in future.

The 2006 Stern Review for the British Government concluded we should invest one per cent of global GDP in fighting climate change or face consequences that could cost up to 20 per cent of world GDP annually.

Lord Stern, a former chief economist of the World Bank, said climate change was the greatest market failure ever seen and saw the issue as so urgent that he set the discount rate close to zero.

Some economists criticised him for that but Lord Stern recently argued that most models still underestimate the dangers of climate change, adding that even the IPCC recommendations are not strong enough.

"The debate about the appropriate discount rate is related to interest rates but also to how ready we are as a society and as individuals to care about future generations," says Melkonyan.

"It's a problem we will face in the fairly short-term, say 50 years, and if we don't do enough, certain irreversible processes are likely to begin.

"People don't realise that even 2°C of temperature change can have devastating effects. It can increase mortality risks, besides all the economic impact on agricultural output and many other productive activities."

It makes picking the appropriate model to base policies on all the more important. ■

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The skill of using luck



Ian Wylie meets **Chengwei Liu** to discuss how following the most successful is pointless and how chance doesn't get enough credit

Never mind that Chengwei Liu is one of the more self-effacing academics you are ever likely to meet. He can hardly deny an element of good fortune in his success to date – after all, the role of luck and randomness in exceptional performance is exactly what he studies.

Liu has spent a number of years researching extraordinary performance in the world of business, and concluded that often luck is mistaken for skill.

The latest accolade to come his way is being listed as one of the global management thinkers most likely

to shape the future of how organisations are managed and led. Every two years, this Thinkers50 poll ranks and shares the best in management ideas and heavyweights Michael Porter, Clay Christensen and Peter Drucker are among previous winners.

"One common feature of the people I know on this list is that we all challenge the wisdom of some existing management gurus," says Liu. For example, instead of learning from "great firms" and trying to imitate the most successful people and organisations, his research suggests that the more exceptional a success is, the less we can learn from them, because moving from "good to great" often requires luck by being in the right place at the right time.

"Some wisdoms now need to be modified and adapted," says Liu, Associate Professor of Strategy and Behavioural

Science at Warwick Business School. Of course, successful people don't like to have their success explained by luck, while audiences too seem unwilling to acknowledge the role of luck in the success of outliers. As a result, the stories of the most successful attract the most media attention.

Don't follow Gates

So why is the idea that exceptional performers are the most skills-flawed? Because exceptional performance often occurs in exceptional circumstances, wrote Liu in research with Jerker

Denrell, Professor of Behavioural Science at Warwick Business School. Top performers are often the luckiest people, who have benefited from rich-get-richer dynamics that boost their initial fortune, concluded their research.

Consider a college dropout who turns out to be the wealthiest person in the world. Yes, Bill Gates may be very talented, but his extreme success perhaps tells us more about how circumstances beyond his control created such an outlier.

In other words, what is more exceptional in this case may not be Gates' talent, but his circumstances.

For example, Gates' relatively privileged background enabled him to gain extra programming experience when less than 0.01 per cent of his generation then had access to computers. He attended one of only 50 schools in the country that had a computer at the time.

“... research suggests that the more exceptional a success is, the less we can learn from them, because moving from “good to great” often requires luck by being in the right place at the right time”



Gates proved it's not what you know, but who you know

And his mother's social connection with IBM's chairman – she served alongside him on the board of a charity – enabled Gates to gain a contract from the then leading PC company, generating a lock-in effect that was crucial for establishing his software empire.

Of course, Gates is not a stupid man. His talent and effort play important roles in the Microsoft success story. But that's not sufficient for creating such an outlier. Talent and effort were probably less important than the circumstances. He could not have been so successful without the latter. But for Liu, calling out the role played by luck is not enough.

"I realised early on that if I wanted to have a career in business schools, I had to say something more actionable and constructive," he admits, with a laugh.

Second best are best

So if we can't learn from the best, who can we learn from? It is more useful, says Liu, to draw lessons from the less exceptional performers, the second best, because their circumstances are likely to be less extreme, implying their performances are more informative and offer more evidence for skill.

There are implications for the management of talent. If not observed or moderate, the role of luck in success can lead to persistent bias and inequality and Liu's research suggests the need for policymakers to design nudges to help people resist the temptation to reward or imitate the top performers.

In research, this time with Mark de Rond, of Judge Business School, Liu points out that untangling luck and skill in the performance of others isn't easy... but it's necessary.

"Rewarding the highest performers can be detrimental or even dangerous because imitators are unlikely to achieve exceptional performance without luck unless they take excessive risk or cheat, which may partly explain the recurrent financial crises and scandals."

Moneyball lessons

However, the "luck bias" is very persistent. Liu's research found that even when observers are given clear feedback and incentives to be accurate in their judgement of performers, 58 per cent of them still assumed the most successful were the most skilled when they were clearly not, mistaking luck for skill. Liu has, for example, tried to apply his research with some financial institutions, where he believes the most successful traders may simply be the luckiest ones who took more risks than their colleagues. These traders tend to be rewarded with bonuses as a result, but in all likelihood their luck will run out.

"I seek to help HR departments identify the lucky outliers and discount their performance in evaluation," explains Liu. "Continuing to reward high performing stars on the trading floor could lead to a dangerous risk-taking culture in the long run. Far better to improve your own evaluation internally, and take advantage of your competitors who will continue to systematically mistake luck for skill."

The lucky few should understand and appreciate the role that luck has in their extreme success – Liu's research finds, interestingly, that entrepreneurs are more willing to acknowledge the role of luck in their success than corporate managers – and with that understanding comes an obligation to those that have not.

"I do a lot of teaching on executive education courses and I've found it really difficult to convince some executives that luck plays an important role," he says. Still, there are ways to 'get lucky':

"Chance favours the prepared mind," as Louis Pasteur, the French chemist, once wrote. Good and bad luck befalls to all, but only some can maximise the return on luck. And only some organisations are able to see what others do not see, says Liu.

He points to the bestselling book Moneyball, in which Michael Lewis documents how a stereotype of what good players should look like blinded the scouts and coaches in most Major League baseball teams to the role of luck. But, as a result, one unfashionable team was able to benefit.

Around the turn of the millennium Oakland Athletics managed to pay less for players than their eventual contribution would suggest they were worth and then resell their best performing players toward the peak of their output.

The Oakland A's recognised the tendency for extreme performances in 'star players' to regress to the mean in future seasons. They benefited from this trading strategy because they were better able to recognise the value of their players



Oakland Athletics' winning strategy in 2002

when buying. But they also gained because other teams paid more for these players than they might be worth when selling them. The Oakland A's strategy led to a higher ratio of win rates relative to salary costs than other teams.

Liu calls this idea as strategising with (others' biases of) luck. His latest research extends this idea to other areas where biases are so systematic that they allow some others to exploit their competitors' mistakes.

For example, when hiring talent some employers continue to be influenced by stereotypes. Successful firms tend to be overconfident and have little incentive to change recruitment strategy.

On the one hand, missing hidden gems is an invisible error – employers rarely follow up what happens to the candidates they reject. Moreover, those hired are trained and developed so they can perform competently even when they were really false positive hires.

But this can falsely boost an employer's confidence in the stereotype hiring strategy. However, while some employers continue to suffer from such a blind spot, other, smarter firms see opportunity.

Corporate law firm Clifford Chance, for example, employed a CV-blind strategy in the UK to break the Oxbridge recruitment

bias. A degree from Oxford or Cambridge is so prized as 'elite' that many UK legal firms are over-represented by their graduates.

Of course, many of them are competent. But inevitably some Oxbridge graduates are overrated and become disappointments due to false positive mistakes. More importantly, firms can omit hidden gems from other universities due to false negative mistakes. Clifford Chance's CV-blind strategy forces evaluators to judge candidates' potential based on track records instead of using the stereotype shortcut.

In the same way, many employers have vowed to adopt a name-blind policy to fight against racism. This strategy should be even more effective for smaller firms, thinks Liu, because hiring against the negative stereotype can help them identify hidden, undervalued gems that others overlook.

There is one further lesson for companies which discover a winning way to do things differently: keep the success to yourself. The Oakland A's did the opposite and let Lewis write a bestseller on their strategy. The publication of Moneyball in 2003 marked the decline of their performances because rivals started imitating their approach.

If you want to keep beating the competition, says Liu, don't let others know how you did it. Just say you were lucky. ■

Dealing with destruction



With the return of the mega-merger 2015 was a record year for M&A, but **Ian Wylie** finds there is little value in most takeovers

When John Colley expresses his doubt in the value of large scale mergers and acquisitions, he knows what he's talking about.

Now Professor of Practice in Strategy and Leadership at Warwick Business School, Colley was Group Managing Director at BPB PLC, a FTSE 100 business and the world's largest manufacturer of plasterboard when it received a hostile takeover bid in 2005 from French multinational Saint-Gobain, and witnessed at first hand the puzzling process.

"We had a turnover of around £2.6 billion, but Saint-Gobain turned over €40 billion, and were very determined to acquire us, increasing their bids until finally our shareholders decided to accept the offer," he recalls.

"They paid a ridiculously high sum for us, and I could never understand how they justified each increased bid to their shareholders. They seemed willing to pay whatever was necessary to buy us, then try to justify to their shareholders afterwards. It lighted my interest in M&As and why, very often bidding companies, and their shareholders, pay too much."

Low interest rates, relatively benign markets and decent growth prospects are just some of the factors that made 2015 a record year for M&A deals – \$4.6 trillion in total, trumping even the giddy days of 2007.

Many of these recent deals – between AB InBev and SAB Miller, Dell and EMC, and Holcim and Lafarge, for example – have been industry consolidations, with companies aiming to reduce costs by rationalising head

offices and regional management structures. And savings can be enormous: beer brewer AB InBev's last two major acquisitions created savings amounting to 14 and 21 per cent of sales value. The result may also be increased market power – there's one less rival to worry about and control of distribution networks may strengthen.

However, M&A activity tends to be cyclical, with peaks seen in 2000, 2007 and now 2015. Deals breed deals as confidence grows, and Colley warns that the risks and costs of growing by acquisition are often steep – with shareholders in the bidding company bearing the brunt.

“Research consistently finds that more than half of acquisitions destroy shareholder value and between 60 and 80 per cent fail to deliver expected benefits”

"Research consistently finds that more than half of acquisitions destroy shareholder value," says Colley. "And between 60 and 80 per cent fail to deliver expected benefits."

Shareholders of the target company almost always benefit with substantial pre-bid share premiums. This often runs at around 40 per cent, says Colley.

So why, then, do shareholders in the bidding companies sanction these huge bids when, argues Colley, they would be better following the example of companies such as Compass that choose to follow a strategy of growing through small, low-risk but focused acquisitions?

"It's the big question," agrees Colley. "I can understand why the chief executive and the board are keen for acquisitions."

"They often find themselves in markets where it's difficult to grow and a major acquisition is a very easy, if expensive way of achieving growth."



“Companies contemplating mega-mergers and acquisitions used to fear the bite of regulators and rulings that view industry concentration as significantly reducing competition and against the consumers’ interest”

According to Colley, shareholders may also seek to reward and retain good management teams, even though they may have reservations about a bid.

There may be another reason shareholders agree. If they are large institutional shareholders, there's a good chance they hold a portfolio of shares across the sector, possibly in the target company itself, and so may stand to benefit if the deal goes through.

According to Colley, high levels of M&A activity tend to boost the value of all shares in the relevant sector.

There is another group of beneficiaries. Advisers to the deal are always well remunerated, with fees-per-deal of several hundred million dollars not uncommon.

Investment bank fees alone for 2015 were more than \$8 billion. These fees, says Colley, are often success-related, which means that advisers are rarely a moderating influence when pricing decisions are made.

The board directors of the acquiring company, if successful, will usually preside over a bigger business and will pay themselves accordingly. And, in most cases, the directors of the target company will probably be well compensated for losing their jobs. The threat of redundancy may be welcomed less by rank-and-file employees, however.

"The actual integration process post-acquisition is also a major issue," says Colley, who hears alarm bells when someone describes a deal as a "merger of equals". "It's a huge distraction for management, with so much fighting for position and power."

"You also know you're in trouble when there's a you-be-CEO, I'll-be-chairman arrangement, because there will be no clarity on who is running the business."

And unfortunately, following the completion of most M&As, there is usually one further group of losers. Consumers, says Colley, rarely enjoy the benefits of a merger or acquisition, and frequently face a reduced choice of products and possibly even higher prices.

"If drinkers are hoping the cost savings from the AB InBev and SAB Miller deal will be passed on to them, for example, I feel they will be sorely disappointed," he says.

scrutiny. According to Colley, competition authorities are beginning to define markets more narrowly. AB InBev, for example, has had to agree to sell its global rights to Miller, Grolsch and Peroni.

The basic conditions for a successful acquisitions market is high liquidity which means corporate cash piles, cheap borrowing and institutions with large cash balances to invest. These conditions persisted in the first half of 2016, driving global acquisition activity, but continuing uncertainty regarding Brexit meant merger activity collapsed in the UK. The fall in sterling, though, fuelled some acquisitions, especially those with substantial export sales and UK-based costs.

John Colley's five worst deals

1. In 2001 AOL completed buying Time Warner in a \$164 billion deal. The new company rapidly lost 97 per cent of its value leading to a de-merger in 2009
2. RBS – with Fred Goodwin as CEO – bought part of Dutch lender ABN AMRO in 2007 for €71 billion – three times its book value. In effect it created almost irreparable damage to both banks and RBS had to be bailed out by the Government
3. Daimler bought Chrysler in 1998 for \$36 billion, but cultural differences saw it turn into a disaster. Daimler essentially paid Cerberus Capital Management \$650 million in 2007 to take Chrysler off its hands
4. Hewlett Packard paid \$11.7 billion in 2011 to acquire UK software firm Autonomy – a premium of around 79 per cent over its market price. It had to write off \$8.9 billion almost right away due to poor strategy, cultural mismatches and alleged misstatement of results
5. Guy Hands lost 60 per cent of his personal net worth when his private equity firm Terra Firma was forced by a US court to sell EMI to Citigroup. It paid \$4.7 billion for the music label but immediately wrote down 46 per cent of its value and then lost a lawsuit, with Citigroup taking over EMI and Terra Firma losing \$2.5 billion. ■

Design enters the C-Suite

Tim Smedley finds out how the 'design process' is being applied to more and more areas of business and not just to the designer's Apple Mac



Traditional management theory that has dominated boardroom thinking for so long has finally got a rival. And it's called 'design thinking'.

Approaches that used to reside within product design and R&D departments are being turned inward, and helping to reshape organisational structures and processes.

Ayse Birsal, co-founder of Birsal + Seck, a design and innovation studio in New York that works with multinationals including GE, Johnson & Johnson, and Hewlett Packard, defines design thinking as "thinking like a designer, holistically, optimistically, collaboratively, with empathy and asking 'what if' questions to inform business practices. In other words, the design process is inclusive, it gets people to see the big picture, put themselves in other people's shoes, be open to new ideas and provide the tools to think differently and creatively about the same old problems.

"Traditional management tools don't allow for leaps of imagination and problem solving – design thinking brings creativity, business logic and intuition together."

The notion of design thinking as a holistic business approach was first popularised in 2008 by Tim Brown, CEO and President of IDEO, the Californian innovation and design consultancy.

"Historically, design has been treated as a downstream step in the development process," said Brown. "Now, however, rather than asking designers to make an already developed idea more attractive to consumers, companies are asking them to create ideas that better meet consumers' needs and desires. The former role is tactical, and results in limited value creation; the latter is strategic, and leads to dramatic new forms of value."

Markus Hohl, London CEO for Finnish service design agency Hellon, believes the emergence of design thinking parallels a significant social change.

"We are moving from B2B and B2C to H2H: the Human to Human era," he says. "B2B and B2C thinking worked until recently as markets moved at speeds that allowed a considered response, the direction of market development was predictable, the competitors known.

"But today's markets move at rapid speeds, it's hard to know which direction the competitive

Barclays
hopper team
work space

disruption will come from, and employees often have to respond immediately.”

This volatile business climate, argues Joe Ferry, Visiting Tutor at the Royal College of Art and former Head of Design for Virgin Atlantic, means that “the relevance of embedding design thinking into a company’s culture has never been more relevant.”

He adds: “It can be used to establish possible future states for businesses and therefore help develop strategies. Or it can be used by a business that wants to be the disruptor to the market.”

