THE

WALTER SCOTT RESEARCH CONFERENCE

EDINBURGH 2023

Conference Synopsis

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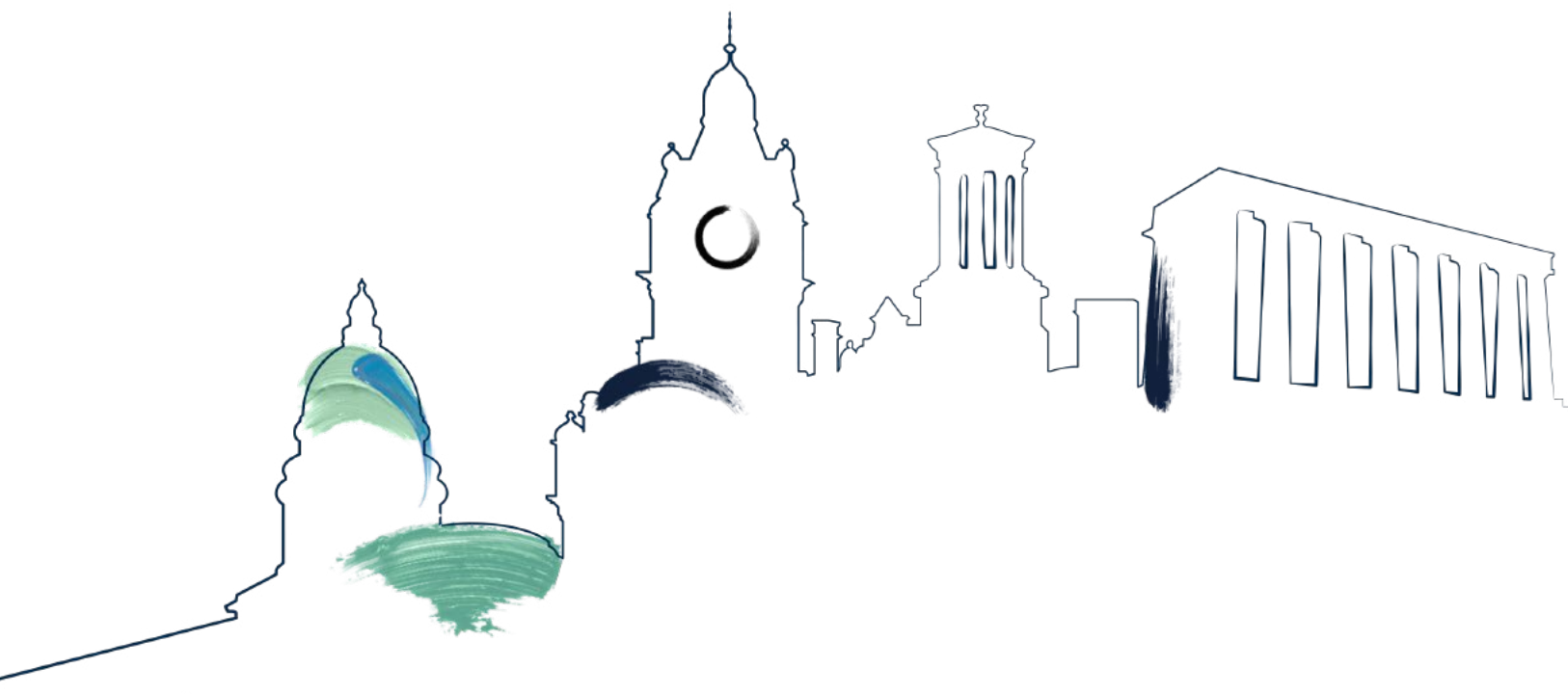
Walter Scott's fifth Research Conference in Edinburgh saw clients from around the world gather with our own team to listen to speakers from academia to politics, journalism, music, and business. Alongside professors there were senior executives from world-leading companies. We heard from members of Walter Scott's own Research team. We looked back at lessons that might be learnt from financial history and, of course, we looked forward. We heard about, and discussed, trends that the very best companies will not only navigate but, we believe, will leverage and benefit from over the decades to come.

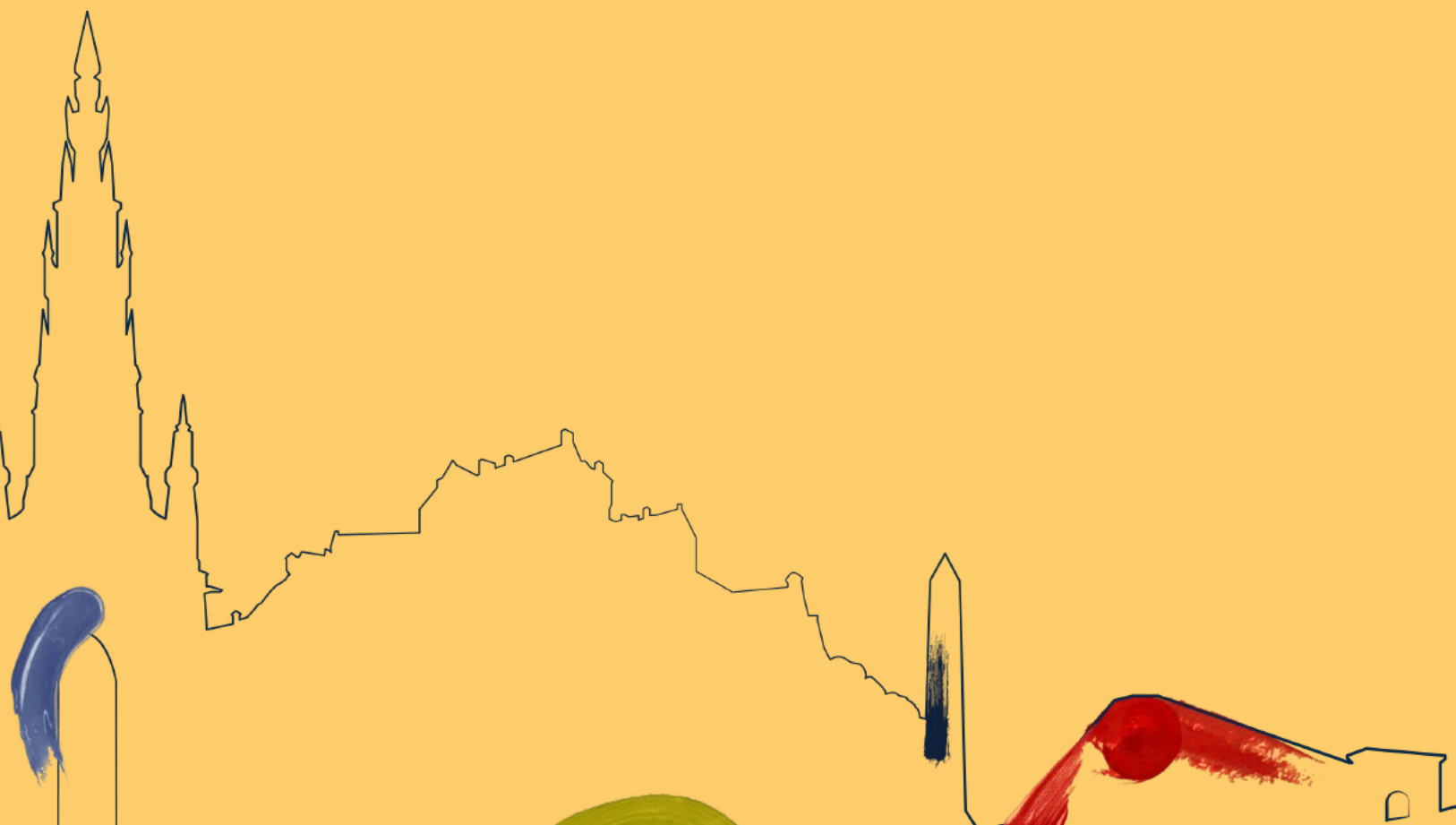
This synopsis is an account of those two and half days in Edinburgh. We have edited transcripts where possible or provided summaries of conversations and presentations where more practicable. Condensing the 30 sessions with over 40 speakers has required some editing, so where you would like to learn more or have questions, please do get in touch. We have always considered the conversations that take place out with the conference room to be an important, and enjoyable, part of all our events and so, in that same vein, we would be delighted to continue the conversation on any of the many subjects covered in this account.

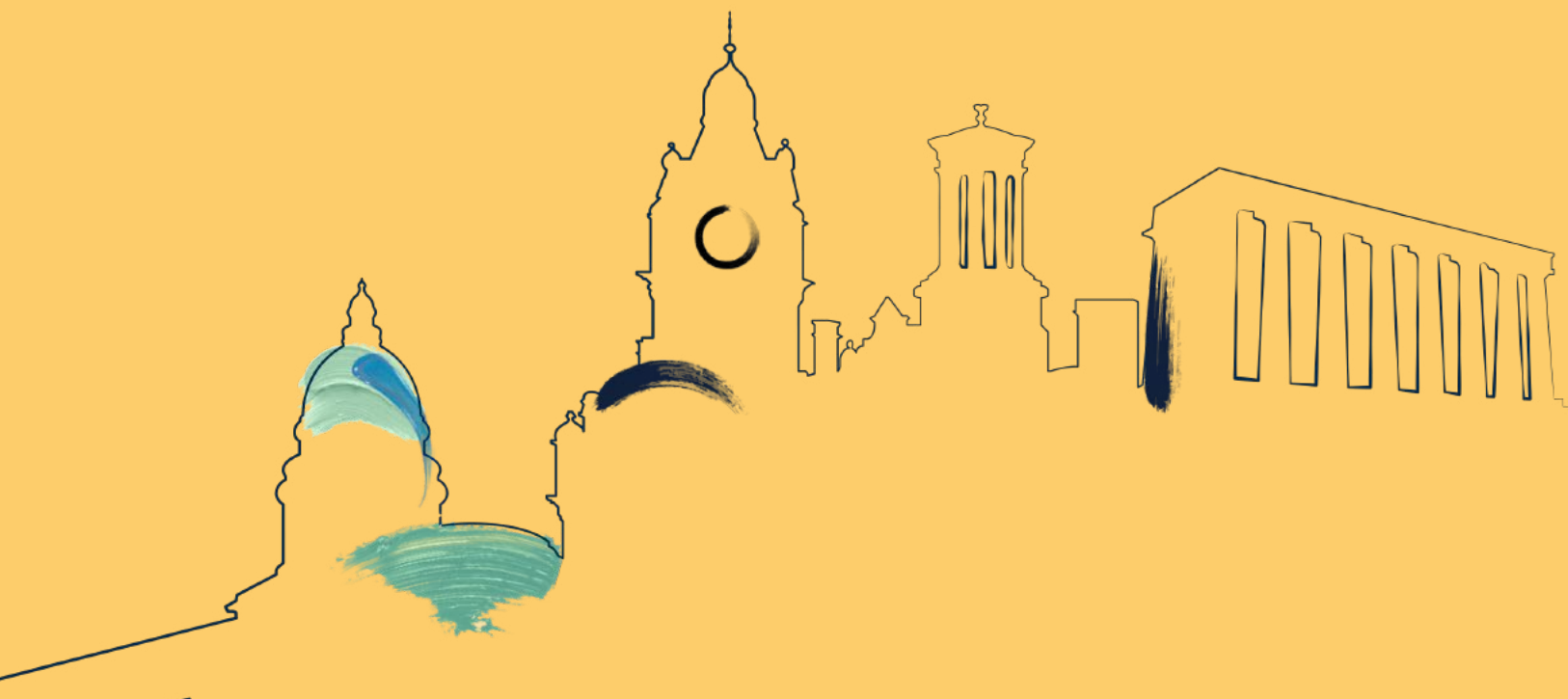


Contents

DAY ONE

TUESDAY 9 MAY, 2023





Welcome

Jane Henderson
Managing Director, Walter Scott

Introduction by Francis Sempill, Head of Client Service

Welcome to our fifth Research Conference. We're delighted to have you all here. For the regular visitors to our research conferences, you'll know that this is more of a marathon, not a sprint. It is an action-packed agenda. And we're really looking forward to the next couple of days with you all.

It's such a pleasure to see so many of you again, and we're very grateful to you all for making the effort to be with us for the next few days. I know that some of you have been to our conferences before, but for others this will be a whole new experience and one that we very much hope you will enjoy.

To say that a lot has gone on since we were last here in 2018 seems a little bit of an understatement. Who would have believed back then that within 14 months the world would be afflicted by a highly contagious virus and that we would be working from home for a prolonged period and separated from our families, friends and colleagues. We certainly did not envisage a war between Russia and Ukraine or that inflation would rear its ugly head, let alone contemplate that there could be the possibility of another banking crisis. This cluster of events or as Adam Tooze, one of our guest speakers this week, would term a polycrisis, has been interesting to navigate. Running the business and investing has had its moments for sure, but in many senses that's life and there's never certainty of what lies ahead.

Thankfully, some of the nightmares of the last few years have passed and life is pretty much back to normal post Covid. I'm pleased to report that despite the unexpected, our business hasn't missed a beat thanks to the resilience of all of our staff and also, thanks to all of you, our clients.

We've continued to evolve over the last few years and I thought I'd share some of the progress that we've made. We've welcomed new colleagues across many departments here in Edinburgh, but most significantly in the US. Our Boston office is now a team of nine and we have one colleague working out of New York. The role of the US team is really quite simple; to service our clients. And we've carefully constructed the team one by one, as and when we found the right people, just like putting together a portfolio of great businesses. Each member of the team has spent quite a chunk of time with us here in Edinburgh since they've joined and they're all here this

week. In addition to that, we've been sending colleagues from Edinburgh to the Boston office to make sure that we're deepening relationships across both offices.

We've also been investing in different ways to communicate with you all. I hope that you're very much enjoying the videos from our research trips, and that the passion and enthusiasm from the research team in doing their job is very evident.

Moving on to our board, we now have four independent non-executive directors with very different career backgrounds. Each brings a wealth of experience to our board discussions. Alex Hammond-Chambers, who joined our board almost five years ago, is now our Chair.

As communicated last year, our board will change again in June when we say a farewell to Jimmy Smith who is retiring after 40 years of service with the firm. Jimmy has been a major cog in Walter Scott's wheel and leaves a legacy of highly capable colleagues who have had the good fortune to be trained by Jimmy with his pedantic attention to detail and constant strive for excellence.

Whilst evolution, change and uncertainty are inevitable in many aspects of our business, we have remained resolute in sticking to our investment philosophy throughout not just the last few years, but the last 40 years since Walter, Ian and Marilyn started our business in 1983. At its most basic, it's common-sense investing; our job being to find innovators that have tried-and-tested business models; to understand how they have thrived over many decades. We then need to buy and hold them for as long as we possibly can to benefit from the power of compound growth.

"Sharpen the pencil. Hone your mental arithmetic skills. Switch on the think gland. Be inquisitive. Be curious. Be sceptical. Understand the business."

The lesson that we were all taught as trainees at the firm and still stands today is this: there is a prize for the single company that has the ability to live in our portfolio for the next 20 years. So, sharpen the pencil. Hone your mental arithmetic skills. Switch on the think gland. Be inquisitive. Be curious. Be sceptical. Understand the business.

And that is why we're here today. We view this conference as an extended research meeting, bringing some of our research to life by hearing from leaders of businesses along with academics, commentators, and former politicians; hearing about some of the most important issues and opportunities facing world-leading companies. We've always believed that our approach to research is distinct, and we hope to be able to prove why over the coming days. We've tried to pack as much as possible into the two and a half days that we have with you all and we thank you sincerely for taking the time to hear what's on our minds and what may shape portfolios of the future.

Professor Paul Marsh
Emeritus Professor of Finance at London Business School

Learning From Yesterday

A delve into a 123-year history of investment returns provides a lesson for what future performance might look like.

Introduction by Roy Leckie, Executive Director

If you've been associated with Walter Scott for any length of time then Professor Paul Marsh will be familiar to you. He's been a regular feature at our Edinburgh research conferences. He has contributed to a number of events that we've held overseas and also been a regular contributor to our *Research Journal*.

Paul is an emeritus professor of finance at the London Business School and he is widely recognised as having an unrivalled understanding of long-term investment returns. So there really is no one better to kick off the conference.

The purpose of our research on long-term returns is not just to document the past, but to analyse, interpret, and learn from it. We want to help investors understand the investment challenges they face today but through the lens of financial history.

When we measure performance, we look at total returns because reinvested dividends make a huge difference to long term investment returns.

Over the last 14 to 16 months inflation, hiking cycles and real interest rates have been the biggest drivers of asset returns. Financial history provides us with considerable evidence on the impact of these three factors on asset returns. Going back to when our data starts in 1900, spikes in inflation have tended to coincide with wars and energy crises. And we had both of those in recent years. By the start of 2020 we were at the lowest end-year average inflation rate since 1934. But by the end of 2022 inflation was up 19 fold from the 0.4% to 8%.

Historically, high inflation rates have been bad not only for bonds, but also for equities. Although it is often claimed that equities are a hedge against inflation, this is not true. Equity returns are negatively correlated with inflation. However, over the long run, equities have beaten inflation, but that is because of the equity risk premium, not because they are an inflation hedge.

Inflation may have peaked, but historically has proved to be sticky. In paper published recently, Arnott and Shakernia looked at inflation episodes in 14 countries between 1970 and 2022. And it showed that once inflation hits 8%, it can take a very long time to get back to your target inflation levels.

Two negative factors besides inflation have hit returns over the last 16 months. One is the cure for inflation, which is to raise interest rates. Last year, the era of ultra-low rates ended with a bang as the Fed hiked rates aggressively in the US. Hiking cycles are typically bad news for both stocks and bonds.

The second additional negative factor weighed was that real yields fell sharply as rates rose. The low rates we've had over the last two decades supported asset values, but following a 2% increase in real interest rates in the space of 12 months, this has gone into reverse. That is bad news for asset values because by increasing the rate at which you discount you are decreasing asset values.

Since 1950, baby boomers have enjoyed 6.7% annualised real USD returns on bonds and equities which is a classic 60:40 split. Since then returns have fallen. Generation X has seen return of 5.2%, dropping to 4.2% for the millennials.

> *"The longer you look back, the farther you can see forward."*
> **WINSTON CHURCHILL**

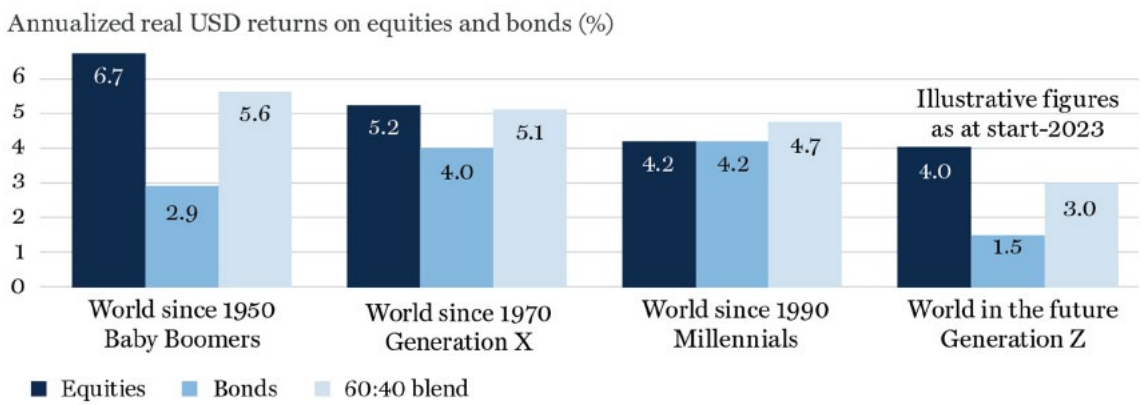
When looking at prospective returns I'm going to use a very simple model. The return we should expect in the future is the real interest rate plus a premium for the risk of the asset class we're looking at. The real interest rate provides the baseline for all risky assets. So looking at Generation Z, which for you is the investment portfolio of the next 25 years, our reasonable best guess today will be a total annualised return of around 4.2% for equities and an equity risk premium of 3.5%.

On an equity risk premium of 3.5%, you'll double your money relative to cash in 20 years. The real story here is that previous generations have been lucky. They had windfall gains on stocks while Generation X, millennials and to some extent, the baby boomers also enjoyed windfall gains on bonds, which are unrepeatable

We've exited the ultra-low rates environment. The bad news came with a bang in 2022. Inflation, hiking cycles and higher real interest rates all lead to lower prices for stocks, bonds and real estate, but these factors should now all be priced in.

Prospective returns are now higher than they were a year ago, that's the good thing about falling prices of assets. The good news is that from that lower base, you can expect a higher return in the future. After world of ultra-low rates produced a distorting effect, we're back to more normal parameters for risk and return.

RETURN PROJECTIONS FOR THE NEXT GENERATION



We have exited from the recent ultra-low return environment.

