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FOREWORD

Since the first edition of this Journal back in 2013, the 'On the Road' reports from our research trips around the world have not only been an important feature, but also among the best received. With more reports from the road than ever before, we hope you will get a real sense of our approach to research as well as its scope: from a relatively quick trip around South America, to an intense look at apparel manufacturing in Vietnam and Bangladesh, to talking ESG with EOG Resources in Texas. to a Web Summit in Lisbon, billed as the world's largest tech conference. The schedules for these trips will vary and the aims and objectives will differ, but the commitment to innovative and in-depth research is unstinting.

Given the tumultuous start to 2020, we turned to Bill Emmott to sum up the social, political, economic and public policy threats that seem so much to the fore. Bill was editorin-chief of *The Economist* for over a decade, he has contributed to our *Journal* in the past and he joined us for a Lecture Series in Japan back in 2017. Bill's interpretation of the world today is certainly worth a read.

And, should we need any reminder of how fast things can change, in planning this edition at the end of last year we contacted Jochen Zeitz, who has been on our wish list for some time given his pioneering, and successful, work on environmental reporting at PUMA and Kering. We are delighted that these achievements continue to be recognised. Since being interviewed for this *Journal*, Jochen has been appointed acting president, CEO and chairman of Harley-Davidson.

In our fast-moving world, we believe that strong beliefs and principles are paramount. As long-term investors, clarity of approach and purpose is critical as we stand still in the wind of speculation and short-termism. Knee-jerk decisions in times of uncertainty very rarely reap rewards. So in this edition we brought together some of the most experienced members of our team to explain what long-term, principled and structured investment means to them.

We hope you enjoy these articles, along with others that cover subjects from the benefits that 5G will bring to our automated world, to the distorted perceptions of the human brain. And, as ever, we would be delighted to continue the conversation on any of the subjects covered, so please do not hesitate to get in touch.

With best wishes,

par Herdelon

Jane Henderson, Managing Director

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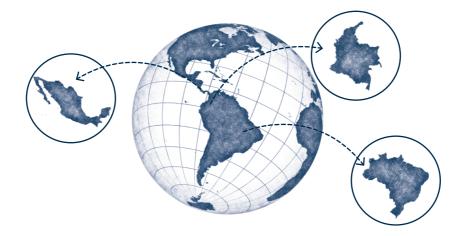
ON THE ROAD

THE LATIN AMERICAN DREAM

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THE LATIN AMERICAN DREAM

BY FRASER FOX

Latin America has experienced decades of volatility, its potential all too often sapped by economic and political adversity. Yet it boasts many fast-growing domestic businesses and remains an important market for some of the world's best-known multinationals. Walter Scott Investment Manager Fraser Fox visited three of the largest economies to take the pulse of this quixotic region.

Latin America is vast and richly diverse. Twice as large as the US, it comprises more than 30 distinct territories, with a combined GDP of more than \$5.5 trillion and a population approaching 700 million.

Brazil, Mexico and Colombia are the three most populous countries and are among the most important economies in the region, making them an obvious focus for my trip.

Over two weeks, I covered more than 8,000km, scheduling 28 meetings in seven cities across three time zones. These meetings gave me the opportunity to review existing investments and to consider potential new ideas and investment opportunities. My schedule "I left Mexico slightly more positive than when I arrived. The president's political record suggests he might best be described as a 'fiscally responsible populist', in favour of balanced budgets and generally prudent with the public finances." also included meetings with local economists to gauge their views. Yes, we at Walter Scott are bottom-up investors, but we still need to understand the environment that companies operate in, including the many multinational businesses with significant exposure to Latin America.

My itinerary alone highlights one key development of recent years. A decade ago, this programme would have been impossible in such a short time frame. Today, low-cost airlines enable travellers to move around the continent with relative ease, bolstering both trade and tourism. The three Mexican airport operators that I met are all benefiting from this strong but still nascent tailwind.

My first stop was Mexico, where I visited Mexico City, Monterrey and Guadalajara. Mexico City is a big, sprawling capital, which is noisy and filled with traffic, but seemed in a notably better state than when I last visited in 2016. Monterrey is smaller and a lot more organised, while Guadalajara – where the security risks are probably highest – has a definite young and entrepreneurial vibe.

Across the country, growth has faltered following the election of avowedly socialist president Andrés Manuel López Obrador, known as AMLO. His flagship policies include social programmes for the poor, large public infrastructure projects and increasing financial support for the struggling national oil company. Financial markets have not reacted well to these policies, amid growing concerns that Mexico could become a less attractive place for private companies to do business.

These fears are warranted but I left Mexico feeling slightly more positive than when I arrived. AMLO's past political record suggests he might best be described as a 'fiscally responsible populist', in favour of balanced budgets and generally prudent with the public finances.

The dynamic between AMLO and President Donald Trump is interesting, too. They could scarcely be further apart in their politics, but AMLO clearly recognises the importance of economic ties between the two countries and so seems keen to keep relations as cordial as possible.

Mexico may also profit from trade tensions between the US and China. The country is strong in manufacturing, it is on North America's doorstep and labour costs are significantly cheaper than China's. A few of the companies I met hinted that they had already benefited from extra business coming their way.

AMLO and his team seem to be taking a pragmatic approach towards the private sector, too. Mexico's airport operators, for example, function within a regulated revenue regime and, despite initial fears, recent news flow suggests they will continue to earn reasonable returns on their investments.

That said, the socialist president has undoubtedly had a negative impact on economic activity. Local banks admitted that companies are shying away from significant investment projects and are unlikely to change tack until the economic framework becomes clearer.

Turning to Brazil. As Mexico veers to the left, Brazil has lurched to the right, with the election of pugnacious populist Jair Bolsonaro as president. "Brazilian President Jair Bolsonaro may court controversy at home and abroad, but his administration is making economic progress, following years of recession."

Bolsonaro may court controversy at home and abroad, but his administration is making economic progress, following years of recession. Economy Minister Paulo Guedes is leading a group described by one Brazilian economist as "one of the best economic teams we've ever had", and the country is finally undertaking much needed structural reform. A key focus is on reducing public borrowing. Tackling the state's extraordinarily generous pensions is a case in point.

But the new administration is considering other important areas as well, including Brazil's Byzantine tax system. One company told me that its 250-strong tax department makes 950 tax filings every month!

My first stop in the country was São Paulo, the financial capital. I last visited the city 10 years ago and my overriding memory was the traffic.

Intense congestion can be a huge blight in fast-growing emerging market cities, so it was a relief to see an improvement, even if I was just lucky. Several years of economic hardship seem to have affected São Paulo less than much of the rest of the country. It is vibrant, sophisticated and full of top-flight companies. Grupo Fleury is one such company. Founded over 90 years ago, it pioneered the concept of one-stop-shop 'patient service centres' in Brazil, offering medical diagnostic services from blood tests to MRI scans. The company is considered the gold-standard operator in its field, investing in leading-edge equipment and performing tens of millions of tests every year.

While São Paulo remains a robust commercial hub, Rio de Janeiro has been hit hard by years of recession. Crime is up and so it appears is homelessness. Public services are struggling to cope. That said, sentiment is improving and the city should have the most to gain from an economic recovery, given its proximity to some of the nation's tremendous natural resources and the long-evident resilience of local citizens.

Like almost every country in the world, Brazil has been affected by the US-China trade spat. The resultant global slowdown has clearly hurt in certain areas, for example, iron ore exports. But there are also pockets of strength. As China has closed its door to US soybean imports, for instance, Brazil is one of the countries filling the gap.

That said, Brazil is relatively closed to international trade compared with other major economies. While this lack of openness has long been an impediment to growth, it could help to insulate the economy at a time when global trade is under pressure. At the same time, opening up the economy is part of the country's reform agenda which should support long-term growth.

Overall, the signs for Brazil are encouraging, with Guedes at the economic wheel and the Organisation for Economic Co-operation and Development (OECD) forecasting increased growth this year. That

said, the country has disappointed so often in the past, with politicians showing an unfortunate habit of shooting themselves in the foot. We intend to remain highly selective in the investments that we make – not least given the exceptionally strong performance of local equity indices in recent years.

While members of the Walter Scott team have visited Brazil and Mexico many times, this was our first research trip to Colombia.

I first visited the country during a three-week summer vacation in 2018 when I volunteered as an English teacher at a school on a small fishing island outside Cartagena. I left with admiration for the culture and also recognised some of the country's strengths that are so often overlooked in the shadow of the narcotics industry. Colombia's economic growth statistics are impressive and I wanted to find out more. So I planned a visit around Bogotá and Medellín to give me a better sense of the commercial realities of, and prospects for, some of the country's key companies.

"Bogotá is striving to become the Silicon Valley of South America. In 2015, Facebook chief executive officer Mark Zuckerberg hosted his first overseas town hall meeting in Bogotá, while Facebook, Google and Microsoft all have growing footprints in the city." Bogotá, Colombia's capital, feels distinctly European. As I travelled around the city, it seemed more like Madrid or Barcelona than a town in the southern hemisphere. The city is striving to become the Silicon Valley of South America. In 2015, Facebook chief executive officer Mark Zuckerberg hosted his first overseas town hall meeting in Bogotá, while Facebook, Google and Microsoft all have growing footprints in the city. Interestingly, too, Bogotá's El Dorado airport has been named the best in South America by World Airport Awards.

Medellín, Colombia's second-largest city, is a lively and cosmopolitan place, peppered with trendy bars, cafés and restaurants. Medellín also benefits from a stunning metro/cable car system, widely regarded as a key plank in the city's remarkable economic turnaround, because it has provided opportunities to citizens living in previously isolated, impoverished and crime-infested neighbourhoods. A weekend trip into a once-notorious barrio gave me a fascinating insight into Colombia's troubled past and a real sense of optimism for the future.

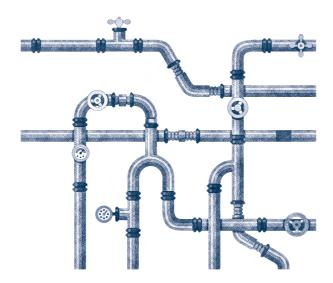
To be clear, Colombia continues to wrestle with drug and crime problems, particularly outside the main cities, but the security situation is improving.

I was impressed with most of the companies I met, many of which are keenly aware of their environmental, social and governance (ESG) responsibilities. Grupo Nutresa, for example, is the leading processed food company in Colombia and has chosen proactively to provide information about ingredients to consumers and to sponsor wellness programmes. And energy companies such as ISA and Grupo Energía Bogotá are genuinely striving to reduce their carbon footprint and take a lead on environmental sustainability.

There are a number of high-quality companies in Colombia, and I am confident that at least some of them will be a focus of our research work over the next few years.

During the two weeks, this trip gave me the opportunity to visit companies from a wide range of sectors, including financial, healthcare, food and drink and energy. Some of these companies are purely domestic businesses. Others are the local arms of multinationals. offshoots of companies such as Coca-Cola, Walmart or Kimberly-Clark. These businesses are tapping into the region's economic growth while benefiting from the robust governance structures and international experience of an established, wellfunded parent, which has always made them particularly appealing from our standpoint.

I returned from this fascinating trip with information and insights that will hopefully enrich our ongoing research into Latin America. Brazil, Mexico and Colombia are three very different countries, with their own distinct economic and political dynamics. Talking directly to the companies dealing with these issues helps us to understand the significant challenges of doing business in the region and, just as importantly, the considerable opportunities on offer.



EOG AND ESG

BY DES ARMSTRONG

The extraction of oil and gas from shale rock formations, known as fracking, has transformed the US energy market. While the political and economic implications are profound, so too are the environmental concerns about this process. EOG Resources aimed to address many of these concerns with its first tour focused on environmental, social and governance (ESG) issues. Walter Scott Investment Manager Des Armstrong was invited along.

Few issues energise environmental campaigners more than fracking. The process has been linked to numerous environmental transgressions, including geological impact, pollution and water wastage. The result has been intense regulatory scrutiny and outright prohibition in a number of countries. Despite some restrictions, the US has been far more open to fracking than many countries, helping to drive its shale revolution and transform its production of oil and natural gas.

EOG Resources is widely recognised as one of the founders of this revolution.

Focused primarily on reserves in Texas and New Mexico, the company is a leader in North American exploration. Since the early 1990s, its innovative approach has delivered a long inventory of excellent-quality, low-cost reserves and best-in-class well-completion capabilities.

In recent years, however, EOG has faced growing criticism over its environmental commitment. At Walter Scott, we have long felt that the company was doing more in this regard than it was communicating, so an invitation to attend its first ESG-focused field trip was an unmissable opportunity.