Warwick Business School and the Design Council formed a collaboration in 2013, headed by Pietro Micheli, Associate Professor of Organisational Performance, to examine how businesses – including organisations not traditionally associated with design – can benefit from design thinking.



“At its simplest level, design thinking is a process,” explains Micheli. “One that you can use for virtually anything around you – when buying a new home, or preparing a room for a new child, whatever it may be. It’s essentially a sequence to approach a problem by asking ‘what if’ questions, through exploration, iteration, and a strong focus on the user. You’re not going to understand people just by asking them what they think. You observe people and their unconscious habits.”

This can be utilised not only to improve product design but also the services and internal workings of companies, says Micheli.

“The big difference is that service design happens from many touch points,” he says. “If you think about your relationship with your bank, it’s not that you go into a branch, buy something and never hear from them again as you would do if you buy a washing machine.

“Instead you set up a relationship through internet banking, you may have separate accounts and investments – so they design a service to accommodate your needs. But most banks don’t look at it from a user point of view and a holistic experience.”

Making Pingit

One bank that has attempted such an approach, as uncovered by Micheli’s research, is Barclays and its dedicated Chief Design Officer under the tenure of the retail-centric CEO Antony Jenkins.

At Barclays a new way of setting up project teams was being trialled. Known as ‘hoppers’, cross-functional, mixed hierarchy teams were assigned specific tasks related to customer experience and allocated a space to work away from their day jobs to work solely on that project.

The bank’s successful Pingit mobile payment service, for example, was launched like a start-up, utilising a dedicated hopper team.

Micheli’s research found that this collaborative approach allowed for a much faster time to market with development much more grounded in customer insight. The hopper teams observed how customers used the app, rather than asking them via questionnaires.

“It’s the observation of their behaviours in their environment that we try to design around,” Chief Design Officer Derek White told Micheli. “Not necessarily what they tell us in focus groups.”

At the time of the study Pingit had been downloaded by more than two million customers and had won more than 20 awards for innovation. Another example is the Nest smart thermostat.

User at the centre

Micheli says: “If somebody had come to you and said: ‘Do you want a new thermostat?’ It may not have been something you’d really thought about before. However, this has become a super-selling product because, although it may not have been labelled as such, it followed a design thinking process.”

This, in essence, was to observe and understand the habits of energy consumption within people’s daily lives, as a credible alternative to the traditional, linear, incremental optimisation-driven process that is the norm in product design.

“I’m not saying market research is wrong,” says Micheli. “But what you find out from that is what people can

tell you. It can give you some kind of trend or average. But if you want to know something new that is going to trigger something different, it’s unlikely to emerge from traditional processes.”

The famous phrase from Henry Ford – “if I’d asked people what they wanted, they would have asked for faster horses” – rings true almost a century on.

Hohl, who features in Micheli’s research, describes the user as “the starting point and centre of design thinking.”

“Unless a business addresses the user’s need with their offer it’s unlikely to succeed,” says Hohl. “It sounds obvious, but you need to know how to ‘get to’ the user’s real needs, requiring expert research techniques and interpretation, you can’t just ask them.

“It often seems easier for businesses to speculate on user needs and then settle for a solution – the ‘build it and they’ll come’ syndrome. Or marketing – ‘if we just tell everyone or make it cheap enough they’ll surely buy it’. While there is some mileage in those, the maximum value can be extracted from an investment if you know what really meets the customer’s needs and wants.”

“You’re not going to understand people just by asking them what they think. You observe people and their unconscious habits.”



Extracting toners from old printer cartridges. Guiyu, China

The observational approach – also known as ethnography – is also integral to the recent collaboration between Scott Dacko, Associate Professor of Marketing and Strategic Management at Warwick Business School, and Rosanna Garcia, of North Carolina State University, looking at design thinking for sustainability.

Their chapter in the book *Design Thinking: New Product Development Essentials from the PDMA*, posits that design thinkers have the potential to slow down environmental and social degradation more so than economists or even engineers.

By creating products and services that incorporate empathy for consumers’ wants and needs into product and service design, waste can be reduced and resources better utilised.

Currently 80 per cent of products are discarded after a single use and 99 per cent of materials are discarded in the first six weeks of use. Consumers and regulators are demanding new alternatives, says Dacko, namely products and services which have a whole lifecycle, cradle-to-grave approach, with re-use and recycling considered from the start.

Crowdsourcing design

The sportswear company Puma is cited as ‘best practice’ in Garcia and Dacko’s chapter for its InCycle range of footwear and apparel, which are made from materials that are relatively easily turned back into both biological and technical nutrients at the end of their useful lives.

Puma’s in-store bins also make it convenient for consumers to return them. Xerox is another example, being far ahead of the curve in 1991, when it began designing photocopiers for ease of disassembly and recovery for re-manufacture, re-use and recycling, diverting tonnes of waste from landfill and saving billions of dollars in raw material costs.

A key phrase in Garcia and Dacko’s writing is that “users contribute as co-creators”, ideally through a process called rapid prototyping – creating visual manifestations of a concept, and giving it to consumers to see what they think and how they would use it in their everyday lives.

“You say to users, here’s a prototype, it’s tangible, you can interact with it, talk about it, and they have ideas and offer feedback,” says Dacko. “It fits with crowdsourcing – a company can’t have all the ideas. The net effect is you create empathy, you co-create, and end up with something that’s more sustainable.”

While focus groups can be useful to garner ideas and contributions, an ethnographic process can be especially useful in sustainability design because it can uncover real world, unconscious habits.

“There’s an issue now, for example, with single use espresso machine coffee pods,” says Dacko. “Increasingly the users of these machines care about recycling, but their actions are inconsistent with their concern. It’s too easy to throw away, even where a company gives users a bag to recycle. You capture that behaviour and reasoning far more in observation than you would in a focus group.”

Procter & Gamble is a past master at ethnographic observation of customers. Dacko says: “It will ask customers: ‘Can we come into your homes and watch you do the laundry?’ Tesco also went to the US and asked if it could observe how people prepare meals at home.”

This may be time consuming and costly, but it should lead to enhanced product or service design because Dacko argues “customers are good at identifying problems far more easily than solutions.”

He adds: “It can lead to a design process that addresses the prevention or reduction of a negative consumer outcome by changing behaviour.”

“It is rarely a case of ‘I have observed, therefore I now know what to do’, it is often quite challenging. But it should lead to several ideas that can then be shortlisted and evaluated.”

Garcia and Dacko’s chapter offers a method for organisations and practitioners to follow. The ‘what if’ questions mentioned by Micheli are broken down by Garcia and Dacko into specific stages, including identifying a specific goal, imagining what such a product or service might look like that could deliver this, and then discussing the milestones needed to achieve this.

That should then be followed by ‘what wows’ to “determine if the sustainable product or service designed in ‘what if’ actually enchants the consumer as intended,” says Dacko.

This can be assessed via sustainability assumption testing – testing each touch point that the consumer has with the firm and the product, including packaging, supplementary products and end-of-life as well as rapid prototyping. This eventually leads to ‘what works’, which is observing of consumer behaviour to determine if the resulting design actually meets its goals.

To work in practice this process needs to be part of the organisation’s culture, not “a bolt-on, take it or leave it option,” argues Dacko. In the long run, he believes design thinking for sustainability will be the norm, and sustainability measures will be standard indicators that all firms track.

A snapshot of today’s business environment, however, suggests this is still some way off. Cheaper, linear models still dominate, and a throw-away society remains the Western norm. But there are signs and trends that lead Micheli to be optimistic.

He says: “If I were to make two bold claims, I would say one is: the way we, as consumers or users, relate to a product or service is changing.

“We are valuing the experiential part much more than we used to. In the past the fact that a car started was already quite something; now, you are definitely expecting a lot more from an automobile. Our expectations and



what we value is much broader than just buying a product.

“The second claim is the ‘humanisation’ of technology as it becomes all pervasive, through intelligent homes, wearable technology and the internet of things. What design promises is to make it human and relatable to human needs.”

Gretchen Gscheidle, Director of Insight and Exploration at Herman Miller, agrees that the opportunities to “delight customers are stronger than ever before – and the rewards for doing so ever greater.”

She says: “We’re also seeing a generation of workers who have grown up in a culture where collaborative work is a regular part of their education experience. It’s a new normal for them and will only intensify as I know there are an increasing number of schools deploying design thinking explicitly in their curriculum.”

Dacko sees an increasing interest in sustainability and user-focused design among the latest crop of MBA students.

“They see sustainability as a key success factor now,” says Dacko. “Certainly those I teach are motivated, they are committed, they see a need and they want to be responsible. I’m relatively optimistic that the direction will be a greater take up of design thinking for sustainability over time.”

Another cause for optimism is arguably the greatest proponent of design thinking: Apple.

“Whenever you go to any event, I always count how many seconds – not even minutes – it takes for somebody to say Apple and Steve Jobs,” groans Micheli. “But yes, if you buy an Apple product it is obsessive with the level of detail, right down to how you open the box and how it feels to enter an Apple store.

“Apple has been fantastic in interpreting the idea of what design means in terms of shape and aesthetics, ease of use, the intention to be intuitive, and relatability – the whole experience. It almost makes you feel unique despite the fact that hundreds of millions of people have bought the exact same product. That is quite something.”

If design thinking is the driving force behind the world’s most successful company, that’s reason enough for others to copy it. ■

 Watch a film about leading business by design at wbs.ac.uk/go/core

© Nest Labs

Five steps to make firms more creative



Promoting creativity in organisations has traditionally focused on a few departments, such as R&D. However, firms may be squandering untapped resources if they do not encourage creativity throughout their workforce. Tamara Friedrich, Associate Professor of Entrepreneurship and Innovation, lists five evidence-based ways to boost staff creativity

Step 1: Drop the carrot and stick

It is important to understand what drives employees to be creative. Extrinsic motivators, such as money, typically do not work as well for creative performance, which is driven by intrinsic motivation or an internal desire to create something new simply for personal satisfaction. Instead of the carrot and stick approach, leaders can stimulate intrinsic motivation by providing a clear and motivating vision that employees will want to contribute to as well as a supportive, risk-tolerant culture where employees feel safe, appreciated and willing to give their ideas freely.

Step 2: Better brainstorming

When faced with a problem to solve, teams often jump directly into brainstorming. But traditional brainstorming, where teams generate ideas together with instructions to resist evaluation and where no idea is unreasonable, does not produce the most creative ideas. It often results in wasted time and a conversation driven by a few, dominant voices. Instead, it is best to provide employees with some guidelines on desired outcomes, the time to generate ideas on their own before bringing the team together, and a clear process for sharing those ideas that ensures each person has the chance to speak. This technique balances the benefit of bringing different people together to feed off each other’s ideas, while still ensuring social dynamics don’t undermine the process.

Step 3: Space – the lost frontier

The cubicle farms of modern workplaces have been designed for efficiency and in the hope that individuals would interact more frequently and share ideas organically, thus boosting creativity. The reality, however, is that these loud, busy spaces are often not conducive to the focused, thoughtful creative process. Common spaces can foster interactions that boost creativity, but individuals should not be forced into these spaces at all times. It is best when there are social and meeting areas where employees can mingle and exchange ideas, but it is critical to also provide employees with protected time and space to think deeply about problems without distractions.

Step 4: Get connected

When employees have the opportunity to share what they are working on, mix with others that have different experiences, and facilitate the cross-fertilisation of ideas, we can see truly novel breakthroughs. This can be encouraged in a formal way – such as through internal conferences, workshops, or cross-functional teams – or in an informal way by providing common areas for people to interact or fostering a culture that promotes integration rather than silos.

Step 5: T-shaped people

In addition to fostering interpersonal connections, it is also beneficial to foster intrapersonal connections; that is an individual’s ability to generate ideas by connecting knowledge or experiences they have from different interests or areas of their life. To accomplish this, some leading innovative organisations encourage employees to be ‘T-shaped’, meaning they have depth of expertise in their main area of work as well as a breadth of knowledge or experience. This breadth can be gained in both their personal and professional life and facilitates seeing unique connections, or translating ways of doing something from one domain into another. ■



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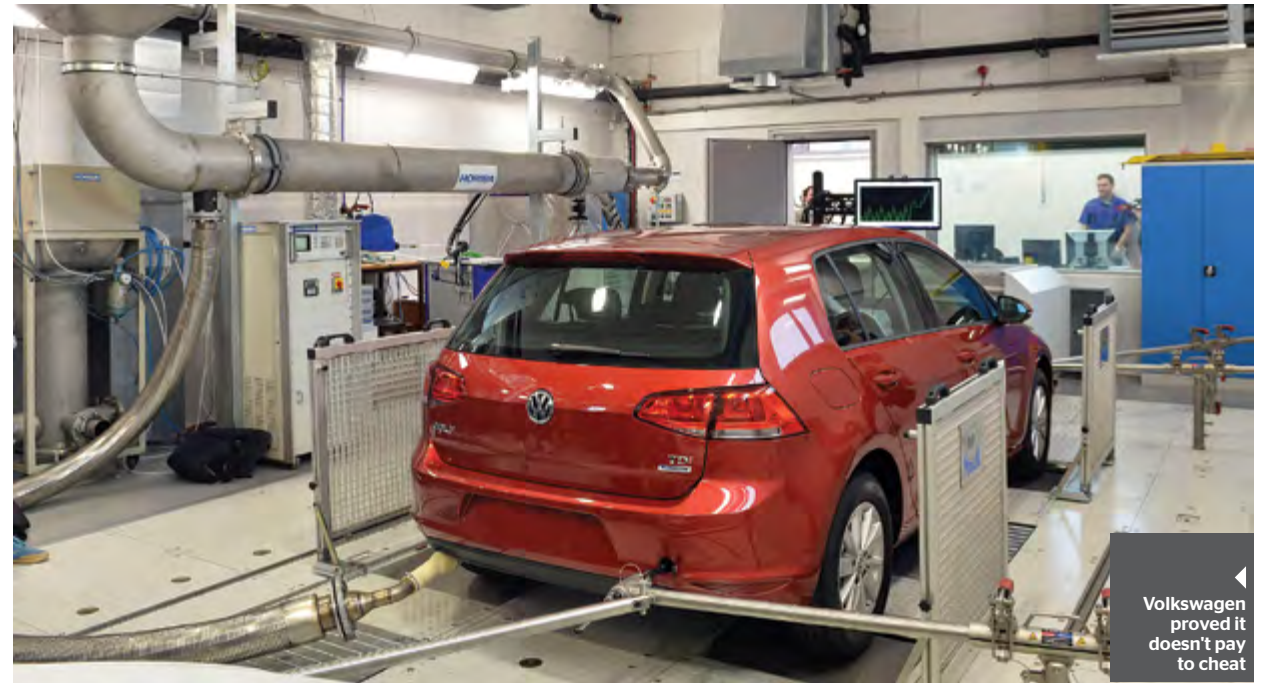
Meg Carter examines Volkswagen's reaction to its emissions scandal to look at how a company rebuilds its burnt and frazzled brand

When the smoke clears

It can take just minutes for a brand owner to destroy relationships it has spent decades building with its consumers - as Volkswagen has been learning at first hand. Repairing the damage to a brand post-scandal, however, takes more than a quick fix. Acknowledging mistakes, making amends and being seen to be doing both are only the beginning. As important is guarding against repeating mistakes and this means that what might initially appear to be 'just' a brand marketing problem can require far-reaching organisational change and even a new business strategy. "Essentially, what's happened at Volkswagen is a breach

of trust," says David Arnott, Principal Teaching Fellow in Marketing & e-Business at Warwick Business School. "Some of what the company has done since the scandal has demonstrated good practice, but not all. "With so many vehicles affected, the level of deceit is significant and appears to have been deliberate, and this makes the problem potentially bigger and certainly more complex to resolve." Founded in Germany in 1937, Volkswagen's business - and reputation - has long been built on its engineering. Now the second-largest carmaker in the world, it comprises

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12 brands - including Audi, SEAT, Bentley, Bugatti, Lamborghini, Porsche and Skoda. But it remains most closely associated with its top-selling, namesake marque, Volkswagen, and that brand's three core values: responsibility, sustainability and innovation.

Then, in September 2015, Volkswagen was accused of violating the US Clean Air Act by the United States Environmental Protection Agency (EPA).

The EPA found the carmaker had intentionally programmed turbocharged direct injection diesel engines in 11 million of its cars to meet US standards for nitrogen oxide emissions only during regulatory testing - the cars emitted up to 40 times more nitrogen oxide for everyday driving.