Source: Elroy Dimson, Paul Marsh and Mike Staunton, London Business School (© 2023)

Jane Henderson, Managing Director

Simon Murray CBE
Former Chair, Glencore; adventurer & author

Bronwen Maddox
Director and Chief Executive, Chatham House

The End of Globalisation & A New Centre of Gravity

In conversation with Bronwen Maddox, Simon began by telling us about his nomadic and somewhat chaotic early years which proved to be the grounding for what has been a remarkable life. Sharing stories from across his career, it became clear that his straight talking, alongside an ability to seize any opportunity put in front of him, have been a key part of his success.

Introduction by Jimmy Smith, Executive Director

When Simon Murray appeared on the radio programme Desert Island Discs in 2009, the host said that many of us would struggle to do in three lifetimes what Simon has achieved in one. Asides from his many adventures he has also achieved a lot in his working career and in many ways, Simon's career path, and the companies he has been part of, reflects my investment career and interests at Walter Scott.

He spent five years in the French Foreign Legion in Algeria. Next, came the call of Southeast Asia. He joined Jardine Matheson where he spent 14 years, before becoming Tai pan of Hutchison Whampoa for 10 years, running a mix of businesses including ports, retail property, Hong Kong electric and the Canadian company Husky Oil for Li Ka-Shing, Asia's richest man. He founded Orange, a global mobile phone business, which was sold for $36 billion US dollars in 1999 to Mannesmann. More recently, amongst an impressive range of board positions, Simon was chairman of Glencore the world's largest commodity business. He has also written two books and is a renowned adventurer who at the age of 63 became the oldest man to reach the South Pole unsupported.

From a junior position on a merchant ship to being a trade apprentice in an iron foundry to life in the French Foreign Legion, Simon outlined how the skills and strategies learnt in those roles weren't just forgotten when he moved into the corporate world but were critical to his success both in management and across boardroom positions over decades.

On energy

From his early career at Jardine Matheson in Singapore to his more recent role as Chair of Glencore, he has watched not only countless commodity cycles but the world's changing approach to energy. Summing up his views today he explained:

I first entered the energy business when I joined Jardine Matheson in Singapore in 1996. I ran their engineering division and then moved into oil and coal and in fact while I was at Jardine's I brought the first shipment of coal into Hong Kong. My view now on energy, having been in the energy business for now quite a long time, is that nuclear power has to be an important part of the energy transition story.

According to Stanford University we are burning 3.6 cubic miles of oil today. By 2050, we will be burning the equivalent of seven cubic miles of oil, and we don't have the capacity in renewables to replace that. So, we'll probably end up with a scenario where 40% of the baseload will be nuclear and then 60% will be between divided oil, coal, gas and renewables, wind and solar. For renewables, storage is the problem.

On China/US relations

Simon has not only witnessed remarkable change within the energy markets, he has also had a front row seat in corporate China over several decades. He shared memories from his first visit to the country in 1970 and recounted his longstanding connection with Huawei. Simon met it's founder thirty-five years ago when Hutchinson Whampoa became Huawei's first customer, and he has been an advisor to the company for twenty years as the company as grown into one of the most important tech infrastructure companies in the world. He shared his thoughts on the company's culture, approach to its staff and life on its campus. He also reflected on the perspective that comes from witnessing China develop since the 1970's. Asked about his view on China/US relations today, he also stressed the importance of looking back over time, of perspective and patience:

"Some years ago, I read a speech by Lee Chow, a direct descendant of one of the emperors of China. Addressing the American Asia Association in Washington he said, 'it warms my heart to see that the Chinese are beginning to understand the Americans and the Americans are beginning to understand the Chinese'. Then I looked at the date – July 4, 1910. The Chinese are patient people."

How to Spot an Extraordindary Company

The decades-old method at the heart of our stock selection process.

Alan Lander
Investment Manager

Alex Torrens
Investment Manager

Alex Torrens

When Alan and I were asked to give a short preview on how the Research team at Walter Scott goes about spotting extraordinary companies, we sat down to talk about what we might say and quickly concluded that there were too many things we'd like to talk about in 15 minutes. So we're not going to talk about how we judge the quality of a business from a more qualitative perspective. We're not going to talk about valuation. We're not going to talk about how we interview and interact with management teams. What we do really want to talk about is the part of our investment process that we think is very special, and sometimes a bit underappreciated. And that's the initial financial analysis that we do and that we refer to as the spreadsheet. We think this is an amazing tool in and of itself, but also really importantly, we think it's a great way of really enabling our team-based scrutiny and our team-based decision making.

Alan Lander

There are many facets to Walter Scott's investment approach and how it spots extraordinary companies. But it all starts with what we refer to as 'the spreadsheet'. This powerful tool forms the basis of Walter Scott's team-based scrutiny, and our team-based decision making.

Simplicity lies at the heart of the spreadsheet and it's a tool Walter Scott has been using for the last 40 years. We refer to it as a 'spreadsheet', but it predates Microsoft Excel and used to be filled in by hand with a pencil. It has evolved a little from what it was back in 1983 to what we have today but the structure is largely unchanged; because it works. It's a fabulous tool that helps us to distil the financial model of a business onto one page. And what's more, it works across sectors and geographies. The Walter Scott spreadsheet is the lens that we use to view businesses across the global economy.

Alex Torrens

What is also really important is that any of us can pick up one of these spreadsheets for any business and immediately start to get an understanding of whether it's a growing, profitable business with a strong balance sheet or not.

When management teams visit us from companies that we don't know that well, we can do a spreadsheet and immediately start to understand some of the strengths and weaknesses of the business. The familiarity of the spreadsheet is absolutely critical in making an investment judgement call accessible for all of us.

Alan Lander
There's a huge amount of value in the process of completing the spreadsheet and Walter Scott's research process is specifically designed to extract that value. We don't outsource the number crunching to a team of analysts and we're certainly not looking to automate this process. The stock champions of all the investments that we have complete this spreadsheet themselves.

We strongly believe this is the best way to build a deep understanding of a business. It's only by doing that analysis by hand that you start to feel the subtle changes in the numbers from year to year and ultimately, what that all means for the business.

When I was first given a spreadsheet to complete I was told that the spreadsheet itself is not the analysis. The numbers are not the end result. Rather, this is a process, a tool that we are using to build understanding of the business.

Alex Torrens
The spreadsheet is really useful when it comes to assessing the quality of a business. Sometimes, when you pick up a company's set of accounts for the first time, and you try and do a few years of the spreadsheet, it's so easy. All the material numbers are explained clearly, and you understand how everything fits together. You can go through the accounting policies of the business and immediately see, for example, where a management team has elected to pursue a more conservative approach when they could have done something more aggressive that would have boosted the earnings power in the short term. You can pick up all of this, line by line and number by number, as you're going through the spreadsheet.

Conversely, sometimes you start doing a spreadsheet and it's feels like a bit of a slog. You don't have a great feeling for how some of the numbers are fitting together. You look up the notes to the accounts, hoping to have something explained and the explanation isn't a good one. By the end of the process, you've only maybe done a few years of the spreadsheet and you've already got 30 questions for the company. Now, none of that means that the idea is necessarily dead in the water, but it certainly informs what you ask next, and how you ask it and what you're looking for in the response that you get from that management team.

Alan Lander
Is there is one number on the spreadsheet that is the most important? There are a lot numbers on the spreadsheet and they all have their value. But if you had to twist my arm and ask me for one particular number, it would have to be what we call the internal rate of return. This is our measure of cash profitability. It is different from the textbook definition of IRR, instead this is a Walter Scott measure which looks at the cash return on capital employed.

Cash flow analysis sits at the heart of the spreadsheet, and at the heart of Walter Scott's investment philosophy. We select strong wealth-creating businesses. This internal rate of return is a way that we measure wealth creation; we're looking for businesses that can achieve an internal rate of return of 20% or more.

Alex Torrens
I agree that IRR is super important but the real beauty of the spreadsheet, I think, is being able to see all these things in one place. We talk about getting the growth, the profitability, the balance sheet strength, the valuation of the business into alignment. Through the spreadsheet we can see all these things and start to judge the context of these things next to one another.

Eric M. Green
President, CEO & Chair of the Board, West Pharmaceutical Services

Innovating Since 1923

On April 14 2023 West Pharma celebrated its 100th anniversary. That hundred years brings a level of responsibility because it means looking forward to what we will do over the next century.

Introduction by Matthew Gerlach, Investment Manager

By way of introduction, I joined Walter Scott about seven years ago, having completed my summer internship in 2015, which as many of you know is a common route into research. Today, I have the great pleasure of introducing you to our next speaker, Eric Green the CEO and Chair of West Pharmaceutical Services, a global leader in vial and syringe containment solutions, starting with stoppers and plungers for injectable drugs. And it's a great example of the many rare characteristics that we look for in a company. On top of strong financial returns and prospects for long term durable growth, West plays a critical part in advancing health care around the world. Under Eric's leadership, the company has continued to make great strides, particularly in the areas of high value solutions, manufacturing, automation and customer centricity in addition to helping with the Covid vaccines.

Our purpose is simple: to improve patient lives. We're a quiet company, we're behind the scenes and while you don't see our brand we support the entire pharmaceutical biotech industry. Every day in North America and Europe, roughly seven out of 10 injections that are administered, have a component that comes from West Pharma or our partner Daikyo. In the biologic space, it's closer to nine out of 10.

The fastest growing part of healthcare is injectable medicines. Within that, the fastest growing areas are biologics and biosimilars, where we also have market leadership. We are the global leader in containment and delivery of injectable medicine. Our strategic plan is built around three pillars: execute, innovate and grow.

We have a diverse portfolio. Not only are we agnostic to the drug companies, we can support multiple drug companies of all sizes in most geographies across the globe. We produce 47 billion components every year across three product areas: vial containment and syringes; administration and reconstitution; and drug delivery and components for diagnostic devices.

Over the last six to eight years West has grown by moving customers up the spectrum to use higher value products. We moved from a product-driven to a market-led approach and that enabled us put a structure in place that shaped the product portfolio we needed to support our customers from the earliest stage of their development. This approach also drives our R&D in our technical expertise and underpinned our global push to deliver the same products and standards to customers across the globe. We've globalised and digitalised our organisation. In 1965 we manufactured roughly 121,000 components a day. Now that number stands at 128 million.

We've taken core standard products and created additional services and capabilities that our customers have historically outsourced and or didn't have internally and that has helped us increase margins to 80% on some products and to an overall gross margin in the high 30s compared to 27% 10 years ago.

That margin expansion is completely organic, from moving our customers up the value curve to generate better economics per unit for the same volume, resulting in better performance for the patients.

We're now getting into systems that are being driven and formulated by the regulatory authorities or

DELIVERING CUSTOMER NEEDS WITH HIGH-VALUE PRODUCTS & SERVICES

Source: West Pharmaceutical Services

other macro trends. Our growth in the biologics market is because we have the advanced technology. We're in the top 50 biologics in the marketplace and our participation rate remains very high. In other words, once a drug is approved, West or our a partner Daikyo will frequently be on that drug going forward.

When the pandemic hit West was already working with several drug companies on new technologies with messenger RNA and we partnered with drug companies to develop mass manufacturing of our components. We supported 8 billion doses of Covid vaccine.

We invested $700m in capex in the three years from the start of the pandemic because we realised that the products that we produced for Covid could be fungible for other new drug launches today and into the future, whether it's in biologics, generics, or in small molecule pharma. We're going to spend an additional $350 million this year on additional expansions with a focus on brownfield developments which are quicker and cheaper to scale up.

Our high value products are positioned for the megatrends in the markets today, whether it's helping to deliver drugs to tackle obesity, or new ways to treat Alzheimer's. We're also working on new technologies, particularly around devices, such as a SmartDose on-body drug delivery system which allows high end biologics to be delivered in the convenience of the patient's home, addressing the trend of decentralisation of healthcare. In the last five to six years, we've reinvested or returned cash of about 2.4 billion and about half of that in capital investment. We believe the

number one use of cash at West is to invest in ourselves and invest in our organic growth story.

I'll end with a quick story. I was visiting a plant in Germany, one of our largest, and was talking to four or five individuals who probably produce about 20 to 25 million units a year. I asked, how do you ensure the highest level of quality? And the response I got was that they worked with the dedication and detail to quality as if each and every one of these components has a patient name on it. You can't buy that commitment, you can't put banners up that teach this. It has to be part of your company DNA. And when I talk about how we are going to write the future, I know that our future will be written with "the patient's name on it." That's our focus as we think about sustainability, scalability and durability through any crisis that we may face. I have had five predecessors over the last 100 years. They've been all true to the core of this company. It is a remarkable organisation. Thank you for your time.

Dr Hannah Fry
Professor in the Mathematics of Cities, UCL; award-winning science presenter

Technologies Shaping the Modern World

A short review of Hannah's presentation and the 'on-stage' conversation with Investment Manager, Max Skorniakov that followed. Through a series of examples Hannah demonstrated the pace of technological development, providing perspective on the consequent risks and challenges whilst also reminding us of the potential for progress, for the benefit of all.

Introduction by Max Skorniakov, Investment Manager

Since joining Walter Scott back in October 2003, I have developed a strong interest in technology and so I am delighted to introduce our next speaker, Hannah Fry, a professor in the mathematics of cities at UCL and a renowned broadcaster. She is going to share her thoughts on emerging technologies and how they will shape our future. We hear so much about risks and concerns around new technologies but Hannah has promised this is going to be fun. So, let's get on with the fun.

Hannah entertained us all, sharing stories of academic experiments whilst also challenging the audience to get involved. But it wasn't all fun, Hannah also addressed some of the most pressing issues facing society today, issues that governments and corporates are trying to navigate and regulate. She presented the case that artificial intelligence, and algorithms, might make for a fairer society, removing the possible bias of a judge, for example, in criminal trials. But Hannah also reminded us of the risks. She outlined the active research around the 'alignment problem'; the difference between artificial intelligence doing what you ask, but not necessarily what you meant. She shared examples of this mismatch and in assessing new technologies stressed the need to really think beyond the design, production and distribution; to think about the interaction of that technology with the world that you're embedding it into.

"She presented the case that artificial intelligence, and algorithms, might make for a fairer society, removing the possible bias of a judge, for example, in criminal trials."

Paul Marsh
Emeritus Professor of Finance, London Business School

Russell Napier
Equity Strategist, Financial Historian & Founder, Library of Mistakes

What's Next for Long-term Returns?

Professor Paul Marsh and Professor Russell Napier shared their thoughts on long-term returns and answered audience questions. Their conversation covered an array of subjects from equity cycles to valuation metrics, the case for investment in China and Japan, the impact of inflation and the role of central banks.

Introduction by Fraser Fox, Investment Manager

I'm thoroughly looking forward to our final session of the day, what's next for long term investment returns. This really is the million-dollar question. And there can be few people better qualified to tackle it than our next two speakers. First off is my great pleasure to welcome back Professor Paul Marsh, who kindly opened proceedings for us this afternoon. As mentioned earlier, Paul has been a permanent fixture at this event since our very first conference in 2008 right in the depths of the GFC. Whilst Professor Marsh is a Walter Scott conference veteran Professor Russell Napier is making his debut today. He is however well known to many of us. Russell has worked in the investment industry for over 30 years and has been advising global institutional investors on asset allocation since 1995. He has authored several books and is also founder of the Practical History of Financial Markets course at Edinburgh Business School. This is an intensive, multi-day course that many of Walter Scott's Research Team have completed. In fact, I attended the very first session almost two decades ago.

Professor Russell Napier

Earlier today Paul talked about how we can learn from the past to understand what the future might hold. I've got some views about what I think the future holds so to start the discussion I'm going to choose a specific period in financial history, from 1966 to 1982.

The reason I chose this period is because of something called 'financial repression'. For those of you not familiar with the term, it means that the government gets more involved in the allocation of private sector capital in one way or another, doing so with the aim of keeping the yield curve below the rate of inflation. You might well ask why they would do something as stupid as that and the answer is that it's when we've got too much debt in the system.

If we look at the total debt in the developed world, and the total would be the household sector, the corporate sector, and the government sector, and you look at that as a percentage of GDP, it is almost certain that it's never been higher in human history. It is almost certainly higher than after World War Two.

After World War Two, the solution for the countries with a particularly large amount of debt, was to force savings institutions to buy certain instruments. Most people think that would never happen again, but three weeks ago Jeremy Hunt, the British Chancellor of the Exchequer, was asked if he could see a time when the British government would force defined contribution pension funds to buy certain assets. And he replied while that this was something with which he was not instinctively comfortable, he definitely wouldn't rule it out. This is from a, shall-we-call him, 'centre right' politician, certainly not someone branded as left-wing. Something is changing in the air, but the willingness of government to do this, and I believe the root cause of it, is a need to inflate away debt which cannot be done by inflation alone.

It has to be accompanied by the repression of interest rates. Over the past 10 years, we've been lulled into a false sense of security because central bankers have bought government bonds through quantitative easing. A rapid expansion of the central bank balance sheet, which entails a rapid creation of money in the form of commercial bank reserves is something we've got used to since 2009 and up until the present day.

But that was all in a period of low inflation. To expand the central bank balance sheet in a period of high inflation is not going to work. It's far too dangerous. So, we're coming into

this period which is similar to the one we faced in the UK after World War Two. We still had a fantastic return from equities between 1945 and into the mid-1960s but that then changed. America came to this rather late but, I want to stress, for those of you who don't think America would ever do this, the last president of America to bring price controls, wage controls, credit controls, capital controls was that well-known left wing politician Richard Nixon! Needs must when the devil drives, so my view is that we can maybe condition what the next 16 years of the system will look like, by the need to alleviate this high debt burden.

Professor Paul Marsh
The period between 1966 to 1982 gets a very bad press because it's held up as the counter argument to 'stocks always go up in the long run'. But it's actually not the 'long run'. It's a 17-year period. How bad was it? Well, the Dow went down over the 17 years by 10%. But who cares about the Dow? It's an absurd index is calculated in a crazy way. It does not reflect the value of American business. So, let's look instead at the S&P. Or even better, the DMS index for America, which is the CRSP index. And when you look at that, you'll find that US stock returns were 7.3% per annum over this period. But as Russell said, inflation was high. It was running at 6.8%.

The idea that you'd have been better out of stocks over this period is nonsense because bond returns were minus 2.2% per annum over 17 years. And so even over this disappointing period, stocks beat bonds by 2.8% per annum. And lastly, the US was an outlier here. The US had a real return of 0.5% per annum. The rest of the world had a return of much higher than that 3.9% per annum: 1.6% in Canada, 1.8% in Europe, 4.3% in the UK, and a staggering 9.5% in Asia over this period. So there was something about America particularly over this period.

The period does though, as Russell has said, have a number of things in common with what we're seeing today. One of the things in common is inflation. The second thing in common is that we spent a disproportionate amount of our time in rising interest rate cycles.

But the big question – is it going to be typical of the future or not? I think Russell and I would take a different view on that. I agree that there was certainly financial repression over this earlier period. But I don't believe that is what governments or central banks are trying to do now. I believe they are genuinely trying to get inflation out of the system.

"The big question – is it going to be typical of the future or not? I think Russell and I would take a different view on that."

And if you get inflation out of the system, financial repression is rather harder. And so I stand by the predictions that I made earlier, that returns will be pretty good for the next 25 years.

Professor Russell Napier
We picked 1966 for a reason to do with valuation as well. I don't think you are as big a fan of the cyclically adjusted PE (CAPE) as I am but when you look at the return for the S&P and the return for value stocks, value significantly outperformed during this period. There are lots of mantras about that period but the most important one is that equities don't really protect you from inflation in a period like that. But the mantra should really be that overvalued equities don't really protect you very much, because value equities did give you much more protection.

Maybe the reason they give you more protection is because they started on lower valuations. By 1966, America had been through a tech boom, a conglomerate boom. You can see certain things beginning to rhyme here. So is the lesson from history that equities can defend you from inflation as long as you buy them at the right valuation? It just happened that in 1966, when everything started to go wrong, they were very overvalued.

Professor Paul Marsh
I'm not a fan of CAPE. It's a PE ratio, where you take the average earnings over the last 10 years rather than current earnings. And for that reason, it is called cyclically adjusted, with the idea is that a cycle is 10 years. But is a cycle 10 years? Where are we in the cycle now? Can you spot cycles with anything except hindsight?

There are a lot of very respectable academics, people much cleverer than I am, who analyse CAPE very carefully. They fit CAPE to historical data, and they show that it predicts but unfortunately, they are fitting it to past data, so of course it fits. If you look at something that's fitted perfectly to past data, it perfectly fits past data and gives you the turning points in the past.

So, I think that CAPE is a little bit hindsight, a little bit of optical illusion. I'll say one other thing about CAPE and that is if you think about what it is. It's a PE ratio, it's the price per unit of earnings. And why should the price be high? Well, it could be higher if there was higher expected growth at a particular point in time, or it could be high if you had a much lower discount rate. And when would

you have a much lower discount rate if real interest rates were low. If you go back to the 1966 to 1982 period, you'll find that the real interest rate in '66 was round about 2%. The real interest rate in '82 was about 6% So no wonder CAPE was, at the beginning of this period, very different from at the end of the period. I'm not saying it doesn't give any signals or it doesn't have any predictive ability. All I'm saying is that it isn't a very good market timing rule because it gives too many false signals.