"I must admit that I was not without trepidation as we climbed a working rig. But chatting to the oilmen as they talked through control dashboards and all the processes, checks and data-gathering involved was invaluable."

The two-day trip centred on EOG's operations in the vast Permian Basin of West Texas and south-east New Mexico.

Day one was spent in the so-called 'oil patch'. Starting early in the morning in Midland, Texas, we travelled to Red Hills in the Delaware Basin. We focused on the deepest section of one of the Permian's three sub-basins, the Wolfcamp level, which lies about 12,000 feet below ground. Here, EOG explained that technology can limit the environmental impact of pulling oil and gas out of a two-million-year-old shale formation. Donning hard hats, we were given a comprehensive walkthrough of the company's operations. I must admit that I was not without trepidation as we climbed a working rig. But by chatting to the oilmen as they talked through control dashboards and all the processes, checks and data-gathering involved, we received incredibly useful context for the second day's more formal presentations.

EOG's operations are split into three distinct stages – drilling, completion and production, and gathering and processing – all of which are subject to environmental stress points. EOG's approach to each one illustrates exactly why it is known as an industry innovator.

"E-frac' technology uses natural gas, rather than diesel, to generate electricity for its pressure pumping equipment. This results in an estimated 40% reduction in emissions. It makes sound business sense, too, saving around \$200,000 per well, annually."

Take the combustion of diesel, for example, which is responsible for a sizeable proportion of EOG's greenhouse gas (GHG) emissions. Here, the company has moved towards 'e-frac' technology, which uses natural gas, rather than diesel, to generate electricity for its pressure pumping equipment. This results in an estimated 40% reduction in emissions.

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"EOG is making significant strides in recycling its produced water. In the Delaware Basin, reuse now stands at 90%, compared with 60% in 2018."

It makes sound business sense, too, saving around \$200,000 per well, annually, according to EOG.

I was also struck by the progress EOG has made on water use. Fracking involves huge amounts of water, and the industry has been roundly criticised for this. Not only is fresh water needed during the fracturing process, but contaminated waste water, known as produced water, then rises to the surface. US shale producers typically inject this waste water into deep disposal wells, but EOG is making significant strides in recycling its produced water. In the Delaware Basin, reuse now stands at 90%, compared with 60% in 2018. Fresh water use is down to 9% of the total.

The shift has been driven by a number of factors, particularly extensive infrastructure investment, including nine one-million-barrel water reuse pits, five treatment facilities and 27 miles of water reuse distribution pipeline. The site I visited processes between 70,000 and 120,000 barrels of water per day into the reuse pit. I also saw the company's proprietary water management system in action. Called Trident, it allows real-time modelling of water distribution, enabling EOG to optimise its water transportation needs. This approach to water use illustrates how sound ESG practices can also deliver financial benefits. Water is one of EOG's biggest operating costs, so using less creates material savings in operating expenses and capital expenditure.

Other highlights include a pilot solar and natural gas scheme to replace the diesel-powered generators that EOG uses to distribute vast quantities of products across its piped infrastructure. The company has also reduced 'fugitive' gas emissions by 90% through its leak detection and repair (LDAR) programme, which involves inspecting more than nine million components. The company also plans a pilot LDAR programme using drones.

For EOG, innovation is a constant and this commitment to investing in technology to drive efficiencies and improve environmental outcomes was one of the standout takeaways from the trip.

The quantity of real-time data that can be accessed and the way it is used to monitor and optimise operations genuinely differentiates the company from others. One could even say that EOG is becoming a technology company that just happens to extract commodities from the ground.

The one point that we did not discuss was EOG's Scope 3 GHG emissions (indirect emissions in a company's value chain, excluding those from the generation of purchased electricity, steam, heating and cooling). Even if EOG's direct emissions trend to zero, its net carbon footprint will still increase through continued growth in production, which even today represents about 85% of the company's total GHG emissions. "Not only are the building blocks of a comprehensive ESG strategy firmly in place, but collectively those blocks have the potential to reduce EOG's direct environmental footprint to a meaningfully low level."

EOG has said that it has no intention of developing a decarbonisation strategy outside its direct operations. Indeed, it has published scenario analysis that stress tests its existing portfolio, while assuming oil demand is considerably lower than that implied by the Paris Agreement. It has included a \$140/tonne carbon cost into that work and has concluded that, even with no further improvement in operational performance, it still generates meaningful net present value through to 2040. That said, it does seem reasonable to expect more constructive environmental steps, particularly given the many emerging carbon capture technologies.

Over the two days, I spent a lot of time speaking to EOG's senior management as well as more junior but equally impressive talent. What really shone through was the alignment of EOG's corporate strategy with its sustainability goals. Its ESG initiatives have all been enabled by its business strategy rather than being developed merely to create a good impression.

Not only are the building blocks of a comprehensive ESG strategy firmly in place, but collectively those blocks have the potential to reduce EOG's direct environmental footprint to a meaningfully low level. EOG's implicit aspiration to become one of the world's most environmentally conscious, operationally efficient companies – not just within the oil and gas sector – is to be applauded. The company's roadmap to deliver this is credible, and it is being aggressively pursued by management.

As a complement to the in-depth, desk-based research we carry out in Edinburgh, this latest trip to Texas reaffirmed my confidence in the company, its management and its culture. EOG has a very positive story to tell.

ON THE ROAD | TAKING STOCK



TAKING STOCK

BY ALAN LANDER AND DES ARMSTRONG

Vietnam and Bangladesh play a growing role in the clothing and footwear supply chain. Investment Managers Alan Lander and Des Armstrong visited both countries to assess standards and practices.

Any global apparel or footwear brand or retailer worth its salt will recognise the importance of robust standards and practices across the supply chain. Just as importantly, the long-term economic value that comes from adhering to sound environmental, social and governance (ESG) principles and practices is now widely accepted. For those reasons, a company's oversight of its supply chain is an important area of conversation for us as we engage with management. But, to fill the gap between the highprofile disasters that we read about in the media and what company management teams might present as their path, we need to understand where particular challenges lie. We need to build our own knowledge and gain some understanding of the reality on the ground.

The global supply chains carefully engineered by many high-street retailers and high-profile apparel brands often span numerous countries, sometimes multiple continents. But developing markets are where focus, and risk, so often falls, so they were our destination on this trip. Having undertaken a similar trip in 2014 to Bangladesh and Myanmar, it made sense to revisit Bangladesh to see first-hand how things have changed. Back then, Myanmar was thought to be on the cusp of growth, but it has not followed through so we chose Vietnam as an appropriate comparison.

Both Vietnam and Bangladesh have been net beneficiaries of China's overarching desire to transition its economy to high value-added manufacturing. US-China trade tensions have added momentum to that trend. According to World Trade Organization figures on global apparel exports, China's market share fell from 39.3% to 31.3% between 2015 and 2018, while Bangladesh's rose from 5.9% to 6.4% and Vietnam's climbed from 4.8% to 6.2%.

Vietnam has benefited from a powerful combination of a supportive state approach to foreign investment, cheap labour and an organised system of labour governance. Bangladesh seems to be less appealing to global brands, even though its labour costs are among the lowest in the world. Furthermore, whereas the industry in Vietnam has successfully developed a reputation for increasing technical skills, more complex designs and the ability to work with man-made fibres, the one in Bangladesh has very much stuck to cotton garments.

Our trip was designed to better understand the third-party supply chain that supports some of our investments in apparel and footwear. Over six days, we had 30 meetings with "While conditions are perhaps not what the shopper on Main Street might expect when they purchase items made in a Vietnam factory, the working environment was certainly reasonable."

a variety of stakeholders: government bodies and NGOs, and local sourcing and compliance teams from global brands and industry associations representing the manufacturers. We also went on several factory visits where we met with owners, management and factory workers.

Our journey began in Vietnam. In the capital, Hanoi, we met a number of relevant organisations, including the Vietnam General Confederation of Labour, the state-run trade union. We then travelled to the industrial centre of south Vietnam, Ho Chi Minh City, to visit factories and speak to owners, workers and brand representatives. While conditions are perhaps not what the shopper on Main Street might expect when they purchase items made in a Vietnam factory, the working environment was certainly reasonable. We saw evidence of recent investment in machinery and factory buildings, reducing noise and improving air quality. Conversations with workers also suggested that they can earn a living wage through a combination of minimum wage plus overtime, in a working environment that is largely acceptable. This felt to us like a sustainable situation.

Bangladesh is different. First, the infrastructure is, largely, terrible. Monumental traffic jams, open sewers and inadequate roads are commonplace and travelling between factories brought home to us the impact on day-to-day life.

Once we reached the factories, there was evidence of positive change. A myriad of audits has shown that garment factories in Bangladesh are much safer places to work than in 2013 when the Rana Plaza complex collapsed, killing more than 1,100 workers and injuring more than 2,500.

The collapsed building housed a number of garment factories that were found to supply dozens of global clothing brands. In the publicity that followed, there was unprecedented industry collaboration to address building structure and safety. Global apparel brands and retailers established two organisations: the Accord, which represented predominantly European companies, and the Alliance, which was mainly US related. Both were charged with overseeing a comprehensive programme of inspection and remediation of all factories in the supply chain.

In contrast to our trip five years ago, fire doors were evident, unblocked and clearly marked. Sprinkler systems were also in place. In that sense, industry collaboration, led by companies including fashion retailer Inditex, has made an important difference. There are tensions, however. Initially, the Accord and the Alliance were not well received by the Bangladeshi manufacturing industry. They were seen as "international brands telling Bangladeshi factories how to run their businesses" – without due regard for local laws and standards. This feeling was compounded by the fact that neither the Accord nor the Alliance had significant representation from the industry in their governance structures. Factory owners also believed they had not been compensated for the costly investments they had to make to comply with internationally imposed standards.

Today, both bodies are attempting to become more local, with more input from the industry. This does, however, prompt an obvious question: will a local body, with industry representation, be as progressive when it comes to driving change?

Our concerns were also raised when considering the lives of factory employees. At one factory, we visited the on-site crèche. There were few toys and very small children sat quite still on the floor, disconcerting when compared with our own experience at home. Of course, to have a crèche at all is to be applauded, but it was a reminder that looking at a list of employee services or building facilities doesn't tell the full story.

Much more tellingly, we visited the homes of some female factory workers in the slums that tend to neighbour factories. We spoke to several workers in one home, effectively one room, where a girl aged five or six was present. We asked where she went during the day and discovered that she just stayed in the room, in a slum with the equivalent box-like homes of around 50,000 people. In this context, the crèche is at least a safe and clean environment.

The conversations with workers in their slum city were not easy, as we saw the harsh reality of their lives first-hand. Factories are safer than previously, but pay has not kept pace with inflation. The workers we met talked of back-dated rent rises for their shack-like accommodation and increased food prices the moment any wage rise is granted. The hopes and aspirations that we heard about and sensed back in 2014 were no longer evident. Of course, we only spoke with a small number of workers and there is danger in extrapolating, but neither of us was left with an impression of hope on this trip.

Where does this tale of two countries take us in terms of our research and company engagement? We didn't expect perfect scores and it is always the case that multiple stakeholders could be doing more. But, for the international apparel brands and retailers that we research and regularly engage with, current sourcing strategies reflect our findings. By way of example, Bangladesh is no longer a strategic sourcing country for Nike and Adidas. Bangladesh is among Inditex's sourcing destinations but the company played an important role within the Accord, and has stated its commitment to continued support. We will continue to quiz company management on the practical outcomes of its work.

When we speak to companies, we are often told about ongoing audits to assess conditions and ensure that factories are meeting the necessary standards. Clearly, these audits are a good thing, but they are not guarantees. For a start, they lend themselves to environmental checks far more than social issues. Fair pay and reasonable treatment of workers are nebulous concepts compared to the installation of a sprinkler system, for instance. There first needs to be consensus on objectives in order to

"Audits have become standard practice and are often the starting point when we engage with global companies. But greater understanding of environmental and social standards in these factories requires so much more." make an assessment. That assessment then requires time and effort.

There is also the ever-present question of who should assume the cost of this important work. As one Bangladeshi factory owner told us: "They are just cleverer than we are." He described how the sales team from a retailer will come to negotiate terms and costs for an order. The compliance team will then make additional requirements and conditions to secure that order. But any attempts to go back to the sales team to share the costs of those additional conditions are futile.

It seems, therefore, that responsibility must also lie at state level. The growth in this sector in Vietnam, and the standards that we saw, largely reflects state support. A strong, effective labour code gives rights to factory workers, and the government has worked hard to encourage investment and create an attractive sourcing destination for global companies.

In Bangladesh, the garment industry is critical to the local economy, accounting for the vast majority of its exports. Unfortunately, the industry and factory owners are deeply mired in politics and it is difficult for workers' voices to cut through.