As soon as the use of its 'cheat device' software was made public, Volkswagen found itself the focus for regulatory investigations in a number of countries. Its stock price fell sharply - initially by one third. Meanwhile, confidence and interest in buying the Volkswagen brand slumped.

By January 2016 Volkswagen's EU sales were down 3.8 per cent year-on-year despite passenger car sales in the EU that same month rising to 1.06 million - up 6.2 per cent year-on-year, according to the European Automobile Manufacturers' Association.

In the UK, the Society of Motor Manufacturers & Traders revealed Volkswagen's sales were 13.8 per cent lower year-on-year in January 2016, while new sales overall rose 2.9 per cent. Meanwhile, the overall slump in US sales post-scandal

is estimated at 10-15 per cent. The German carmaker reported a 2015 third quarter loss of £2.5 billion - its first quarterly loss in 15 years.

Though top line figures have been hit hard, the negative impact of a scandal can extend far further.

Employee dissatisfaction and a desire to no longer work for a company is one side effect. Loss of third party support - from a local event or team that company might sponsor, for example - is often another. Reduced belief in what a company is saying can also undermine the business' guarantees and warranties.

One key challenge for Volkswagen has been how best to undertake the necessary steps required in a way that complements and reinforces rather than undermines the brand and what it stands for.

Immediate steps after any scandal are likely to include firing those responsible - which was Volkswagen's immediate response - appointing new managers and or embedding new managerial structures and audit trails. Attention should then turn to addressing relationships with key stakeholders through carefully crafted communications.

"A brand should act as a 'central organising principle' that sits at the

heart of a business informing decision-making at all levels of an organisation," says Mike Rocha, Global Director, Valuation, at brand and design consultancy Interbrand. "So when a scandal occurs a brand should go back to what it stands for, to what its ultimate purpose is, and ensure that

“As soon as the use of its 'cheat device' software was made public, Volkswagen found itself the focus for regulatory investigations in a number of countries. Its stock price fell sharply - initially by one third. Meanwhile, confidence and interest in buying the Volkswagen brand slumped”

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the action it takes in response to the crisis builds on these core ideas.”

It's all about acting human, according to Dylan Stuart, Partner at brand strategy consultancy Lippincott. “Brands are human creations and as such are fallible, as humans are,” he says. “So it is important they react in a human way – admitting where there is fault, taking responsibility and demonstrating they can and will change.”

What is also needed next is an exploration of what went wrong and why – an independent enquiry always helps – and efforts to make the outside world aware you are working to put things right.

“Having identified the causes, measures must then be put in place to ensure it doesn't happen again and confirmation that such action has been undertaken needs to be shared publicly,” says Arnott.

In this respect, many believe Volkswagen has made some positive progress. Yet not everything it has so far done has been ‘best practice’, according to Sebastiaan Van Doorn, Associate Professor of Enterprise at WBS.

“Volkswagen was clever to replace former Chief Executive Martin Winterkorn quickly,” he acknowledges. “But it missed an opportunity with the appointment of Matthias Müller (former chairman of Volkswagen-owned Porsche) to replace him. Because Müller had so close a connection this appointment did not send out a strong message externally that the company was willing to change.”

Volkswagen's decision to quickly put in place a plan with considerable funds set aside to deal with fines, compensation to car owners in some markets for the reduced value of their vehicles, and funding for the recall of all affected vehicles was another positive step.

An estimated 11 million cars were to be either fitted with a ‘flow transformer’ device to enable the correct calculation of fuel and air being combusted or a software tweak.

But the senior management's claim to know nothing of the cheat device apparently sanctioned by some of Volkswagen's middle managers was not well-received and, worse, raised questions about the effectiveness of its internal communications and management procedures.

Furthermore, the brand's corporate and advertising communications post-scandal have received a mixed response.

After immediately suspending its marketing communications, Volkswagen ran tactical advertising to apologise with a pledge to address the problem. In February 2016 the strategy then switched to brand advertising with a campaign created by advertising agency DDB Germany emphasising the longstanding, emotional relationship between Volkswagen customers and their cars.

Launching the new advertising, Volkswagen Brand Board Member Jürgen Stackmann firmly positioned the campaign as the “first visible step in a new mindset”.

“We have lost credibility and trust in recent months,” he said. “We are now doing everything we can to win that back.”

Volkswagen's new TV ad, in which its cars were described as “a lifelong companion”, proved uncontentious. But its print campaign was less so as it used the line: “It's more than just a car. It's keeping your promises.” This was something many observers believed Volkswagen failed to do.

This gap between Volkswagen's words and actions is indicative of a deeper challenge the company needs to address, some suggest.

“Volkswagen has failed to deliver on past values,” says Van Doorn. “I don't think its statements in press releases or marketing communications will convince without it acting boldly and proactively to ensure it can change and its plans to do so are viable, credible and achievable within three years rather than 10 or more.”

A company may have positive values, but if its culture is wrong it will find them impossible to anchor within the business as a single, guiding theme, he adds: “Mindset determines action. And the misalignment of mindset and values suggests a misalignment of senior management and middle management.”

The extent to which the Volkswagen brand – and, indeed, any brand post-scandal – is likely to be given a second chance by consumers will be dictated by a variety of factors.

“In essence, trust is the willingness of an individual to become vulnerable to another's behaviour which, in business, depends on a company's ability to deliver on what it promises,” says Arnott. “And in Volkswagen's case, one part of its brand promise – its focus on engineering – has not been breached.”

Also in Volkswagen's favour is consumers' previous experience of the brand and the lack of any past evidence of scandal or deceit.

Yet another factor, believes Arnott, is a firm's ‘benevolence’ – whether people feel they can assume that company will behave in a fair and equitable way. And on the basis of the nature of the scandal Volkswagen's credibility is compromised.

A brand owner's ability to respond effectively to a scandal will be dictated by other factors, however. Its size, for example, corporate structure and even company culture. And for Volkswagen, all three present challenges.

Deep pockets always attract lawyers. And a major driver of the furore has been the US market where, despite not being one of Volkswagen's main markets and diesel cars accounting for just 25 per cent of its sales there, some observers suggest there is an eagerness to pursue damages claims simply because the company is big and profitable.

“Furthermore, there is an historical disjoint at Volkswagen between its board of directors and its marketing function,” says Arnott. “Neither appears able to speak the same language, and the board is dominated and directed by engineers and financial people.”

“Furthermore, there is an historical disjoint at Volkswagen between its board of directors and its marketing function. Neither appears able to speak the same language, and the board is dominated and directed by engineers and financial people.”



Arguably the greatest challenge of all for Volkswagen, however, is whether its senior management team has the inclination and appetite for the root and branch internal change many observers now claim the business needs.

“Volkswagen is not the only automotive company to have failed to comply with industry standards, and it is not the worst performer in terms of emissions,” says Van Doorn.

“But it has been the most ‘creative’ in terms of efforts to work around them.”

In a statement made by Volkswagen in December 2015, it even admitted to a mindset that “tolerated” rule breaking and “a chain of errors” behind its emissions cheating.

“The scandal that resulted is in part down to Volkswagen wanting to be too perfect and not wanting to be seen to fail. And this, in turn, is due to the way the organisation is structured and functions,” adds Van Doorn.

“Volkswagen is still one of the most centralised organisations. As a family firm, it is not naturally inclined to release a mandate to lower levels within the business and those middle managers will feel they're not heard and not taken seriously.

“Only time will tell whether senior management sees this as being important enough to address.”

Furthermore, in recent years Volkswagen has let itself down on one of its brand's core values – innovation – in a way that suggests its business strategy is at fault.

Arnott says: “Volkswagen set out to push ‘clean diesel’ rather than zero emissions or hybrid cars, as other automotive manufacturers have done. But that strategy was wrong.

“They tried but couldn't deliver on the clean diesel promise

and then, rather than admit it, found a way to side-step the problem by cheating regulatory tests.

“The decision to install the cheat software was a strategic decision. The failure to think through the implications – and to assume the downside risk was acceptable – is a big problem. Both are key indicators that something fundamental internally at Volkswagen must be addressed.”

Like many brands to suffer the consequences of a scandal, crisis could prove to be a powerful catalyst for Volkswagen to change – for the better.

“If a brand is very damaged, then it could seize the opportunity to revisit its story, its vision, its mission,

its values, to re-energise the organisation,” says Rocha.

But even if the damage is less severe, being forced by circumstance to self-examine and reassess can lead to positive change.

“A lot of strong, established brands can get stuck in conservative thinking and look only to protect what they have rather than try new things and this – in turn – can sow the seed for long-term decline,” says Stuart.

“But the jolt to the system a scandal brings can be an opportunity to realign with changes quickly implemented that might otherwise have taken months or years.”

Longstanding and enduring brand values, deep pockets and a rapid response carried Volkswagen through the first few months after the scandal, enabling it to start regaining lost ground.

However, in a world in which brands now liaise with the public not through communications but actions, how the company re-sets its strategy for the long term will determine how Volkswagen recovers from the scandal. ■



iROKOTv dubbed the Netflix of Africa

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Africa has long been seen as the next 'China' and **Sabuhi Gard** finds a new breed of entrepreneurs might finally be making it a reality

Re-building Africa's brand

Africa's consumer-facing industries, resources, agriculture and infrastructure together could generate as much as \$2.6 trillion in revenue annually by 2020, according to a report by the McKinsey Global Institute. Meanwhile, Africa's collective GDP in 2008 was \$16 trillion - roughly equivalent to that of, say, Brazil or Russia. These economic facts should be viewed as plus-points for those wanting to invest in African economies, however,

the perception of the African people and economy is a mixed one, coloured by media pictures of war, famine and unrest. The continent's troubled image has caused global companies to overlook business opportunities, but there is a new breed of entrepreneur in Africa that could be changing that, a breed that has flourished with a rare single-mindedness and creativity that sometimes only limitations and scarcity can produce - after all the imagination is limitless. Christian Stadler has travelled to Africa to find out about

its entrepreneurs and has found a country very different to the one the West sees in the news. "One of the 20 fastest growing economies in 2015 was Kenya according to a survey by Bloomberg economists," says Stadler, Professor of Strategic Management at Warwick Business School. "However, most of the items of news we see on the TV report Boko Haram terrorism in West Africa or Al Shabaab in Somalia. "There are also somewhat negative views of African migrants who come to the UK. We in the West are also unable to make a distinction about different types of Africa geographically, for instance Nairobi is very different to North Africa." Perceptions like these have to change, Stadler believes, so that investors are attracted to allow the African economy to develop. And he has discovered plenty of opportunities for investors looking for the next big growth area. "The number of Africans interested in entrepreneurship is growing dramatically," says Stadler. "In countries like Gambia and Nigeria 40 per cent of people have started a business that is less than three years old. Investors do not want to miss out on this opportunity." There is also a burgeoning middle class in Africa that needs feeding. They are increasing demand for consumer goods, presenting ripe opportunities for entrepreneurs. This new army of entrepreneurs also come armed with the latest management thinking and teaching thanks to the West's universities, especially in the US and UK. "There is a growing number of people returning from the West having been educated in universities there or employed there and they are using all of that knowledge to pursue opportunities in Africa," says Stadler. "They see it work in the US or UK and then go back to Africa to implement it." University of Manchester graduate Jason Njoku is one such African who had the entrepreneurial mindset to see an opportunity and jump in with both feet. He set up

iROKOTv in 2010 after he was tasked by his mum to buy some Nollywood DVDs - Nigeria's equivalent to the US' Hollywood film industry. Surprised and frustrated he couldn't get hold of any easily on DVD he jumped on the plane to Lagos - and the rest, as they say, is history. Njoku started buying online licences for Nollywood movies to stream on a dedicated YouTube channel. Thanks to investment from US-based hedge fund Tiger Global, the channel became a dedicated Nollywood platform. Now dubbed the Netflix of Africa, iROKOTv makes its own content to stream and has offices in Lagos, New York, Johannesburg and Kigali in Rwanda, with a staff of more than 100 and funding totalling \$25 million. iROKOTv's popularity is set to grow in tandem with the Nigerian entertainment industry, whose revenues grew 23 per cent between 2010 and 2013 and contributed three per cent to the country's GDP. This will only be exacerbated by the surge of mobile internet users expected to total 110 million by 2018, who will push the entertainment industry's value up to \$8 billion in the next three years, according to iROKOTv. According to the African Development Bank and the US billionaire George Soros, Africa now has the fastest-growing middle class in the world. Some 313 million people, 34 per cent of Africa's population, spend \$2.20 a day, a 100 per cent rise in less than 20 years. The bank's definition of middle class in Africa is people who spend the equivalent of \$2 to \$20 a day - an assessment based on the cost of living for Africa's near one billion people. By 2060, Africans living below the poverty line will be in the minority - 33 per cent. The bank describes the rise as "unstoppable". Investors cannot ignore revolutions in North Africa, and famines in East and West Africa, but the underlying mantra of "growth, growth, growth" is taking hold. Njoku was living in England when he set up iROKOTv, but Stadler believes many Africans have been driven to

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entrepreneurship due to the lack of formal employment in their country or they have decided to turn their everyday duties into a business.

According to the 2015-16 Global Entrepreneurship Monitor (GEM) report more than 60 per cent of people in Senegal and Botswana stated they intended to start a business over the next three years. In its 2014-15 report GEM found an average of 71.5 per cent of 18-64 year-olds in Angola, Botswana, Burkina Faso, Cameroon, South Africa and Uganda believed becoming an entrepreneur was "a good career choice".

"Someone collecting rubbish every day as their job can turn it into a rubbish recycling business or a cleaning lady who is just cleaning one house, then gets more cleaning jobs due to word of mouth, then she sets up her own cleaning business," says Stadler.

"If you look at how quickly cities in Africa are growing – you already have 51 cities bordering on a population of one million. As these cities start growing so does their division of labour."

Technology is also helping African entrepreneurs overcome the infrastructure problems the continent has. Many tech start-ups have built on the success of M-Pesa, the mobile payment system that was launched by Safaricom in 2007 giving Kenyans technology way ahead of Western consumers. With 80 per cent of Kenyans using M-Pesa and more than 18.2 million subscribers, mobile money transactions in Sub-Saharan Africa hit \$656 million in 2014.

Stadler says: "M-Pesa has enabled a lot of start-ups to flourish and is one of the reasons why entrepreneurship has grown so quickly in Kenya.

"M-Pesa works on the very simple principle of transferring money via your mobile phone. The transactions carried out via M-Pesa are larger than all of the banks in Kenya combined, it is a very successful business and allows other companies to exist."

Stadler cites M-Kopa, which sells solar panels to rural residents in Africa, and Kopo Kopo, a mobile payment tool

© M-KOPA

for business, as examples of companies that have grown thanks to M-Pesa.

"M-Kopa is an example of a business that links a very basic need to smart technology," he says. "This business was started by a group of entrepreneurs who saw that people living on the outskirts of towns and in villages were having problems getting electricity into their homes cost effectively.

"They were also using unsafe methods to light up their homes like burning kerosene lamps. An alternative solution for lighting up your home would be to put a solar panel on your roof and get electricity in your house that way."

M-Kopa estimates that 80 per cent of its customers live on less than \$2 a day and energy accounts for a significant amount of their spending. The company's power system costs \$200: it includes a solar panel, two LED bulbs, an LED flashlight, a rechargeable radio, and adaptors for charging a phone. The kit comes with a two-year warranty, and its battery is designed to last at least four years.

It is a lot of money for those living in rural villages so what the company sells is, in effect, a loan of about \$165. Clients pay \$35 upfront and agree to make a daily payment of 45 cents for a year until the system is theirs – hence the name kopa, which in Swahili means 'to borrow'. The kits come with a control box containing the battery and a SIM card that can communicate with M-Kopa headquarters in Nairobi.

Kopo Kopo, meanwhile, is a service that helps businesses to accept payment of services rendered through M-Pesa. It is easy to use and affordable; only one per cent of the transaction is deducted.

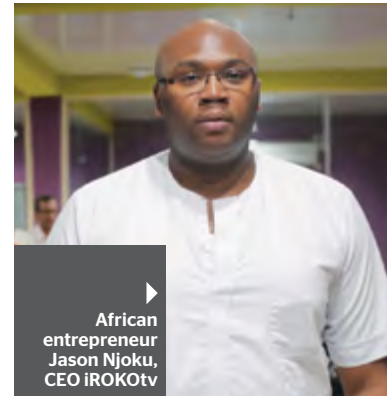
It enables service providers to track transactions and identify sales trends and market insights. Running on the M-Pesa platform means it is safe and trusted.