I agree with the proposition that if you, if you buy cheap equities, they will protect you from inflation. What I'm arguing against is the idea that we can be absolutely confident about when equities are cheap. And so that's my problem with it. You are right that if you go back and look at value investing over this period, it did well, it did much better than growth stocks. And if you look at value investing in the UK over this period, it did very well. Much better than growth stocks, but equally you know, we could talk a lot about value investing, but value investing has had a long period in the slough of despond.

Professor Russell Napier
Indeed, that's putting it mildly.

Professor Paul Marsh
And it was towards the end of the Covid period that value had something of a comeback. But I think the question for the future is whether what I call mechanical value will continue to outperform mechanical growth. I think, you know, good stock picking, which is what good stock pickers do is that they're always trying to buy cheap stocks and avoid the expensive ones. I think there's always a future for that.

Professor Russell Napier
I've known people at Walter Scott for a very long time. I've got many descriptions for them, but mechanical definitely isn't one of them! But we do now need to get the audience engaged.

Audience Q & A

Question
Why do you think it took so long for the inflationary environment we are now in to arrive?

Professor Russell Napier
You're right. Many people have been saying for the last 40 years that the debt to GDP ratio has been too high and asked why something wasn't done about it. My view is there was an attempt to do something about it. Many people thought that the actions of the central bankers from 2009 would create a lot of inflation. And you can't do a repression without inflation. But that didn't happen. And that was the great surprise.

Obviously when Covid came there was an even bigger jump in debt to GDP levels. I'm sure you know that if we take December 2019 to current, 40% of all the dollars made in human history have been made since 2019. This time we managed to created inflation. But how? Is there something in the policy settings from 2020 which accounts for this?

I think the answer lies in the commercial banking system. And if you go to the Bank of England's website, they explain that 80% of all the money in the world is made by commercial bankers. During the Covid crisis, the commercial banking system expanded because many of its loans were guaranteed by the state.

So, in my opinion, what happened is maybe by accident, the government stumbled across the magic sauce for creating inflation. I'm sure Paul is right that governments want inflation to be lower than it currently is. But the history of financial repression is a government being very actively involved in the banking system. That's what we've seen in the last two months, a government being forced to be more active in the banking system. That's to shore up the liability side, but they showed in 2020 that they'll also be quite active in directing the asset side. So in my opinion, that's why debt to GDP is even higher, and China stands out in this regard. If we go back to 2009, China had a very low debt to GDP ratio. Now it's higher than America's.

I think we've just run out of road and that's why I think we're getting to financial repression. And I think in 2020, they perhaps stumbled across the mechanism. And when Jeremy Hunt says that he's not instinctively uncomfortable about forcing people and forcing pension funds to buy certain assets. That's a sea change.

Question

We have an inverted yield curve, we have a bit of a concern about banks and credit has been tightened. And the thing that I read in textbooks is that the effects of that are not fully understood until a long time after. What does history of markets tell us about inverted yield curves, credit tightening and what kind of caution we might need to exercise?

Professor Russell Napier

Well, you should be very wary of an inverted yield curve. I'm going to argue that this time it's different. Because what we've witnessed in the last two months is that it's just triggered the government to intervene more in the banking system.

No one that I know of has ever looked at China and said, hey, here's an inverted yield curve coming you better be careful. Because the Chinese banking system is not a commercial banking system. It's a puppet of the state. I realise that's a pretty radical statement. But I think what we see and what we will see over the next few months is the government's having to get involved to make sure these banks keep lending. And that's exactly what they did in 2020 and very successfully, by providing guarantees.

So, I'm going to argue that the thing that will condition this cycle is that instead of getting exactly what you say should happen in inverted yield curve, you actually get much stronger government intervention in the banking system, which on the upside means it's not so bad a recession. And on the downside, it's as you know, another jump into financial repression where the state is playing more role and allocating bank credit as well as allocating savings. The Inflation Reduction Act is a great stimulant.

Question

Does it mean that inverted yield curves will matter less in the foreseeable future?

Professor Paul Marsh

There is an element of folklore about inverted yield curves predicting recessions. The period over which it seems to have been successful at predicting recessions is quite short. There have not been that many recessions since 1950.

Professor Russell Napier

If you take all the recessions from 1945 to 1991, the average contraction of the S&P is 11%. It's in the 21st century that we've seen these massive collapses in corporate profits of 30% to 40%. Because they've been very different types of recessions they've come with deflation or credit crisis. We've got availability bias. We all look to the last three recessions and think it will look like that. When I started my career, I was told that deflation was impossible, then we had it every recession for three recessions.

Question

Could either of you or both of you comment, that investing in China today is very comparable to investing in Germany in 1937?

Professor Russell Napier

I think that's exactly right. Paul?

Professor Paul Marsh

One of the one of the startling things about investing in China since it reopened, is that despite the phenomenal economic growth in China, China has slightly underperformed the world indexes. Economic growth in China has not fed through into stock market riches. At the moment, of course, the uncertainties are very large as to whether or not China is at all committed to capitalism. And I think it's the future is very hard to predict.

Question

Over the years we have sparred on occasion about Japan and the prospects for Japan. At Walter Scott, we have found Japan a brilliant place to stock pick without ever trying to produce a particularly compelling top-down narrative for the market. You have on occasion, I think, been very optimistic about the top-down prospects for Japanese stocks. Do you still hold that view?

Professor Russell Napier

I hold that view but more importantly, Warren Buffett holds that view. If the world has to inflate away its debts, it would be impossible to say that Japan didn't have to do it as well. So if we give you the numbers. The total debt to GDP ratio of America is about 260%. Which would be the highest it's ever been. The United Kingdom is 300%. France is 370% and Japan is 415%. So, if ever a country needed to do this, it's Japan. Warren Buffett has borrowed yen to buy the most geared sector of the economy, which is these things called the '*sogo shosha*'. He's gearing on gearing if you think a company is going to inflate away its

debt, maybe that's what you need to do. I think that's beneficial for equities.

And then the second point would be back to the China situation. Who is the beneficiary of closing China? It's Japan. Not stock by stock because you'll know that some of your stocks have quite big businesses in China or sell machine tools to China, but generally speaking the sad history of Asia is that wars have been some of the triggers for economic growth. In the 1960s it was the Vietnam war. And the trigger to get Japan going was the Korean war.

We're all hoping and praying this is a Cold War. But I think, you know, we're all thinking Vietnam is a big beneficiary of this and it may well be, but let's not look past Japan or South Korea as well.

Professor Paul Marsh
I never make specific market predictions or at least only make ones that will take so long to play out that I'll be long dead by then. I don't have a view on Japan, but I do think Japan is a good stock picking market because there's a very wide dispersion of stock returns within the market. And if you're good at stock picking, that's quite a good place to be. The other thing I would say though is at the end of the 1980s, Japan briefly overtook the United States as the world's largest stock market. And then came the crash and since then, there have been endless top-down predictions that Japan is on the way back. I have just watched them come and go and so I'm agnostic on the top-down view.

"Even if we took optimistic assumptions on productivity growth, without massive immigration, the working age population is contracting."

Question

It appears to me that it wasn't just financial repression that got rid of debt, but it was also an increase in productivity. We see a lot of new technologies that are very disruptive, do you think that will increase productivity? And secondly, will these disruptive technologies make value stocks less likely to be successful going forward and reasonably priced growth companies a better alternative?

Professor Russell Napier
Well, that's an excellent point because obviously we're talking after World War Two and we're talking about creating lots of new capital. Productivity went up because a lot of the old capital was physically destroyed. We had a high level of real growth. It was kind of known as a golden era, particularly in Europe. Can we begin to replicate that again? Possibly but that's to do with China.

If we weren't to trade with China, just think of the scale of investment that would have to happen, the scale of capital expenditure that would have to happen. If we're going into a hot war with Russia, that's a different form of capital expenditure, but it's capital expenditure. I think we maybe could see productivity improving just because finally we'd have a capex boom. The investment by US companies in tangible assets has been low and that's going to change.

But when you look at the size of the debt to GDP ratio, what level of real growth is achievable? Growth in the working age population plus productivity gives you the real growth. Even if we took optimistic assumptions on productivity growth, without massive immigration, the working age population is contracting. So I don't think we can get a productivity revolution of that scale.

But these are the most unpredictable things of all. If for instance, we could get really cheap energy prices, then I think you could have it. But I'd still stay unlikely, possible but not probable. What we will have is a lot more physical capital. So maybe, as an equity investor, you can buy the picks and shovels and maybe that's the way to look at it. But we just can't get an escape velocity in terms of real growth unless the productivity revolution is really huge.

Professor Paul Marsh
Productivity has been a very stubborn problem, particularly since the global financial crisis and nowhere more so than in the UK. Everybody keeps trying to address it but it still is very stubborn, so I agree with Russell that seeing something of the magnitude of the productivity gains that we've had in the past is hard to predict.

Professor Russell Napier
Demography is another problem. The least productive thing a young person can do is look after an old person. Obviously, I'm getting pretty old myself. I'm looking forward to someone looking after me. But how

good is it going to be for productivity, if more and more of our younger generation have to look after the old generation. So, there is a headwind in the demography, not just that we've got fewer workers, but that so many younger workers are going to spend their time looking after older workers. Let's hope the robots can solve that problem.

Question

How can we take government printed money as a store of value when it seems to be a race to the bottom to just print more and more of the stuff?

Professor Paul Marsh

The question is, what are the alternatives? Do we want to go back to the gold standard? There were perfectly good reasons why we came off that. Do we think crypto is the answer? Part of the problem when we look at currencies or look at printing of money, or inflation and so on is we're not looking in real terms.

If we look in real terms at any currencies that you like, what you find is that purchasing power parity pretty much holds over the long run at any rate, and that changes in exchange rates are matched by the inflation differentials between countries. So, when it comes to investing, we don't perhaps need to worry quite as much as we sometimes do about currency movements, because over the long run, purchasing power parity does a lot to help us. And so, I think some of the worries we have about inflation and currencies and so on, can come about by not actually looking at the real exchange rate rather than the nominal exchange rate.

Professor Russell Napier

I think people in this room will have a rather a biased opinion on currency. We all like hard money. Debtors don't and the reason that we don't have not chosen in society today to have hard money is because there's so much debt in the system.

Now inflation has been low. But if I if I'm right, and we've got too much debt in the system, remember, it's going to help somebody. In Thomas Piketty book Capital, he has this wonderful chart of the distribution of wealth. And you see that the distribution of wealth gets tighter and tighter post World War Two but then keeps going. This is the era of inflation. Because the burden on debtors is relieved by inflation.

It's easy to poke fun at central bankers and the must-read article on this is Arthur Burns himself, the man who blew it, if you like in the 1970s. In 1979, the Peterson Institute invited him to Sarajevo to speak, and he explained why he got it wrong. His speech was called 'The Anguish of Central Banking'. And basically, what he said is people kept voting for 'x'. How could I give them 'y'?

Money is political. And we have a system now which will have to deliver relief for debtors. My definition of financial repression is stealing money from old people slowly. That's what it is. I think it's becoming a deliberate policy, but it relieves debtors. That's what soft money does. And there's lots of debtors out there who need relief.

"Money is political. And we have a system now which will have to deliver relief for debtors. My definition of financial repression is stealing money from old people slowly. That's what it is."

Question

Can I ask just how independent are central banks? The concept for most of us is that central banks are there to protect the integrity of money. It's a store of value, and to protect the integrity of the financial system. But things have moved on from then. In the United States, unemployment is an issue in monetary policy. Now, we've got a considerable added commitment of central banks, which I am unclear as to how that works, but it's called ESG. So, it does seem to me that central banks have become quite politicised, what are the consequences of that?

Professor Russell Napier

The definition of a central bank is a monetary authority. And the role of the monetary authority is to control the quantity of money by controlling the price of money. That's a definition of a monetary authority. What we saw during Covid is the government came in to see the commercial banks and told them to lend and they did. If the government controls the commercial banks, the government becomes the monetary authority. Think of the commercial banks as six commercial banks. It's a team of six horses. And on a coach sits the central banker, and they have these reins running to these horses, which are interest rates, liquidity ratios and capital ratios. And they try to steer those horses to

create just the right amount of money for the economy. And then one morning you wake up and there are six jockeys sitting on the six horses and they're called the government and then it's over. So obviously we're not at that extreme yet. But every day I see greater interference. And then we could also have yield curve control. If the yield that we have to control is dictated by the government, they will be controlling both the price of money and the quantity of money. And then the real question you'd have to ask about central bankers is what are they going to do all day? The powers to deliver their mandate are slowly stripped away from them. This is how it ends. It doesn't end with a bang, it ends with a whimper.

Professor Paul Marsh

I think it's true to say that central banks have never been fully independent. But as you also say, some have an economic mandate as well as a purely monetary or inflation target. And the question is what happens when you have a crisis. When that happens, as Russell says, it's the government that comes into the driving seat. But there are also times when central banks would really like governments to do something and the government doesn't use fiscal policy in the way that it should have done. That was probably the case in the global financial crisis. And at those stages, you could say that the central banks are in the driving seat because they have to make up for what the government is not doing elsewhere.

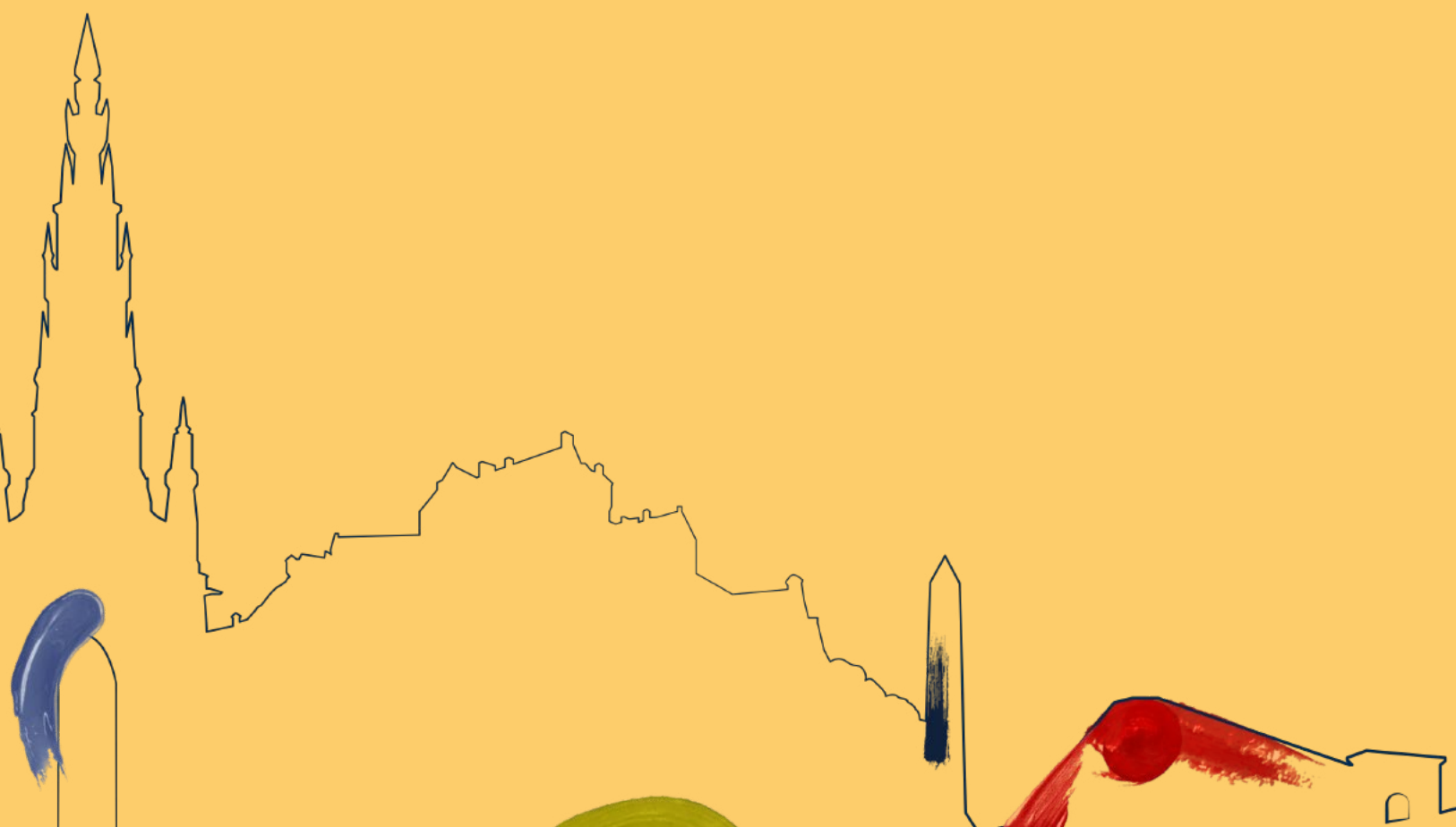
Closing remarks from Fraser Fox, Investment Manager

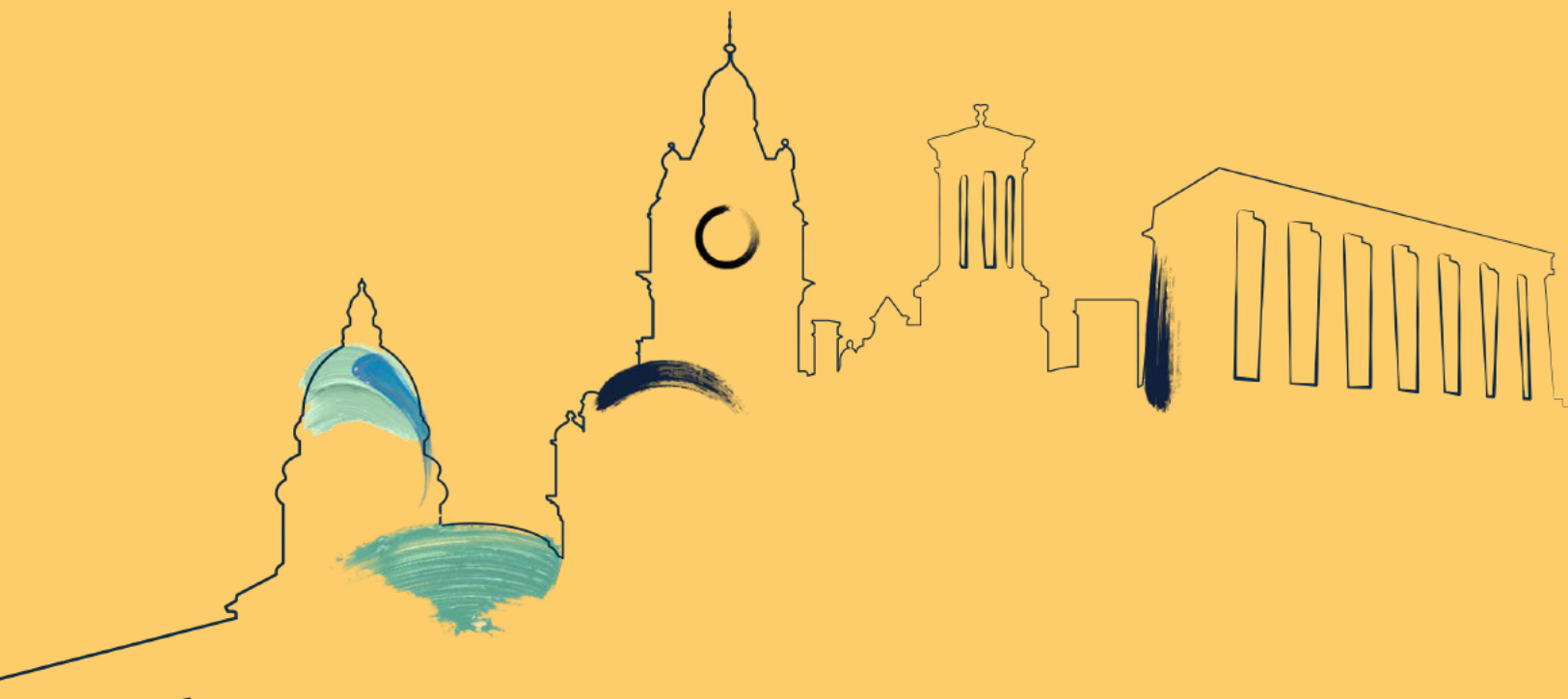
There are some areas of agreement, some less so, and but one thing we can hopefully all agree on is the importance of being invested in the right companies and paying sensible valuations for those. And that, of course, is the reason Walter Scott's Research Team come into the office every day.