That should change and it is not just about pressuring manufacturers or retailers to pay more for the garments they procure from Bangladesh. There is no guarantee that this would translate into better pay for workers, especially on an inflation-adjusted basis. The state needs to play its part.

Development of trade unionism could be an answer. Freedom of association is still a right that many workers find elusive. Anecdotally, we visited one factory in Bangladesh where recent unrest over wages had resulted in a number of workers 'resigning voluntarily'. Just as importantly, the unrest had resulted in customers pulling orders from the factory, heaping more financial pressure onto the business.

For our part, when engaging with companies, we can continue to ask about initiatives that would improve the standard of living for workers, such as subsidised groceries, healthcare programmes, childcare benefits and occupational insurance plans.

And we will certainly return to this region to visit factories and continue the conversation with many of the groups we met. Audits have become standard practice, and are often the starting point when we engage with global companies. But greater understanding of environmental and social standards in these factories requires so much more. And higher standards matter: to society, to consumers and to the bottom line of companies in which we invest. We cannot visit every factory, nor can a trip like this ever give a truly comprehensive view. But the knowledge and impressions that we gained on this trip will feed into our questions to management teams on their sourcing strategies across developing markets, including factory oversight and workers' conditions. We are also much better placed to interpret and judge the responses from retailers and apparel brands: distinguishing reality from rhetoric and proactive steps from PR.

TECH TALKS

BY TOM MIEDEMA

The Web Summit is the largest technology event in the world, held annually in Lisbon, Portugal. Tom Miedema, Investment Manager in Walter Scott's Research team, spent three days there last November. He shares his impressions from this gathering of technology leaders, politicians, regulators and visionaries.

Billed as the biggest and best technology conference in the world, the 2019 Web Summit attracted 70,000 delegates. I was among that crowd, there to take the temperature of global tech, and assess the views of the gathered experts on key threats and opportunities. I was also there to begin work on a project on carbon emissions and energy consumption. The trade show part of this mammoth event brought the latest environmental technologies together under one roof - so it seemed an ideal place to start.

"Amid the talk of technological advance, sustainability and marketing prowess, political themes dominated."

The World Wide Web was established in a culture away from politics, with aims of open, borderless access. Social media companies cheerfully promulgated connections free of 'old-fashioned' social structures or domestic rules, governance and politics. But politics is now inseparable from 'big tech' and if one needed any reminder of that, the roster of speakers at this event made it extremely clear. US and European politicians of all persuasions shared the stage with senior management from Microsoft, Huawei, Samsung, Google and Amazon, among many others. Amid the talk of technological advance, sustainability and marketing prowess, political themes dominated.

The ongoing disagreements on trade between the US and China could not be avoided. Looking at the list of speakers and the diversity of delegates, this was undoubtedly a global conference, with onstage translation to Japanese and Chinese. But that didn't prevent a lot of Huawei-bashing. The White House's chief technology officer proffered little nuance in his description of Huawei as evil.

Regulation was also a standout theme. One of the biggest

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draws on the roster of speakers was Margrethe Vestager, EU Commissioner for Competition at the European Commission, a global titan when it comes to technology regulation. While making it clear that, today, there isn't a case for the breakup of the big technology companies, she stressed that greater regulation is critical, and urgent. Technology companies, too, are tiring of bearing the responsibility to devise, police and then report back on regulation while maintaining the trust of users and customers. Vestager closed her remarks to a standing ovation.

"Forget the space race; the race for 5G appears to have become a matter of national pride."

5G was another subject wrapped up in politics. Forget the space race; the race for 5G appears to have become a matter of national pride. China has significantly accelerated its 5G rollout, with the US and Europe determined to catch up. In turn, there was a definite change in tone from telecoms equipment and service providers, with investment plans and timescales certainly more advanced and concrete.

"Tencent's venture capital arm showed video footage of a flying car capable of vertical take-off and landing, based on the same safe and efficient concept of propelled energy found in a hairdryer."

A conference of this scale and ambition would not be complete without offering participants a chance to showcase progress and innovation. Tencent's venture capital arm, for example, showed video footage of a flying car capable of vertical take-off and landing, based on the same safe and efficient concept of propelled energy found in a hairdryer. There was also much talk of the benefits of environmental advance and the resultant corporate commitments to low- or no-impact operations.

Ikea's chief digital officer outlined the company's aim to be carbon positive by 2030; a JP Morgan representative talked of carbon neutrality by 2030; and the Google team went even further. Having achieved carbon neutrality back in

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"Carbon neutral, carbon balanced, carbon positive... differentiating between claims and making meaningful comparisons remains a challenge but there can be no doubting the commitment, and the progress, that many companies have made."

2007, they are now committed to ensuring that all shipments to and from Google customers become carbon neutral this year.

Carbon neutral, carbon balanced, carbon positive... differentiating between claims and making meaningful comparisons remains a challenge but, listening to the speakers in Lisbon, there can be no doubting the commitment, and the progress, that many companies have made. On the technology front, I met with one firm that claimed to be one of only three in the world with the technology for direct air capture of carbon dioxide.

The Web Summit has been described as "Glastonbury for geeks". I can't claim to have ever attended Glastonbury – the UK's most iconic music festival – but there was certainly an engaging blend of interests and technologies at the Web Summit. That politically related conversations were high on the agenda was not in itself a surprise: the prevalence and breadth of those conversations was, however, striking. That said, the sense of forward thinking, technological advance and optimism that I had hoped for was also very much evident. And in the technologies that I came to learn more about, I was certainly enthused.

This conference marked the beginning of my work to deepen knowledge and challenge existing thoughts, with research on future energy consumption alongside carbon emissions, storage and management, and climate change. In December, I attended the Sustainable Innovation Forum in Madrid which ran alongside the high-profile Conference of the Parties (COP 25). In January, I travelled to the Netherlands to meet Alfen, an energy solutions company, that designs, develops and produces smart grids, energy storage systems and electric vehicle chargers and then combines them into integrated packages. With a colleague, I also recently met with academics at Edinburgh University's acclaimed Edinburgh Centre for Carbon Innovation.

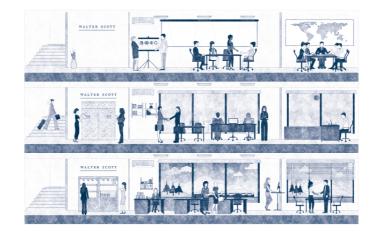
With a busy calendar of events and meetings also planned for the months ahead, I look forward to reporting back.

INVESTMENT THINKING

IN IT FOR THE LONG TERM

DROWNING IN DEBT

A QUESTION OF BALANCE



IN IT FOR THE LONG TERM

DISCUSSION WITH ROY LECKIE, LINDSAY SCOTT, MAX SKORNIAKOV AND YUANLI CHEN

Walter Scott has always focused on long-term investment, selecting stocks that can generate strong returns over many years. That selection process incorporates individual research and collective expertise. With a combined tenure of 68 years, Executive Director Roy Leckie and Investment Managers Lindsay Scott, Max Skorniakov and Yuanli Chen appreciate the strengths of the firm's approach, both in monitoring success and learning from inevitable mistakes. They explain how stocks are picked, how they are monitored and why their approach delivers results.

ROY LECKIE: Equity markets can be both volatile and unpredictable over short time periods. But the longer you hold stocks, the more reliable and satisfactory the returns will be in absolute terms and relative to other asset classes. We are strong believers that what drives individual share prices over the long term is the wealth created by the underlying company, as opposed to sentiment, interest rates, market movements and the like. Our focus is on "It's a tried and tested approach but it requires time, patience, diligence and a deep understanding of what you are putting your clients' money into."

identifying companies where superior rates of intrinsic growth are reasonably valued and monitoring them diligently to ensure that the fundamentals are on track. We then allow those returns to compound over long holding periods.

LINDSAY SCOTT: It's a tried and tested approach but it requires time, patience, diligence and a deep understanding of what you are putting your clients' money into. So, a huge amount of work goes into identifying what to own. That involves researching, analysing and assessing the prospects for a business and its future and management strategies. We put huge store in making decisions from first principles, reaching decisions collectively and then backing our judgement over anyone else's.

MAX SKORNIAKOV: Everyone has to be a self-starter. We're all looking for interesting companies on a daily basis and we always seek out certain characteristics. These include being number one in their space, having a strong margin structure, delivering consistent growth through economic cycles, enjoying strong cash flow and maintaining a robust balance sheet. That structure, combined with our experience, helps us to see at a glance whether a company merits further investigation. We also use bespoke tools for both qualitative and

quantitative analysis and we discuss every potential investment with the rest of the team.

LECKIE: And discussions do not always lead to investments being made – not by any means. We can spend a lot of time analysing businesses, meeting them on more than one occasion and talking to related stakeholders. But we may then decide, for whatever reason, that now is not the time to buy. So a company can go quite far through the approval process without ultimately becoming a holding. It's really important to be patient and disciplined about when to buy.

SCOTT: One example that comes to mind is a US medical robotic company that is a leader in its field. Several members of our team had met management a number of times over a number of years. After every meeting, we all agreed that it was a great company but it was just too expensive. Then it had a couple of weak quarters, the share price collapsed and that gave us an opportunity to buy into the stock.

SKORNIAKOV: A Japanese engineering company specialising in customised pneumatic equipment is another example of our patient approach. We watched it for several years and started buying when there was a cyclical downturn and the price

"The more short-term our peers are, the more we can capitalise on their impatience. Our focus is on buying well and holding, as long as the fundamental rationale plays out."

fell. There was another downturn recently and we used the opportunity to add to our position.

LECKIE: This highlights one of the plus points of being long-term investors: we can take advantage of short-term variability or volatility and use it to our benefit. The more short-term our peers are, the more we can capitalise on their impatience. Our focus is on buying well and holding, as long as the fundamental rationale plays out. We watch how the company evolves, how it goes through generational management change and how capital is allocated. And we reconcile what we observe with the prevailing share price.

SKORNIAKOV: There is an ongoing process of evaluation. There are around 50 stocks in each of our portfolios. Every stock has a stock champion from the investment team and they have to constantly justify why that stock should remain in the portfolio. As a team, we want to have the best 50 stocks we can so there is always competition, as both current and potential investments jostle for inclusion.

YUANLI CHEN: There is a formal process too, an annual review of each holding, where all of us have to defend the continued presence of each stock in the portfolio. And every day, we look at all our stocks and see what they are doing and whether anything has changed. There's really no hiding place here. Today, we have 220 stocks in total across all strategies and you can never take the position of any of them for granted.

SCOTT: That said, we don't take the decision to sell lightly. We have to establish that the fundamentals have changed in a way that is detrimental to their return prospects.

CHEN: Sell decisions often prompt a lot of debate within the team – and that is a real point of difference here. We put huge store in everyone's contribution to discussions about individual stocks, and that collegiate approach helps us to achieve the confidence and the humility that are crucial for stock-picking. You need the confidence to back your own judgement and hold your line when everyone around says you're wrong, but the humility to accept that you can make mistakes.

"We are not 'activist' investors who buy a stock and agitate for change but we are active owners and we are not afraid to engage with companies when we feel it's necessary."

LECKIE: And we do make mistakes. We held a long-established and wellregarded European retailer for many years. Over that time, it stumbled a couple of times but we backed management and held on. The stock rebounded and returns were strong over a long period of time. Then a couple of years ago, the company stumbled again. After some debate, we decided to back management again because it seemed as if it understood the issues and how to address them. Ultimately, however, our confidence withered away and we sold. It was the right decision but a little late. We are very conscious that it is vital to learn from the mistakes we make and never forget the massive responsibility that we've been entrusted with.

SKORNIAKOV: And it's a

responsibility that we take extremely seriously. When we hold a stock, we consider ourselves to be long-term owners. That is not a passive activity. If we spot shortcomings in a business, we may well reach out to management, express our views and make suggestions about how best to move forward. We are not 'activist' investors who buy a stock and agitate for change, but we are active owners in that we are not afraid to engage with companies when we feel it's necessary.

SCOTT: We also develop genuine relationships with management teams and board directors so we can have very frank and honest discussions with them. We don't shout publicly but we do express our demands to management. We may say that we want higher dividends or we may suggest that a business divests of certain assets. A Hong Kong utility company is one recent example. We've held the stock on and off since our firm was founded - and on a continuous basis since 1998 – but the group has some coal-fired powergenerating assets that we feel it should exit. They are pretty dirty assets and their contribution to revenues and profits is much lower than other parts of the business on a pro rata basis. We've already met with management on several occasions and we will continue to discuss the situation with it. This type of engagement takes time but it does work.