Kopo Kopo is based in Nairobi, which has made its mark in the global technology community through the mobile banking technology that has evolved around M-Pesa. These innovations are changing the face of Nairobi, meriting the description as Africa's 'Silicon Valley'.

Funding has always been a problem for start-ups in Africa, with banks being out of the reach of most, but that is also being solved says Tayo Leigh, who set up Shortlist, a headhunting platform in Nigeria, which allows job seekers to upload their CVs for companies to search for talent.

"There is more funding for online businesses," says Leigh. "Institutional funding is still very hard to get hold of without an extensive business plan and watertight numbers behind you – and I don't know that entrepreneurs have the know-how to deliver that perception of robustness at the early stages of their business. Lending rates on bank loans are often higher

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African entrepreneur Jason Njoku, CEO iROKOTV

“It is clear that a new generation of African entrepreneurs are emerging with full force... these people are changing the way the global business community and global media view the African economy”

than 20 per cent – who can service that kind of debt in the first few years as a start-up?

"But there are growing initiatives and bodies set up to give out grants. I recently attended the Africa Business Angel Forum that has both angel investors and institutional investors and it was really interesting to hear what they look for and even more interesting to see entrepreneurs pitching and how much they were looking for and valued their business."

Shortlist got its funding from management consultants Phillips Consulting who came to Leigh with the idea.

"Unemployment remains a huge issue in Nigeria with 30 per cent of 24-35 year-olds out of work," says Leigh.

"We wanted to cater for a specific niche, the experienced professional, middle managers and directors who would depend on word of mouth or personal referrals to make their next move.

"We are kind of like a LinkedIn for Nigeria. This means our registered candidates are directly contacted for roles that are often not advertised and they probably would not have heard about."

It is clear that a new generation of African entrepreneurs are emerging with full force and setting up companies like M-Kopa, Shortlist and iROKOTV and these people are changing the way the global business community and global media view the African economy.

"There is an increasing interest in Africa by a collection of people with a true affiliation to the continent," says Leigh. "I know that the narrative of Africa as a troubled continent is not the Africa that many young people are now growing up with, Africa is now cool.

"The export of music, fashion and the greater connectivity of the world means young people in the continent are being influenced, talking about and connecting to the same pop culture and issues that the rest of Europe and the US are exposed to."

Immaculate Kiiza, director of children's charity, Hope for Children in Uganda is hopeful that perceptions of Africa are changing.

"Africa is becoming a force to be reckoned with," she says. "With each passing year and the new generations coming up, I believe the stereotype will change. This, of course, has to start with us, the Africans. We have a long way to go, but if entrusted with great leadership I personally believe the rest can follow."

Stadler agrees and is optimistic about the continent's future, believing the people have the drive and ability to improve Africa's economy and, in doing so, change its image.

"The right ingredients are there: talent, demand and increasingly also the capital that is required for some of the initiatives reaching a critical scale," says Stadler.

"Looking at the entrepreneurial energy in places like Nairobi or Lagos I have no doubt the future belongs to Africa." ■

It's more than just a game



Oliver Balch discovers a new branch of game theory, hide and seek, that could help find criminals, unearth unexploded mines and show how best to diversify investments



On May 2, 2011, at around 1am local time, US special forces burst into a three-story mansion in North East Pakistan, close to the town of Abbottabad. Huddled around a television in the White House, the US president and his chiefs of staff watched intently. Minutes later, Osama Bin Laden received bullets to the head and chest. The world's most wanted man was dead.

Catching the mastermind of the 9/11 attacks on the World Trade Centre took the best part of a decade. Rumours and alleged sightings had him placed everywhere from the Afghan border to the Balochistan mountains of Pakistan and beyond. In 2006 a French newspaper even reported his death, supposedly of typhoid.

In reality, the Al Qaeda figurehead had moved around the Khyber Pakhtunkhwa province of Pakistan, from Peshawar to the Swat Valley and from there to Haripur close to Islamabad, before settling on his final safe house. It was one of Bin Laden's couriers who eventually put US authorities on the path that led to his Abbottabad hideout. Rather embarrassingly, the compound turned out to be right next to a military barracks.

During the 10-year search, US investigators never thought to ring Steve Alpern. Not that he expected them to. He knew no more about Bin Laden's whereabouts than they did.

Yet five decades working on 'search theory' - a branch of game theory - means Alpern would have been well set to at least pass on some tips. What options of escape and concealment does the fugitive have? What strategies for his capture might prove more or less likely? How might investigators most efficiently deploy the resources at their disposal?

"In reality, what most security services or police do when trying to catch someone is just put all the resources they can into every possible area. In as much as mathematical modelling can help optimise the use of these resources, then I'd like to think my research would potentially prove useful," says Alpern, who joined Warwick Business School in 2012 as Professor of Operational Research.

Game theory has taken on a life of its own of late. From poker tactics to price-stability-oriented monetary policy, the term seems to be everywhere. Its biggest success, in terms of being applied, is auction theory, with the biggest example being the UK Government's auction of the 3G mobile network



Using game theory could help search for IEDs

in 2000. A complex process of 150 rounds of bidding over six weeks saw the applicants whittled down to five, who paid a whopping \$35.5 billion.

Alpern's search theory could be the next branch finding its way into the 'real world', especially as it has so many potential applications from finding criminals to finding aliens.

At its most basic game theory's conceptual conceit is relatively simple: a rational party (or 'player', to keep with the theoretical analogy) finds himself in a predicament or quandary, the resolution of which depends on him discerning how another rational party or parties will act.

The 'prisoner's dilemma' is perhaps the best known example. Two criminals, both interrogated simultaneously in separate cells, both offered lighter sentences if they grass up the other but both facing longer sentences if they both grass. What do they do? Enter the mathematicians' formulae.

'Hide and seek' theory, Alpern's noted specialism, works on a similar premise: namely, the application of rational decision-making to a context where the meaning of rationality is questionable. His introduction to the subject came as an undergraduate, back in the 1970s. Oskar Morgenstern, one of the founders of game theory and one of Alpern's tutors at Princeton University, suggested he read a book by Rufus Isaacs on 'differential games'.

Differential games have two players who make continuous time decisions. A famous example is the 'homicidal chauffeur game', where a driver with a fast car that can't turn quickly tries to run over a pedestrian who is slow but can turn on a dime.

Alpern's curiosity was piqued by another example in the book: one about a princess and a monster. The pair are situated in a dark room whose dimensions both know. The monster, who is looking to catch the princess, moves at a set speed. If the princess is to stay out of his grasp should she keep moving or stay still? If she chooses not to move, where

would she best hide? The monster faces the same dilemma about whether to remain in one place and wait (an 'ambush' tactic) or to actively hunt the princess down (the 'cruise search'). Game theory asks: how do the fairy-tale pair decide in a way that assumes that both are as rational as one another?

At the time, as a diversion from his graduate studies, Alpern came up with a solution to one part of the problem. A few years later, an Israeli mathematician Shmuel Gal solved the so-called 'princess and monster game' in its entirety.

The two would later go on to co-publish a book called *The Theory of Search Games and Rendezvous*.

Rendezvous Games are basically like simple hide-and-seek, only harder, because instead of one person hiding and the other seeking, both seek. Imagine the scenario: you arrange to meet a friend on the train station, but arrive to find the ticket hall absolutely packed. The question Alpern poses is how they should move about the 'search region' to minimise the time taken to meet?

Finding answers to this problem isn't just the concern of pure mathematicians. Alpern gives the example of artificial intelligence. As scientists consider sending robots to the moon or to another planet, how can they be programmed to meet up to perform a task? Or, to keep with the theme of outer space, consider the search for extra-terrestrial intelligence.

Just picture for a minute that there are other life forms out there, busy beaming out radio signals into the galaxy. How can we best increase our chances of picking up these interplanetary missives? Inventors looking for willing financial backers provides a more grounded version of the same dilemma.

Alpern offers another example even closer to home. In case he ever got separated from his daughter, he'd tell her to find an open area and wait until he found her - i.e. revert to a traditional hide-and-seek format. Her response to any friendly adult looking to help her was always the same:

"I'm waiting for my Daddy to find me - he does rendezvous search and knows how to do it."

A key mitigating factor in both rendezvous and standard search games is speed. Move too slow and the 'searcher' may miss a moving 'hider'. Or, if the hider is still, the searcher may take excessive time to find him. If the searcher is moving too fast, on the other hand, they may pass the hider unawares.

One practical area where Alpern believes this line of search theory research could make a powerful real-world difference relates to the detection of land mines or improvised explosive devices (IEDs). He is currently in discussions with various demining organisations working in former conflict areas about setting up a conference on precisely this subject.

"An explosives expert searching for an IED may be able to move from place to place quickly in a vehicle," says Alpern. "But in order to detect the IEDs they must get out of their vehicle and move at a slower pace. Similarly, specially trained mine detection dogs are used extensively in the detection of mines. It's been observed, for example, that dogs perform this role more effectively when moving at a slower speed."

Talk of dogs links to another of Alpern's research interests: animals. He's not alone here. Over the years, search theory has drawn heavily on the animal kingdom - and behavioural ecology, more specifically - for inspiration.

An expansive literature exists around predator strategies, for instance. Imagine you're a bird of prey: you spot your lunch running in a field below, but fail to catch it on the first dive. Do you conserve your energy and give up the chase, or do you use up more energy by continuing your pursuit? Start-up entrepreneurs encounter the same scenario all the time. When to give up the search?

Alpern is more into squirrels than birds of prey. To get through the winter, squirrels and their 'scatter-hoarder' ilk rely on collecting nuts and then scurrying them away for later. 'Pilferers' adopt a different, less laborious tactic. Instead of looking for food themselves, they search out the scatter-hoarders' food caches and steal whatever they can.

And so a sophisticated game of hide-and-seek develops. Scatter-hoarders usually spread their food supply around a large geographic area (so-called 'cache spacing'). That way, if pilferers happen upon one cache, they won't necessarily find the others.

Other hoarders opt not to scatter at all, choosing instead to store all their supply in one place and then guard it jealously. To confuse matters further, some hoarders turn to pilfering as

well. The really clever ones change cache sites regularly or recover their food at intervals.

Alpern's research takes this caching game to a different level of sophistication. Using empirically observed animal behaviour, he investigates how the total quantity of food is shared across various sites, as well as the ideal number of sites and the ideal depth for burying food. He even factors in the use of 'decoy nuts': nuts placed above other nuts that

are buried further down. All this to establish the optimal diversification of resources against catastrophic loss.

"The idea of the scatter-hoarders is essentially to have enough food left so that when some of the nuts have been pilfered they can still survive during lean times," says Alpern.

"In terms of business, this method of scattering nuts might also be seen as a way of diversifying investments against the threat, say, in banks that might fail."

For all its potential applicability, hide-and-seek theories have yet to really take hold outside academic circles. That could well change. As with game theory, considerable interest is emerging among economists and businesses.

Perhaps the best known application is the use of search theory models to better understand labour market trends. One way of seeing unemployment, after all, is the inefficient allocation of workers to job opportunities. Either the employee is 'hidden' to the employer, or the employer to the employee.

Reality is never that clear-cut, of course. Supply and demand in the job market is rarely in equilibrium. Nor are all those out of work necessarily searching desperately for a job. But, it's computing contingencies such as these that is precisely what excites search theorists like Alpern.

The searched for object doesn't even have to be an 'object' as such. In the case of product sales, for example, it could be unknown demand. How does an ice-cream vendor know how many ice-creams to order? They listen to the weather forecast, track tourist numbers,

test out different order volumes, and so forth. Alpern worked with the acclaimed US economist Dennis Snower on just such a problem. Together the pair resolved how to reduce the associated costs of over- or under-ordering.

Distilling complex mathematical-based solutions into everyday tools is imperative for hide-and-seek theory's uptake. But with the rising tide of digital data, algorithms are being used in more and more areas of our lives, and in search theory a host of new formulae can now be applied to solve seemingly intractable problems. ■



“In terms of business, this method of scattering nuts might also be seen as a way of diversifying investments against the threat, say in banks that might fail”

Millennials tip the scales



For many the digital world means being connected to work for longer thanks to the ubiquitous smartphone. But **Carly Chynoweth** finds younger workers are looking to change that trend

Employers who want to attract more job applicants – particularly younger ones – should talk about their work-life balance policies when recruiting, suggests research by Shainaz Firfiray.

The WBS academic's experimental study involving 189 MBA students aged between 26 and 40 found that people were more likely to apply for a job that promised flexibility than for an equivalent role offering healthcare benefits – or no benefits at all.

“There is already a lot of anecdotal evidence and research suggesting that many employees have difficulties managing work as well as their personal commitments,” says Firfiray, Assistant Professor of Organisation and Human Resource Management. “The last European Quality of Life Survey found that 22 per cent of people in employment are not satisfied with their work-life balance.”

Given this it is hardly surprising that companies who make a point of promising to help employees find that balance have an advantage over their peers.

Despite this, few companies that offer such benefits mention them on the recruitment pages of their websites.

“If they did mention it they would find that putting up even a small amount of information might help them to attract more applicants,” says Firfiray.

Another finding of Firfiray's research was that work-life benefits were more popular with ‘millennials’ – people who reached adulthood around the turn of the century – compared to members of Generation X – generally seen as those born between the 1960s and the early 1980s.

“As people get older they may have more healthcare needs and therefore be more attracted to the benefits of healthcare,” she says. “Future research could work to isolate the effects of age and other demographic factors.”

It also suggests employers could do more in the meantime to look at how to tailor the benefits they offer to the specific needs of the demographics they are targeting with their recruitment advertising.

But getting new employees through the door is only the first part of the process, which is why Firfiray's latest research examines what happens next. What she found suggests organisations that want to take full advantage of the business benefits of their work-life balance policies need to do more than put them on their websites or include them in the employee handbook.

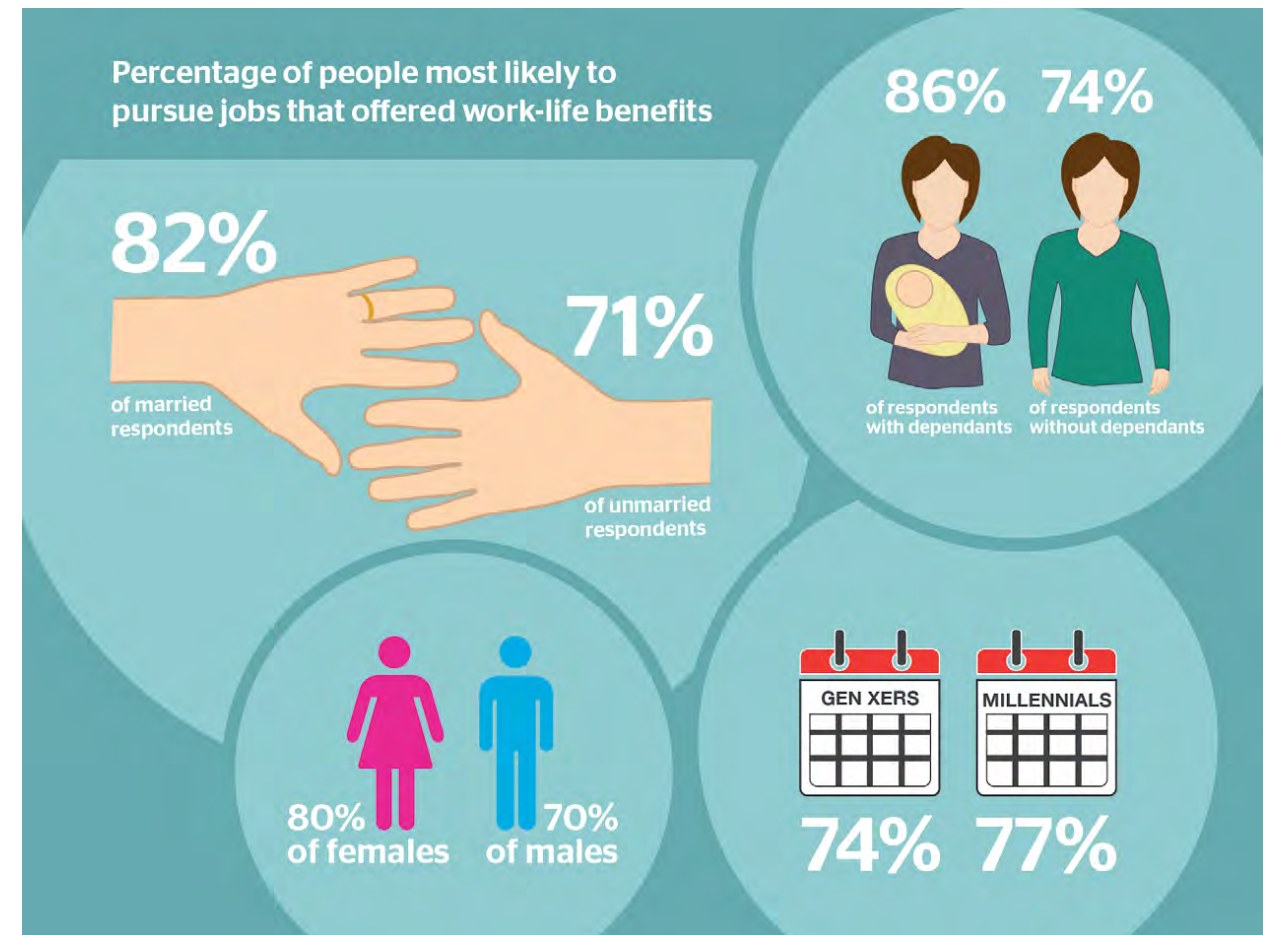
Such policies can mean employees feel more committed to their employer and therefore less likely to leave – avoiding all the associated costs of staff turnover – but only if managers endorse and support them.