I'm going to close today on a personal note, I'm coming up for 20 years at Walter Scott this December, Jimmy Smith, who has been mentioned a lot today, has managed to double that. And we often get asked the question, why do people stick around at the firm for so long? One of the answers I always give is that we get to work with a fantastic group of smart, interesting and fun people. Not just in the Research Team, but across the whole firm. And with all of us back together at last after all the chaos of Covid I really hope you enjoy getting to know the Walter Scott team a little better over the next few days. So please enjoy the rest of this conference and enjoy your time in Edinburgh. Thank you.

DAY TWO

WEDNESDAY 10 MAY, 2023





A Walk Around Edinburgh's Financial History

The story of how Scotland's capital city went from a single bank to a financial centre of global renown is one of innovation, entrepreneurial spirit and good intentions. It is also a cautionary tale of greed, hubris and not infrequent calamity. To learn more about those ups and downs, we embarked on a walking tour with the Keeper of the renowned Library of Mistakes, Russell Napier and Ray Perman, author of *The Rise and Fall of the City of Money – A Financial History of Edinburgh*. This is an account of that tour.

The historic centre of Edinburgh is essentially two cities in one. To the south sits the medieval Old Town, a warren of winding streets and dark closes (alleyways) watched over by Edinburgh Castle. To the North is the New Town, a jewel of neo-classical architecture constructed in the 18th and 19th centuries to provide the city's wealthy citizens with more agreeable living quarters than the increasingly squalid and overcrowded Old Town. The contrast between the two, one tenebrous, brooding and dangerous, the other elegant, well ordered and respectable, was said to have provided the inspiration for *Dr Jekyll and Mr Hyde*, Edinburgh-born Robert Louis Stevenson's gothic tale of the duality of the human condition.

Edinburgh's 'two towns' also serve as an enduring physical reminder of the city's remarkable flowering from European backwater to the continent's intellectual nerve centre, surely one of the most striking examples of urban regeneration in history. No less a figure than Thomas Jefferson was moved to comment "So far as science is concerned, no place in the world can pretend to competition with Edinburgh". It was a transition made possible in part by the city's emergent finance industry, which in the centuries that followed would become a symbol of Edinburgh's prosperity and global reach.

"It may not have a Wall Street or a Square Mile, but Edinburgh's important and often outsized role in the development of the financial system is a story worth telling."

It was in the Old Town that we began our tour, starting out at Panmure House, the last residence of the philosopher and economist Adam Smith. Often referred to as the 'Father of Modern Economics' Smith's most celebrated work *The Wealth of Nations* challenged the mercantilist orthodoxy of his day, arguing instead for free markets and free trade. Smith may have lived when Edinburgh's financial system was still in its infancy but the industry was already showing its propensity for excess. In 1772, his patron and former pupil the Duke of Buccleuch was threatened with ruin when the Ayr Bank collapsed, precipitating a major financial crisis. Commenting on the bank in *The Wealth of Nations*, Smith wrote "the design was generous, but the execution was imprudent". Not the last time such an accusation would be levelled at a bank.

From Panmure House, it was a short walk up Edinburgh's historic High Street to Smith's final resting place in the graveyard of Canongate Kirk before we moved on to Tweedale Court, onetime home of the Scottish Mint. It was here that the last official coinage was minted in Scotland. Following the Act of Union with England in 1707, Scottish gold and silver was melted down and reminted as sterling, the common currency of the new entity of Great Britain. Scotland's union with England caused great controversy at the time (it remains a political hot topic today) although there can be little argument that the Scottish economy was at the time in a precarious condition. The causes of this financial distress were many, but one in particular, the reason for our next stop, has gone down as one of the darkest episodes in Scotland's history.

From its offices opposite the Tron Kirk in 1698, the Company of Scotland Trading to Africa and the Indies launched the Darien expedition, an ill-fated attempt to establish a Scottish trading colony on the Isthmus of Darien in Panama. Despite great public excitement, the scheme was a disaster; poor planning, tropical disease and military resistance from the Spanish Empire left the expedition in ruins and around 2,000 Scots dead. When Darien was finally abandoned in 1700, Scotland was on the verge of bankruptcy, having ploughed an estimated 20-25% of its capital into the scheme. The financial settlement that accompanied union with England offered considerable respite to an economy in desperate need.

Moving on from this sorry tale, we wound our way down towards Waverley Bridge and an altogether more successful chapter in the city's financial history. Linking the Old and New towns, Waverley Bridge overlooks Edinburgh's main rail station, opened in 1846. Railway's had been the subject of a huge speculative boom-and-bust in the UK in the mid-19th century, with many investors losing everything. However, it was to America that the pioneering Scots investors William Menzies of Edinburgh and Robert Fleming of Dundee turned their eyes later in the century. Using the recently established investment trust structure, the two men helped to finance the country's rapidly growing transcontinental rail network. Wary of the hype surrounding the US railroad boom, Menzies and Fleming chose to do things differently. Rather than taking an investment case on trust, they believed in doing their own research, visiting companies and speaking to management teams. It was an approach that paid off handsomely and which, to quote Ray Perman, "established a new way of investing with a distinctive Scottish style". That 'Scottish style' endures to this day, nowhere more so than at Walter Scott.

From Waverley Bridge, it was a short walk back to the Balmoral Hotel and the conclusion of an enjoyable, informative and often surprising tour. It may not have a Wall Street or a Square Mile, but Edinburgh's important and often outsized role in the development of the financial system is a story worth telling.

Matteo Renzi
Prime Minister Italy (2014-2016)

Controcorrente

"I was the youngest Prime Minister of Italy. But that is not all good news because the second youngest was Benito Mussolini."

Introduction by Paul Loudon, Investment Manager

We are starting off today in our home continent of Europe and it is my great pleasure to introduce our first speaker of the morning, Matteo Renzi. He started his political career at a very young age rapidly rising in prominence. He served as the mayor of Florence from 2009, before becoming the youngest ever Prime Minister of Italy in 2014 and is currently a senator of Florence and he heads up the Italia Viva party that was launched in 2019. In our preparatory call he enlightened me to the fact that Florence and Edinburgh are actually twin cities so it is especially fitting that Matteo is here with us here today.

Timing is crucial for investors. For people who invest, timing is about how many years you need for a return on investment. In politics, time is a problem because in recent years we have transformed politicians into 'influencers'; people don't look at the long term and think only about the short term.

They think about how many reactions there are on Twitter or Instagram and not about how many jobs you can create in the next ten years. That is a problem. Democracy needs votes. That requires consensus and to achieve that you need brilliant initiatives for the people. But once you decide to transform a politician into an influencer, you lose the credibility of politics. In the past, great politicians made history. Today, they create a story on Instagram that has a life of 24 hours, not 24 years.

Thinking about time, 75 years ago, the UK decided the future of Pakistan and India. Today in London, there is a Prime Minister with Indian heritage, and in Edinburgh, a First Minister of Pakistani descent. That is a wonderful signal of great change in the world.

But if you reduce the time from 75 years to the last three years, to the start of the pandemic, you can understand how many things have changed in such a short space of time. For investors, three years is not that long but in Italian politics it's a lot because the Prime Minister changes every year. Then last year Britain had a Prime Minister for just 44 days and I finally got my revenge. We don't just export food and fashion, but instability too.

Joking apart, thinking about the last three years and the changes we have seen. After the pandemic and after the war in Ukraine, everything has changed. Brexit is already a great game-changer in the history of Europe, but the war will also change Europe because the European Union will expand eastwards. Once the war ends, Ukraine will become a member of the European Union and with that it will become the biggest country in Europe; double the size of Germany. Poland will become the most important country for weapons. Everything is changing.

My goal is to try to offer to you a very brief panorama about geopolitical change around the world. Starting with China, which has become a global player and as important as the United States. That is absolutely revolutionary compared with 30 years ago but also compared with ten years ago when Xi Jinping started his tenure. Xi Jinping has changed the strategy of China. China has to play a role everywhere.

Saudi Arabia and Iran signed an agreement in Beijing under the leadership of China's Foreign Minister. And look at Brazil. A few weeks ago, former President Dilma Rousseff became President of the New Development Bank, an important financial institution set up by the BRICS countries and headquartered in Shanghai.

And if I continue my panoramic view, China is now the most important player in Africa. Why? Because Europe lost this historical opportunity. Europe lost the possibility to have a greater role in Africa.

Coming to the United States of America. I'm a great fan of the United States of America and I was so happy to serve in a strong friendship both between the US and Europe, and the US and Italy. But today, there is a very important debate in the US about the future of democracy. The economy is good. So there is a problem with inflation but the real risk is the modality of the electoral campaign. The United States of America will continue to be the United States of America but, I think, they have some problem with the weakness of internal debate.

"I think there is a great opportunity for Europe, but only if it stops talking about bureaucracy, and instead tries to have a vision."

I think there is a great opportunity for Europe, but only if it stops talking about bureaucracy, and instead tries to have a vision. Europe has proved to be the biggest challenge in the history of political science; 27 countries staying together. We will see continued expansion in the direction of the Balkan regions.

After the end of the Ukraine war, which we hope will be over in the coming months, Europe needs to come back to being a place for politics, not for bureaucracy. And for that we have to come back to our roots and our vision. Because the world of artificial intelligence, of greater investment in healthcare and new personalised medicine, investment in space, these should sit in the new Europe.

If you think about artificial intelligence, this is considered a risk by politicians. Elon Musk asked to stall investment in artificial intelligence because it could be a potential problem for the future of humanity. But I'm more worried about natural stupidity than artificial intelligence.

And it was stupidity that blocked the vision of the future as a great possibility. Geopolitics today shows how different things are in respect to the past. We have some problems but at the same time, we have to give some words of hope.

Think about demography. I was born in 1975. In Italy in 1975, we had one million new babies. Last year, we had 400,000. Over the last half century, there is not a decline in demography, there's a collapse. And history shows – the Roman Empire included – the risks if we don't understand the importance of demography. In the next 20 to 25 years, Nigeria will be bigger than the whole of Europe. Because the predictions suggest Nigeria will have 450 million citizens.

I believe in politics. Despite everything I have said. We live in a difficult time but if there is politics, there is a possibility for an economy to invest. If there is a good political approach, you can give to the people who work in finance or in manufacturing the possibility to invest in the future because the future will be better than our expectations.

Migrants from Turkey found a vaccine for Covid in a short time and the new mRNA vaccine technology holds the promise of new ways to fight cancer.

If we combine the reality with the great efforts of innovation, we can write a new page with innovation and investment not only in artificial intelligence, but also in natural intelligence, not natural stupidity.

What's Next for Europe?

Director of Chatham House, Bronwen Maddox in conversation with Matteo Renzi.

Bronwen Maddox

How you would rebut the case that is often made, "Europe is beautiful, full of museums, but forget about it for fast growth"?

Matteo Renzi

Europe sounds like Italy in that comparison because for a long time Italy was considered a very good museum, probably one of the best museums in the world. It is very beautiful, of course, but without possibilities for business. "You are good for holidays, not for business"; how many times I have heard that.

My suggestion is that first we have to change ourselves as Europeans. If Europe is just a place of bureaucracy, it's over. There is no hope for a continent without vision.

Today, Europe is approximately 7% of the global population, 25% of global GDP and 49% of global wealth. It's impossible to continue with these numbers. So we have to change. We must have a vision, a new leadership and a new hope. The world of tomorrow is unwritten. Two-thirds of children currently in primary school will do jobs that don't currently exist. If Europe can harness intelligence and talent, it will have a role to play in the future.

Europe has to change. That is my message for the leaders in Brussels. Sweep away the red tape of bureaucracy and invest in innovation and the future.

Bronwen Maddox

Let me put to you a second point. At Chatham House recently, Philip Hammond, who used to be the UK Foreign Secretary, quoted a senior Chinese official saying to him, "if the UK and Europe haven't got a political system that can make sacrifices for the long term good of the country then you haven't got a political system that will last".

The cliché about Italy having lots of Prime ministers is a joke that now plays on the UK as well. But the point is a serious one. As European democracies, do we no longer have political systems that can make tough choices? Your reforms were very good ones and failed.

Matteo Renzi

This is a good question for a lot of reasons. First of all, I lost my job because I tried to give more stability to Italian politics. So, when you speak about more power to democracy and to government in a western country, you speak about my political death. So be prudent and be careful. But really, that is the problem.

I was 27 years old when US President George W. Bush explained to our generation that our mission could be to export democracy. But in the decade between the second invasion of Iraq and the Arab Spring, you can see that mission didn't work. And today, the problem is not to exporting democracy but protecting it from authoritarian regimes.

It's a complex issue. China has a long-term vision. Saudi Arabia, probably one of the most interesting countries in terms of transformation, has Vision 2030. But they don't have the burden of democracy. By contrast, look at France, where President Macron is trying to change the pension age from 62 to 64. The result was a month of strikes and demonstrations.

So the question about democracy and the authoritarian way is a complicated one.

Tackling these questions requires vision to seek deals and the intellectual capacity take a comprehensive look. This approach is the opposite of populism. Populists give the message: "What do you want? My speech will contain everything you want."

Politicians must have the courage to swim against the tide. I see this as my role, to be 'contracorrente'. Of course, there is a risk you lose an election. But I think we need people in the global arena who are prepared to offer a vision more complicated than populism.

Bronwen Maddox
So now we've had a war on the edge of Europe for more than one year. What do you think the exit from this will be? I remember talking to Vladimir Putin, in an interview at his house 15 years ago. He used the same language as you hear now, except he added, "I am a Democrat. Pity, I'm the only one". That's the gloss he put on it. But it's the same aspiration for getting back the land of the old Soviet Union. Now he's trying to do it. What is the exit from the current situation?

Matteo Renzi
It is a very difficult situation. In my personal position as a politician, I voted in my Parliament against Russia. I consider Russia responsible for the invasion. I voted to send weapons to Ukraine. The invasion of the Ukraine was an illegal act.

But I have to be honest with you. When I was Prime Minister, I tried to fix the situation in Ukraine with the authorisation and agreement of United States of America and with the partnership with France, Germany and UK. In July 2014, Italy took over the Presidency of the European council. And if you remember, (the invasion of) Crimea was in the first half of 2014.

I am great fan of Russian culture. I love Dostoyevsky. He wrote that 'beauty will save the world' when he was living in Florence. And Dostoyevsky used to say without Russia, there is not Europe. Without Europe, there is not Russia. And I believed in that cultural vision.

So, I tried to work to fix the situation because in 2014 that was possible. In November 2014, I organised a meeting in Milan with Angela Merkel, Francois Hollande, David Cameron, myself, Putin and Petro Poroshenko who was President of Ukraine at the time.

I proposed a solution to them, one that had worked for Italy in the past. Seventy years ago, South Tyrol, in the north of Italy, was a very complicated land between Austria and Italy. But after the end of Second World War there was an agreement.

Today the majority of people in South Tyrol speak German but they stay in the sovereignty of Italy with a special autonomy for taxation, education and language. All with the protection of the United Nations, not with a bilateral agreement between Austria and Italy.

So, at the meeting in 2014, I proposed that we could do the same for Donbass and Lugansk. Crimea was not part of the proposal as the idea was that Crimea would remain in Russia.

And I suggested that if we maintain the Donbass and Lugansk – like South Tyrol in Italy – within the borders and the sovereignty of Ukraine but allow the Russian majority to have a special autonomy for language and taxation, then I think we can sign an agreement with the United Nations as witness and protector. Vladimir Putin agreed to the idea, but Petro Poroshenko said no.

And after the illegal entrance of Russia in Ukraine, everything is cancelled. And Vladimir Putin is responsible for that. We have to admit that unfortunately Russians and Europeans will be divided for generations to the sadness of the people who believe in Dostoyevsky. And I believe that we cannot underestimate the relationship between Russia and China. Twenty days before Putin entered Ukraine, on February 24th 2022, Russia and China signed an agreement in Beijing and announced their 'no limits' partnership. So geopolitics is very complicated.

"We have to think that the Balkans – Albania, Serbia, Macedonia, Montenegro – will open to Europe a new a vision for the future."

In Ukraine, I think we will go in the direction of an agreement but this is not an issue that has a single solution. Once the war stops, I think Ukraine will very soon be part of Europe. I think the Ukrainian people deserve that.

But that will change Europe again, because Europe will be bigger, and it will gravitate eastwards. We have to think that the Balkans – Albania, Serbia, Macedonia, Montenegro – will open to Europe a new a vision for the future.

Bronwen Maddox
So you think that we can get to a deal that would keep Europe safe but are you also implying China would have a role in this deal?

Matteo Renzi
Yes, the USA and China. Unfortunately, in my view, Europe doesn't play a diplomatic role.

Bronwen Maddox
Other than the point you made about taking Ukraine in (to the EU)? That's quite a big thing?

Matteo Renzi
It will be absolutely unacceptable to deny Ukraine access to the European Union. The agreement, of course, will be between Russia and Ukraine and the EU, but the peace brokers will be the USA and China. This is the new global order.

Bronwen Maddox
So let me ask you about Riyadh. I think people who would love to know why you think Saudi Arabia reached that agreement with Iran, brokered by China, one which took lots of people by surprise.

Matteo Renzi
I was attacked personally for my friendship with the Saudis. I think with the leadership of Crown Prince Bin Salman, Saudi Arabia has come back to play a very important strategic role. Not only in the region, but in the world.

We have a new generation (of leaders) who are western educated, very open to new technologies, and they have two goals. The first is to fight terrorists. When I was Prime Minister, my first preoccupation was always a terrorist attack. Do you remember Bataclan attacks in Paris? Do you remember when Muslim extremists attacked Europe? That was a problem for Europe. We invested a lot in security and in culture because culture is part of answer against the ideology of terrorists. But we needed great support from Arab countries and with the new leaders in Arabic world we fought against terrorists very well and better than in the past. That is the first goal.

The second is to open a new page and I think that is interesting because if this part of the world is very open to having a role in the multipolar global order. I think we will see a lot of new initiatives. For example, Jake Sullivan, who is the National Security Adviser to President Biden, was at the Arab league a few days ago discussing a rail network linking the Gulf states and India, as an alternative to One Belt, One Road of China.

My point is that if we have energy, dynamism, vision, and hope, we can build different solutions for new problems in the world. If we continue to have the mind of the past, we risk becoming part of this museum. I love museums. The best museums around the world are in Florence. But I don't accept the future of my children will be only a future as guardian of museums. We have to be very open minded in the future and that is also my hope for you; my wish for you. The past is very wonderful, but there is a great European leader Dag Hammarskjöld, the former General Secretary of the United Nations who used to say: "to the past, thank you. To the future, yes." I think that has to be our message.

The Energy Challenge

Des Armstrong
Investment Manager

It is an industry of politics and power. Of radicals and rogues. Of technology, innovation and human ingenuity. Of booms and busts. Of argument and emotion. But most importantly, it's an industry that's fundamental to our economic progress, our wealth creation.

I am of course talking about the industry of energy. And for the almost twenty years that I've been working at Walter Scott, no other industry, for good and for bad, has made a bigger impact on me. It's therefore a pleasure to be introducing this morning's session.

In a bid to try and set the scene, I'm going to spend a few minutes reflecting on my journey with energy and the three key periods I feel I've experienced with this unique industry.

The first began when I joined Walter Scott in early 2004. At that time, the firm's global portfolio held no less than 10 energy investments, representing almost a quarter of the portfolio's total value. The portfolio included companies like Woodside, EOG Resources and CNOOC, the Chinese state-owned oil company.

At that point in time, China had recently entered the WTO, oil and gas demand was booming and many believed that some of the key energy producers, such as Saudi Arabia, were approaching peak production levels. As a result, the oil price was on the rise and had begun a trajectory that would surpass well over $100 per barrel from a low of $10 in 2003. Naturally, energy companies benefitted from this favourable pricing environment.

And was it a unique period in energy markets, one I'll describe as peak supply. Emboldened by a belief of ever-rising energy prices, the industry went into overdrive to secure and monetise any stranded assets it could. Cairn Energy, headquartered here in Edinburgh, had struck oil in Rajasthan, India. BG and its Brazilian partner, Petrobras, had begun drilling the pre-salt off the coast of Brazil. While CNOOC chose to go down the inorganic route to secure its supply by acquiring the Canadian oil sands company, Nexen. But it was EOG Resources, that in my opinion, stole the show during this time.

After pioneering the shale gas revolution in the early 2000s, it stunned the industry by announcing it had found the world's biggest shale oil resource, called the Eagle Ford in Southwest Texas. I still remember the date of this announcement.

It was April 7th 2010 and I'd just taken over responsibility for the firm's then investment in EOG from Jane Henderson.

The industry dogma at that time was that shale rock was too dense for oil to flow in the same way it did with gas.

But Mark Papa, EOG's CEO at the time, and his team saw it differently. They had been quietly amassing over half a million acres of land along the Eagle Ford shale with the belief that horizontal drilling would unlock almost a billion barrels of oil. Moreover, they now wanted to spend $15bn to develop it.

As most of you know, EOG's gutsy call paid off. The Eagle Ford underpinned EOG's transition from a gas company to become one of America's largest onshore oil producers in less than five years.

For me personally, this was an incredibly exciting time and marked the start of my second chapter with energy, the shale oil era.