CHEN: Taking time, and being patient, has always been an important aspect of what we do; that is especially so today. In the past, asset managers often had an information advantage. That has gone. Someone else will always have heard about management changes, technological developments or some such before we do. It's what you do with that information. And we believe that it's really important to avoid knee-jerk reactions. We are flooded with news, and market noise, every day but you must stand back and ask yourself whether an individual piece of news jeopardises the long-term future of a business or whether it changes your fundamental investment rationale. It can be hard to keep calm but you need to - and you have to make sure that you ask the right questions to discern whether a piece of news is temporary or structural.

LECKIE: That can be challenging, given the pace of change within the business world these days. An entrepreneur can tap into infrastructure and capital very easily now and an idea can become a billiondollar business within a few years. Businesses can also become obsolete much more quickly than they used to. All the more reason, therefore, for us to ensure that we are in companies that are flush with technological resilience, businesses that have competitive, and sustainable, moats around them. We have always looked for these types of companies and that approach is all the more pertinent today. As such, our portfolios include a number of pioneers in their respective fields, be it robotic technology, digital advertising or pioneering medicines. Our investment approach may be old-fashioned – invest in high-quality businesses with a proven track record and certain qualitative and quantitative characteristics - but the companies we invest in are frequently cutting edge. So we apply a tried and tested approach to a fast-moving and extremely exciting global opportunity set. Over time that approach has been shown to work well.



DROWNING IN DEBT

BY BRIAN CAPLEN

Corporate debt is at record levels, fuelled by years of low borrowing costs and liquid markets. But there are fears that the market may be heading for a fall. Brian Caplen, editor of *The Banker*, considers the outlook for companies and investors.

When the Global Financial Crisis erupted in 2008, the blame was squarely laid on debt. People had been lured into the sub-prime mortgage sector, bankers had created increasingly exotic products to camouflage the size and nature of the market, and eventually the elaborate edifice of debt collapsed beneath its own weight.

Since that time, the nature of global borrowing has changed but debt levels have soared. According to the Institute of International Finance, global debt now stands at more than \$260 trillion, a 50% increase since Lehman Brothers collapsed. Nonfinancial companies in particular have been on a borrowing spree, more than doubling their debts to around \$75 trillion over the past 11 years.

Buoyed by ultra-low interest rates and receptive investors, these firms have come back to the market again and again, prompting widespread concern among industry pundits, particularly against a backdrop of continued geopolitical uncertainty, US-China trade tensions and slow economic growth.

For the moment, the sector appears to be coping. Debt volumes are high but repayments seem affordable, largely because interest rates are still at rock-bottom. Looking ahead, however, problems are almost certain to arise. Some firms may find that they have borrowed too much to finance equity buybacks. Some may pursue unsuitable acquisitions and some may suffer from disruptive forces that hit their growth and profitability.

High-profile cases, such as the collapses of Thomas Cook in the UK and Deluxe Entertainment in the US, illustrate the burden that debt can impose on companies. Both were heavily indebted and creditors were hit hard. Over the coming months, smaller companies issuing low-grade debt or 'junk' bonds are likely to be especially vulnerable, and there are already reports of investors pulling back from the riskier parts of the US corporate bond market.

This underlines the greed-fear conundrum faced by investors worldwide. The junk bond market is attractive precisely because it offers returns in a moribund low interest rate environment but there are risks attached – and these risks are not always appreciated. According to USbased ICE Data Services, for example, many firms suffered from falling prices last year, hit by individual circumstances and a growing tendency among investors to desert these businesses at the first hint of trouble.

Analytics provider Dealogic echoes this trend. The consultancy explains that issuance remains strong but companies are having to pay up to pique investor interest. Last September, for instance, \$304 billion worth of corporate bonds were issued globally, the second highest monthly value in the past five years. But borrowing rates are increasing, with firms having to pay significantly more than they did in the more benign days of 2018.

The BBB rated sector - the lowest investment grade rating in the bond market - has been under particular pressure. This is worrying, as it represents more than 50% by volume of all investment-grade corporate bonds in the US, up from one-third 10 years ago. In Europe, the figure has gone from 50% to 70% over the same period measured by number of issuers. Ratings agency Fitch estimates that between \$105 billion and \$215 billion of US and European BBB corporate bonds could migrate to BB, and therefore become high-yield securities, in a downturn. Even though this is only a small percentage of the market - worth more than \$3 trillion in total - it could still cause unease. When BBB bonds are downgraded, they slip into junk territory where they are viewed as 'fallen angels'. At that point, many institutions can no longer invest in them, often triggering a wave of selling.

"Non-financial companies have been on a borrowing spree, more than doubling their debts to around \$75 trillion since Lehman Brothers collapsed."

"Some firms may find that they have borrowed too much to finance equity buybacks. Some may pursue unsuitable acquisitions and some may suffer from disruptive forces that hit their growth and profitability." "Corporate deleveraging in Spain and Portugal has brought their debt service ratios to the lowest in two decades. At the opposite end of the spectrum, France and Canada are at peak levels of indebtedness."

Some sovereigns, sectors and companies are more resilient than others. At the country level, research by Citi shows that despite the increases in corporate debt volumes, the debt service ratio is at a 20-year average for Australia, Belgium, Finland, Germany, the Netherlands, Norway, Sweden and the US. In Denmark, Italy, Japan, South Korea and the UK, however, the figure is below the 20-year average. Corporate deleveraging in Spain and Portugal has brought their ratios to the lowest in two decades while, at the opposite end of the spectrum, Canada and France are at peak levels of indebtedness. Tracking similar ratios in emerging markets shows China and Turkey to be above average but other countries - including Brazil, the Czech

"Among US junk bonds, most of the worries used to be around energy companies; now concerns are broader, covering the retail and telecoms sectors too. In US investment grade, concern centres on the healthcare and industrial sectors." Republic, India, Indonesia, Malaysia, Mexico, Poland, Russia and South Africa – are sitting close to average.

As for sectors, certain areas are under particular scrutiny. In US investment grade, numerous healthcare and industrial bonds have been put on negative watch, suggesting they are vulnerable to downgrades. In an environment of trade disruption, debtladen exporters are being carefully watched too, not least the auto sector, where many manufacturers have experienced falling sales and profits.

Among US junk bonds, meanwhile, most of the worries used to be around energy companies struggling with falling crude prices; now rating agencies' concerns are broader, covering the retail and telecoms sectors too.

Looking ahead, deleveraging is likely to be a big theme in the market, that is, which companies are best able to reduce debt levels over the coming months. Some may try to raise revenues while keeping debt levels constant. Some may choose to sell off assets or reduce dividends to pay down debt. Some may try to increase their credit ratings to cut borrowing costs and some may look to broaden their investment base and move into other types of security.

Of course, many individual corporate bonds will flourish in 2020. But there will be accidents. Some companies are groaning under the weight of debt used to make acquisitions and are dependent on the rewards coming through to pay it back. Such transactions can be fraught with difficulty and calculations often prove overly optimistic. Across the market, researchers also suggest that borrowing costs will rise and volatility will increase. It is a long time since the market looked this vulnerable. Brian Caplen has been editor of *The Banker* since 2003. He frequently chairs discussions on financial topics as well as commenting on banking topics for the BBC and CNN.

A QUESTION OF BALANCE

BY CHARLIE MACQUAKER

Raising debt may seem like a logical response to an environment where interest rates are at record lows. Walter Scott Investment Director Charlie Macquaker assesses the risks within that all-too-common assumption.

At Walter Scott, one of the tenets by which we judge the companies we meet is whether they have control over their own destiny. In a rapidly changing world, such businesses are hard to find. To have that control they need to be market leaders, they need to be adaptable and, critically, they need to be financially resilient.

Excessive gearing can affect that resilience, especially if the debt is ill-used. And when we look around, there is increasing evidence of just that. Leverage used to fund mergers and acquisitions that are based on questionable assumptions about future synergies. Leverage that circumvents traditional lenders, such as banks, in favour of 'shadow banks', whose lending activities are barely regulated. And leverage used to fund share buybacks, which bolster the share price in the short term (and often management remuneration too) but often do nothing for the long-term health of the business.

This type of borrowing activity may seem logical, when interest rates

are low and businesses are ticking along. But it makes companies much more vulnerable when problems arise – and they do.

Take Thomas Cook, the travel and airline group that collapsed spectacularly last year beneath a £1.7 billion debt mountain. This business was geared to tourism trends, geared to the airline industry and heavily geared financially.

"As a training exercise with younger members of our Research team, we looked in-depth at the group's annual report and accounts, which showed that Thomas Cook's demise was an accident waiting to happen."

Of course, hindsight is a wonderful thing but, as a training exercise with younger members of our Research team, we looked in-depth at the group's annual report and accounts, which showed that Thomas Cook's demise was an accident waiting to happen. The balance sheet was piled high with debt and littered with over-optimistic assumptions around intangibles. Investors were also steered towards adjusted earnings, which often strip out awkward but important elements, such as interest owed.

Thomas Cook was a high-profile case and its end was unfortunate but the group's fondness for debt is widely shared.

As the International Monetary Fund noted in a recent report: "Debt has risen and is increasingly used for financial risk-taking, to fund corporate payouts to investors as well as mergers and acquisitions, especially in the US. In addition, global credit is increasingly flowing to riskier borrowers."

The report singles out the US, where we have certainly seen an increase in buybacks, often unnecessary, in our view, particularly when they are funded through debt. But debt is also rampant in emerging markets, particularly China where the risks are even greater, because data is scarce, the shadow banking sector is vast and the state is heavily involved.

As a global investor, we need to be abreast of all these trends.

That is not to say we are against debt on principle. But we want to know that the money is being wisely used.

Chr. Hansen, the Danish food and healthcare business, is a case in point. Its borrowings have risen – and earnings have been depressed – as the group pursues a substantial capital expenditure programme. But that is investment in the future, which should feed through to stronger growth over time. As such, we believe the money is well spent.

We take a similar stance on mergers and acquisitions. Some transactions are clearly worth pursuing, if they strengthen a company's market position, for example, or add new beneficial technologies. But the risks and rewards need to be carefully assessed, particularly at the top of the market when the premium paid can often outweigh the growth generated.

Highly leveraged buyouts are particularly risky, especially when they rely on inflated assumptions about future synergies to boost the amount borrowed. When those assumptions don't materialise, the edifice crumbles. In essence, long-term perspective is in short supply when we look across the corporate universe. Only recently, we met a company that had traditionally been very conservatively managed but had begun to gear up, using the cash to fund buybacks and unproven acquisitions. Management was surprised when we questioned this approach. But we believe that it indicates a lack of discipline and a focus on the here and now rather than the years to come.

"Businesses don't grow in a straight line and if revenues and earnings fall for a time and a company is highly geared, that imposes extra strain on the balance sheet and the PSL."

For us, it's a question of balance. Businesses don't grow in a straight line and if revenues and earnings fall for a time and a company is highly geared, that imposes extra strain on the balance sheet and the P&L.

So yes, money is cheap and yes, businesses have benefited but conditions can change. Debt levels have already reached or exceeded pre-financial crisis levels, by some measures. And

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that creates vulnerabilities in the system. Indeed, there is already evidence in the bond markets of increased investor nervousness and a lack of liquidity at the slightest hint of trouble.

Our investment approach is designed to veer away from such problems. We look for businesses with a conservative approach to gearing, businesses that invest for long-term growth not short-term gain and, crucially, businesses that can withstand shocks, if and when they arise.

Charlie Macquaker, Investment Director, joined Walter Scott in 1991.

TECHNOLOGY IN FOCUS

GENERATION GAIN

5G: THE ENABLER

WHO MAKES THE RULES IN TECH?

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TECHNOLOGY IN FOCUS | GENERATION GAIN



GENERATION GAIN

BY CHRIS NUTTALL

The introduction of 5G has been the subject of hype for years, fuelling excitement, expectation and controversy, among consumers, industry leaders and governments. Chris Nuttall, assistant technology editor at the *Financial Times*, considers the impact of this long-awaited technology.

Technological developments come in many guises. Some are incremental, some are fun, and some are truly transformational.

The development of hyperlinks and the World Wide Web, the launch of Google and the introduction of smartphones all fall into this last category. 5G almost certainly does too. The full benefits may take years to come through but, ultimately, this new technology should play a central role in the much vaunted Fourth Industrial Revolution.

The process is likely to begin prosaically, with faster browsing, gaming, downloading and higherquality video streaming for consumers. In time, however, 5G is expected to deliver widespread change, from the adoption of self-driving cars to greater automation in factories and remote health services.