“Work-life balance policies attract potential employees, but they do not make them more likely to stay on unless they can see the policies are supported by the organisation and by their direct supervisor,” says Firfiray. “Employees need to feel confident that taking advantage of such a policy will not harm their career prospects.”

In other words, they need to be reassured that it is okay to actually use the policy.

“This means that work-life balance policies have to be accompanied by a change in organisational culture,” says Firfiray. “There needs to be greater openness about discussing the needs of employees as well as those of the organisation, and the assurance that the policies won't create any negative outcomes in terms of careers.”

This level of change will often require employers to make a significant cultural shift in order to convince staff – including the managers whose endorsement is critical to employees' trust – that this support of work-life balance is genuine.



Entrepreneur Lizzie Penny, however, has taken a somewhat different view. The WBS graduate argues that real work-life balance requires not simply a cultural change, but a structural one.

“It needs the sort of radical change that only entrepreneurs are confident to do at this stage,” says Penny.

She is speaking from experience. In 2009 she set up a marketing agency called Futureproof. For a number of years it operated on traditional agency lines, eventually growing to 30 employees, but in May last year it became a fascia of The Hoxby Collective, a flexible working community, who provide outsource support functions of which she is co-founder and joint chief executive.

Penny no longer has employees, instead “curating teams” of individuals, who take on projects on behalf of The Hoxby Collective's clients. Those individuals come in the form of roughly 125 freelance associates in 12 countries; 18 of Futureproof's former employees – made redundant when Penny changed the model – are among them. It also has a number of self-employed equity ‘partners’ who, between them, own a quarter of the business and share in its profits.

And it is always profitable, says Penny, as it makes a margin on the day rates charged by each associate.

“We make a profit every month, clients get exceptional value and all associates set their own day rate, so they

are getting paid exactly what they think they deserve,” she said. Associates, who are free to take on projects for other clients, can also choose when and how they work, whether that is term-time only, a day or two per week, evenings only – whatever suits them. Real work-life balance means having the ability to fit work around life, not the other way around, says Penny.

“Everyone is freelance or self-employed,” she says. “We believe that people can only truly get a proper work-life balance by being their own boss. We also think that, while self-employment is on the rise, it comes with some challenges. It can be quite isolating and you can't deal with big businesses because of their payment terms.”

Penny is quick to explain, however, that The Hoxby Collective is more than a platform connecting freelancers to clients. Associates are screened before being added to their roster, as the business vouches for their work. And each project is assigned to a team of people rather than one person; it is the only way to make sure that both the client's needs and individual worker's work-life balance choices can be met at the same time.

The end result is good for workers, for the partnership and for the business that use its services, argues Penny.

Maybe the future of balancing work and life will not be shaped just by changing job advertising, but by changing the nature of work itself. ■



A book that inspired me to...

We asked five WBS academics to pick a book that has inspired them, here's what they chose...

Think differently

Andy Lockett
Dean of Warwick Business School

Nausea
Jean-Paul Sartre



I read *Nausea* during my late teens, not because I was angst-ridden, but because I was curious about

the meaning of existentialism.

I can't say it was an easy read, but it was certainly one that benefited from perseverance. What it taught me was the importance of not seeking meaning in the outside world; you can give meaning to your own life.

We are all self-authoring our existence; always becoming, and if it were not for the contingency of death, it would never end. For me the message was uplifting, but I confess that I did have to read the book more than once before the penny dropped.

For many of an Anglo-Saxon persuasion Sartre may come across as pretentious, but for me his work is very real and keys into the essence of existence.

Funnily, the one line that has stayed with me all my life is the lament that: "Three o'clock is always too late or too early for anything you want to do." ■

Love my job

Crawford Spence
Professor of Accounting

The Craftsman
Richard Sennett



Sennett succeeded in striking a personal chord with me. He explores the nature of craftsmanship, which he defines as "the desire to do a job well for its own sake."

He suggests that this is routinely undermined in the contemporary economy where more emphasis is placed on quick results and throwaway products.

He does not merely lament this trend, but highlights how craftsmanship is an enduring human impulse that is always striving to find its full expression. Indeed, there is much to be learned from the book for those working in modern organisations.

People in organisations today often find themselves subject to myriad output-based performance metrics, which can potentially reduce their work to simply being a means to some end.

By paying more attention to the inputs and to the process of work itself, we can infuse meaning and a sense of purpose into what we do. In turn, this is likely to yield more interesting outputs as a result.

The point is that people have a basic desire to do good work, but this is often mismanaged by organisations that socialise them into routines that are anathema to craftsmanship.

As Sennett concludes: "Society can collude in that mismanagement or seek to rectify it." ■

Spot my biases

Dawn Eubanks
Associate Professor of Behavioural Science & Strategy

Thinking, Fast and Slow
Daniel Kahneman



This would make a great present for anyone curious about how we make decisions. It summarises

a body of research on the psychology of judgement, decision-making and behavioural economics that saw Kahneman receive the Nobel Prize for Economics (even though he is a psychologist) in 2002. Kahneman leads the reader through various decision-making biases so that they also fall into the trap of making sub-optimal decisions.

Experiencing this for oneself is a powerful way to drive home the decision-making biases presented. The research is delivered in a compelling, entertaining manner, making it easily accessible for anybody. For those wanting more, there are two full-length journal articles presented at the end of the book.

I was fortunate to attend a seminar at LSE a few years ago where Kahneman spoke about this book. I'm not usually one to be star struck, but I did take the opportunity to have him sign *Thinking, Fast and Slow* for me afterwards. The addition of his signature made it an even better gift for a friend. Even without the autograph, it's a great gift for anyone interested in learning about how we make decisions and common traps that our brains can fall prey to. ■

Ask questions

John Colley
Professor of Practice

Accounting for Growth
Terry Smith



This book changed the face of Western accounting and played a major part in the decline of a genre of large businesses

called conglomerates by putting a brake on corporate acquisition activity. It also changed the way we think about published accounts, introducing caution, scepticism and occasionally suspicion.

Acquisition activity had appeared much more successful than it really was through perfectly legal but misleading accounting. It is now generally accepted that more than half of all acquisitions destroy value. Before this book that was anything but clear.

As a young finance director it taught me that accounts are only as good as the questions you ask.

Having chaired businesses over two decades I have developed a healthy scepticism about the stories accounts and reports intend to tell.

Smith unveiled the many practices corporates legally used to distort their accounts on a grand scale when making acquisitions.

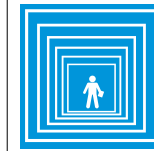
Profits were enormously inflated by making acquisition activity look very attractive. Conglomerates like Hanson Trust, BTR and Williams Holdings bought any business they could squeeze cost from and which had enough market position to influence prices.

The cash produced plus the veil of 'dodgy accounting' increased their share price and allowed further acquisitions to be made. Eventually City investors realised that this approach had little prospect of creating growth and frequently destroyed value. Conglomerate share prices collapsed and they were broken up to 'release value'. ■

Look deeper

John Thanassoulis
Professor of Financial Economics

Fault Lines: How hidden fractures still threaten the world economy
Raghuram Rajan



This is a compellingly written book about an incredibly important subject. Rajan sees the financial crisis as the outcome

of deep imbalances in the whole global economy. He explains, in easy to understand flowing language, why deeper problems in the economies of the West and the East combined to generate a subprime crisis in the US and then a global financial crisis.

Of all the books using economics to analyse the state of our world this is the one I find most credible and most engaging. It is not a narrow analysis of the flaws of the banking system: greed, risk-taking, fraud. Instead it explains why a banking system established on these lines serves a deeper end of delivering credit to large sections of the population whose incomes are stagnating.

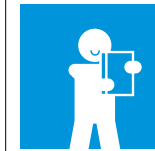
This is not a book that assaults the reader with statistics as to the inequality in the East or the size of China's foreign exchange balance. But, rather it explains why the export-fuelled path to growth can be a motorway with no exit, which ultimately leads to stagnation.

This is a thoughtful and deep analysis from one of the world's leading scholars. It is the book I would most want my students to read. ■

To smile

Kevin Morrell
Professor and British Academy Mid-Career Fellow

A Confederacy of Dunces
John Kennedy Toole



This is a brilliant, Rabelaisian comic novel about the anti-hero Ignatius J Reilly: "a mad Oliver Hardy, a fat

Don Quixote, a perverse Thomas Aquinas rolled into one." Ignatius is a 30 year-old slob who lives with his mother and rants incessantly at the world. When asked: "Got a job?" He says: "I dust a bit... In addition I am at the moment writing a lengthy indictment against our century. When my brain begins to reel from my literary labors, I make an occasional cheese dip."

It's impossible to do *Confederacy* justice summarily - trying to reminds me of Woody Allen's joke: "I took a speed-reading course and read *War and Peace* in 20 minutes. It involves Russia."

The simplest thing to say is thinking about it makes me smile. There are brilliant light-and-shade contrasts in *Confederacy*, but these fade compared to the tragic story behind its publication - the real-life dunces were those who were too dim to recognise John Kennedy Toole's Pulitzer Prize winning genius.

If you don't know the book, resist the temptation to 'Google' it and skim the backstory - just get hold of a copy and read it. ■



City guide Washington DC



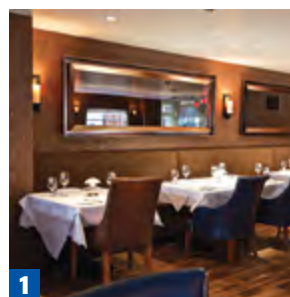
Patrick Cropper, Warwick Business School MBA graduate and Principal at aviation consultancy ICF International, tells us about his home city named after one of the US' founding fathers George Washington.



Washington DC, founded in 1791, is the seat of power in the US and the Western world. Home to the White House, Congress, Supreme Court and the President it houses a host of national monuments. Spring is a particularly special time to visit during the National Cherry Blossom Festival. Each year, in late March or early April, 1,700 Cherry Blossom trees, a gift from the people of Japan in the early 1900s, bloom around the city's Tidal Basin. It's a beautiful site and attracts residents and tourists alike.

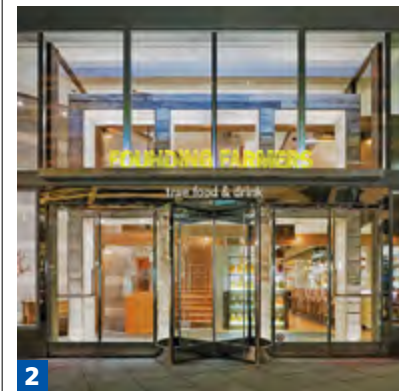
Where to eat

Washington DC's culinary scene has experienced something of a renaissance in the past decade, with dishes from around the world. For a quick lunch, visit the many food trucks that line-up along Farragut Square for an affordable and tasty meal. **Ben's Chili Bowl**, a DC landmark serving the



1

city's 'half-smoke' – similar to a hot dog but spicier – is also a favourite among visitors and the President! For those seeking a more elegant dining experience, a drink at the Round Robin Bar in the iconic **Willard InterContinental Hotel**, a venue steeped in US political history, will set the right tone for any evening. Then walk or take a taxi to one of my current favourites: **Brabo** 1 or **Founding Farmers** 2.



2

- ◇ www.benschilibowl.com
- ◇ www.washington.intercontinental.com/food-drink/round-robin
- ◇ www.braborestaurant.com
- ◇ www.wearefoundingfarmers.com

Where to shop

Georgetown, nestled along the banks of the Potomac River, boasts some of the area's best shopping. Georgetown's cobblestone streets are lined with a wide variety of shops. **M Street** and **Wisconsin Avenue** serve as the neighbourhood's two main arteries, with plenty of quaint side streets. Across the river in Virginia, **Alexandria's King Street** also hosts an impressive shopping corridor with an 18th century vibe.

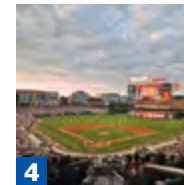
© Brabo | © Founding Farmers



3

Where to chill out

Frenchman Pierre Charles L'Enfant designed Washington DC in the late 18th century and ensured that parks were prominently and equally placed throughout the city. As a result, there are many settings to relax in and enjoy the weather. One such park is **Dupont Circle**, 3 a major social landmark playing host to markets, small festivals, and all sorts of leisurely gatherings. The circle is also surrounded by great shops, cafes, bars and restaurants, ensuring something of interest for every visitor. For those looking for a more casual setting, **Gravelly Point** on the other side of the Potomac River offers a beautiful view of the city on an expansive bank of the river. Plane-spotters will also appreciate its proximity to Reagan National



4

Airport. For those looking to relax while enjoying a sporting event, visit **Nationals Park** 4 to watch the Washington Nationals play a Major League Baseball game.

Sights not to miss



5

Any visit to Washington DC should include a stroll through the **National Mall**. Anchored on either side by **Capitol Hill** and the **Lincoln Memorial**, 5 this two-mile park boasts some of the city's most popular attractions. Walking through the Mall, visitors can see the **Washington Monument**, which has an elevator to the top, the **White House**, many memorials commemorating notable leaders and national heroes, and a wide variety of museums, including the National Gallery of Art, that

showcase topics from American history to air and space travel.

- ◇ www.nps.gov
- ◇ www.whitehouse.gov

Nearby cities to visit

Surrounding Washington DC are a number of historic quaint towns. **Fredericksburg**, **Middleburg**, and **Leesburg** are all good options for a day-trip and each host impressive commercial districts with good food, shopping and attractions. The Amtrak train takes visitors from DC's beautiful Union Station to **Richmond**, **Baltimore**, or **Philadelphia**, each in less than two hours. ■

Watch Patrick's film 'What I did next' at wbs.ac.uk/go/core

City guide

Beijing



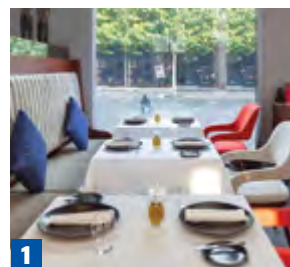
Mandy Zhang, Warwick Business School MSc Management graduate, and now Senior International Officer at King's College, London, reveals all about China's capital



Located in northern China Beijing is full of history and is renowned for its opulent palaces, temples, parks, gardens, tombs, walls and gates, while its art treasures and universities have made it a centre of culture and art in China. Beijing has seven UNESCO World Heritage Sites – the Forbidden City, Temple of Heaven, Summer Palace, Ming Tombs, Zhoukoudian, Great Wall, and the Grand Canal. The 2008 Olympics saw it build a host of spectacular modern stadia including the National Stadium. The best time to visit Beijing is April and May or September and October when the weather is pleasant.

Where to eat

Beijing Roast Duck is a must-try for visitors! While **Quanjude** is the most well-known restaurant for this, **Dadong** and **Bianyifang** are also highly recommended. **Xi He Ya Ju**, sitting in a traditional Chinese courtyard near Ritan Park, is one of my favourite restaurants. It has an outdoor courtyard that is perfect for alfresco dining, but make sure you book



1



2

a reservation early. The gong bao prawns and roast duck are highly recommended. If you want fine dining with western cuisine try **Temple Restaurant Beijing 1** or **Capital M 2**.