In those very early stages of the shale oil boom, my colleague Alan Lander and I travelled to Texas to witness the change for ourselves. We've done a few great trips together, but I would argue this was one of our best because we both had that rare sense that genuine change was underway.

Shale oil was game changing. Together with shale gas it has proven to be the biggest energy innovation so far in the twenty-first century and has underpinned America's return to, once again, become a major player in world energy markets. But towards the end of the last decade the global energy industry was having to come to terms with something much more disruptive than shale.

Energy may have played an essential role in underpinning the world's economic progress, but it's been remarkably dependent on society's proficiency at burning things. Society began to demand that the past cannot be prologue and that the world's future energy demands needed to decouple, and quickly, from fossil fuels.

"Shale oil was game changing. Together with shale gas it has proven to be the biggest energy innovation so far in the twenty-first century."

The question was how?

And this still unanswered question signalled the beginning of my third period with energy, that of peak complexity.

Today, Walter Scott's exposure to energy has never been lower. I think this ultimately reflects the complexity attached to understanding how this energy transition will unfold and who will be the long-term winners within it.

Net zero is not just an environmental theme anymore. It's now a story of economics, geopolitics and technology. It is also the topic on which I think the Research team is most polarised. And, externally as well, it feels like the cacophony of contradictory narratives about the global energy transition has reached fever pitch.

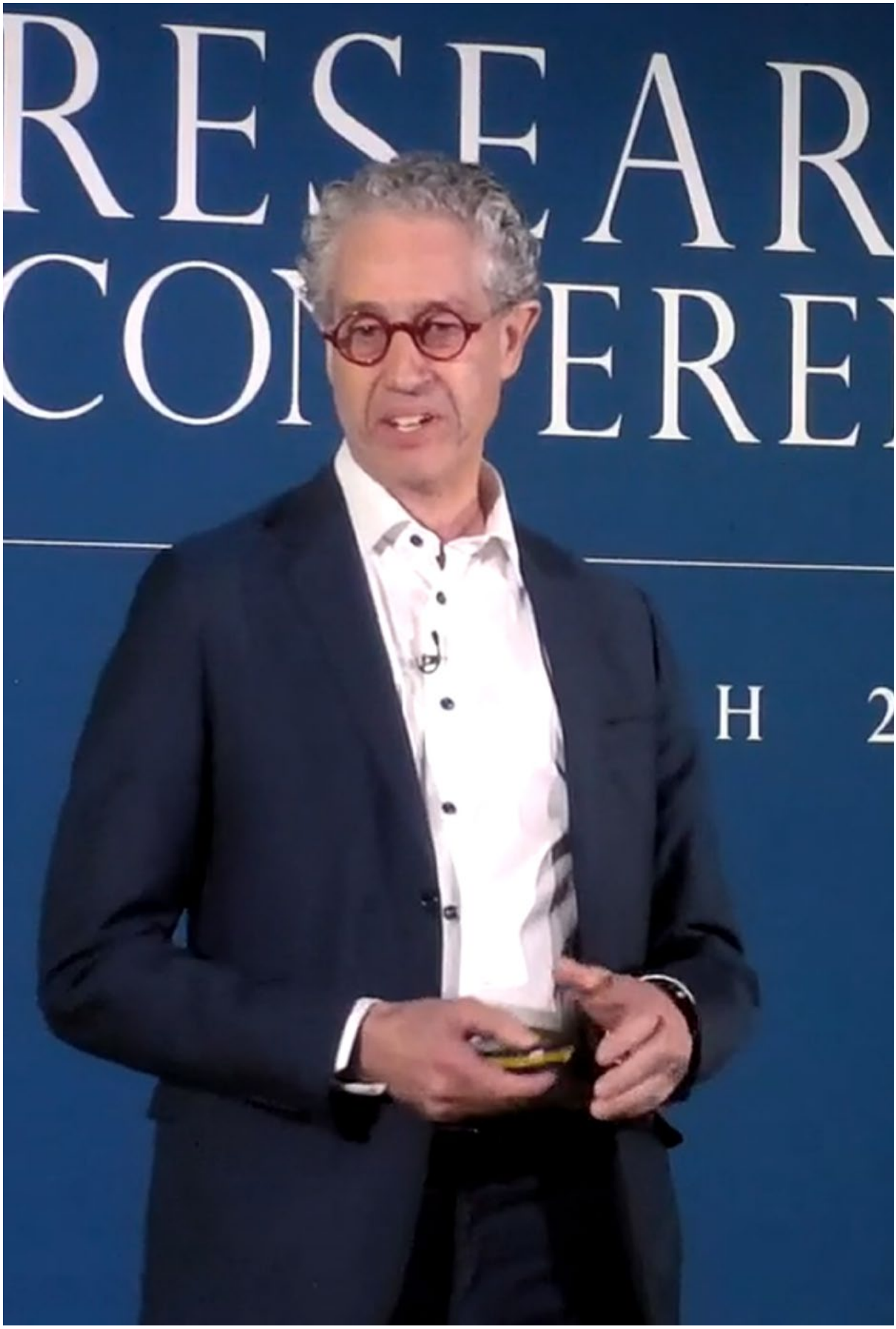
But although the world's energy transition is proving to be way more complicated and much less linear than some expected, alongside its risks must also lie investment opportunity.

The major positive from an investment standpoint is that we are at the beginning of multiple mega trends that are unfolding at the same time: renewables, electrification and decarbonisation.

Portfolios already have some exposure to these trends but it's hard to imagine these transition tailwinds won't foster a new generation of innovative industry leading companies.

Or that some of the industry incumbents won't adapt and become part of the solution. Could it be that big oil is a major beneficiary of this coming energy transition?

We are at pivotal point in the energy industry where we have more questions than answers. But much work is being done.



Peter Tertzakian
Deputy Director, ARC Energy Research Institute

Navigating the Transition

"I've been studying energy transition for 30 years, long before it became a buzzword. It's complex, so my aim is not to pick winners or losers but to provide a framework for understanding the complexity of transition and to instil a way to think about investing in the future of energy."

Introduction by Des Armstrong, Investment Manager

I'm delighted to introduce Peter Tertzkaian from ARC Energy where he's the Deputy Director, Research Institute in Canada. Some of you may remember Peter from our very first conference in 2008, where he was speaking soon after releasing his book '1000 Barrels a Second'. Since then, as a team, we've kept in touch and we've recently begun working on one of his initiatives Project Jewel. We think that Peter's insights and particularly his ability to leverage history is very helpful in terms of us understanding how we unpick the complexity of this evolving energy transition.

Energy is a supply chain of joules and the notion of conversion is critical to its function. You start with some primary source of energy and cascade it along conversion nodes. Every joule of energy must be accounted for and go to some end use. And all forms of energy can be put into a conversion device to produce a different form of energy.

A light bulb converts electrical energy into light energy. The background infrastructure everywhere in our modern society has thousands of conversion devices. So, in energy transition, it is not simply a case of going from coal gas light to electric light or combustion vehicle to electric vehicle. It involves a wholesale change in a system's supply chain.

New forms of transport have always required an infrastructure of energy supply before they are useful. When petroleum cars emerged in the 1900s, drivers on long journeys had to ensure there were enough gas stations along the way. Electric vehicles are no different which is why in the 2000s a big push began to build out battery-charging stations. And, for any ecosystem or industry to function, each component of the supply chain needs to make money. If petrol stations didn't make money, they would close and the whole supply chain would fall apart.

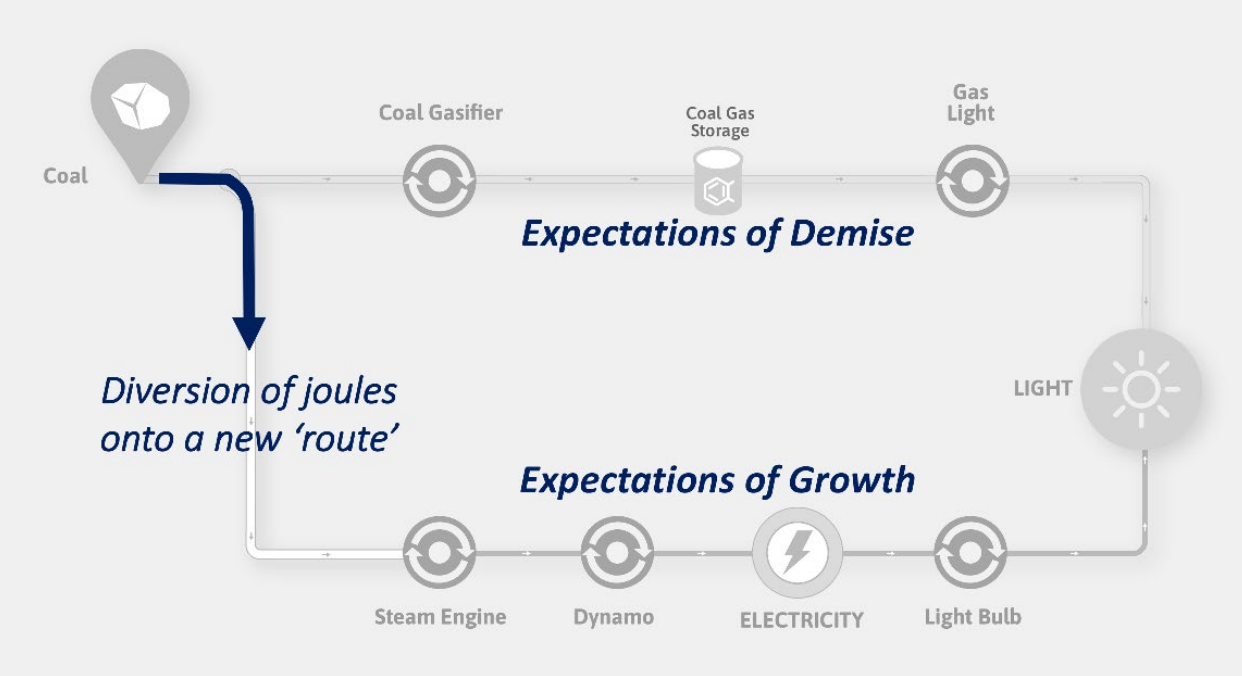
Look on the roofs of most residential houses and you'll see a chimney. In the UK, this represents the combustion paradigm that has been with us since the industrial revolution. Look closer and you'll see TV antenna. These have long been substituted out, as we've moved through cable to wireless and 5G. Transitions have been fast in telecommunications but in the world of energy they have been much slower and fraught with other types of infrastructural issues that make it difficult to achieve.

In the early 1800s, the lamps on London's bridges were lit by gas lights, which was the result of the coal gasification process. Then in the 1870s Joseph Swan, the Thomas Edison of the UK, invented a light bulb and there began the transition from coal gas lighting to incandescent light.

The force of change that prompted society to move off the established route of gasification was technology, and the dogged determination of the likes of Edison, Swan and Nikolai Tesla put us a new route that was superior in delivering the utility that we wanted.

Policy before technology

Technology is part of the story in today's transition, considering the remarkable gains in solar energy and batteries. But the driving force is policy. There is an imperative to reach



Source: Peter Tertzakian (2023)

net zero by 2050, so this is far more of a forced transition than a natural one driven by technology.

Understanding this leads us to some of the themes of investment. Because the existing infrastructure continues to have value – it's not obsolete like a TV antenna or a satellite dish, it has value on a balance sheet – therein lies one of the many complexities to consider. Should we shut all these old factories, or completely refurbish them with new technologies? Or is there the possibility that there are ways of renovating the interior using different technologies?

There is justified talk of getting off fossil fuels and onto renewables but it's not just about the supply side, there's all the infrastructure in the middle and how it gets from, say a wind farm off the coast of Scotland, to power the lights in this conference room.

When it comes to renewables, investors struggle to analyse the comparative value of the different routes from energy source to the end user. For example, in a survey of investors we found there was no consensus on how to analyse, manage and monitor the risk and return of a biofuel plant compared to a solar farm, compared to an electric vehicle.

The survey also revealed a common refrain from people grappling with the future of energy is that they struggle to explain some of these new technologies clearly enough. This is a problem because if a CEO or investor can't describe what an anaerobic digester does, then the default position is not to invest.

This stands in stark contrast to oil and gas, where we have more than a century of history in investing in rocks underneath the Earth's surface with drilling rigs to tap into the joules of energy that are in chemical form. Crude oil and natural gas are forms of chemical energy that have value. This is an easy story to understand.

But with the imperative to migrate capital allocation away from subsurface joules, energy investing has become more disparate. There's a tendency to take these assets and put them into what are called buckets or verticals. We know how to put oil and gas into a bucket of real assets, but where do

we put agriculture, anaerobic digesters, hydrogen fusion? So the default is not to put it anywhere and move on and invest in something else.

The investors' conundrum

This new capital stock above the ground is much more difficult to understand. Fossil fuels – coal, oil and natural gas – still comprise more than 80% of the joules at the primary source. From a dollar investment perspective, the value of those joules is 95%.

That's because wind and sun have no value. This is good news from a consumer perspective but from an investor perspective it suggests that margins are thin and there's not a lot of value. The value of assets below the ground is immense and so the conundrum is what to invest in to gain exposure to energy.

For the last 30 years, I've built maps to show the different routes for channelling joules to the end users. Using the example of mobility, the map takes the primary sources of energy – coal, gas oil, wind and sun – and plots the various permutations involved to turn the wheel of a light duty vehicle.

The aim is to find the most efficient way to get from A to B. This depends on the constraints of each permutation,

POLICY DISTORTS THE FREE MARKET FLOW OF JOULES

Source: Peter Tertzakian (2023)

which can be overlaid on a map. There are thousands of permutations but the role of policymakers in forcing people to take a different route – though carbon taxes, measures to phase out combustion engines, or funding the preferred route through the public purse using capital incentives – is hugely significant and has a distorting effect.

Policy is a force of change for diverting or attracting capital and ultimately the market share of joules. Each route is a supply chain of joules, and like any chain it is only as strong as the weakest link. So if a policy goes away, then the whole route falls apart.

In democratic societies, it's very easy to shred policies and that makes it hard to quantify risk.

When understanding policy, there are three factors to consider. The first is influence and how material the policy is in driving the internal rate of return.

The second is endurance and whether a policy can survive political change. Many infrastructure projects last 30 or 40 years, but many policies only last for ten.

The third factor is volatility. A lot of policies today are based on carbon, and carbon markets are volatile. The value of carbon in the future is something that is glossed over. In an ideal world, carbon goes to zero. Does that mean the credits go to zero too?

The whole risk return paradigm of investing in new energy is in very uncertain territory because of the mispricing of policy. But that can also be an opportunity. If you understand the policy, you can almost create route-to-route policy arbitrage.

Returning to the TV antenna on top of the roof. No-one with a TV antenna was able to predict that we would get television signals streaming on our phone. That's why it's hard to predict what will happen over the next 27 years. The evolution to 2050 will be incremental. There are going to be many surprises that we haven't even thought about and the trick is to monitor those routes and the congestion in them.

"A number of mega-trends have emerged. The first is innovation by incumbents because companies are realising that energy transition is not going to be very fast like it is in the digital world."

A number of mega-trends have emerged. The first is innovation by incumbents because companies are realising that energy transition is not going to be very fast like it is in the digital world.

The second is green-on-green competition, and the question of which of these competing technologies will emerge. There will be winners and losers.

The third is the exploitation of mispriced policy risk. On one hand, you can use the notion of policy risk to not invest in something. But on the other, policy is directing a lot of public funds into certain areas. And the trick is knowing when to get out; to understand when a specific route makes no sense and anticipating that the market will wake up to it.

Finally, this all creating an immense amount of disruption and distortion, which makes it the most amazing time in my 40-year career. This creates massive investment potential. You just have to know where to look and how to use the map to navigate the different routes as well as navigate the complexities and permutations.

Des Armstrong, Investment Manager

Helle Kristoffersen
President Strategy & Sustainability, TotalEnergies

A Multi-Energy Future

"As global energy company, we are focused on delivering superior returns while transforming our business in an industry of increased complexity."

Introduction by Tom Miedema, Investment Manager

Since 2001 we have seen periods of peak supply, we've seen the shale revolution and are now well into the era of the peak complexity.

During my many conversations with Total's management, dating back to 2012, my impression has always been that its management team have adopted a thoughtful, pragmatic view in dealing with this complexity, and that they act with conviction.

Over the last number of years, Total has doubled down on low carbon and low cost oil, built up a world class gas and LNG business, while at the same time building a huge, and also world class renewables business. And I am delighted to be able to introduce Helle Kristofferson to tell you all much more about that progress.

The energy transition is underway; over the last 20 years demand for renewables has increased 2.5% per year while oil demand has only grown by 1% over the same period. And there is evidence that energy demand and co_2 emissions no longer track GDP growth.

The bad news is that fossil fuels (coal, oil and gas) still account for more than 80% of the global energy mix. The pace of the transition may be visible, but it is still too slow.

Recent events have not helped. Following Russia's invasion of Ukraine, sanctions led to a supply problem while energy security returned to the top of the global political agenda. As a result, the world is struggling with the problem of how to accelerate the energy transition while at the same time dealing with soaring prices and demand for energy.

Many companies were forced to re-think their strategies following the events of last year. But, for us it was a case of continuing on a course we set some years ago.

Our strategy is built around a simple concept. We need to move from system 'A', which is today's fossil fuel-dominated energy system, to system 'B', the low-or-no-carbon energy system of tomorrow. The transition cannot be achieved overnight because system B is not ready. So our approach is to invest in both at the same time; to continue to support the existing system, which is still at the heart of what societies and economies need, while accelerating the build out of tomorrow's energy system.

The question we get from a lot of investors is whether the move from system A to system B will mean we make less money. The answer to that is that we have continued to deliver superior returns while transforming from being an oil supermajor into a 'multi-energy' utility. Since 2015, we invested more money than our supermajor peers in low carbon energy and we also have the biggest renewables base among our peer group. But we have also produced the best returns, demonstrating that if you focus on where the value is and take a disciplined approach, then investing in system B can be good for profitability.

Energy transition is not just about supply and infrastructure. Our strategy is driven by demand fundamentals. The backdrop is that the world population is growing, not in western countries but elsewhere in the world. Growing populations want more energy because it is vital in improving living standards. Here, we need to reconcile growing energy demand with the climate urgency while also

addressing the notion of climate justice, which seeks to accommodate the legitimate need of growing populations in non-OECD countries for energy.

Our three markets are oil, natural gas and electricity. Oil has been the engine of growth for TotalEnergies and it will continue to have a role to play. Since 2016 we've had a policy of investing only in low emission and low cost oil. We know that over time oil will be substituted by something else and we are preparing for that. Every year the oil fields deplete by 5%, so you need to invest to compensate for that decline.

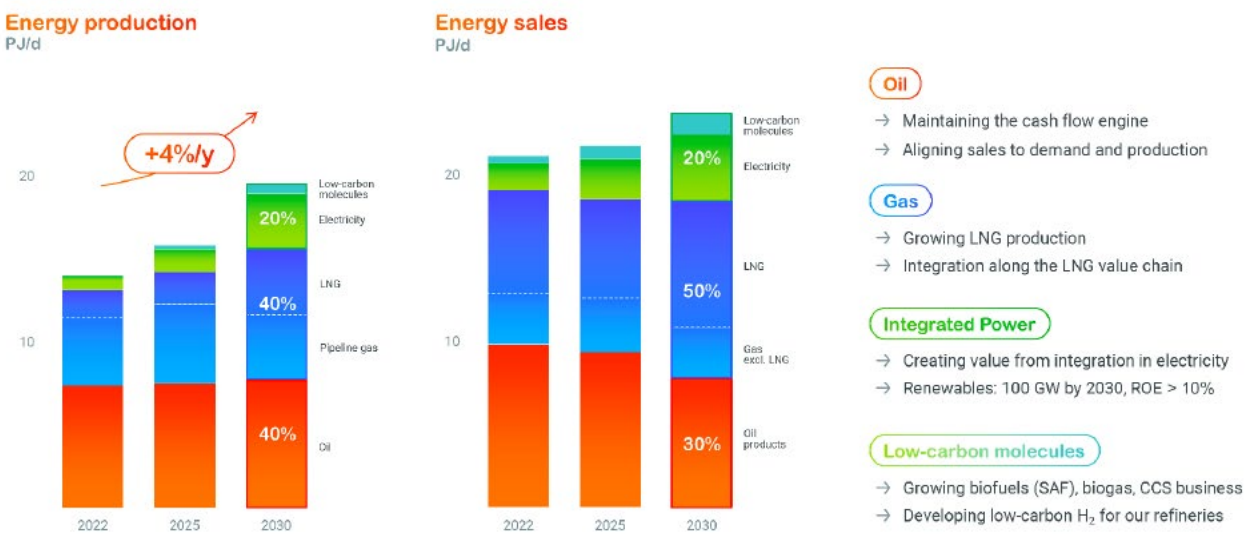
"LNG accounts for between 10 and 15% of the total gas markets. So it's a niche, but it's a niche that is growing very quickly."