The initial temptation is to view 5G as just another iteration of mobile technologies, mildly improving data speed, by comparison with 4G. The picture is made fuzzier because operators can tweak 4G to achieve speeds close to the lower bounds of 5G. In the US, for example, AT&T has controversially renamed its 4G network "5G Evolution". Elsewhere, a lower-grade 5G will be offered in certain regions to overcome transmitting distance limitations.

"5G benefits from characteristics that will make it a far more powerful means of communication than any of its predecessors."

SUPERCHARGED COMMUNICATION

But, apart from the theoretical capability of extremely fast data transfer, 5G benefits from characteristics that will make it a far more powerful means of communication than any of its predecessors.

Fifth-generation cellular wireless represents a new way of encoding radio waves, combined with the use of wider bandwidth and more sophisticated antennae, to give more capacity and higher speeds. Its optimal deployment will come in the less-used higher-band areas of the spectrum – 'millimetre waves', whose oscillations are much more rapid and can therefore convey far more data. The problem with the high-frequency waves is that they quickly run out of steam over distance, so a denser network with more base stations is needed as well as more extensive 'backhaul' – the fibre-optic landline networks that connect to and support the wireless infrastructure. Bringing this premium version of 5G to big cities is not a huge problem, with high population densities making it economically viable and many small cell sites already in place for 4G.

The challenge is greater in rural areas where wider coverage is needed and communities are sparser. Most carriers are responding by deploying low- and middle-band 5G in these locations. While these lower bands can cover greater distances and need fewer base stations, they offer much slower connections. Independent testing of US 5G networks last December, for example, produced download speeds of only 150 megabits a second (Mb/s) on a T-Mobile low-band network, while a Verizon high-band option was nearly six times faster at almost 900Mb/s.

Ultimately, operators are aiming even higher, hoping to ramp up 5G to 20 gigabits a second, where an entire HD movie can be downloaded in a fraction of a second.

> "But 5G is about much more than speed. It also offers very low latency, essential for rapid communication between Internet of Things devices."

But 5G is about much more than speed. It also offers very low latency, which is the delay experienced when making requests to remote internet servers and receiving a response. This 'ping' time might be 10 or 20 milliseconds over a regular home broadband connection currently, but 5G promises just 1 millisecond. This will be a boon to new cloud gaming services where any delays are anathema to players with itchy trigger fingers. More fundamentally, it will be essential for rapid communication between Internet of Things devices, such as helping autonomous cars receive instant and constantly updated information on their surroundings.

5G also offers greater 'connection density' than previous generations. It can handle 1 million devices connecting within a square kilometre, 10 times the maximum number for 4G networks. So the problem of being unable to connect to overloaded networks at football matches, music gigs or other large events should disappear with the next generation. Other features of 5G include network slicing and edge computing. The former allows bandwidth to be divided up into virtual networks for different purposes while the latter enables real-time processing of large amounts of data locally.

THE RACE TO 5G

Some 5G devices are already in the market and, within five years, UBS analysts expect the technology to cover 50% to 60% of the world's population and reach 1.5 billion mobile subscribers. But distribution will be uneven as countries adopt it at different paces.

South Korea currently leads the way, with large-scale 5G networks in operation. SK Telecom, which has almost 50% market share, predicts 7 million subscribers by the end of the year. However, much has been made of a 5G race between the US and China for leadership in 5G. The US's Qualcomm is a key provider of chipsets in smartphones, while Chinese technology giant Huawei has a dominant position in 5G network equipment, a position that has aroused persistent security concerns among the Trump administration.

In terms of building networks, China is way ahead of the US. All three Chinese mobile operators – China Mobile, China Telecom and China Unicom – launched commercial 5G services in November 2019 and analysts at Bernstein expect to see 150,000 5G cells in China by early 2020, compared with 10,000 in the US.

US pressure over Huawei, whose equipment is deeply embedded in European networks, is handicapping adoption on that continent, while in India, spectrum auctions have been delayed, with operators criticising what they see as high prices being expected by the regulator. Other emerging market countries may also struggle to deploy 5G as the outlay required to build dense networks and extensive backhaul is extensive.

AUTOMATING THE FUTURE

Even as the technology is gradually adopted, tech companies should thrive while home broadband providers could be among the early casualties, as 5G offers a superior service over copper and cable lines.

In time, however, 5G is expected to cause deep and widespread disruption. Hospitals could be transformed, with 5G allowing surgeons to use specialised haptic feedback gloves to operate on patients through a robot thousands of

miles away, using video and vital signs. Ports and factories could become fully automated, cars driving in smart cities would be ushered to empty parking spots and a myriad of functions would operate in smart homes.

Few of us need to understand the technology behind it but there is widespread recognition that 5G will be the foundation for our future lives.

Chris Nuttall is assistant technology editor at *The Financial Times* and lead writer of its daily #techFT newsletter.

"Hospitals could be transformed, with 5G allowing surgeons to use specialised haptic feedback gloves to operate on patients through a robot thousands of miles away."

5G: THE ENABLER

BY TOM MIEDEMA

5G will have a profound effect on businesses across a range of sectors. Walter Scott Investment Manager Tom Miedema assesses why this technology matters to the much talked about Internet of Things and the latest industrial revolution, Industry 4.0.

Watch a recent advert from any mobile phone provider and you could be mistaken for thinking that 5G was simply about making life more fun for gamers or YouTubers.

Our focus might seem more prosaic but, to us, the potential for industry is far more profound. 5G is a crucial enabling technology – much like the internet, artificial intelligence (AI), cloud computing, quantum computing, even electricity. And it is not just 5G in isolation that we believe will prove so influential. 5G enables the aggregation of all these technologies, allowing existing businesses to be transformed and entire new business models to evolve.

The term, the Internet of Things (IoT) – the connection of independent devices – was first coined in the late 1990s. Recognition of the potential benefits that might come from IoT has only grown since then. Cost has, however, been prohibitive. 5G reduces cost, allowing these benefits to at last be realised more widely. Take healthcare as an example. Devices such as the iWatch already allow users to monitor their heart rate, sleeping patterns and suchlike. With the advent of 5G, connections will be faster and cheaper which in turn will permit wider adoption and greater benefit. No longer will these devices be largely the reserve of the wealthy-well or the critically ill. Healthcare professionals will be able to monitor remotely patients with a variety of conditions, from diabetes to cardiac arrhythmia, gathering and sharing data from devices and sensors to assess changes and plan care. Over time, the combination of medical knowhow and technology should drive significant advances in preventative care - allowing patients and healthcare professionals to predict diseases before they take root.

"5G is a crucial enabling technology – much like the internet, artificial intelligence (AI), cloud computing, quantum computing, even electricity."

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Prevention is not only better than cure, when it comes to healthcare; the logic applies equally to industrial assets. And 5G can play a crucial role here too.

Industry 4.0, like IoT, requires the connection of assets and devices. To date, cost has made it difficult for many to harness the opportunities of connected sensors and robotics. The power needed to collect and transmit high volumes of data at speed has been a second sizeable hurdle.

Wind farms are just one example of where 5G will enable Industry 4.0 technologies to deliver meaningful productivity enhancements.

Wind turbines can be as high as 20-storey buildings and cost more than a million dollars apiece. Adept use of the power of 5G can connect a multitude of sensors and in turn support the gathering and transmission of data. Analysis of that dataset might provide warning signals on parts that require maintenance well before they break down, avoiding costly downtime. "There are very few businesses that cannot benefit from the technologies that 5G will support." This would be of particular benefit to offshore wind farms, which are often miles out to sea. 5G can also help optimise the way turbines operate both on and offshore, by monitoring wind conditions in real time and adjusting speeds and power accordingly to maximise energy generation.

Realising the benefits of 5G won't happen overnight. Even as 5G becomes available, it will take time for businesses to make use of its enabling capabilities, especially for those dealing with legacy infrastructure and systems.

There are some clear winners already within portfolios but we are also on the lookout for new investments that will be able to leverage 5G technology to their advantage. There are very few businesses that cannot benefit from the technologies that 5G will support, and for some it will be game-changing.

Investment Manager Tom Miedema joined Walter Scott in 2007.

LGRO ONITEDGE



WHO MAKES THE RULES IN TECH?

BY AMIT KATWALA

Big technology firms were long considered a force for good in the world, boosting democracy, promoting community spirit and changing the workplace for the better. Today, leading players such as Google, Facebook and Twitter face criticism on several fronts. Proclamations of positive change have been replaced by widespread criticism and calls for regulation as well as penalty. Amit Katwala, senior editor at *WIRED UK*, considers the future for these global monoliths.

Soon after Larry Page and Sergey Brin launched their search engine, Google, in September 1998, they settled on an unofficial motto for their employees to adhere to. As Google grew into the dominant force in searches, email and online advertising, that motto – "Don't be evil" – acted as a yardstick by which the company's coders could make sure their actions were not negatively affecting the world.

It was so entrenched in Google's culture that it became the wi-fi password on the shuttles that ferried workers around the company's campus in Mountain View, California. But in April 2018, the phrase was quietly removed from Google's online code of conduct.

"A decade ago, firms such as Facebook, Amazon, Google and Apple were seen as the best places in the world to work – not just for the perks, the ping-pong tables and the beanbag-filled breakout spaces, but because they were changing people's lives for the better."

Although it was quickly reinstated, some observers felt that the incident highlighted a wider shift in the way big tech companies view themselves, and how they are perceived by the public. A decade ago, firms such as Facebook, Amazon, Google and Apple were seen as the best places in the world to work – not just for the perks, the ping-pong tables and the beanbag-filled breakout spaces, but because they were changing people's lives for the better. Those days seem long gone. While it is widely acknowledged that technology has been a force for good on many levels, the dominance of the biggest companies is controversial, raising serious questions about ethics, transparency and fiscal responsibility.

Take Facebook. The social media monolith helps people to stay in touch with their friends and family, but has also been used by unknown actors to interfere in the democratic process thanks to little or no oversight over who can buy targeted advertising and what their messages say.

Google and its sister companies under the Alphabet umbrella - have made huge progress in the field of artificial intelligence (AI), but there are concerns about the vast amounts of data they hold on everyone, and what it will be used for - it took a worldwide employee protest to prevent the firm from signing a controversial military deal with the Pentagon, for example. Amazon has transformed the retail experience, but it has been accused of exploiting workers and is constantly under siege for the way it pays taxes. As for Twitter, the acrimony of tweets on its site is such that users and followers can fear for their safety.

As these firms and others like them suck up more and more data, and feed it into opaque algorithms, there is a growing call for change. Some industry observers have called for a code of ethics for AI – akin to the Hippocratic Oath that doctors take – that any organisation using such technology should pledge to adhere to. At a state-level, the Organisation for Economic Co-operation and Development's (OECD's) Principles on Artificial Intelligence is the recognised global standard, with all G20 countries and OECD members now stating adherence to this ethical code. Individual companies are caught somewhere in the middle, becoming far less keen on self-regulation but without comprehensive global regulation to turn to instead.

Almost all parties involved now concede to some extent that attempts at self-policing have largely failed. Political advertising has been among the most contentious areas of debate. But despite the loud and emotionally charged claims of undemocratic practices, there is near silence on what might become enforceable, crossborder regulation.

After criticism over the role it played during the US presidential election and the Brexit referendum in 2016, Facebook established a library of political advertising to try to increase transparency, but the library has been criticised for being slow, buggy and difficult to use. Twitter has introduced more robust policies for clamping down on hate speech, but enforcement seems haphazard.

Twitter and Spotify recently decided to ban political advertising from their platforms – and there have been calls for Facebook to follow suit before the 2020 US election. But that still leaves

"As questions about the ethics, transparency and fiscal responsibility of big tech companies become more entrenched, politicians in some countries are starting to take action." the decision about what constitutes a political advertisement in Facebook's hands. Governments have effectively outsourced many complicated decisions about everything from pornography to radicalisation to unaccountable moderators working for social media companies.

As questions about the ethics, transparency and fiscal responsibility of big tech companies become more entrenched, politicians in some countries are starting to take action. A number of different potential approaches have been advocated – from levying a tax on digital advertising to breaking up big tech companies entirely.

The break-up idea was among the early ideas, appealing in its simplicity because it would limit or stop the way these companies keep users locked into one ecosystem. Under such a model, WhatsApp and Instagram could be separated from Facebook (which owns both of them). And Google would be unable to push users towards its own products, such as Google Maps or YouTube.

Margrethe Vestager, the EU's Commissioner for Competition, has more recently distanced herself from such drastic threats but she has certainly developed a reputation for clamping down on the tech giants. In July 2018, she hit Google with a €4.3 billion fine for forcing mobile phone manufacturers to pre-install Google Chrome and Google Search on phones equipped with Android, the mobile operating system that is also owned by Google. Less than a year later, she was back again, fining Google another €1.5 billion for breaching EU antitrust rules.