- ◇ www.trb-cn.com
- ◇ www.m-restaurantgroup.com/capitalm

Where to chill out

It used to be a factory, but now **798 Art Zone** has been transformed into an avant-garde district with galleries, design studios, art exhibition spaces, artists' studios, fashion shops, restaurants and bars. It feels very refreshing and relaxing going there on a lovely day with friends!

- ◇ www.798district.com

Nearby cities to visit

Tianjin, only half an hour away by high speed rail, is an important port city in Northern China with some charming European-flavoured neighbourhoods. Make sure you try

© Temple Restaurant Beijing | © Capital M Beijing



3

its steamed stuffed bun (baozi) and fried dough twist (mahua). If you are a ski fan visiting in the winter, **Zhangjiakou 3** is the nearest city that has ski resorts and will co-host the 2022 Winter Olympics with Beijing.

If you want to experience the traditional Chinese courtyard, **Double Happiness Beijing Courtyard Hotel** has very good reviews.

- ◇ www.shangri-la.com/beijing/chinaworldsummitwing

it offers more than a shopping experience - there is also a museum, an art gallery, and a boutique hotel with tropical garden.

Sights not to miss

Right in the heart of Beijing, the **Forbidden City 6** is a must. It is the world's largest palace complex with hundreds of ancient buildings and collections. Here, you will appreciate the exquisite craftsmanship and history of China. Across the road from the north gate of the Forbidden City is **Jingshan Park**, formerly a private imperial garden, it is the best place to enjoy a magnificent panorama of the city. ■



6



4

Where to stay

Hotel prices in central Beijing are much lower than London prices, and you can find plenty of five-star luxury hotels for around £100 per night. If you'd like a view of modern Beijing, **China World Summit Wing 4**, the tallest building in the heart of the central business district, overlooks the city. You can also enjoy the beautiful skyline at Atmosphere bar on the top floor.

Where to shop



5

Wangfujing Shopping Street 5 offers a one-stop shopping experience:

food stalls, book stores, souvenir shops and large shopping malls with international brands, there is something for everyone! **Nanluoguxiang**, on the other hand, is a preserved alley (Hutong) with a lot of small but interesting shops and food stalls. **Silk Market** is always popular among tourists – you can find everything you want from Chinese crafts and pearls to watches and handbags, plus practicing your bargaining skills with multilingual salesmen can be fun! One of my favourites is **Parkview Green Fangcaodi**. Stunningly designed,



Trailblazer Khan takes his chance

From smashing boundaries on the field to breaking new ground off it, CEO at [Leicestershire County Cricket Club](#) [Wasim Khan](#) has become one of the most important men in English cricket. Ashley Potter travels to Leicester to meet him

When Wasim Khan sat in the alleyways of inner-city Birmingham chiselling a picket fence post into a cricket bat with his mum's kitchen knife, little did he realise it would lead to a lifelong career in the sport.

Khan has been breaking barriers ever since. When in August 1992 Khan strode out to bat for Warwickshire in the Sunday League clash with Northamptonshire at Northampton's County Ground he became the first Englishman of Pakistani origin to play professional cricket in the country, and the first Muslim. He had already been the first to captain England Under-19s.

On the cricket field Khan won the NatWest Trophy and County Championship with Warwickshire, but it is off the field where he has made his name and continued to break down stereotypes.

First he became Cricket Foundation's CEO of Chance to Shine raising £50 million to help children play cricket in inner-city schools and now he is the first non-white CEO of a county cricket club, as he tries to lift Leicestershire from its recent moribund state.

Whether it is chiselling out cricket bats, or crafting out success from a cash-strapped cricket club, Khan has gained a reputation for making the best with limited resources.

"When we started Chance to Shine lots of people said it couldn't work," says Khan. "Similarly, when I was thinking about taking the job at Leicestershire nine out of 10 people said I was crazy. I could probably have gone to a job at a Test ground but what difference could

I really make? Here at Leicester there's a real chance to achieve something."

Grace Road has always been one of the less romanticised county cricket grounds, but as we stroll around the outfield building work is under way to transform that.

From humble beginnings Khan has already achieved great success. His parents travelled to England in the 1960s from Kashmir, a region beset by war and conflict as India and Pakistan disputed the region. His father found work at Wimbush Bakery in Small Heath, but despite coming from a cricket-mad nation he had no interest in his son's new found passion for cricket.

"A few boys would play cricket in the alleyways, so I joined in," says Khan. "We used milk crates as wickets, and I carved my own bat out of a piece of fence. That is how it started."

Remarkably, Khan developed a natural talent that was only spotted when a teacher peered out of the staff room one break time at Oldknow secondary school (now Small Heath School).

"He came over and asked me: 'Where did you learn to play cricket like that?' I said: 'Just watching it on TV sir'. He threw me a couple of balls and said come back at 4pm today. So I did and he threw down a few more balls. He said: 'I think you might have something; I want to send you for trials at Warwickshire Under-13s. I had no cricket whites, and I had never faced a proper cricket ball, but I turned up at Edgbaston for trials."

Mr Bolland had unearthed a gem in his own



playground. Khan not only impressed but was made Warwickshire Under-13s captain, despite being the only state schoolboy in the squad of 13.

"It was the innocence of youth, I knew with a bat in my hand I was quite good," says Khan. "The hard ball didn't scare me, it was just like - bring it on!

"I was fortunate, unless Mr Bolland had an interest in cricket I probably wouldn't have been spotted."

Unfortunately Khan's father, Gulzar, never saw him play professionally, as he died from a heart attack at just 49. With Khan only 15 he saw cricket as his lifeline and pursued it with an even deeper desire.

"My mum came from a very traditional Muslim background," says Khan. "She would support me, it was more my uncles questioning why I was wasting my time hitting a ball around."

Luckily he carried on wasting his time and was offered a full-time contract by Warwickshire at 18. Growing up in England in the 1980s was hard for many Asians, with racial abuse commonplace, but Khan didn't find any

barriers to his rise to prominence, as he became a symbol for his community.

"I didn't face any problems, I blended in well," says Khan. "I understood I needed to adapt to the environment as much as the environment needed to adapt to me. I realised that at quite a young age, and I was accepted."

There I was as an Asian boy scoring a century and winning the game for England Under-19s - I am a hero, I was there on merit and everybody respected that"

"There were no issues, sport crosses all ethnic divides - that is the power of sport. There I was as an Asian boy scoring a century and winning the game for England Under-19s - I am a hero, I was there on merit and everybody respected that."

The likes of Monty Panesar, Ravi Bopara and current England spin king Moeen Ali have followed in Khan's footsteps, but the 45-year-old believes there is still more the sport can do to bring cricket-mad Asians into the fold.

"I think every county can do more to tap into the Asian market," says Khan, who has recently been appointed to the board of Sport England by Culture Secretary John Whittingdale. "There is a lot of good work being done by the England Cricket Board and the counties in terms of



LCCC's grounds:
a new
future vision
in progress

trying to engage communities. In Leicester more than 50 per cent of the city is non-white, so there is a huge amount we can do.

"I still think there is a bias towards public schoolboys in county cricket for no other reason than they have the best facilities and the best coaches, while state schools have issues around teacher time and facilities. But it can be done, inner-city Birmingham has produced 15 first-class cricketers in Small Heath - a three-mile radius where I grew up."

After seven years at Warwickshire and then stints at Sussex and Derbyshire Khan decided to move into coaching at 31, before he received a call out of the blue in 2005 that would change his life.

"An unassuming voice said: 'Is this Wasim Khan?' I said: 'Yes' and she said: 'I have Mervyn King, Governor of the Bank of England on the other line who would like to talk to you'. I wasn't sure what I could teach him about economics but the voice came on the line and said: 'I have this vision of getting cricket back into state schools, will you come and have a conversation with me?'"

"I thought it was quite bizarre, but I went to meet him at the Bank of England the next day."

King wanted Khan to help raise £25 million with the Government promising to match it, engage with two million children and bring cricket to a third of state schools, where it had largely disappeared. As somebody who had only ever played

cricket the Chance to Shine campaign was a huge strategic and organisational challenge.

"I had three KPIs and I sort of worked backwards from there," says Khan. "Cricket has 39 county cricket boards across the country, so we had a natural network to work through and then it was trying to work out how we build a scalable programme. Using the coaches from the board, they were our delivery arm, we brought in Loughborough University to evaluate the social and educational impact of the programme. We were raising and spending £6 million a year of which only 17 per cent were on our overheads, all the rest was directly back into the programme."

By any measure the campaign was a huge success. It reached 2.5 million children, one million of them girls, visited 10,000 schools that had not played the game before and, Khan believes, has left a lasting legacy, especially in the rise of women's cricket.

“By any measure the campaign was a huge success. It reached 2.5 million children, one million of them girls, visited 10,000 schools that had not played the game before and, Khan believes, has left a lasting legacy, especially in the rise of women’s cricket”

Its impact saw Khan awarded an MBE in 2013 for services to cricket and community and a private lunch with the Queen and Prince Philip.

"I thought it was a tax letter," says Khan. "I didn't open it for three days. It was pretty incredible, there were only five of us in the room for two and half hours. It was like sitting with your Grandma in a café putting the world to rights."

The campaign also inspired Khan to learn more about strategy and running an organisation and he enrolled to do an Executive MBA at Warwick Business School.

"Because I had no formal education I felt it would support me down the line, I felt I was ready for academia," says Khan. "I had a real thirst for learning and Warwick was right up there in terms of its recognition as an institute."

The MBA gave Khan the confidence to go for the CEO position at Leicestershire when it arose, despite the county not having won a first-class game for more than two years and suffering four consecutive annual losses. Within a year he had turned a £250,000 loss into a profit.

"We are investing quite a lot into our ground, with new floodlights and stands, developing the culture here, getting the right people doing the right jobs and empowering people, who were unhappy to be here," says Khan.

"We are selling a vision about where we want to be, local companies are getting involved and for the first time we have a five-year naming rights for the ground.

"By 2019 our aim is to be the leading non-international

cricket club in the country, and in division one. We have recently been selected as one of five venues for the ICC Women's World Cup in 2017."

After leading the first wave of Asian cricketers into the English game, Khan is hoping his move into the boardroom will inspire more from the country's ethnic minority to follow him.

"To be the only non-white CEO across any professional sports organisation in this country is a pretty sad statistic," says Khan.

"I implore Asians to not just think about the playing side, but about the administration as well and get yourself in a position of influence to do a lot more."

Bringing more ethnic diversity into the country's boardroom is one barrier that campaigners have tried to break for some time. Some are calling for positive discrimination to end the cycle of white middle-aged men appointing white middle-aged men.

"I am not a huge fan of that," says Khan. "There is more of an educational piece needed rather than forcing people's hand. They may do it because they have to, but they will not really embrace it or place a value on it. Rather than telling people 25 per cent of boards should be female or BME, people have to see the value, meritocracy is something I believe in.

"I like the idea of independent nomination boards. De Montfort University is helping us do this, it has been through it all before and has a very good board now."

It might be the biggest barrier Khan has faced yet, but don't bet against him breaking this one too. ■



Why I love my job

Hugh Thomas, Co-Founder of Ugly Drinks

Hugh Thomas studied BSc Management at Warwick Business School and then went on to work for Heinz on its Ketchup and Beanz brands, and lead marketing at Vita Coco Coconut Water in the UK, before starting out on his own by setting up Ugly Drinks with friend Joe Benn

I always knew I wanted to start my own business. I remember in my teens trying to sell 'sandwich toastee bags' with my friend, George, at a car boot sale in Redditch, and getting the flu in the process. I think we just about broke even!

The inspiration for Ugly Drinks came from noticing a general shift in public perception around sugar and sweeteners in drinks.

Joe and I are very conscious of the health of the nation, diabetes and obesity levels are increasing, which has an impact on the NHS – the numbers are just staggering.

Also, we both worked in the drinks industry with Vita Coco and we noticed people were looking for the option of a drink without sugar or sweetener in it, but wasn't water and still had a flavour. When we looked on the shelves we couldn't see anything like that anywhere.

There should be a choice for consumers, so we wanted to create a fizzy drink that had all the fun of the big brands, but was also healthy. We want people to get excited about the drink, have that great taste and the bonus is it has no sugar or sweetener or anything artificial in it. We are filling the gap between water and traditional fizzy drinks, and it still gives you that 'cold can' moment.

We started in 2015, developing an unsweet fizzy drink infused with fruit and launched it in 2016.

My job – alongside other founder responsibilities – is to look after the marketing and brand, whether it is social media, PR or anything out in the market. Every day is different, we could be doing in-store sampling, meeting PR agencies or out in the street selling cans.



“We look for obstacles, because that is when you learn... For a start-up you need that persistence to keep knocking on doors and optimism that the next one will open”

It is all consuming, a lifestyle that blurs the line between work and leisure time. I am always working, when I go to bars, store openings, the launches of new clothing ranges, concerts, or sport, I check new things out to understand the new trends in pop culture. As a brand you need to tell your story and have an emotional pull.

At WBS I was surrounded by super-ambitious people from all over

the world and our team is the same. We look for obstacles, because that is when you learn; getting the science of the drink right so it had a shelf life was a real hurdle we overcame.

For a start-up you need that persistence to keep knocking on doors and optimism that the next one will open.

Having your own company is great; the ability to literally do whatever the team's imagination conjures up is a real joy, it is our call, Joe and I make the decisions. That freedom and ability to be creative is amazing.

We have total autonomy, and although there is nobody there to help you if things go wrong, when you see your thoughts and decisions play out in the marketplace it is exciting. One of the best feelings was the first day when we saw Ugly Drinks on the shelves in Selfridges and seeing somebody buy it for the first time.

The Ugly brand draws inspiration from chefs, and the way they mould together cookery, science, marketing and art, craft beer, street artists like David Choe, and filmmakers like Casey Neistat.

Our mission is to make healthy drinks accessible to as many people as possible, geographically and through the price.

Ugly stands for being beautifully different; we champion individuality and believe in people putting their stamp on the world in their own unique way. ■

Watch Hugh's film 'What I did next' at wbs.ac.uk/go/core



INSIGHT

Cash reaches vanishing point

RESEARCH



The fintech revolution might be a worrying sign for the traditional banks, but **Jonny Paul** finds it could mean a cheaper and easier way to manage our finances

Are the days of schlepping a bulging leather wallet brimming with a credit and debit card or three, along with the passport photo of a loved one and the dust-gathering gym membership, about to end?

Does the proliferation of fintech start-ups churning out absurd amounts of innovation threaten to disrupt the traditional banking model and shake up how we transact, and pay for goods and services? Are we edging ever closer to becoming a cashless society?

The financial services sector has seen an explosion of activity in recent years, with fintech start-ups assiduously fusing innovation with technology to provide digital solutions that disrupt prior processes, practices and products.

Transforming the consumer experience and way we approach our finances is the ultimate objective.

Speaking at Fintech Week in London, Economic Secretary to the Treasury Harriett Baldwin lauded the work of the UK's fintechs, stating they had increased competition and choice in banking, helping customers and businesses to get better services.

"Fintech helps normal people in their daily lives," she said. "It gives them extra choices; it makes their everyday tasks simpler; it improves their quality of life. In the 21st

century, fintech is quite simply essential in making financial services work for the customer."

Payment models and mobile transactions are integral to the cashless drive. Mobile banking already lets you check your balance, pay bills, make payments and transfer money.

The digitally savvy

Research published by the payment infrastructure provider VocaLink shows that 84 per cent of UK residents own smartphones with 46 per cent using them for mobile banking. People are generally more digitally-savvy today and want a faster, smarter experience and competitively priced products. Fintech is providing solutions that reshape the entire consumer experience, encouraging interaction, inclusion and better outcomes.

Markos Zachariadis, Assistant Professor of Management and Information Systems at Warwick Business School and co-founder of the WBS PayTech Conference, says that cash is still the most popular way to transact globally, but as of 2015 cashless payments were more popular in the UK than cash.

In modern economies, cash can sometimes be deemed as having a more suspicious and sinister purpose, Zachariadis says, especially

high denomination notes that are easy for the criminally inclined to transport and launder. There has been a move to ban the €500 note with this in mind.