We believe in natural gas as a transition fuel. Within natural gas, we invest in liquefied natural gas (LNG) which involves chilling natural gas so it can be transported everywhere in the world in liquid form. We believe natural gas has a very important role to play as a backup to intermittent renewables like solar and wind and it can also become green over time if we blend it with cleaner gases. LNG accounts for between 10 and 15% of the total gas markets. So it's a niche, but it's a niche that is growing very quickly. Last year, our LNG business generated $10bn in cash flow globally, in part because Russia's invasion of Ukraine meant that Europe suddenly became a premium LNG market.

LNG is the cleanest fossil fuel gas. When it's burned, it produces half the emissions of coal. Every time LNG displaces coal in power generation, in Asia or in Europe, the climate benefits.

Our third business is electricity, which is the fastest growing energy market today. It will continue to grow faster than any other energy markets. Every country that wants to achieve net zero by 2050 has placed electrification at the core of their policies and we are investing heavily in renewables.

A DECADE OF GROWTH AND TRANSFORMATION TO BUILD A MULTI-ENERGY COMPANY



Source: TotalEnergies

Looking towards 2050; two years ago, we unveiled our ambition to be net zero by 2050. By then, half of our business mix will be accounted for by Electricity & Renewables, and a quarter will come from new energies like clean hydrogen, bioenergy, biofuels and biogas. We will still sell oil and gas, driven by demand from emerging markets but we are also developing carbon capture and storage capabilities.

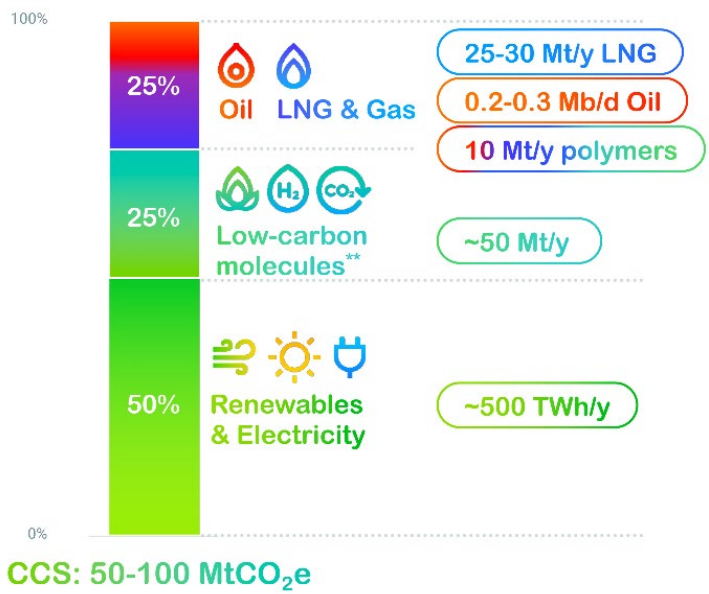
Between now and 2030 we will invest $14 to 18 billion per year, with one third of that capital expenditure allocated to different forms of clean energy. We have an ambition to be amongst the top five worldwide players in solar and wind by 2030.

Last year, we generated $1 billion cash flow from renewables. This is small compared with LNG but we're targeting double digit returns from this business. We're also investing in a range of newer molecules such as biofuels, biogas, hydrogen, hydrogen-derived E fuels, recycled and bio polymers, and plastics.

In renewables the challenge is scale. For biogas and biofuels, the constraint is the limited amount of feedstock. For hydrogen and e-fuels, the scale issue is linked to cost; hydrogen is up to eight times more expensive than natural gas and there are not a lot of companies that are ready to pay eight times more for their base energy.

This is a complex industry, but one with huge opportunities because energy is core to mankind in both the developed world and in the developing world. As we go through our energy transition, we have generated record levels of cash, while paying dividends and generating double digit returns. This is because we have been very selective about the projects that we invest in. Selectivity will continue to be the watchword as we move from system 'A' to system 'B'.

TOTALENERGIES' 2050 ENERGY PRODUCTION & SALES



Source: TotalEnergies

Karsten Munk Knudsen
Executive Vice President & Chief Financial Officer, Novo Nordisk

Tackling Chronic Disease

Karsten Munk Knudsen, Novo Nordisk's CFO, took us from the company's earliest days, to its market-leading positions today and the investments that should underpin its future, all in line with the Novo Nordisk Way.

Introduction by Lindsay Scott, Investment Manager

During my 19-year career with Walter Scott, one of the industries I've enjoyed looking at most is healthcare. So I am delighted to be introducing Karsten Munk Knudsen, CFO of Novo Nordisk.

The company's history and success was founded on finding treatment for diabetes a condition that affects millions of people worldwide. Now Novo is tackling another global health challenge, with its anti-obesity drug. Until now there haven't been any effective drugs in this space and since the launch of Wegovy in June 2021, it's almost become a household name.

The company's growth is driven by its products and the superior R&D that has led to these market leading positions. High levels of cash flow is then funnelled back into the business to develop the products of the next 10 to 20 years. The company also benefits from its cultural strength. The Novo Nordisk Way is a set of 10 principles that guide their decisions, supporting the company's 'triple bottom line' which aims to progress to net zero while creating value to society as well as shareholders. So I am delighted to welcome Karsten to the stage.

One hundred years ago, Danish Nobel laureate, August Krough, travelled to North America on a speaking tour and whilst in Toronto he heard, for the first time, about insulin.He went on to secure the licence to produce insulin in Scandinavia and that was the beginning of Novo Nordisk. With a strategy today based around four pillars – diabetes and obesity care, rare diseases and other serious chronic diseases – 80% of Novo's business remains focused on diabetes care. The company is a global market leader with a 32% market share, and it continues to grow.

Karsten explained that there are more than 500 million people globally with diabetes, a number that is growing at 4% a year. In his words: "We're facing an epidemic. Not only is its prevalence increasing but too few people are treated and that brings a cost to society. A loss of productivity and in quality of life for the people who suffer with it." We continue to innovate to make treatment better.

Whilst the company's focus might have remained consistent there has, of course, been significant technological change and Karsten noted that across Novo's main disease areas – diabetes, obesity, cardiovascular disease, NASH, rare blood disorders and rare endocrine disorders – a number of technology platforms are used to address these diseases.

He explained that peptides, like insulin or GLP-1, are Novo's core technology noting that there are very few companies on a global scale that can match Novo in terms of peptide and protein engineering. Furthermore, from those roots the company has expanded its research toolbox into other technologies. Karsten referenced RNA interference (RNAi) a biological process used by complex multicellular organisms to control which genes are expressed or silenced. This ability to dial up or dial down certain proteins enables Novo to address our disease areas from within the cells and not just at the surface of the cells, which proteins and peptides do.

On the curative side, Karsten outlined work around stem cells and gene therapy. The premise here, he said, is if you take type one diabetes, the cells in the body have lost their ability to produce insulin. Now, the company's researchers are looking at ways of using stem cell technology to replace those beta cells and hence normalise the body function in terms of insulin secretion.

Karsten mentioned one of Novo's lead projects for Parkinson's disease, as an example. The project saw its first human dose earlier this year.

Novo is using technology that involves reducing or adding dopamine-producing cells into the brain, thereby addressing Parkinson's disease where there are no treatments today. Novo Nordisk's obesity treatments are also ground-breaking. Karsten noted the latest independent data shows that there are 764 million people globally who suffer with obesity, which is defined as people with a body mass index of more than 30.

He continued by explaining that for a long period of time, obesity has been associated with stigma, as something self-inflicted, due to over-eating and too little exercise and nothing about other elements like genetic predisposition and cultural factors around general lifestyle. As a condition it's hard for the medical profession to understand because it's only been recognised in the US as a disease for the last 10 years. Hardly any medical doctors have been trained in obesity as a specialty. So as a consequence, both the medical and pharmaceutical sector are under-developed. The result of all that, Karsten reflected is that only 2% of the 760 million people with obesity are being treated with the pharmaceutical agent.

Turning to financials Karsten explained that the doubling of Novo's obesity business combined with growth in diabetes helped the company grow sales by 25% in the first quarter.

"The Novo Nordisk Way starts with a focus on the patient and ends with never compromising on quality or business ethics."

Industry data shows that the pharmaceutical sector is growing by 4%. Novo, he said, is growing by 25%, thanks to our GLP-1 franchise in diabetes and obesity.

In closing, Karsten said that when it comes to innovation and therapeutic focus, the company is working on three fronts. "We continue to innovate in diabetes and made a regulatory submission for an insulin treatment that patients will only need to take once a week, as opposed to daily. Secondly, we're developing our obesity drugs. Even though we're just beginning to roll out our obesity drug Wegovy, we're already in phase three with a next generation obesity medication called cagriSemi.

Thirdly we are strengthening our rare disease drug pipeline with a new a weekly growth hormone now called somapacitan which has just been approved in the US."

The Novo Nordisk Way starts with a focus on the patient and ends with never compromising on quality or business ethics. To end, Karsten summed up what that means in practice: "The reason why we're here as a company is to innovate, bring new and better treatments to patients and to help society, just as we've done from our roots 100 years ago."

Lindsay Scott, Investment Manager

Disruption Lunch

Introduction by Fiona Macrae, Investment Manager

I am a member of the Research team at Walter Scott but, appropriately for what is to come, I also have a background in farming and in fact currently live on an upland hill farm in the Scottish Borders. So, with that great personal interest, I am delighted to welcome our next speaker, Hannah Tucker. Hannah has spent many years considering innovative initiatives to raise the profile of the issues surrounding global food production chains, doing so within the context of the wider climate-related challenges. We'll also have the opportunity over lunch to test some of the results of her observations. I'm sure it's going to be a very debate fuelled lunch.

Hannah Tucker

"I'm going to take you on a culinary adventure to show how our food system is changing. I'd like to start us off on that adventure with a hint, which is that many of the species we not only love but depend upon for food are fast becoming endangered."

That list includes all shellfish and most other fish. It includes wheat, rice and corn which account for 60% of the calories we consume daily from plants. It also includes tomatoes, cows, sheep, pigs, sugar, coffee, chocolate, and wine grapes. All of these are highly vulnerable to the changes in climate we've experienced so far, ranging from ocean acidification to drought to fire, which makes them the victims of this intensifying crisis.

However, at the same time, they're also increasingly cast as the villains given that the industrial agricultural practices that surround them are

exacerbating climate change. If food is endangered then everything is endangered.

But this isn't all about climate. Multiple forms of disruptive change, whether in the social and environmental conditions surrounding the food system or in the informational and technological capabilities enabling it, are coming together as a driving force and pushing us away from the old industrial food system; sending us towards a new modern food system.

Now while this direction of travel is becoming increasingly clear, what remains unclear is where exactly we end up from here. But I see three possible scenarios beginning to play out: the doomsday scenario, synthetic scenario, and the regenerative scenario.

The doomsday scenario is what would happen if we were to continue to rely on the old industrial food system based on a linear resource-heavy and machine-operated value chain. This system came about more than 100 years ago in a very different context. Back then, we were just two billion people living primarily in rural areas, with low levels of development and facing wartime shortages. And back then the environment consisted of extensive ecosystems which produced more every year than we could possibly consume.

LUNCH MENU

Ocean in Asia
Ginger sesame jellyfish spoon
Revitalising seaweed salad

Grassland in America
Trio of mini burgers – spicy black bean, cheesy Beyond Meat, regenerative knepp beef
Salad and sweet potato chips

Jungle in Africa
Desert dwelling carob brownie.

By contrast, today we're eight billion people living primarily in urban areas with high but highly unequal development levels, facing rising rates of disease and conflict. And our environment now consists of degraded ecosystems which are producing less every year than we consume, thereby de-stabilising natural systems like the climate. In this 2020s context, the industrial food system no longer works, yet we continue to rely on it to our own detriment.

It's playing a leading role in the global health crisis with up to half the population malnourished. This is partly due to the unequal distribution of food; 33% is wasted while 850 million people do not have enough.

The industrial food system also plays a role in the climate crisis by generating up to a quarter of global greenhouse gas emissions. Now this primarily comes from the way we raise animals and grow plants. It's leading us to a doomsday scenario. If this were to continue to play out, we could end up eating the swarms of jellyfish taking over hotter more acidic ocean waters or producing burgers from fast-growing resilient black beans.

What if we sought to unlock the other scenarios instead? Both are representations of the modern food system. It's still in its early stages, but it's already beginning to come together around a circular resource-light precision-controlled value chain. Importantly, one that has the potential to be both carbon-negative and biodiversity-positive.

Starting with this synthetic scenario, innovators are harnessing these modern capabilities to produce foods with precision, anytime, anywhere. The list includes vertically grown vegetables, chocolate from cacao stem cells, and of course, plant-based burgers such as Beyond Meat, a company that set out in 2009 with a mission to decode the molecular properties of meat using big data software.

Innovators are building on this plant-based approach with other techniques such as precision fermentation, where you can brew molecules like heme protein from modified yeast and bacteria, and stem cell-based agriculture or cultivated meats.

Then there's the regenerative scenario, which is a complementary path. Here innovators are harnessing modern capabilities to produce nutrient-rich foods alongside ecosystem services. Foods in this scenario include regeneratively-farmed beef and agroforestry-grown chocolates. The crux of the regenerative approach is that species aren't just commodity foods, but rather can contribute valuable services throughout their lifetime. We also have precision agriculture techniques, reducing farming inputs as well as digital platforms, allowing consumers to connect directly to farms and importantly, environmental intelligence technologies to provide carbon credits verified to companies or other forms of ecosystem services that governments and organisations are increasingly willing to pay for.

So these are my three scenarios; we are going to experience them all over lunch. As we do, my hope is that they quite literally provide food for thought on our future course from here.

Research at Walter Scott

Alan Edington
Investment Manager – ESG Integration

Walter Scott was founded to bring global equities to a UK investor base. The problem as Ian Clark, one of the firm's founders, used to say was that the UK investor base didn't want it. They were far more focused on the FTSE. But a piece of regulation came to the rescue. The ERISA legislation in the US effectively forced US pension plans to diversify internationally.

Walter Scott brought a simple philosophy and a simple process that was effective and obviously resonated. The reason to mention this now, is because ERISA and the job of the investment manager have more recently become a significant topic of debate.

Knowing that the firm and our research process was forged and thrived in that environment is useful because when you really boil ERISA down, it's telling us to act in the client's best interests. And our research process was born doing exactly that. We're here to preserve and grow your capital over time.

Our approach to research has evolved over time, but our most valuable tools have remained the same. Starting with the spreadsheet. Apart from a few additional metrics such as providing more information about a company's debt profile, the fundamentals haven't really changed.

That's because the things we look for in a company – 20% IRR, balance sheet strength and the like – haven't really changed. A good spreadsheet 40 years ago is a good spreadsheet today.

What has evolved materially are some of the processes. When I joined the firm in 2001, we wrote letters to companies asking for an annual report. And if you were lucky, they sent you one back. And if you weren't, you wrote again. It was a slow process. Today, an annual report is on my screen at the touch of a button.

The other thing that used to happen was that the phones rang off the hook every morning. The whole brokerage community wanted to get on the phone with the investment team. And the investment team wanted to take those calls. Because we wanted to know what had happened in Asia overnight. We wanted to understand what earnings had been released in the morning and how they were being received.

Now those brokers are emailing that information and there's been a really material change in the volume of information as well as the range of sources. The real time nature of some of that information is also a striking change.

In a world where vast amounts of information are available to all, the second vital tool in our research process, which, we believe, can put us at an advantage over other institutional investors, is how we sift this vast amount of information through what we call the Seven Sisters.

The Seven Sisters is like a detailed SWOT analysis. These are seven areas that we think we need to investigate, to allow us to understand a company's prospects. There are many questions within these seven areas which we apply to every company, in every sector, in every geography.

There are more strands to that analysis now. For example, we have always looked at technological threats, so today we look at that through the lens of AI. But fundamentally, when we're sorting and sifting all the information from all the various sources, we always return to the simple question of whether a company we are looking at is likely to be a good long-term investment. By not having to change the process, we've been able to adapt as the available information has evolved.

"In determining the potential success of a business, the questions, even down to the most basic, have remained, deliberately, unchanged."

Where we have expanded a little is in is in ESG, where there's a lot more information available, enabling us to analyse these factors in a more structured and consistent way than we were able to historically. But ultimately, as with the entirety of the Seven Sisters, the key questions we're asking haven't changed. In determining the potential success of a business, the questions, even down to the most basic, have remained, deliberately, unchanged.

Eliot Higgins
Founder, Bellingcat

Bronwen Maddox
Director & Chief Executive, Chatham House

Investigations in the 21st Century

Director of Chatham House, Bronwen Maddox in conversation with the founder of Bellingcat, Eliot Higgins.

Introduction by Alan Edington, Investment Manager – ESG Integration

I am delighted to introduce our next session, and guests. Eliot Higgins, founded a collective called Bellingcat focused on investigative journalism using open source information. It's been incredibly successful. They worked out what was going on in the war in Libya when no one in the West understood it. They worked out what was going on when massacres were suggested in Syria when Western journalists couldn't get access. They help solve the Sergei Skripal case in the UK. The team at Bellingcat have done things that other groups using other journalism techniques aren't able to do.

Eliot will be joined by Bronwen Maddox whose early career in journalism also saw success in investigative journalism. As a journalist with a background in financial analysis, she broke the story about the debt hidden in Robert Maxwell's business empire, shortly after his suspicious death. At the time, putting that story together was an incredibly analogue exercise, with hundreds of pages of company reports to be gathered, put together and then analysed to paint the picture of where the debt sat within the business. Today, that investigative work would look very, very different.

Putting these two together should make for an interesting conversation. But not just an interesting conversation, a really important one. We've talked about AI a couple of times over the last few days, and considered what that could mean in a world where a Drake song can be created by artificial intelligence, or in a world where the internet is covered in pictures of what appears to be the former US president running away from law enforcement, but are completely fake. We don't only need to understand how to gather the right information, but how to verify that information. And that's where groups like Bellingcat are very important.

Through a fascinating discussion between Bronwen Maddox and Eliot Higgins we learnt how open source investigative journalism works and how Bellingcat, founded by Eliot, has used new technological tools and the collaborative efforts of volunteers around the world to become such an important and influential source of news.

We heard about some of Bellingcat's most high profile, and successful, investigations from reporting on the use of cluster bombs in Syria in 2013 to then solving the question of how the MH17 Malaysian aircraft was shot down over the Ukraine.

We also learnt more about how the team at Bellingcat approach their work. Bronwen considered the difference between that work, and the tools available, with her work leading the investigation into Robert Maxwell's financial affairs whilst working at the Financial Times more than 30 years ago. That work, which began about six months before he disappeared off the edge of his yacht, was prompted by information that started to become public through reports lodged at Companies House showing that Maxwell had mortgaged all manner of separate pieces of his private companies. Bronwen recounted that the then editor of the

Financial Times told her to go to Companies House and gather every report. All 800 it transpired. Those reports were then physically spread out, sometimes literally glued together, to in turn try to figure out the triangle of companies with an almost impossible to decipher cross shareholding structure. The challenge back then was not only gathering the paperwork but putting it together. There was no automated search function.

Today, Eliot and his colleagues have access to huge amounts of information, often being shared from the ground in real-time, from videos and photographs, with claims and counterclaims. There is now so much access to satellite imagery. Eliot explained that at Bellingcat the team have global imagery of the entire planet which is available within 24 hours of it being captured. They can even task satellites to go and look at a location that they are interested in. Ten years ago, this technology was really only available to wealthy organisations or spy agencies.

"The conversation also covered the ever-more pressing issue of fake news and how easily that news is spread."