There are problems with applying this approach too widely, however. When

the UK media company Sky had its monopoly on English Premier League football broadcasts forcibly broken up in the mid-2000s, for instance, customers ended up paying more because they had to subscribe to two or more services. Splitting up Google into smaller companies could make the consumer experience worse – and some policymakers believe that it may be better for one big company to have people's data than lots of small ones.

Whatever the future brings, however, data will almost certainly be a key regulatory battleground. It is also one of the areas where politicians could curb the excesses of big tech. One of the issues with a platform such as Facebook, for example, is that users vield almost all control over their data to the site. If they no longer want to be on Facebook, they can delete that data via a complicated process, but they can't take those years of photos and conversations to another platform. It's not theirs to own, which means there's very little incentive for the platform to treat it with care, particularly as the risk of users moving to another social network is quite low.

"Enshrining an individual's right to data portability could have a huge impact on big tech firms. Here, the world will be looking to Ireland, where Helen Dixon, the country's Data Protection Commissioner, will set the rules for the many large US tech firms with European headquarters in Dublin." "Data portability could allow users to shop around for the social network that gives them the best deal."

Enshrining an individual's right to data portability could have a huge impact on big tech firms. Here, the world will be looking to Ireland, where Helen Dixon, the country's Data Protection Commissioner, will set the rules for the many large US tech firms with European headquarters in Dublin. In the UK, open banking regulations have helped to spark a surge in fintech startups that help customers make sense of their money. The big banks still dominate the market, but they have been forced to modernise in the wake of growing competition.

Data portability could do the same for our personal information, allowing users to shop around for the social network that gives them the best deal – whether that's the most robust privacy settings or even a cut of the advertising revenue. Big tech companies have built fortunes on the notion that their users are the product – regulation might force them to start treating all of us like customers.

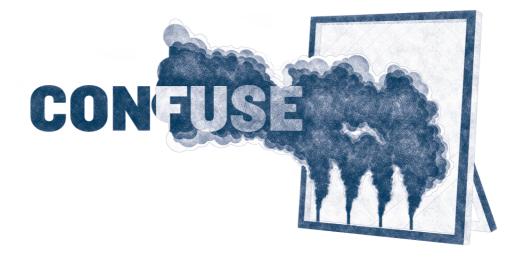
Amit Katwala is a writer and editor based in London. He is a senior editor at WIRED UK and the author of The Athletic Brain.

SUSTAINABILITY

CARBON CONFUSION

THE ZEITZ WAY





CARBON CONFUSION

Under increasing pressure from a range of stakeholders, more and more companies are striving to reduce their carbon footprint. Bold targets have become almost commonplace. But judging those targets and interpreting reported efforts remains a complex challenge.

The collapse in 2019 of Pacific Gas and Electric Company (PG&E), a Californian electric utility, was dubbed by the media as the world's first climate change bankruptcy. The stock price of the company tumbled 85% as the utility faced liabilities of up to \$30 billion arising from damage caused by devastating wildfires in 2017 and 2018. Record droughts had increased the risk of dying trees falling on electric lines and sparking fires. "Climate change is no longer coming, it's here," Geisha Williams, the then chief executive officer of PG&E, stated in an email.

PG&E may have been the first company to collapse beneath climaterelated debts but it is unlikely to be the last. Businesses are vulnerable to financial harm from global warming in numerous ways, including damage caused by extreme weather events, forced capital spending to reduce emissions and revenue loss as customers turn elsewhere.

Yet understanding these investment risks is far from straightforward. This problem starts at the most basic level of measuring greenhouse gas emissions by companies so that they can be compared.

> "We lack a common language on emissions and climate risks."

DATA DIVERGENCE

"We lack a common language on emissions and climate risks," says David Parham, director of research projects at the Sustainable Accounting Standards Board. "We still have work to do in creating consistent data that enables investors to easily compare climate risks between companies." This data deficiency was illustrated most clearly in a recent study by academics from the Massachusetts Institute of Technology (MIT). The paper, titled 'Aggregate Confusion: The Divergence of ESG Ratings', found a striking level of disagreement between the five most prominent companies that rate carbon emissions, MSCI, Sustainalytics, Vigeo Eiris, ASSET4 and RobecoSAM.

"On the issue of emissions, the correlation between ratings was just 0.13, on a scale of zero to 1," says Florian Berg, an associate at MIT's Sloan School of Management. By comparison, credit ratings for companies provided by Moody's and Standard & Poor's show a 0.99 correlation. This lack of consensus is particularly unnerving, given the potential risks faced by companies with a high carbon footprint. "Investors know that companies with high emissions – in absolute terms or simply relative to their industry – could face dangers. Equally, early movers could enjoy a competitive advantage," says Emily Kreps, global director of investor initiatives at CDP (formerly the Carbon Disclosure Project).

The stakes are high and not just for high-emitting industries – such as oil explorers and miners – but across the corporate universe.

"A supermarket chain might find that about 80% of its emissions come from its supply chain, such as the agricultural businesses it buys produce from," says William Paddock, managing director of WAP Sustainable Consulting. "Since they are under pressure to reduce their overall impact, supermarkets will increasingly be judging their suppliers not just on price, quality and reliability, but also on emissions."

SCOPE AMBIGUITY

But accurate measurement remains a challenge, not least because the task itself is complex.

First, there is still considerable wiggle room in the way companies measure their full carbon footprint. The Greenhouse Gas Protocol – used by 92% of Fortune 500 firms – gives clear instructions on measuring the direct emissions generated by a company's buildings, factories and vehicles, along with electricity purchased from utilities. These are called Scope I and II emissions. It is Scope III – which seeks to measure emissions from supply chains and the "A car company must evaluate emissions from the use of its vehicles. That requires estimating how many miles its customers are likely to drive, and at what speed."

footprint of products – where more discretion is possible. While there is a growing expectation that companies should measure Scope III, it is more complicated to assess and can involve many more estimates and assumptions.

For example, a car maker would need to calculate the emissions from several tiers of suppliers, from component makers all the way back to the companies mining the metals. At the other end of the system, a car company must evaluate emissions from the use of its vehicles. That requires estimating how many miles customers are likely to drive, and at what speed, along with many other projections. Even after the data is compiled, often by CDP, the five main rating companies have different methodologies for ranking performance.

"Greenhouse gas accounting was not really intended to compare one company with another but rather one company over time."

COMPARISONS FAIL

The second complication for investors is that the variation in the way businesses operate even within a sector makes comparisons tricky. "Greenhouse gas accounting was not really intended to compare one company with another but rather one company over time," says Cynthia Cummis, director of private sector climate mitigation at the World Resources Institute, one of the bodies that devised the GHG Protocol. "Businesses even in the same industry can have very different business approaches or levels of vertical integration. What is more critical is to evaluate the trend."

In addition, emissions are only one piece of the evaluation process, as Cummis explains. "Investors really want to know if there is a strong strategy for mitigating emissions risks. Is the company 'best in class' in terms of devoting resources to producing products or operating in a more emissions-efficient way? Are executives financially incentivised to cut emissions? Do they have an internal mechanism for taxing emissions? Such assessments are hard to encapsulate in a single figure."

INTRODUCING STANDARDISATION

That said, experts do expect a degree of convergence over the coming years. Greater clarity is likely to emerge from specific industry initiatives, says Suzanne Greene, manager of the Sustainable Supply Chains initiative at MIT. Having worked with freight and logistics industries to forge a common approach, she says: "More progressive companies want more specific guidance for calculating and sharing emissions information along supply chains. We've run successful initiatives to develop unified standards for the IT and logistics sectors, and now for mines and materials."

Financial services firms are also pressing hard for a more universal approach to standardisation. A prime mover here has been the Task Force on Climate-related Financial Disclosures (TCFD), backed by a range of financial luminaries from former Bank of England Governor Mark Carney to entrepreneur and politician Michael Bloomberg. The TCFD points out that investors, insurance firms and banks need to understand far more than just the emissions of a company.

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"A study of 11,000 publicly listed business found that physical risks could reduce their market value by anywhere from 2-3% up to 20%."

Rather, they need information on everything from the physical dangers a company faces from climate change - such as harm to factories from rising sea levels - to potential legal liabilities, and the cost of adjusting operations to a low-carbon world. The potential variation in risks can be substantial. For example, a study of 11,000 publicly listed business found that physical risks could reduce their market value anywhere from 2-3% on average up to 20% for the most exposed companies. Such variation helps explain why 930 organisations, representing a market capitalisation of over \$11 trillion, now support the TCFD.

Initiatives like the TCFD give reason for optimism that a more consistent approach to measurement and reporting is on the way. "There will never be the kind of agreement we get on credit ratings, which are just simpler to assess and compare," argues Kreps. "But there is good reason to expect that in the coming years it will get easier for investors to evaluate big risks and opportunities arising from the different emissions efforts of companies."

Walter Scott has been a member of CDP since 2017.



THE ZEITZ WAY

Jochen Zeitz is chairman, acting president and CEO of Harley-Davidson, former CEO of PUMA and an environmental innovator and philanthropist. Having transformed PUMA's approach to climate change, and influencing sustainability thought and practices at many other companies, Zeitz believes business has a key role to play in the fight against global warming.

Jochen Zeitz was just 30 years old when he became chairman and chief executive of PUMA, in 1993. Over the next 12 years, he executed a dramatic turnaround of the company, increasing sales five-fold to €2.4 billion and turning the business into a top-three global sportswear brand.

In 2007, PUMA was acquired by luxury goods conglomerate Kering and, four years later, Zeitz introduced the world's first environmental profit and loss account: a way for Kering to keep track of the cost of its products on the environment.

The EP&L, as it is known, measures water consumption and pollution, waste, air pollution, greenhouse gas emissions and land use. And it does not just consider the company's own business but the entire upstream supply chain. Back in 2011, the accounts showed that PUMA was "in the red" to the environment by €145 million on consolidated sales of €2.7 billion. But Zeitz feels that the absolute figure matters less than the fact that the work is being done.

"The important point is to encourage companies to do the maths and realise that the cost to the environment often comes much further down the supply chain," he explains. He applied that idea across Kering, introducing environmental profit and loss accounting to luxury brands, including Yves Saint Laurent, Balenciaga, Gucci and Alexander McQueen. He also standardised supply chain sustainability with the idea that this would give PUMA and the Kering brands an edge over competitors.

Zeitz was instrumental in Harley-Davidson's approach and progress on environmental sustainability as well, and in 2012 the motorcycle company conducted its own EP&L assessment. "Jochen's leadership and support, backed by real analysis, is the critical difference for sustainability at Harley-Davidson," says Rachel Schneider, Harley-Davidson's director of sustainability & business planning.

"You cannot just look at your own company's footprint," says Zeitz. "You have to look at your entire supply chain. While the overall value might be a huge loss, it's taking responsibility for the entire value chain and not just looking at your own operation. It's a collective responsibility that the business that generates these kinds of products and services needs to help solve. That's the whole idea."

Zeitz recalls that, when he first started talking about accounting for the

environment, he was criticised by financial analysts, who said that he seemed to be treating the company as if it were his own. As a public company, they argued, PUMA should focus on short-term returns for shareholders, not sustainability. Zeitz responded that, to the contrary, chief executives should run companies as if they own them and think long term: "We're trying to change the way business needs to be done in order to tackle huge problems so that climate change and other environmental impacts that we cause are finally at the top of the agenda."

"Zeitz calculates his carbon footprint every year and has concluded that, despite all the flights between his three bases in London, Kenya and Santa Fe, New Mexico, he is in credit."

Having spent nearly 20 years with PUMA and six with Kering, Zeitz resigned from the group in 2012. He then joined forces with British billionaire and philanthropist Richard Branson to found The B Team, a group of business and civil society leaders working together to improve the transparency and sustainability of business practices globally. Today Zeitz calculates his carbon footprint every year and has concluded that, despite all the flights between his three bases in London, Kenva and Santa Fe, New Mexico, he is in credit, thanks in part to a 15-year passion project rewilding a 50,000-acre former cattle range in Kenya.

"I believe in taking responsibility," he says. "Once you're aware you're responsible, you're responsible if you do something or not."

Zeitz often hears it said that, unless governments do something to address climate change, business leaders cannot hope to make a difference. But he does not believe that the environment should be the responsibility of politicians. "I think that's an excuse for inaction and passing the buck to government," he says. "Governments rely on business to help the economy grow and for jobs to be created. We should actually think the opposite - even if you're a trade organisation, you should be pushing governments to set up long-term environmental frameworks and initiatives."