"So much of the cash going around is related to fraud, and while this is slowly declining it still persists in some sectors," says Zachariadis. "What may be the case one day is that carrying cash could be seen as a sign of misconduct."

Zachariadis believes there is a lot of ground to cover before becoming cashless, and each country has its own pace.

"Payment innovation and the adoption of technologies of exchange certainly help as people move towards mobile payments, and abandon cash and plastic," he says. "The more these are being accepted at the point of sale, the closer we will get."

Certain demographics use cash, such as lower income groups, and will continue to do so, argues Lisa Moyle, techUK's Head of Programme, Financial Services and Payments.

"The products and service offerings will have an impact, but there needs to be more understanding as to why they still use cash," says Moyle. "Financial and digital inclusion also needs to be addressed further and the underlying payment structure needs to move to real-time payments. We are moving in the right

direction, but there are still some stumbling blocks."

Millennials expect everything in real-time, according to Volker Breuer, CEO and Founder of Payfriendz, a money transfer app where friends can send money to each other in real-time.

Breuer says: "You push a button and your friend instantly gets digital content – messages, photos or videos, why should digital payments work differently?"

The sharing economy

One problem the payment sector faced was that actual settlement cycles were still measured in days.

"This involves risk mitigations and therefore costs, but you can prevent this on the digital peer-to-peer platforms," he says.

For Pinar Ozcan, Associate Professor of Strategic Management at WBS, the success of sharing platforms, such as Uber and Airbnb, is playing an increasing role in the way consumers pay for goods and services.

She says: "Many of these sharing platforms use mobile payment technology and so their growth will encourage the growth of PayTech. These platforms encourage business at an individual level, rather than going through companies. Calling for a taxi through Uber or booking a room on Airbnb involves apps. All done through mobile payment technology, allowing you to send a payment with one click."

The introduction of Apple Pay, and other digital wallets that aggregate electronically our plastic cards, could further challenge the banking model. Providing more payment agility, easy access and the ability to make transactions seamless and swift, could entice the more cash persistent to go digital.

MasterCard is looking at taking biometric recognition to a new level by allowing consumers to make online payments simply by snapping a selfie. This could mean cards and PIN numbers will be something our children snigger at as we reminisce about how we used to put plastic into holes in the wall then type in digits to access our money.

Chris Dunne, VocaLink's Director

of Market Development, said fintech and shifting consumer behaviour is changing the use of cash, and helping with financial inclusion, but more was needed to move the unbanked – said to be around two million people – away from cash.

Cash accounts for less than 50 per cent of all transactions, Dunne says,



but it is still the biggest way to pay for lower value goods. However, we are starting to see this moving to contactless payments, especially in urban areas.

"Interestingly, the Bank of England continues to print cash and there are more ATMs than ever, with more than 70,000 now across the UK," says Dunne. "This is because people are still taking money out in much the same way. But if you look at retail, the amount of money circulating in shops is far less."

According to Payments UK cash machines will remain the main method by which consumers acquire cash over the next 10 years. However, the trade body says cash payments are set to decline by 30 per cent by 2024, from 18.1 billion in 2014 to 12.6 billion. This would see cash represent around 33 per cent of the total volume of consumer payments, down from 53 per cent in 2014.

The government and regulators are hugely supportive of giving fintechs access to the payment system infrastructure to improve competition and consumer choice.

"As a Government, we've also been working on how fintechs can make better use of bank data on behalf of customers, by creating an open API standard in UK banking," said Baldwin. "This would, for

example, enable fintechs to design phone apps that help customers manage their money better."

Andy Reiss, a former Cabinet Office adviser and director of Fingleton Associates, a consultancy that advises on competition and regulation, believes for many disruptive technologies, lower cost solutions can threaten incumbents.

"However, for payment systems, some of which operate in relatively uncompetitive markets, lower costs may not be passed on to end users," says Reiss.

"PSD2 and other regulatory interventions are poised to help new entrants break through the competitive barriers. This could pave the way for more digital and mobile alternatives to cash, as well as broader disruption across banking and other financial services."

Democratising banking

With the huge inflow of investment, fintechs are continually improving payment security and expanding innovative mobile offerings that make a more compelling case to transact using digital devices.

While fintech is without doubt the champion of the movement towards cashless, the consumer is the ultimate winner. With far more choice, more rounded and tailored solutions and agile and interactive ways to engage with the financial system, outcomes for consumers can only get better.

"In the increasingly digital and therefore cashless society, there is a terrific chance to address many of the issues around financial inclusion that have for years appeared unsolvable," says Alex Letts, founder of Ffrees, the current account that doesn't do credit checks.

"Digital banking companies like Ffrees are working off a low-cost digital footprint. They have a generational opportunity to offer democratised access to fairly priced products and services that the legacy operational model of the established banks simply cannot deliver."

So cashless means cheaper banking as well? Most people would give up their wallets for that. ■

The end of capitalism?



Mark Piesing explores how Uber has unleashed a movement that could change the face of how we live and work

Rioting taxi drivers, smear campaigns against journalists, and an ever-growing number of lawsuits. Welcome to the world of Uber. Love it or hate it, nothing seems able to stop

the growth of Uber, the disruptive Silicon Valley ride-hailing company whose ambitions are as great as its name.

It operates in more than 350 cities and 60 countries, with 11 million – and growing – active drivers, and by early 2016 was valued at \$62 billion.

The secret of its success is an app that allows customers to summon the nearest Uber driver at the touch of their smartphone screen to take them wherever they want. The price of the journey rises and falls with demand – known as ‘peak pricing’ – and at the end of the journey driver and passenger can, eBay-like, rate each other. Clients can even track the car as it threads its way through the traffic towards them. It’s addictive.

Uberisation

Airbnb, founded one year before Uber, uses the same business model. It is a website and app for people to list, find and rent rooms, and by the start of 2016 it had 15 million listings in 34,000 cities and 190 countries. In 2015 it was valued at more than \$20 billion. It even provoked similar reactions from hotel and B&B owners fearful for their own livelihoods as Uber did from minicab drivers.

There are many other companies all with ambitions to be the Uber of this or that.

And this process has a name. It is called ‘Uberisation’. While Uberisation may mean different things to a venture capitalist and a licensed taxi driver, it is a process that has a number of components everyone can agree on. It combines

“What Uberisation means to me is that the premium services we buy are easier for us to find and use by decreasing both our search costs as a customer and the marketing costs of the seller to near zero”

the use of real-time data, mobile payments, instant gratification, use of workers or buildings not employed or owned by a company (described as being ‘decoupled’), and dynamic pricing, to create a new low-cost, on-demand economy that could manage what Karl Marx failed to do and bring about the end of capitalism as we know it.

“What Uberisation means to me is that the premium services we buy are easier for us to find and use by decreasing both our search costs as a customer and the marketing costs of the seller to near zero,” says Ola Henfridsson, Professor of Information Systems and Management

at Warwick Business School. “Digital technology enables a market to develop between people that might not have existed before, and this has been called the sharing economy.

“I use my BMW for an above average 40 minutes a day and for the rest of the time it stays in the parking lot. From an economic standpoint this is very inefficient. However, what if I could safely rent it out while it is parked and know that it would be back by 5pm? Well, I would.

“That’s what Uber does. It destroys traditional business models [in this case the car hire company]. It may even start to destroy capitalism itself as the autonomous vehicles that companies like Google and Uber are developing don’t need drivers, so taxi services like Uber will be so cheap that we will



stop buying so many cars, because there would be no reason to want to own a car when you could get such an on-demand service at such low cost.

“If ownership becomes less important and ownership is important for capitalism as we know it to function, well then..

“The same is true for Airbnb. I have a four-bedroom house with an annex and I could rent it out to the bowling players in Victoria Park in the summer. Now Airbnb provides me with the mechanism to choose who I let stay and earn £50–70 for a night. It is good for the economy as I am reusing empty space and it’s good for me as every pound I earn is profit.

“It won’t destroy hotels, but it will reduce their number.”

What is more, the network effect is a phenomenon by which a service like Uber or Airbnb becomes more valuable the more people use it, and this effect, Henfridsson believes, accounts for their strategies of growing as quickly as they can, as well as the winner-takes-all culture that they have to competitors, regulators and journalists.

Losing jobs

However, critics argue that rather than a revolutionary new economic system, it is classic red-in-tooth-and-claw capitalism that makes its money by getting in between consumer and supplier. Henfridsson concedes they may have a point.

“It is a difference in degree rather than in kind, as these services operate in a very lean and efficient way,” says Henfridsson. “Just think about the number of people employed in the market and distribution systems of a traditional industry and the number of people employed by Uber

or Airbnb. You hardly notice these apps are there.”

Moreover, the loose coupling gives services like these an additional competitive edge as employing workers or leasing buildings is very expensive. If an Uber driver makes a mistake or if an Airbnb property isn’t satisfactory then they can be quickly replaced.

Henfridsson warns that there is a downside to this. He says: “In the industrial revolutions of the past, we have been able to compensate workers with new jobs, but not necessarily this time.

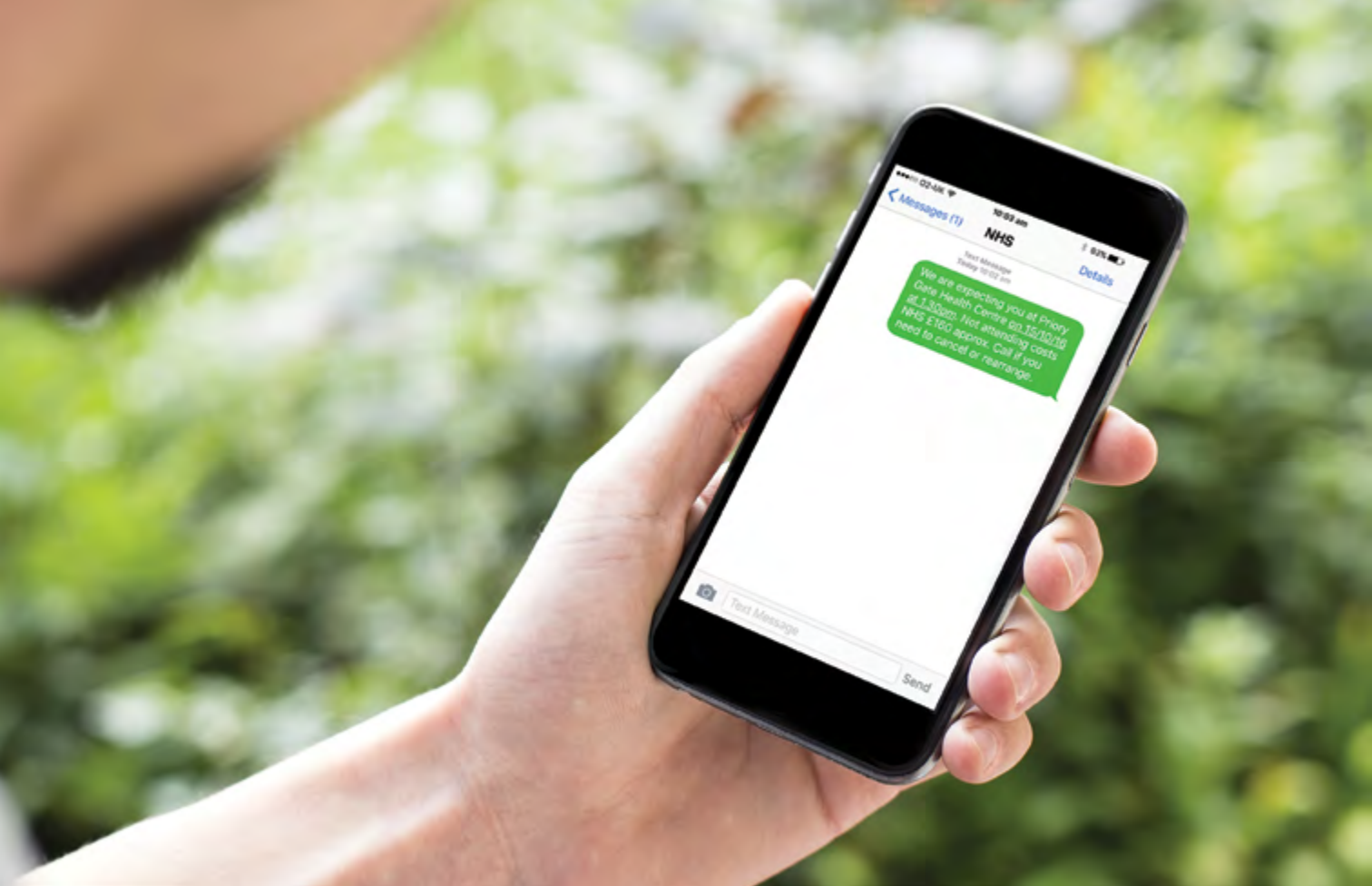
“We may have to change our mindset as to the nature of work, as this kind of digital technology will release a lot of people from tedious labour-intensive jobs and replace them with – what? The future is unclear.

“One solution might be a universal basic income, but someone still has to pay for that.”

He believes home energy may be another industry that will be Uberised as new technology will allow homeowners to generate solar power and store the energy for use during the dark. This will create a market for homeowners to share energy with other homeowners and this market will be very difficult for power companies to compete with. Education may be another vulnerable area.

“This may mark the emergence of a new economic system that will spell the end of capitalism and the birth of collaborative commerce,” says Henfridsson.

“Whatever it is, Uberisation is an economic force that it is going to be very hard to stop despite the protests of taxi drivers and regulators. If it’s not Uber itself, it will be something else.” ■



RESEARCH



Robin Yapp investigates how findings in behavioural science are being applied in healthcare with surprisingly simple changes producing huge effects

Can SMS save the NHS?

With a rapidly ageing population and a mood of economic uncertainty that refuses to go away, the need for a more efficient National Health Service (NHS) in the UK has been brought into sharp focus.

A report by The Health Foundation, an independent charity, predicted an NHS funding shortfall of £2 billion in 2020/21, rising to £9 billion a decade later.

Given this sobering outlook, the potential to cut waste through small behavioural changes in patients or healthcare staff has rightly risen up the agenda.

Ivo Vlaev, Professor of Behavioural Science at Warwick Business School, is playing a central role in shaping the debate with research that combines elements of psychology, neuroscience and economics.

His recent studies highlight how simple tweaks to text

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message communications with patients and hospital environments could save millions of pounds of public money and improve wellbeing.

In 2010 Vlaev co-authored the MINDSPACE report that preceded the UK Government's Behavioural Insights Team - better known as the 'Nudge Unit' and now a private company part-owned by the Cabinet Office.

"The fundamental insight from behavioural economics is that correcting human behaviour to make people less biased and more rational is too difficult," he says.

"So let's go with the grain of human nature and play on these irrational behaviours to benefit the individual or society. That's the philosophy of nudge theory."

Vlaev and colleagues from Imperial College London, the Department of Health and the Nudge Unit, have shown how the content of a text message can reduce non-attendance of hospital appointments.

Around five million NHS text reminders per month are sent to outpatients, yet in 2014-15 around 5.6 million (nearly one in 10) NHS outpatient appointments were missed in England.

The National Audit Office estimated the cost at up to £225 million. Jeremy Hunt, the Health Secretary, has claimed it is much higher and said in 2015 that he would not "have a problem in principle" with charging people for missed appointments.

Surveys indicate that most patients who don't attend simply forget, but previous research had not investigated the wording of text reminders.

In two trials involving almost 20,000 patients, Vlaev and colleagues found texts spelling out the cost to the NHS of not attending (around £160) had a significant positive effect.

Missed appointments were a quarter lower among patients who received such a text compared to those who got a standard SMS about location, date and time.

Texts giving a general warning that not attending "wastes NHS money" or asking patients to "be fair to others" if they wished to cancel or rearrange resulted in far less improvement.

The study was carried out in London, which has a particular problem with non-attendance, at Barts Health NHS Trust, with texts sent five days before appointments to the 20 per cent of patients for whom mobile numbers were available.

If the impact was the same across England, the intervention could prevent 400,000 cases of non-attendance a year.

This calculation was based on having mobile contact details for one in five patients, so if more were available the savings could be huge.

Furthermore, altering SMS messages could hardly be simpler and incurs no additional cost, simply "piggybacking on the existing service" in Vlaev's words.

He now plans to investigate the principle with letters rather than texts and has also applied for funding to test it with GP appointments in the Midlands.

"If it also works in primary care and with letters, I don't think we'd need any further evidence," says Vlaev.