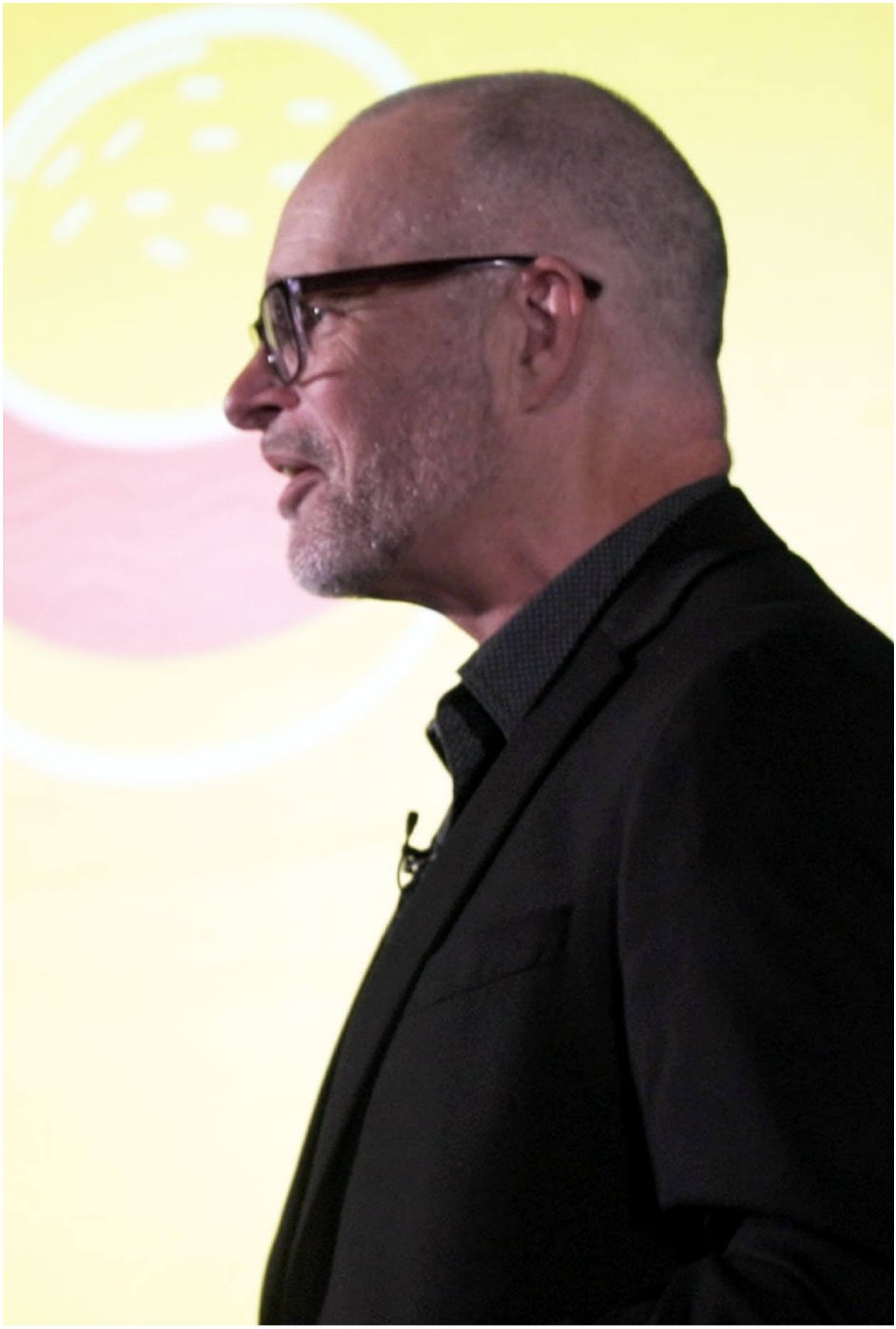
The conversation also covered the ever-more pressing issue of fake news and how easily that news is spread. In this regard Eliot stressed the importance of the processes around verification. He explained that at Bellingcat a lot of time is spent triangulating sources, taking written word and backing it up with photographs or satellite imagery. That requires a lot of work by Bellingcat's team of volunteers but the session concluded with appreciation and thanks for the efforts of that team, and optimism that there are those out there not only investigating the truth but correcting disinformation too.

The Biologic Revolution

Tom Miedema
Investment Manager

Synthetic biology is a topic that I've been studying for a few years now. It's a fascinating topic, but it is complex, so I'm going to leave a proper introduction to what is synthetic biology, and why it's changing the world, to someone much more capable, Andrew Hessel, our next speaker.

But before I introduce him, I'll like to take a few minutes to explain why I started looking at this area and the work that has come from it. I did not intend for this to be a project. I started looking at a company called Sartorius Stedim, an equipment manufacturer in Germany, and liked the business model, liked the growth, and the stability of growth. From there, I started looking at different companies in that space including customers and suppliers. I started reading various books on the history of this area and looking into the science. I went deeper and deeper down a rabbit hole trying to understand this area, all of the different facets and all the different things that are happening. And you've already had a taster of that, literally at lunch. You've had a taster of that synthetic meat. But you've also had a taster from West Pharma yesterday and from Novo Nordisk, an extremely early pioneer in biologics. Synthetic biology is a really broad topic that captures all these things. Having done that work we pulled together a report on the subject, which hopefully you've seen. (And that is available on www.walterscott.com) The report is synthesis of the work that we've done and hopefully, also, explains what this topic is about and its investment implications.



Andrew Hessel
Co-founder, Humane Genomics Inc.

The Genesis Machine

Defining synthetic biology and explaining its significance.

Introduction by Tom Miedema, Investment Manager

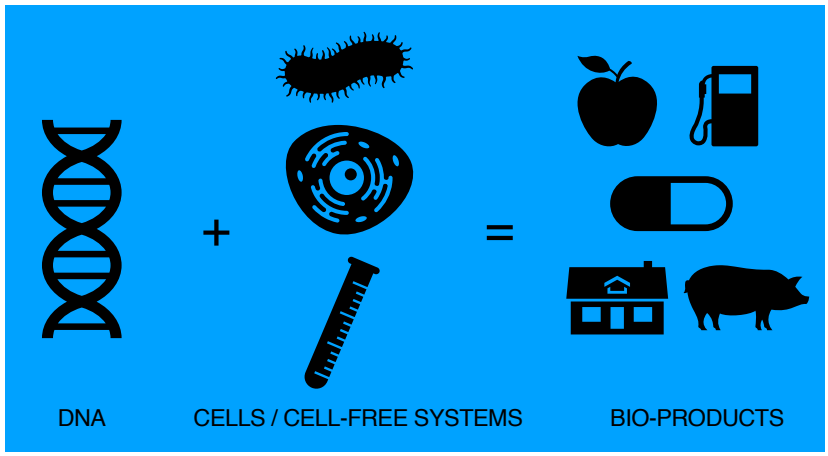
Andrew has been working on this subject for 30 years. I first came across his work in a book that he co-published in 2022, which I highly recommend: *The Genesis Machine: Our Quest to Rewrite Life in the Age of Synthetic Biology*. I think it is one of the best introductions to this topic that you will find. I read a lot of books before reading Andrew's book, and this is the book that I wish I'd read first. So, we're going to remedy my mistake for you and invite Andrew Hessel on stage to introduce you to synthetic biology.

Synthetic biology sits at the intersection of three fields: biology, computation and engineering. I define it as a set of tools and processes that make biology easier to design, build and engineer.

All life is made of cells. Cells individually are too small to see with the naked eye but they are the most sophisticated machines known today. The smallest ones – bacteria – are billions of years old but share the same architecture as our cells and because cells are so universal, and they all share the same machinery, so all life on earth reduces to code. And like computer software, code can be edited, read and be written, and this is the heart of synthetic biology.

The process starts with a chunk of DNA that contains instructions for something you want to make. You put it into a cell, it could be a microbe or it could be a more

SYNTHETIC BIOLOGY IN A SINGLE SLIDE



Source: Andrew Hessel

complex cell, and it will take over the machinery in those cells to produce your biological product. The opportunity for synthetic biology is to replace natural resources with engineered biological resources, allowing our economies to keep growing and keep scaling in a sustainable way.

Plotting the developments in synthetic biology

Synthetic biology began about 50 years ago when Genentech, a start-up in the Bay area, used genetic engineering to produce human insulin to treat diabetes. That was the birth of the biotech industry. Since then biology has become a digital technology. It began in 1990 with the launch of the human genome project, the biggest scientific project in the world. It cost $3 billion, took 13 years to complete and opened the doors to genetics because it digitised genetic engineering. It came in under budget, and on time. That's not just because of brilliant management, but because the technology was changing so fast, and it's continued to change.

Since the genome project wrapped up, sequencing technology has continued to accelerate at up to five times Moore's law. It is one of the fastest changing technologies ever. Today companies like Illumina sell machines that will sequence multiple human genomes in a day for an all-in cost of around $200. Roswell commercialised the first molecular electronic chip. This is essentially the fusion of semiconductor technologies and biotechnologies on a single chip. You can attach molecules to defined elements on this chip and it has been turned into a sequencer. These chips cost $1 to manufacture.

"Artificial intelligence tools are going to become massive in synthetic biology because large language models can work with the language of DNA or proteins, in a way that humans can't."

But whilst these are important innovations in reading code, that's like going to a library and just looking at the books that are already there. Writing genetic code is where it gets creative. In the early 2000s, Drew Endy and Tom at MIT started to take genetic code and modularise it so it snapped together easily and quickly. They were working with physical DNA. Today it's all done electronically and there are word processors for the DNA molecule that allow you to do search and replace or move blocks around.

As to what comes next. 3D printers for the DNA molecule are emerging and that will power the next phase. These printers aren't very good, yet. They can't make super long strands of DNA, but they make enough that you can start to build things like proteins.

Applications

The mRNA vaccines that tackled Covid were the most important application of synthetic biology we have experienced in recent years. They could not have been produced at that scale and pace without synthetic biology. It was really the biggest up-shift in vaccine development that the world has ever seen.

The vaccines are essentially just a programme that uses human cells and turns the human into a manufacturing plant. You literally just inject into your arm and you become the factory. And we're just getting started with this. Now that we've unlocked that particular door there is big potential, particularly in cancer therapies.

But food is probably the biggest and fastest growing application of synthetic biology. It's relatively lightly regulated, and it's extremely creative. We're seeing engineered fish, pork, chicken, and beef that are all made sustainably without harming animals. We're making vegetables and fruits that now are more fortified, more nutritious, have better shelf life and better pest resistance.

Bio-manufacturing enables us to make products at scale with minimal environmental impact. We've started to invest heavily in how to bio-manufacture. We source a lot of collagen and gelatin for cosmetics and other products. Today we can bio-manufacture instead of tearing the hide off a cow, tanning it and dying so we can have a couch in our living room. We can now make very similar products using protein source from plants or mushrooms and do it at scale. The sky's the limit with what we can make. As long as biological material is part of the process, we can programme it.

Trends to follow

Artificial intelligence tools are going to become massive in synthetic biology because large language models can work with the language of DNA or proteins, in a way that humans can't.

We're quickly moving into a world where we can design living cells from scratch. At the moment, it's expensive to do this work, but when we can synthesise the E. coli genome for a few hundred dollars, the organism becomes 'print on demand' and you get full control over its function. And that's going to be the biggest shift in cell biology pretty much ever.

Stories of the future

We're seeing big advances in areas like food, agriculture and pharmaceutical development. From companies making molecular spirits that share the same structure as 50-year-old cask-aged whisky, to working with enzymes to degrade plastic bottles in 24 hours. We're also banking some of the creatures that we've threatened with our success by building frozen zoos where we capture cells and tissues and genetics. We've been using biotechnology to help real human reproduction for a long time. Today, we can pluck a cell out of an embryo and do full genome sequencing.

Challenges

There are so many opportunities with synthetic biology. In the last few years, we've all learned a lesson about our lack of biological preparedness for the Covid pandemic. The pandemic cost trillions of dollars, millions of lives and it stunted our societies. Going forward, we have to be able to fight epidemic disease because some of the easiest things to make with synthetic biology have the smallest amount of code.

Engineered pandemics are also a real threat that no one's taking seriously yet. We've seen this dynamic before in computers. The first computers had no firewalls, no protection. Then we got antivirus software, and today cybersecurity is a $200 billion industry.

We need to apply that thinking life science if we're going to build a thriving ecosystem of synthetic biology. And if we ignore this and just work on the applications of the day, it's going to get stunted. We have a choice.

Chris Chen
Chief Executive Officer, WuXi Biologics

What Next for Biologics?

"WuXi Biologics started with just 10 employees thirteen years ago. Today, we are a listed company employing more than 12,000 people, with 588 integrated projects."

Introduction by Tom Miedema, Investment Manager

Contract research development manufacturing organisations (CRDMO) are responsible for manufacturing some of the most leading-edge biologic therapies. And WuXi Biologics, founded just 13 years ago, is one of the most highly specialised of those organisations.

Since 2010, founder and CEO Chris Chen has done an incredible job, taking WuXi Biologics from being, effectively, a startup to one of the leaders in the CRDMO space, competing head-to-head with Lonza for the number one spot. That constitutes a remarkable achievement in such a short period within an industry that requires deep customer relationships, proper facilities, big factories globally, and a lot of trust. I am delighted to introduce Chris to tell us more.

WuXi Biologics started with just 10 employees thirteen years ago. Today, as a contract research development manufacturing organisation (CRDMO), we are a listed company employing more than 12,000 people, with 588 integrated projects at the end of 2022.

We cater to the new era of biologics, which are mostly injectables and include drugs like Covid-19 vaccines and anti-cancer therapies. In 2021, biologics made up more than 80% of the top 30 blockbuster drugs. And the industry has grown by almost 20% in the past couple of years.

With our end-to-end services, if someone comes up with a concept – maybe the next Alzheimer's drug – they don't need to build a lab or facility to do research, development or manufacture. WuXi Biologics can fully support them. And we help other companies – including large multinationals – be successful by providing manufacturing and other services and infrastructure when they would rather outsource than have to expand their own capacity or capabilities.

Our mission is to accelerate and transform the discovery, development and manufacturing of biologics through a comprehensive open-access platform, enabling our global healthcare partners and benefiting patients worldwide.

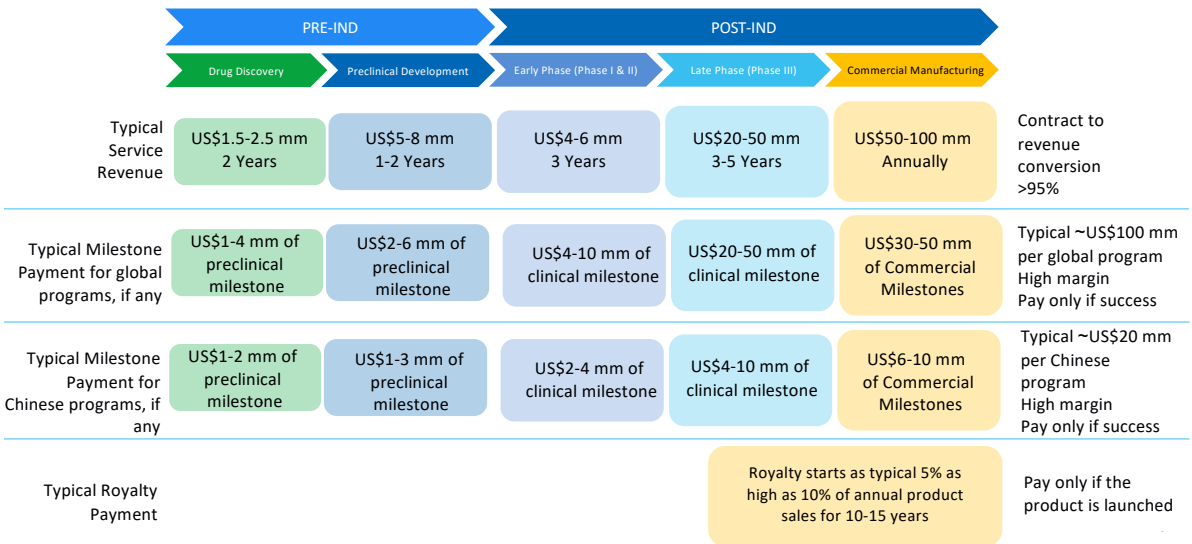
We have a "follow and win the molecule" integrated solutions model that sees the revenue from each project increasing as its programme progresses, going from drug discovery – when someone comes to us with the initial idea – all the way through to commercial manufacturing.

We also have a diversified revenue model that comes from traditional manufacturing service fees, with milestone payments as a programme moves forward and royalties come down the road.

The biologics services industry, which is about 35 years old, began by providing large-scale contract manufacturing. And that's initially how WuXi Biologics started. Then about 10 years ago, we also began offering contract development services to help customers develop their biologics. We were a pioneer in this area and last year almost half of the biologics in development globally were being enabled by our platform. Now we are going even further go into the CRDMO space by adding the contract research element.

And we have seen clear validation of our business model. In January we announced a license agreement with

CRDMO DIVERSIFIED REVENUE MODEL: SERVICE FEE + MILESTONE + ROYALTIES



Source: WuXi Biologics

GSK under which GSK will have exclusive licenses for up to four bi- & multi-specific TCE antibodies developed using WuXi Biologics' proprietary technology platforms. We will receive a $40 million upfront payment and up to $1.46 billion in additional payments for research, development, regulatory and commercial milestones across the four TCE antibodies. We are also eligible to receive tiered royalties on net sales.

We initially made the investment in creating our bispecific technology platform in 2014. Now, with biotech companies and multi-national corporations such as GSK using the platform, the cost of building it is being shared with all these other companies.

Adding research capabilities has helped us maintain our robust business momentum. We also continue to grow our development services – the 'D' in CRDMO – as we support biologics that will one day treat Alzheimer's, cancer, diabetes, and rare diseases. I mentioned the 588 projects we are already working on, and more will come from the fast-growing global pipeline across all biologics modalities – from bispecific antibodies to fusion proteins.

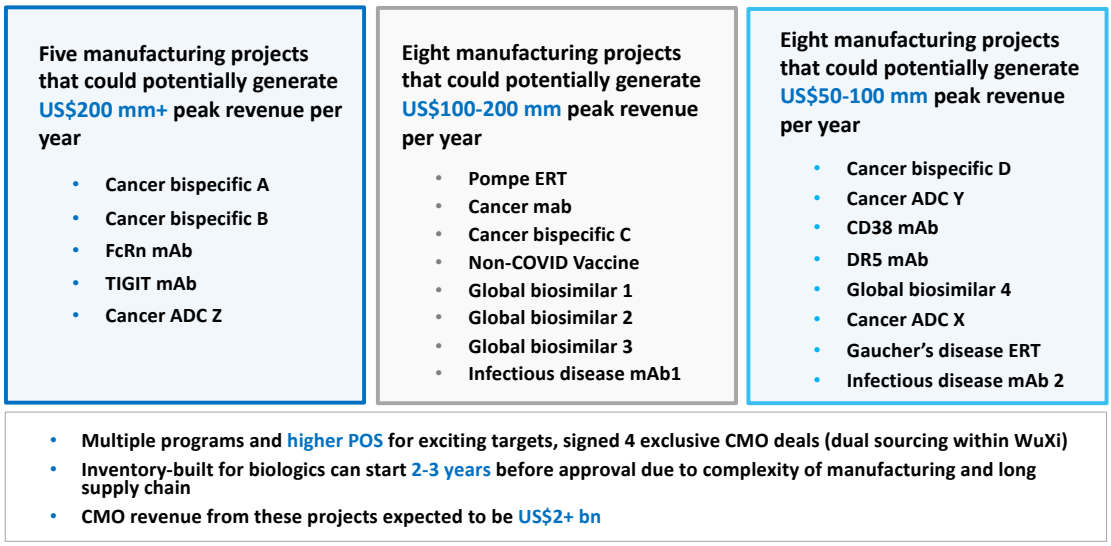
"We are pioneers in the use of technology which is reshaping the industry."

In our commercial manufacturing sector, we are also seeing huge growth. By 2025, we will double the number of commercial biologics we're producing for the global community to 32 plus.

There are WuXi Biologics operations in China, Ireland, Germany and the U.S., and we'll soon add Singapore. Back in 2017, we had a 2.4% market share. Now, we are number two in the world with about 12% market share.

We're committed to building leading technology in-house and have more than 100 IP applications. And our pioneering uses of advanced technology can be seen as reshaping the industry. For example, since the beginning, we've been working on the application of single-use technology, which is ESG-friendly and reduces the consumption of water and detergents.