In recent years, Zeitz has focused on doing just that, across a portfolio career which includes board positions for Harley-Davidson, investment firm Cranemere and the Kenya Wildlife Service, as well as his work for The B Team, the Zeitz Foundation and The Long Run, founded in 2008 and 2009 respectively to create and support sustainable, ecologically and socially responsible projects around the world.

In each line of work, he strives to do something that no one has done before. With the Kenyan cattle ranch, for instance, although a tourism element sustains the project, the principle behind it is quite different. "The primary focus was really on proving that if you give nature breathing space, degraded areas can recover and become diverse and biodiversity can prosper," he says. "I wanted to prove that by taking a business approach to conservation, you could actually create net positive impacts over time for people, the planet and profit."



"They do not want to talk in monetary terms. I say that we don't have to. It's all about standardisation: finding a measure that we can all agree on."

Recently, Zeitz has begun to think about other standard measures that allow businesses to compare their impact on the environment, after noticing that many chief executives were reticent to talk about "profit and loss" in relation to the environment. "They do not want to talk in monetary terms," he says, "although some are beginning to do so." Danone, for example, whose CEO is part of The B Team, just announced carbonadjusted earnings per share, taking into account the cost of carbon's impact on the planet. "But there are other ways to do it. It's all about standardisation: finding a measure that we can all agree on."

Rather than money, Zeitz has started thinking about explaining environmental cost as calories, showing the carbon and water waste associated with various products.

"Capital has an enormous role to play in tackling the environment so it is crucial that investors come to the table and make the right decisions based not just on short-term profits but on long-term sustainability." "If we were able to apply that as standard to every product, the consumer very quickly will lean towards the less environmentally unfriendly. It's a no-brainer."

At the moment, he admits, there are too many initiatives out there. Consumers are confused about how best to act, while investors are concerned about the plethora of environmental classifications. Zeitz believes clearer standards are essential so that investors are better equipped to make the right decisions. Green bonds exemplify the challenge. "Green bonds are a great idea, but you have to decide what is green and worthy. That's where transparency is important so investors can make an educated decision based not on promises, but on facts," he says.

"Capital has an enormous role to play in tackling the environment, so it is crucial that investors come to the table and make the right decisions based not just on short-term profits but on longterm sustainability," he adds.

Looking ahead, Zeitz is optimistic for change, noting that major shifts in business do take time. "It's always like this," he says. "It starts off like the wild west and eventually moves to regulation. I'm a pretty impatient guy, but I recognise that things of scale do not just happen overnight."

What would he say to investors frustrated at the pace of change? "Know what you're investing into. And, just as you look at the return on investment from a financial perspective, you should look at the return on investment from an environmental and social point of view," he explains. "Companies that care and truly imbed sustainability into their DNA and business model, seeking a competitive advantage for brand and company, will be the long-term winners. The others will become dinosaurs. To care makes good business sense."

Reducing carbon emissions and achieving a carbon-neutral world are ambitions that loom large on the policy agenda. But Zeitz believes that business must lead the way, driven by leaders with a desire to do better. It's a desire that has taken Zeitz himself from boardrooms in Germany to a former cattle ranch and now fully sustainable eco-reserve in Africa. "As long as I can look back and say I did my best, that's my motivation," he says.

Jochen Zeitz is chairman, acting president and CEO of Harley-Davidson, former CEO of PUMA and an environmental innovator and philanthropist.

THE WORLD AT LARGE

2020 VISION

ALL AT SEA



2020 VISION

BY BILL EMMOTT

Bill Emmott is an author, commentator and former editor-in-chief of *The Economist*. He considers the economic and political outlook, in a year dominated by the US presidential elections, trade tensions and Brexit.

If 2019 was dominated by the uncertainty of trade wars and Brexit, 2020 was shaping up to be a smoother ride – until Covid-19 intervened. Economists were expecting steady if suboptimal economic growth, widely spread around the world, with no serious prospect of generalised inflation, suggesting that major

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central banks would either cut interest rates and expand quantitative easing or at worst hold steady. And then came the new coronavirus.

This virus, which emerged from China during January, has widened the range of possible outcomes, to say the least. Yet let us keep it in proportion: experience with previous viral epidemics shows that while they may well be very disruptive in the short term, especially to travel and to major international meetings and events, they prove to be an unpleasant interruption rather than a long-term game changer. Unless, that is, they have a political impact, which this one might.

This fits with 2020's real theme: politics. Let's not forget that the year began with something unusual and politically provocative: the assassination by the US of a senior military figure from Iran, while he was visiting Iraq. And the year will end with something highly usual but potentially more consequential than in past cycles: a US presidential election.

Typically, where politics prevails, big discontinuities can occur. This year, the places to watch for potential market-disturbing discontinuities look to be the US, China, Germany and, as always, the Middle East. For once, by contrast, Britain might start to look stable and even predictable, after three years of Brexit paralysis and confusion.

Following the killing of Qassem Soleimani, the first indications were that this would not lead to a wider or more sustained conflict. The opening Iranian retaliation through missile attacks on US bases in Iraq appeared designed to avoid escalation. It was anyway overshadowed by the tragic shooting down in error of a Ukrainian airliner and resulting unrest against the Iranian regime.

If there was a calculation on the US side that Iran is too weak to risk a major conflict, this appeared to have been borne out. But we should remember that this was an opening retaliation, which may not mark the end of the story. We might also note that Iran has become closer to Russia, with which it has collaborated in Syria.

The contemporaneous backdown by North Korea from its threat to send "a Christmas gift" if the US did not make concessions over sanctions relief carried a similar implication. No matter how often North Korea's leader Kim Jong Un is pictured riding a symbolic white horse to the sacred Mount Paektu, he is not really in a strong position to act. But again, that weakness needs to be interpreted with caution. Sometimes regimes in a weak position compensate by lashing out to keep opponents off balance. The risk of Iran or North Korea doing so, perhaps in what pundits like to call "an October surprise" to disrupt the November US election, cannot be ruled out.

Nonetheless, President Trump's foreign policy this year has so far made him look quite strong and successful, or at least not reckless. Moreover, we have witnessed a ceasefire between the US and China over trade. It brings no great breakthrough for either side but reduces risk and kicks the main issues to beyond the November election. With the US-China dispute on hold, some think Trump may turn his trade fire on Europe. But he is unlikely to take this very far for fear of disrupting his re-election year.

The November election will be all about legitimacy, not policy: Trump's legitimacy, that is, in the face of Democratic Party attacks on his conduct and character. The boast of low unemployment and robust economic growth is too important to jeopardise just to poke the Europeans in the eye.

"The places to watch for potential market-disturbing discontinuities look to be the US, China, Germany and, as always, the Middle East. For once, by contrast, Britain might start to look stable and even predictable."

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"Conventionally, a secondterm president soon becomes a lame duck, unless his party also controls Congress. That convention might have to be put to one side in Trump's case."

The reason why this year's US presidential election could be more consequential than on previous occasions arises precisely from that legitimacy question. During his first term, Trump has shown that the only element of democracy he really respects is consent from voters. In 2016 he lost the popular vote to Hillary Clinton, which still rankles, but he has also spent three years fighting off the Mueller investigation into his Russian ties and this year's short impeachment trial over his efforts to use Ukraine to investigate his opponents. Re-election despite all of that would signify true vindication and legitimacy, in his eyes.

Conventionally, a second-term president soon becomes a lame duck, unless his party also controls Congress. That convention might have to be put to one side in Trump's case, for victory would embolden him, especially if the Republicans also fare well in the congressional and state polls. He could become even more aggressive in trade and foreign policy, and in the exercise of his executive powers.

Most radical of all, a re-elected, legitimised Trump might attempt to copy Vladimir Putin and promote a constitutional amendment to allow himself to run for a third term. Although the Republicans are unlikely to have sufficient power in Congress to win the required two-thirds majority in both houses, the alternative route provided for in the US Constitution is not so far out of reach: an amendment can be passed if it has support from two-thirds of state legislatures, which means 33. The Republicans at present control 29 states.

Compared with the possible consequences of such developments in the world's most powerful democracy, events in China, Germany or Britain might seem more prosaic. But they are not, especially in China's case.

The way in which President Xi Jinping consolidated and centralised his power after he replaced Hu Jintao as Communist Party General Secretary in 2012 left many non-Chinese awestruck. However, such centralisation can incite reaction. Over the past 12-18 months, many things have gone awry for Xi Jinping: the protests in Hong Kong, Taiwan's presidential election, international outcry over China's treatment of its Muslim citizens in Xinjiang, a slowing economy, the somewhat inconclusive evolution of the US-China trade war, and most damaging of all, the evident mismanagement of Covid-19.

The best working assumption, given President Xi's proven power, is that he will remain China's supreme leader.

"There is a growing tail risk that forces inside the Communist Party might emerge to try to push President Xi aside." "After a lot of huffing and puffing, Boris Johnson's government is likely to come to a pragmatic settlement." But there is a growing tail risk that forces inside the Communist Party might emerge to try to push him aside, especially if the public backlash about the deaths and disruption caused by the coronavirus pandemic gathers strength. Vaccines can be discovered to deal with viruses, but not political change.

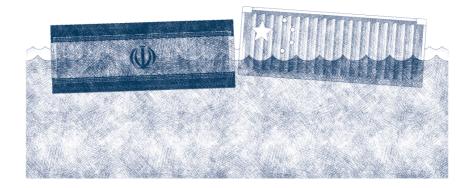
In Germany's case, the issue is also one of a long-serving leader, though in Angela Merkel's case she is no dictator. But she has been Chancellor for over 14 years, and German politics is in a state of suspended animation waiting for the post-Merkel era to begin. A battle is under way inside her CDU party over who will succeed her. As a result, federal elections may take place sooner than the scheduled date of late 2021. Merkel may simply decide to stand down, conceivably at the end of Germany's EU presidency in the second half of this year, or her current coalition partners, the Social Democrats, may decide to withdraw. This, at least, could bring a positive discontinuity, for until Merkel has been replaced, little truly constructive change can happen in EU politics either.

Britain's negotiations over its future trade and security relationship with the EU will occur against that background of political stasis in Germany. That stasis will likely bind EU negotiators to a legalistic, inflexible position. After a lot of huffing and puffing, Boris Johnson's government is nevertheless likely to come to a pragmatic settlement.

Johnson's political interests looking ahead to the next general election in 2023 or 2024 lie overwhelmingly in establishing a strong record for economic growth and rising living standards, and in proving to a divided electorate that Brexit wasn't really as important as die-hard Remainers or Leavers made out. Consequently, prolonged confrontation with the EU makes little sense as it would simply extend business uncertainty too, depressing investment.

Having "got Brexit done", Johnson's new ambition will, in effect, be to prove the banality of Brexit by overshadowing it with other initiatives. He never wants anything to be dull, but in terms of political and policy risk, that may prove to be his goal. The year will be far from banal, but Brexit might well be.

Bill Emmott was editor-in-chief of *The Economist* from 1993 to 2006. He is now chairman of the International Institute for Strategic Studies, the Japan Society of the UK and Trinity Long Room Hub Arts & Humanities Research Institute. His next book, *Japan's Far More Female Future*, will be published in summer 2020. In 2017, Bill spoke at a Walter Scott Lecture Series event in Japan.



ALL AT SEA

BY CHRISTIAN LE MIERE

More than 90% of global trade is transported by sea. Within that monumental movement of goods, materials, produce and commodities, the Gulf and the South China Sea are of particular strategic importance. As tensions mount in both of these parts of the globe, Christian Le Miere assesses the implications.

2020 started, not with a whimper, but with a bang. The drone strike that killed Qassem Soleimani sent governments and investors alike scrambling to understand the likely repercussions.

A significant conflict between Iran and its neighbours would have devastating effects for regional economies and populations. But what makes a war with Iran so unsettling for the global economy is the pivotal importance of the Gulf, and in particular the Strait of Hormuz.

The Strait of Hormuz is one of seven significant maritime chokepoints worldwide, where the narrowness of the waterway combines with heavy maritime traffic to make the passage indispensable to global trade. "A closure of the Strait of Hormuz for six months could lead to oil price increases of 126%, to more than \$150 per barrel."

In 2018, some 21 million barrels of oil per day were shipped through the strait, according to the US Energy Information Administration (EIA), or roughly one-third of global seaborne oil. With most oil transported by sea, more than 20% of all liquid oil products consumed globally pass through the strait, and more than a quarter of global liquefied natural gas (LNG). No surprise, then, that the EIA refers to the Strait of Hormuz as "the world's most important chokepoint".