He has also investigated the power of nudging to help

“So let's go with the grain of human nature and play on these irrational behaviours to benefit the individual or society. That's the philosophy of nudge theory”

tackle potentially deadly hospital infections, in a study also involving Imperial College London and the University of Miami.

Simple handwashing is vital in preventing hospital-acquired infections, but numerous studies have shown alarmingly low rates in both staff and visitors.

Previous efforts to address the issue have concentrated on educational campaigns and have achieved only temporary and modest improvements.

Vlaev's study, published in the journal *Health Psychology*, instead explored the potential of "psychological priming" to alter behaviour without the conscious awareness of the people targeted.

More than 400 people were observed entering the surgical intensive care unit at a Miami teaching hospital.

Only 15 per cent of a control group of 120 - who were not given any kind of nudge - washed their hands. But the rate was three times as high (47 per cent) among 160 individuals

exposed to a clean, citrus smell pumped out through an aroma dispenser.

Another 124 people were exposed to a photograph of a pair of eyes above the hand gel dispenser. In this group, hand washing doubled to 33 per cent when the eyes were male but there was no positive impact if they were female.

Previous studies suggest men exert more social influence than women but the researchers cautioned that the male photo also featured more facial muscles, which could have implied anger.

"They're not consciously aware of the eyes but subconsciously they're being watched," says Vlaev

of people influenced by the experiment.

While more women than men washed their hands in the control group, no significant differences were seen in how the sexes were influenced by the smell or the eyes.

Vlaev has secured a £212,000 grant from the Health Foundation to carry out a larger version of the study at Birmingham Heartlands Hospital.

In a smaller study he also found evidence that the power of social norms could help to tackle dangerous drinking.

Students who drink to excess were more likely to request alcohol-related health information on learning how their drinking ranked among their peers than when told how it compared to official guidelines.

Healthcare is just one of many areas in which behavioural insights are coming to the fore; many UK government departments, the European Commission and the White House have embraced the field, along with a growing number of major companies.

"It brings insights from psychology into the laws of economics to give us a richer understanding of what's going on and maybe enable us to predict better what will happen," says Vlaev.

"I think big organisations would benefit from having a chief behavioural officer - a CBO, in addition to a CFO and CEO."

By showing how painless changes can trigger behavioural shifts that serve the greater good, Vlaev is ensuring the healthy level of interest in this field continues to grow. ■

Making sense of ourselves



Lucy Hodges gets her shoes off to sample how the world of acting can help students become better business leaders

The belief that creativity lies at the heart of business is central to the work of Warwick Business School. For the last five years the creative arts, and drama in particular, have been on the MBA curriculum and available to undergraduates, as well.

This idea that business and the arts make happy bedfellows may sound counter-intuitive but an emphasis on the arts creates better managers, says Deniz Ucbasaran, Associate Dean for Pedagogy. People with careers in large organisations need creative ideas to succeed and one way to do that is to give them literature to read or a play to take part in.

Thus, students at WBS are given the chance to perform in Sophocles' *Antigone* or Shakespeare's *King Lear*, learning in an intensely direct way the importance of listening to others, making compromises – and becoming a better leader. Or they read *Henry V*, which is really a play about strategic management, how to implement a project and how to deal with setbacks, according to Ucbasaran. All useful, if you are seeking a career in a big corporation.

WBS believes that creativity – defined as acting in or on the world in new and significant ways – is a powerful and universal force throughout the business world. Ucbasaran argues that the worlds of arts and business are intrinsically linked and have been throughout history.

Initially, business students can find acting out a dramatic role mystifying, not to say terrifying. But, they soon get the hang of it and end up learning more than if they simply engaged in playing the role of a marketing manager or CEO of a company.

Moreover, they benefit from the dramatic skills explained by professional actors, understanding how to influence

a boardroom or give a convincing presentation.

To make this a reality WBS has built a drama studio, known as the 'create space', the first business school in the UK, and possibly the world, to do this. It provides a room in which business students can be creative, rehearsing and acting out their plays – and is available to all faculty in the business school to explore new approaches to teaching and learning.

Housed in the new £25 million extension, it has four projectors and screens, a sprung floor and a ceiling-mounted camera to film all the drama.

Inside, Teaching Fellow Piers Ibbotson, a former Royal Shakespeare Company actor and director, imparts his craft.

The create space is a "deconditioning chamber," he says, in which students are encouraged to unlearn the habits they have acquired in life and learn new ways of behaving in order to become convincing leaders.

Simply entering the space challenges people's conditioned responses because it is so different from the usual lecture theatre or seminar room, says Ibbotson, who is the author of *The Illusion of Leadership: Directing Creativity in Business and the Arts*. "There are no chairs, the room is curved, and almost

but not quite round," says Ibbotson, one of several in the WBS Create team with a drama and theatre background including two National Teaching Fellows. "It has a flat floor with a surface that encourages you to run or jump or walk about.

"There are curtains to change the light and the texture of the walls and there is state-of-the-art technology to create light and sound, or fill the space with images. Everything about it is designed to offer a different context to the one we are conditioned to accept as a teaching space."

“WBS believes that creativity – defined as acting in or on the world in new and significant ways – is a powerful and universal force throughout the business world”



The WBS Create space, breaking with traditional teaching methods

This space helps students to explore their unconscious biases and ingrained expectations, he says. Learning the craft of acting takes this further.

"Actors are trained to develop an acute awareness of their bodies, their voice, facial expression, emotions and words in order to be able to create the effects on the audience that their performance requires," says Ibbotson.

"This knowledge is profoundly useful to all of us. Every day, as participants in organisational life we are required to affect others, to influence, to persuade and to encourage. Being able to achieve these effects with integrity and grace is at the heart of good leadership."

Students across the curriculum go through the same process as actors learning their craft.

"You need to get skills into your body, your fingers – your imagination," writes Ibbotson in his book *The Illusion of Leadership*. "And this can only be done experientially."

To motivate people and get them on board or to get a team fired up by an idea, managers need to take great care of how they express themselves.

In the create space students are learning this self-discipline and awareness, just as actors do, though Ibbotson points out that the secret to great acting is not to act at all.

It is a notion that has some support from behavioural science. Research by Nick Chater, Professor of Behavioural Science at WBS, suggests we are all acting, all the time.

"We are almost improvisation actors playing a role," says Chater. "We're continually improvising our beliefs, preferences and attitudes. This means that situations we are in, and the 'role' we think we are supposed to be playing,

can dramatically shift how we think, from one situation to the next.

"This means that we are not stuck with a particular repertoire of thoughts and behaviours; we can retrain ourselves to play a different role or character."

Chater, whose MOOC (Massive Open Online Course) *The Mind is Flat* on the FutureLearn platform is set to be turned into a book of the same title, argues that our everyday conception of how our mind works is profoundly misleading.

Chater, who is an adviser to the 'Nudge Unit', which began as a UK Cabinet think-tank and now works with governments around the world, argues that we are victims of an "illusion of mental depth."

We imagine that our thoughts and behaviour arise from hidden motives and beliefs, but in reality we have to continually make sense of ourselves, actively creating our own "character" and working out which "story" we are in.

This is where Chater's research links to what is being taught in the create space.

"Theatrical techniques are among the most powerful methods we have for helping us make better sense of ourselves, working together with other people, and training ourselves to let go of unhelpful or even destructive habits of thought," says Chater.

"Playing with new ways of thinking, behaving and interacting with others, can help us become more thoughtful, ethical and effective managers."

Students are learning through experience the truth of Shakespeare's famous line: "All the world's a stage, and all the men and women merely players." ■



RESEARCH



David Brindle looks at why innovations that will improve healthcare are not being adopted more widely throughout the UK's National Health Service

Health stuck in the slow lane

Anything up to a third of people prescribed drugs for epilepsy are misdiagnosed, it is reckoned. Quite apart from the human cost, the UK's cash-strapped NHS could be wasting as much as £268 million a year. So if there was a simple way of helping prevent misdiagnosis, you might think it would be adopted with alacrity.

In January 2012, the National Institute for Health and Care Excellence (NICE) recommended that all adolescents with an epilepsy diagnosis be assigned a named clinician to smooth their transition to adult services and verify their diagnosis at a transition clinic.

But, three years later, the proportion of hospital trusts running such clinics had risen only from 30 per cent to 38 per cent. As NICE observes, in its typically understated way,

"this area of epilepsy care warrants further improvement."

Why is the British health service so slow at adopting new concepts and technologies? The UK pioneered development of the MRI scanner, yet it has just 500 of the world total of 20,000 machines, performing less than two per cent of all scans and operating at two-thirds the average rate. It's a classic example of what is called the 'knowing-doing gap' - and the NHS seems to have an especially bad case of gap-itis.

There is no shortage of analysis of why this should be. Suggestions range from poor access to evidence, data and metrics to lack of financial incentives to innovate and insufficient celebration of innovators. Another way of looking at it is as a supply and demand challenge: for whatever

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reasons, the flow of ideas, services and products seems to be out of kilter with whatever appetite there is for innovation.

Researchers at Warwick Business School are urging a fresh perspective on this issue to try to get supply and demand into better alignment. The starting point, they argue, is to focus on the demand side and develop an understanding of how people - health managers, doctors and patients - behave when they are seeking new solutions to problems; how they discover and absorb innovations; how they 'mobilise' knowledge.

"The way this was traditionally looked at was in terms of knowledge transfer," says Jacky Swan, Professor of Organisational Behaviour at WBS and an editor of the book, *Mobilizing Knowledge in Healthcare: Challenges for Management and Organization*.

"Something was created in a laboratory by researchers and then pushed out through a linear sequence of steps to passive and grateful users. It was thought of as a pipeline.

The reality is much more complex, involving a process of transformation and interactions of multiple individual and collective actors."

The simple linear model of knowledge transfer was refined during the 1990s in response to the evidence-based medicine (EBM) movement, which believed that doctors and other clinicians would increasingly seek out knowledge to improve the quality of care they offered.

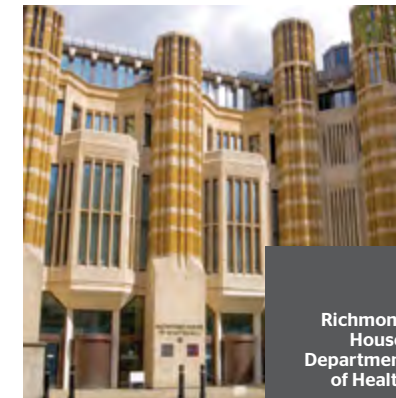
This led to the idea, developed in Canada and elsewhere, of knowledge 'translation', a more dynamic and iterative form of transfer. But neither EBM nor, more recently, the vogue for patient empowerment through 'voice, choice and control' appears to have strengthened our understanding of the demand side of the equation sufficiently to bring it into productive balance.

An influential NHS paper in 2011, *Innovation Health and Wealth*, posited that successful diffusion of innovations came when there was in fact a three-way balance of top-down pressures, bottom-up pressures and what it termed horizontal pressures - things like collaboration, competition and peer influence.

It is these horizontal factors that play a key part in the new book's exposition of knowledge mobilisation, which it argues is achieved "with words and deeds" and very often through everyday encounters and conversations as much as in response to strategic initiatives.

In the end, success or failure of knowledge mobilisation can depend on something as mundane as availability of a meeting room, says Swan.

"Understanding what it is that people do, where they go to, the importance of social space - all of this is part of what we need to know about processes and practices."



Richmond House, Department of Health

“There is now recognition that repeated structural reorganisation, which the Government says it has ended, may have damaged the level and availability of organisational knowledge in the health service”

There is now recognition that repeated structural reorganisation, which the Government says it has ended, may have damaged the level and availability of organisational knowledge in the health service.

One casualty has been the Chief Knowledge Officer (CKO), a role widely adopted by NHS bodies following the Darzi report on quality improvement in 2008, but rapidly eroded after the Lansley reforms just four years later.

Although views differ on the lasting value of the CKO, with some critics seeing it as too top-down, there is consensus on the importance of key individuals in knowledge mobilisation - not necessarily early adopters of innovation, but opinion leaders who have credibility within an organisation and with peers beyond. They may also shape the organisation's culture and its receptiveness to innovation.

This emerges in Swan and colleagues' book in an analysis of how health sector managers use knowledge. Gerry McGivern, another of the book's many WBS contributors, led a study at six sites of their "epistemic fit", or how the stances they took on epistemology - or knowledge theory - determined what innovations they adopted.

The best fit, found at an independent charitable trust providing specialist clinical services, was attributed to the influence of a chief executive and other directors, both executive and non-executive, who encouraged an 'open' approach to the acquisition of management knowledge.

"Individuals do make a difference," says McGivern, Professor of Organisational Analysis at WBS, "but they have to be in the right place at the right time to do that."

To illustrate his point, he draws on another of the study sites, a former primary care trust where its medical director had been highly influential in crafting an open epistemic stance.

After the 2008 financial crisis, however, the trust's Chief Executive imposed a much tougher discipline requiring proof of financial return on all innovation. A whole-systems learning initiative, seen previously as a promising solution to an ingrained local problem of GPs' failure to work together, could not pass the test.

"It fell out of fit with the prevailing way of thinking in the organisation and, as we say in the book, was 'summarily executed,'" says McGivern.

"In very tight financial circumstances, lack of hard, quantitative evidence may be used to justify non-mobilisation of knowledge. Knowledge brokers need to be able to adapt."

In this uncertain and fast-changing post-crash world the challenge of adapting knowledge to fit demand and circumstances is going to be harder than ever. ■

Wild West of the internet



With the Internet of Things set to bring our whole house and car online **Mark Piesing** discovers how stopping our data being hacked will be even more difficult

All it can take is an absent-minded click on an attachment that appears to have been sent from a friend and you can find yourself locked out of your own computer or your files encrypted.

This frightening scenario is down to malicious software, or malware, known as ransomware – the only way to release your computer is to pay a ransom to the criminals who sent it.

One particularly nasty piece of ransomware called Cryptowall has been estimated to have made \$325 million so far. Now you would hope that the companies that look after your personal data would not make similar mistakes – but you would be wrong. Famously, in July 2015 hackers stole the personal details of 32 million members of Ashley Madison, a site for people looking for an affair, and then released it all online. It is still unknown how the hackers gained access.

In October 2015, UK mobile network TalkTalk fell victim to a so-called ‘brute force attack’ when hackers breached the security of a poorly designed part of its website to steal the unencrypted personal details of 156,000 customers and the bank details of 15,000. The cost to the company was £60 million and 101,000 disgruntled customers. However, both of these are minnows compared to the hack of the personal details of 80 million customers from US healthcare insurance giant Anthem earlier in 2015.

“Hacking has become big business because, in the digital economy, personal data is worth a lot of money,” says Mark Skilton, Professor of Practice at Warwick Business School. “This is only going to get worse as we become more connected. There is a continuum of threats, from brute force attacks that occur in broad daylight through to malware, which can be on your computer for years without you knowing it. New technology like the Internet of Things (IoT) also brings new opportunities for hacking that haven’t been seen before.”

IoT is a vision of the future in which tens of thousands of devices, from fridges to traffic lights and cars, are connected

to the Internet and use it to share data with each other. Many of the early IoT devices marketed so far have been shown to be pretty easy to hack – and alarmingly this includes cars.

“We face a tricky problem as we want personal security, freedom from state surveillance, and an open internet, but it seems impossible to have it all,” says Skilton. “Some are even saying that privacy is gone for good, so get used to it. The law certainly hasn’t caught up with what legislation a digital economy actually needs.

“It is the ‘wild west’ out there, but we can do some things to protect ourselves, like checking the identity of those who appear to be sending us an email with something as simple as a phone call to make sure they are who they say they are. Or even just choosing reliable and well-known cloud services or website brands that encrypt their data. If you are using unknown website services you can be vulnerable to computer viruses or other unwanted attention to your personal data.”

New projects are growing up in response, such as HAT (the Hub-of-All-Things). Led by the University of Warwick and involving five other UK universities, it looks to allow people to keep all their personal data in one place securely, instead of being dotted around the internet. It will allow people to use their data to get better deals with banks and shops instead of it being owned by internet giants such as Facebook, who sell it to advertisers. It is also working with app developers to design new online services for users, so people can monetise their own data. Skilton adds: “Every new human innovation that breaks the old paradigm also breaks the rules that were designed for it, but we have as a species all the creativity we need to respond to it.” ■



Watch Mark Skilton's film 'What is the Internet of Things' at wbs.ac.uk/go/core

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