Disruption to traffic through the strait can therefore have outsized effects on the global economy. As such, any event that suggests trade might be stymied, such as the Soleimani drone strike, often leads to immediate (although usually temporary) spikes in the oil price. An estimate by JP Morgan in January 2020 suggested that closure of the Strait of Hormuz for six months could lead to oil price increases of 126%, to more than \$150 per barrel. Even a one-month blockade could see prices increase to \$80 a barrel. The same study calculated that a 10% increase in the price of oil would reduce global GDP growth by 0.15%.

VESSEL ATTACKS

Given this strategic importance, it is unsurprising that Iran often threatens traffic through the strait. In fact, since the beginning of 2018, Tehran and its allies have undertaken a series of attacks against maritime targets in a bid to shake market confidence in the security of the maritime commons and undermine the economies of Tehran's Gulf rivals.

The original theatre for many of these attacks was Yemen, with three attacks on tankers in the first half of 2018. In May 2019, four commercial vessels were attacked off the coast of Fujairah in the UAE. Two tankers were subsequently attacked just outside the Strait of Hormuz. And in July, the Stena Impero tanker was seized by Islamic Revolutionary Guard Corps (IRGC) forces and held for two months, most likely as a retaliation for the seizure of an Iranian tanker in Gibraltar. Although overshadowed by other events, disruption of shipping in the Gulf has continued apace since then.

This continued destabilisation has affected not just the oil price, but also shipping costs. Ship insurers paid out more than \$100 million in damages last summer from tanker attacks in the Gulf, while shipping premiums have risen as the Lloyd's Market Association Joint War Committee added the Gulf to its high-risk areas. The Norwegian Shipowners' Mutual War Risks Insurance Association (DNK) noted in August that risk premiums increased 10-fold in 2019, meaning that ships crossing the Strait of Hormuz pay between \$300,000 and \$400,000 for each sailing. Daily rates for supertankers operating through the Gulf can be up to \$42,000, compared with around \$20,000 in calmer parts of the world. The difference means operators in the Gulf may see profit margins shrink to low single-figure digits, or even evaporate completely, during periods of heightened tension.

"In 2018, some 21 million barrels of oil per day were shipped through the Strait of Hormuz, roughly one-third of global seaborne oil."

SPRATLY MILITARISATION

The Gulf is not the only region where geopolitical tensions pose a threat to international shipping. In the South China Sea, the development by China of seven military bases in the Spratly archipelago has further militarised an area of more than three million square kilometres of sea. Seven entities lay claim to at least some of the South China Sea, and five have a military presence on disputed islands, including China, whose involvement has prompted concern among regional states and policy responses by the US.

A strategic competition has thus evolved in this sea, with the US again rebalancing its forces to cope with a very different kind of rival from Iran.

Unlike in the Gulf, direct disruption to shipping in the South China Sea has thus far been limited. Beijing has repeatedly stated that it supports freedom of navigation in the sea, even while laying claim to vast tracts of the ocean. However, paramilitary forces and 'maritime militia' – civilian vessels supporting state goals – interfere with fishing vessels hundreds of times per year.

Regular disruption of survey vessel activities has had an even greater impact. In 2012, Vietnam accused China of deliberately cutting seismic exploration cables of its survey vessels operating in the South China Sea. Two years later, Vietnam deployed a flotilla of paramilitary and civilian vessels to harass a Chinese offshore rig in the country's exclusive economic zone.

Compared to the Gulf, where specific acts of sabotage have blown holes in the hulls of various vessels, activity in the South China Sea has been quietly coercive rather than overtly destructive. But these activities nonetheless have a direct effect on development in the region.

CALCULATING THE CONSEQUENCES

While it's difficult to calculate the exact costs, they act as deterrents to international investors in developing undersea resources, reinforced by direct political and diplomatic pressure from Beijing on foreign companies. US diplomatic cables released as part of the Wikileaks disclosure in 2010 noted that four US and eight non-US oil companies had come under direct pressure from Beijing to abandon projects in the region. At that time, five deals had been suspended or cancelled.

The potential consequences of a significant disruption of shipping in the South China Sea could be far broader. The militarisation of the sea, the number of separate claimants and the uncompromising legal stance held by China create a complex situation in a sea that annually carries approximately one-third of all global seaborne trade, according to the United Nations Conference on Trade and Development (UNCTAD).

"The militarisation of the sea, the number of separate claimants and the uncompromising legal stance held by China create a complex situation in a sea that annually carries approximately one-third of all global seaborne trade."

"Daily rates for supertankers operating through the Gulf can be up to \$42,000 a day, compared to around \$20,000 in calmer parts of the world." The Strait of Malacca, another key global chokepoint that serves as an entry point to the South China Sea, carries over 16 million barrels of oil per day, second only to the Strait of Hormuz as a key node for oil transit. More than two-thirds of South Korea's and 60% of Japan's energy imports, as well as 80% of China's imported crude oil currently transit the South China Sea. Rerouting this oil trade around the sea would cost an estimated \$600 million for Japan and nearly \$300 million for South Korea, according to the Asia Pacific Journal.

Disruption of merchandise trade would cause far greater complications, leading to at least short-term shortages of goods in trade-dependent nations in north-east Asia. For China, a US blockade of the Strait of Malacca would almost certainly affect its eastern seaboard, thereby effectively cutting off crucial oil imports.

HIGH STAKES

The stakes are therefore high. Over 90% of all global trade is carried by sea, according to the World Trade Organization (WTO), and significant proportions of both merchandise and energy trade are transported through the narrow Strait of Hormuz and the legally complex South China Sea.

Shipping companies, oil and gas producers and trade organisations can mitigate the risks to some extent by maintaining effective situational awareness. Governments can hedge against the risk of disruption to shipping by developing and using alternative transportation methods, such as pipelines. Navies can attempt to deter and disrupt any threats or attacks on shipping through close protection of vessels (convoys were used during the Tanker War in the 1980s, for example). "Tensions at sea are often symptoms of policies made on land, and without a resolution to the Iranian nuclear crisis, or a more comprehensive strategy to either deter Chinese coercion or co-opt China's growing power, it is unlikely that these maritime tensions will cease."

But the tensions at sea are often symptoms of policies made on land. and without a resolution to the Iranian nuclear crisis, or a more comprehensive strategy to either deter Chinese coercion or co-opt China's growing power, it is unlikely that these maritime tensions will cease. Neither waterway is likely to be closed to maritime traffic - both the Iranian and Chinese economies rely too heavily on the flow of trade through these passages and seas. Yet, the heightened geopolitical competition in both of these regions means there will continue to be a risk premium on both ships transiting these regions and the price of oil more broadly.

Christian Le Miere is the founder of Arcipel, a strategic advisory firm offering geopolitical intelligence solutions. He is a previous contributor to this *Journal* and also spoke at a Walter Scott Lecture Series event in the US in 2015.

ENDNOTE

THE WHOLE TRUTH



THE WHOLE TRUTH

BY CORDELIA FINE

Most people think they know their own minds. But do they? Cordelia Fine, author of A *Mind of its Own* and Professor of History and Philosophy of Science at The University of Melbourne, reveals the truth.

1) What evidence is there that we routinely deceive and distort the truth?

Most people are familiar with optical illusions in which we can intellectually see that, say, the two lines are the same length, but we can't help but 'see' one line as longer. These illusions occur because we don't have 'immaculate perception'. Although it seems as though we are perceiving the visual world directly, as it objectively is, in fact our visual experiences are constructed by automatic processing to which we do not have conscious access.

So too with our perception of other aspects of our world. Over decades, psychologists have identified an embarrassingly long list of biases to which we are susceptible. We have psychological data showing that we can be unaware of automatic, unconsciously operating influences on our choices, judgements and "Rather than helping to bring us closer to the truth, it seems that sometimes we use our uniquely human intelligence to justify and rationalise a preferred view (and persuade others to see things the same way)."

beliefs, meaning that our reasons for making those choices or judgements or holding those beliefs are not always, or entirely, what we think they are.

Nor can our conscious reasoning capacities necessarily save us. Rather than helping to bring us closer to the truth, it seems that sometimes we use our uniquely human intelligence to justify and rationalise a preferred view (and persuade others to see things the same way).

2) How do you know that people act in this way?

Whether it's discussions about who did the most housework last month. who deserves the most credit for a project, who or what's to blame when something goes wrong, or the risks of a technology, everyone knows how much people's opinions can differ, even when ostensibly everyone has the 'same' information. So, it's clear that people's minds are susceptible to distortions and self-deceptions. But social psychology findings also challenge the assumption that our moral judgements are grounded in reasons. Instead, there is an argument that our judgements are based on gut feelings, which we rationalise after the event.

3) Why do we do these things?

Broadly speaking, there are two kinds of reasons: unrecognised biases in our fast, intuitive processes; and motivated reasoning.

For instance, in a classic study by psychology professor Paul Slovic, clinicians were asked whether they would discharge a patient from a mental health facility. One set of participants was told that a trustworthy psychologist had concluded there was a 20% probability of the patient committing a violent act in the months following discharge. The other group was told that "of every 100 patients similar to Mr Jones, 20 are estimated to commit an act of violence" in the months following discharge. Even though the two groups received essentially the same information. clinicians in the latter group were twice as likely to refuse to discharge the hypothetical patient. Why? Apparently, because we draw on feelings as a shortcut for assessing risk. This rough-and-ready approach often works well, but in this scenario apparently equivalent ways of presenting the same information trigger different affective responses. As the study suggests, representing risk as probabilities (e.g. 20%) "led to relatively benign images of one person,

"Distortions can also arise out of conscious rationalisations that lead you conveniently towards a conclusion that protects your self-concept as a good and competent person or is otherwise convenient or self-serving."

ENT

unlikely to harm anyone" whereas the apparently equivalent representation of the same information (as 20 out of 100) "created frightening images of violent patients".

'Mr Jones' is a classic example of the quirks of efficient and good-enough intuitive processes. But distortions can also arise out of conscious rationalisations. Through biased information search, evaluation and recall, you can be led conveniently towards a conclusion that protects your self-concept as a good and competent person, shores up an important world view or is otherwise convenient or self-serving.

4) What are the greatest perils that can derive from this tendency? What other examples are there of decisions taken as a result of self-deception and distortion?

Rationalisations are particularly perilous. When I teach ethical leadership, I ask students to imagine how their colleagues would respond if they were to speak up about something unethical going on in their organisation.

Students can instantly reel off the rationalisations they would hear, and most of them fall reliably into four categories: materiality (It's not a big deal; you should hear what *they're doing at company x*); standard practice (Oh, everybody does it); loyalty (Well, maybe it's a bit unfair on the customer, but do you want the team to lose their bonuses or their jobs?) and responsibility (We're just doing what management told us to *do*). Comb through the psychological ashes of any major organisational scandal in which ordinary, decent people are involved, and you'll find these soothing calmers of conscience.

"Perhaps the most successful solutions focus on processes that help to weed out bias, rather than trying to 'debias' individuals."

5) How best can we guard against it?

Awareness of our many biases and blind spots is a good start, but they do tend to be much easier to identify in others than in ourselves – which is also a bias, of course! As a result, perhaps the most successful solutions focus on processes that help to weed out bias, rather than trying to 'debias' individuals.

A simple example is 'blinding' job applications (removing any way of identifying applicants), to prevent the biasing effects of stereotypes. On a larger scale, ensuring that teams and organisations include a relevant diversity of perspectives, and are open to dissent from majority opinion.

As John Stuart Mill pointed out, and contemporary social science confirms, even if that minority view is wrong, it may hold some of the truth, or help us to better 'know what we know'.

Cordelia Fine is a Professor of History and Philosophy of Science at The University of Melbourne, Australia. A regular contributor to *The New York Times, The Wall Street Journal* and *New Statesman*, she has written three popular science books. In 2018, she received the Edinburgh Medal, a prestigious award for scientists who have excelled in their field and contributed to our understanding of humanity.

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Phil McLoughlin Meanwhile, what am I to do

Walter Scott has been supporting emerging Scottish talent since 1988. In the same way that we believe that different perspectives within the team generate the best investment ideas, so we believe that our art collection should incorporate a wide range of work from an eclectic group of contemporary artists.

Our commitment to the art community is also reflected in our established partnerships with – and sponsorship of prizes at – the Royal Scottish Academy, the Royal Glasgow Institute of The Fine Arts and the Royal Scottish Society of Painters in Watercolour.

Like the art that envelopes it, The Walter Scott *Journal* was born of a desire to create something that is both considered and collectible. Each piece has been individually finished by hand, while the typeface, Miller – a Scotch Roman design, originating in Scotland and popular in the US – has been selected for ease of reading.

The *Journal* is bound using the saddle Singer sewn method in dark blue cord; a tailored finish that we hope reflects the care taken to create the pages inside.