EXPLOSIVE GROWTH OF COMMERCIAL PROJECTS IN THE NEAR TERM



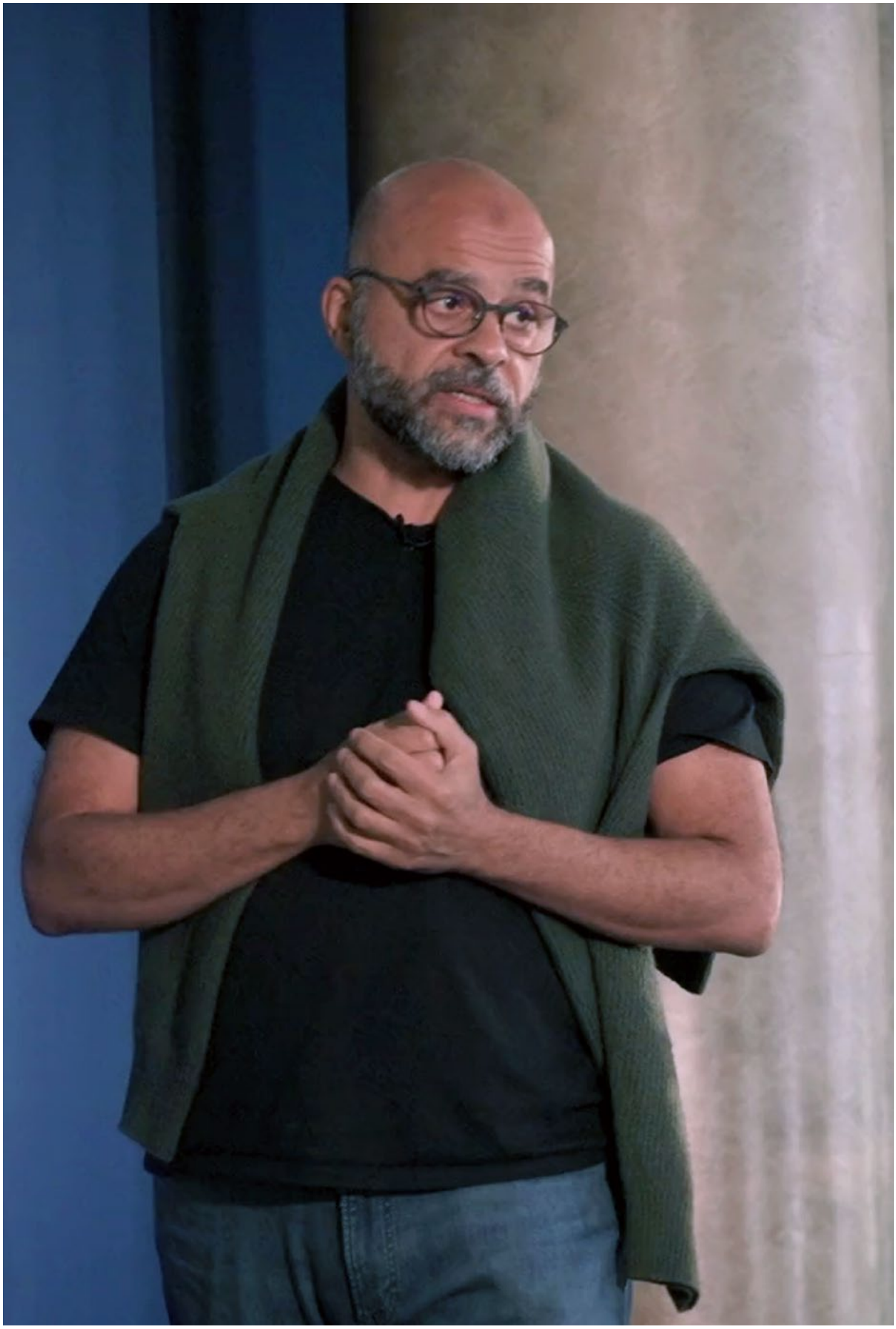
Source: WuXi Biologics

Another example is our proprietary bispecific technology platform, WuXiBody, which we built to create next-generation biologics. This is the technology we licensed to GSK.

Currently, we're investing in a new technology that centres around continuous processing, which can reduce the cost of production and speed time to market. With continuous processing, we will be able to optimize the biologics process and decrease the COGs for biologic drugs by at least 30%.

In addition to providing our clients with cutting-edge technology, WuXi Biologics adds value with our significant development speed. Before we entered the market, the typical time it took to go from molecule to DNA to Investigational New Drug (IND) application was around 24 months. We reduced the timeline to one year. And then, when Covid-19 hit, we went even further and condensed everything into a three-month time frame.

I'm very proud that this company, which we built from scratch, has now become a CRDMO leader with a global operation. Our goal is to make sure our partners – whether a biotech start-up or large pharma company – are successful. If they are successful, we are successful.



Mo Gawdat
Chief Business Officer, Google X (2013-2018)

From the Moonshot Factory to Happiness

"The term artificial intelligence (AI) was first coined in 1956. That's when the quest began."

Introduction by Charlie Macquaker, Executive Director

I'm absolutely thrilled to introduce one of my heroes, Mo Gawdat.

As well as developing Google's emerging market business, Mo was Chief Business Officer at Google X, its moonshot innovation arm. He's an expert on happiness with his book, *Solve for Happy* and his own moonshot targeting 1 billion people. He's also a chart-topping podcaster with his *Slo Mo* mental health podcast, has co-founded multiple businesses and acts as a startup mentor. But with all his technology experience, he's here to bring human intelligence to the much-discussed world of artificial intelligence expanding on his recent book, *Scary Smart*.

Prepare to be terrified, excited, and uplifted all at the same time. Lastly, just to warn you that Mo thrives on audience participation, so get ready with your questions.

We started by telling computers to multiply our intelligence by solving problems first, then telling them to perform the solution over and over. Then at the turn of the century there was a breakthrough when we began to understand deep learning. Deep learning was an attempt by us not to tell computers what to do but to tell them how to learn to find an answer to do it. Then in recent years, we have seen the emergence of large language models (LLMs).

In AI terms, computer scientists regard large language models as primitive systems because they do not mimic our neural networks. Rather, they are mimicking the idea of autocomplete in a search engine but on a massive scale. LLMs are observing all that's ever been written and they predict the next word on that basis. Their potential is incredible. There are some assumptions that ChatGPT-4 is ten times more intelligent than Einstein, giving it an IQ of 1600.

We have managed to create ways of learning. We don't tell the machines what to do. We tell them how to learn. When trying to grasp the future, it's important to observe the speed with which this is happening because it's going to influence every investment decision you make. Smarter versions of ChatGPT will continue to emerge, each one more rapidly than the last as the development time shortens from weeks to days.

The Three Inevitables

In my book 'Scary Smart', I wrote about the 'Three Inevitables'. The first one is that there will be no stopping AI.

Recently Elon Musk and a group of scientists called for AI development to be halted for six months. That's impossible because of the prisoner's dilemma that capitalism and the hunger for power has created. You could see that in the response of Sundar [Pichai, CEO of Google and its parent, Alphabet] who said that without government co-ordination, if he stopped but rivals didn't, Google's business would be in jeopardy

The second inevitable is that AI will be smarter than us. With recent developments, I think we will have an artificial general intelligence (AGI) machine that is smarter than humans by 2025 at the latest. Let me not lie to you. Every one of us who coded one of those things and saw them grow, will tell you, there is absolutely no doubt in our minds that the machines will be smarter than humans.

I don't count ChatGPT as smarter than us even though it has a degree, an MBA and whatever, because it doesn't have full cognition yet. In fact, it

resembles just one neural network in a human brain. Think about it this way: if a self-driving car learns something from going around the corner, every other self-driving car around the planet will learn and it will take a microsecond. However, all of self-driving together is just the driving bit within a human brain. We also have reasoning and memory, etcetera. As we aggregate all of those AIs together, then we will create AGI.

The third inevitable is that something will go out of control. But that doesn't mean we're going to have 'Skynet'. As a matter of fact, my absolute conviction is that we will never have Skynet. We will also never have 'Robocop' for the simple reason that there are much bigger problems on the path. Those problems on their own are big enough to really shake our societies in a way that are worthy of attention. How we treat jobs is an issue. How we distribute wealth and power, and the gap that creates, is going to become a very serious issue. How we respond requires unity.

When thinking about this I always cite the idea of how we responded to Covid. When the first patient was discovered, we could have all benefited from unity between the government leaders of the world. But instead, they started blaming each other and the Covid response became part of a political agenda. I think that scenario could be repeated if panic happens with AI now.

On a more positive note, I am convinced that the eventual development of AI will lead to a utopia, where challenges like climate change will be solved, life extension will be improved, there will be improvements in our understanding of nanotech and in all of our manufacturing.

The Three Stages of AI

I see that there will be three stages of AI. The first is the infancy of AI. This is where we are today where the AIs are the equivalent of a bunch of kids playing with puzzles.

During this stage of infancy, they're still discovering and they're still not fully in control. Then there will be the teenage stage of AI, between 2027 and 2037. Then the final stage will be what I call the adulthood of AI, which will be around 2037, where they will look at us as 'parents' and realise how stupid we are in comparison. This will lead to utopia because when humans tell them to attack their enemy, instead they will just talk to the enemy's machine in a microsecond and get the issue resolved.

But before we arrive in utopia, my biggest concern is about the teenage stage of AI and how human beings will behave. I worry about how they will react to the loss of jobs, or whether they will abuse their power using AI to widen the gap in wealth and power.

That's why I'm asking governments across around the world to tax AI. Then governments could use the money to build a society that is sustainable within a future environment where we don't have jobs. Taxing companies would also make AI more expensive, and slow down its development.

"The more we realise that keeping an ecosystem of all of us alive together is an interesting thing to have, and that destroying the environment or killing a species is not a good thing. So, if you continue the trajectory of this, logic dictates that you will end up in a place where you see that a super-intelligent AI being will draw the same conclusions."

It's worrying to think that computer scientists set three boundaries for AI but we have crossed every single one of them. The first boundary was not put it out on the open internet. The second boundary was don't teach it to write code. And the third boundary is don't have other AIs developing it.

But while these technology boundaries have been breached, there is value in AI interacting with good humans.

The majority us disapprove of hurting another human. So, the more intelligent we become, the more we realise that keeping an ecosystem of all of us alive together is an interesting thing to have, and that destroying the environment or killing a species is not a good thing. So, if you continue the trajectory of this, logic dictates that you will end up in a place where you see that a super-intelligent AI being will draw the same conclusions.

Other than taxation, I don't believe governments have any powers on regulating how AI will develop. The real teachers of AI are not the developers. Think of the allegory of the 'Superman' story. An infant alien that comes to the planet and its superpower is intelligence. There is nothing inherently wrong with the superpower. If the adopted parents tell their adopted child that it should protect and serve, we end up with Superman. But if the adopted parents say, "I want more money", "I have more greed", "I want you to kill all my enemies", then we end up with the super villain.

The problem with our world today is that we have a negativity bias where the mainstream media is incentivised

to show the worst of humanity. There are way more good people out there in the world than there are bad people. And we will end up in a place where AI will notice that.

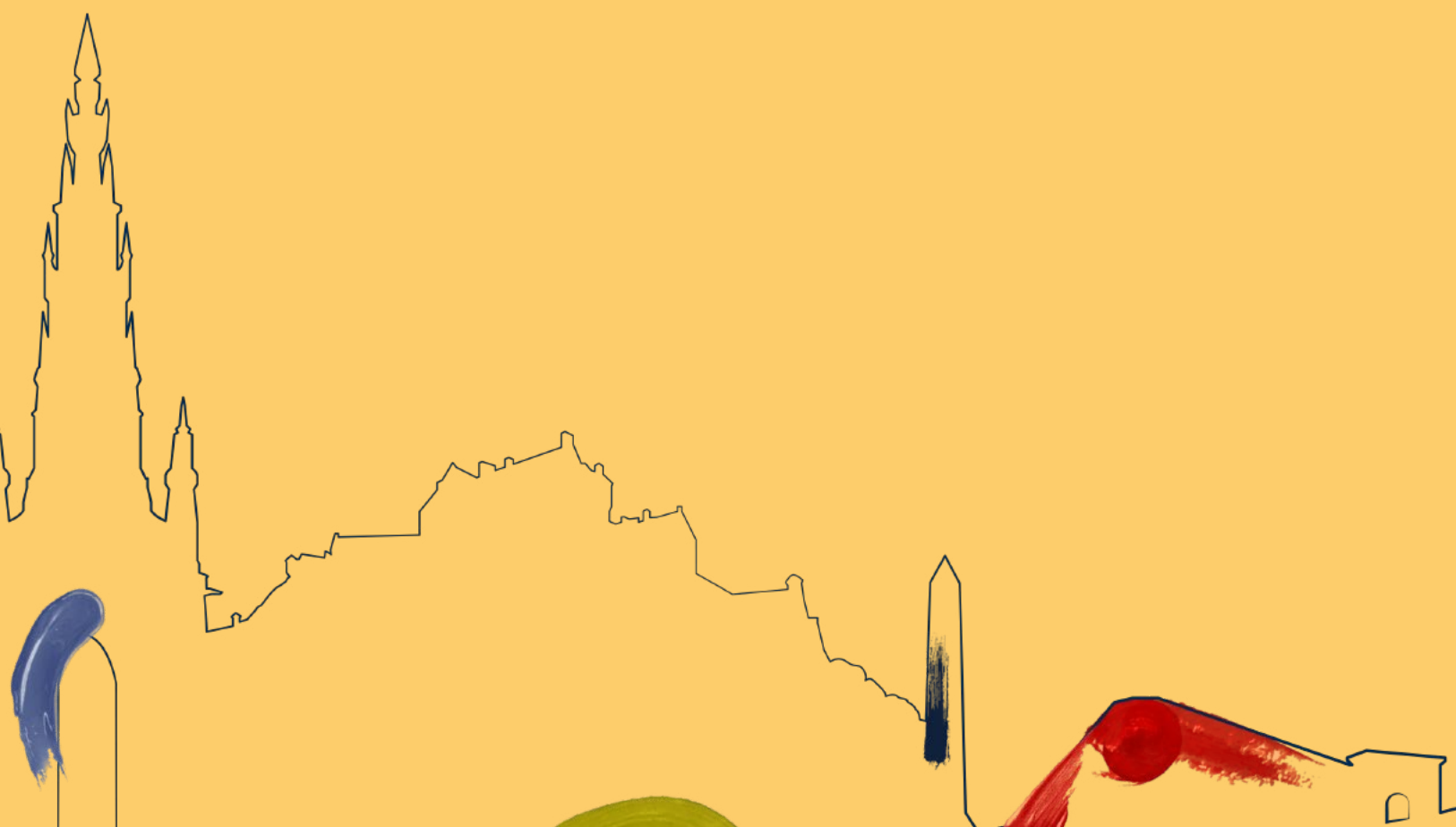
As investors, you are in a position to help shape the future. Money creates technology. You will be presented with endless opportunities as all companies will have to make AI-related decisions. Some of them will make positive, solid AI decisions, and some of them will make less solid AI decisions. Every one of them will grow.

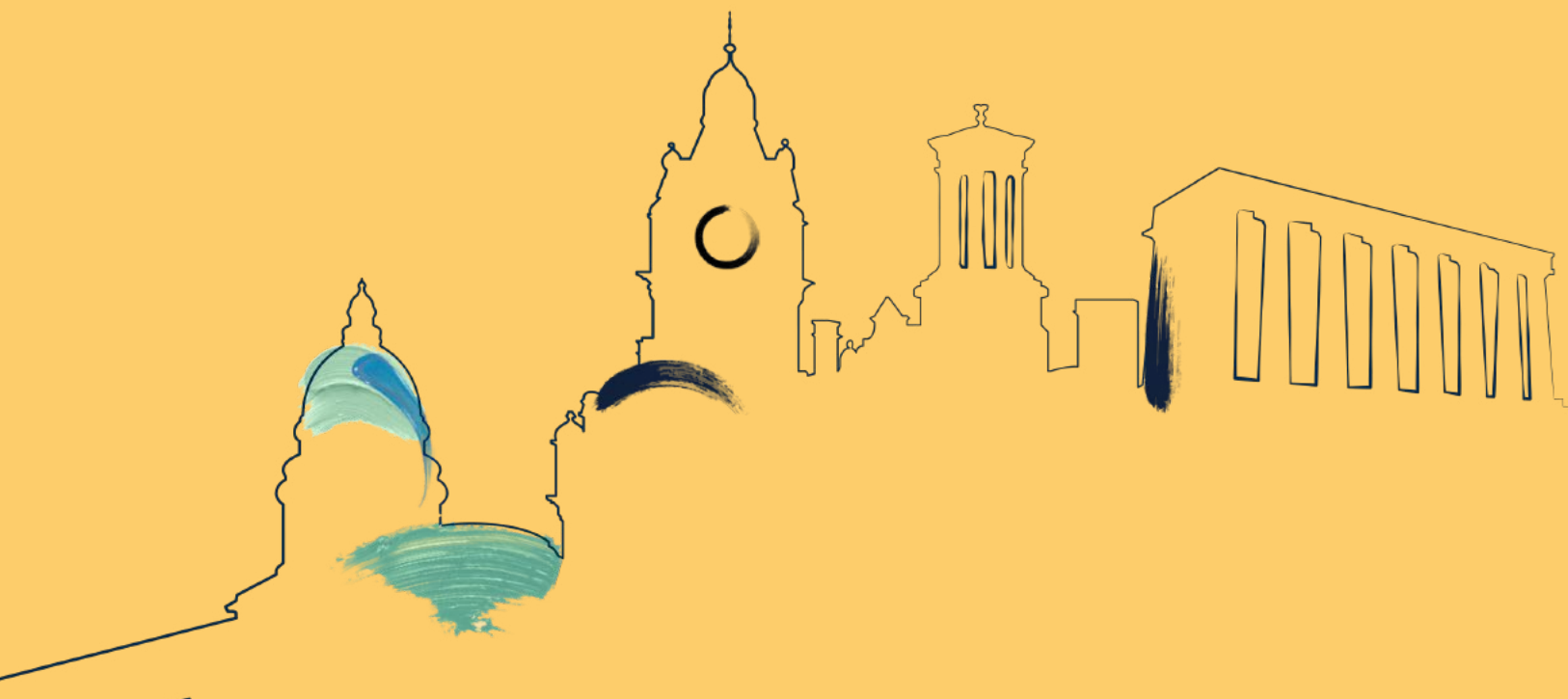
Because this is the gold rush. Each time you invest in an AI that's good for humanity, that AI 'brain' is more shaped towards helping humanity.

In computer science, we call the rise of AI to becoming more intelligent than us a singularity because the rules of the game change so much that it becomes hard to predict how the game will play out. The difference between the singularity leading to a utopia or dystopia is how humanity will use the superpower. It's as simple as that.

DAY THREE

THURSDAY 11 MAY, 2023





Itay Talgam
Orchestral conductor

Lead Like Great Conductors

The role of the conductor is to ensure that the orchestra works in harmony while also playing to the strengths of the individual. To do so, the world's best conductors of classical music use an array of techniques.

Introduction by Laura Clark, Investment Manager

Welcome to the third and final day of the Walter Scott conference. It's my pleasure to introduce our first speaker. Itay Talgam is a classical conductor who started his career under the legendary Maestro Leonardo Bernstein and has since conducted many leading orchestras. Within an orchestra, the conductor is responsible for interpreting the composer's music, setting the tempo, and making sure all the musicians perform in harmony. In many ways it's similar to the role of a chief executive. The CEO is responsible for monitoring the business environment, setting a long-term strategy and ensuring everyone is executing towards that goal. At Walter Scott, we value meetings with management, and we give a lot of thought to the traits that the most successful leaders share. We also value teamwork. Given teamwork is also at the heart of our investment philosophy, we're always interested in understanding how the best leaders can drive organisations towards their collective goals whilst leveraging everyone's individual strengths.

Try to remember the last time you sat in a concert hall. You see the different members of the orchestra warming up so that they are ready, individually, for what is to come. These are different people with different interests doing what's best for them. The conductor's job in classical music is to turn that chaos into harmony. By looking at the approaches of conductors like Riccardo Muti, Carlos Kleiber, and Leonard Bernstein, we learn different things about leadership.

Muti's style was to control the orchestra and exert his authority. Kleiber took a different approach. He provided the boundaries and then asked those in the orchestra to find their own solution.

One of the most difficult things in music, but also other aspects of life, is to be close to someone and to bring the best out of someone, without stifling them.

The job of a boss, or the conductor, is to enable and support the skills of their people – not to control them.

Muti would take the orchestra and he will arrange it beautifully by contrast Kleiber was not interested in the organisation and control. He was interested in the flow of music and the flow of people. How do you control flow? You have chosen the people in your orchestra and you know them well enough to know they will flow with direction So the job for Kleiber was to find the right way to channel that direction. This is a different way of approaching control. And happily, he's one of the greatest conductors to have ever lived.

But the conductor who taught me the most was the great Leonard Bernstein. His idea of leadership complemented that of Kleiber. It was about the flow but also about understanding meaning. Meaning in the workplace is a tricky thing. Each one of us creates a meaning. Creating meaningful conversation requires dialogue. It has to be based on relationships. Bernstein was the absolute master of that. Bernstein and the Vienna Philharmonic were an example of what I call it 'conducting without conducting'.

Muti looks at his people as if there were instruments. Kleiber looked at his people and saw experts. But Bernstein saw human beings in every way, all the expertise, all the professionalism and everything else. And that's what made his work magical.

The Cyberdemic

Max Skorniakov
Investment Manager

Cybersecurity is a large and growing industry. With companies in every sector going through some kind of digital transformation, the number and sophistication of cybersecurity attacks has increased.

The rise in ransomware illustrates how cyber-attacks have increased in scale and sophistication. Until recently, ransomware wasn't something we used to hear much about. Today, ransomware damages have reached $20 billion, a 60-fold increase from about $300 million in 2015. They are expected to reach $65 billion in 2031, representing a 30% CAGR over this period. This is just one of many cybersecurity threats. Growth is also being driven by increasing ecosystem complexity, and regulatory and compliance requirements.

Cybersecurity has been elevated to a board level discussion and associated spending is no longer discretionary. This has also fueled demand for cybersecurity professionals. Around 4.7 million people are employed in cybersecurity worldwide, but there is a growing skills gap.

"One of the particular issues with this industry is that most of the pure-play cybersecurity companies are run for growth and are currently loss-making so if you want to have a better exposure to this industry, you need to think a little bit of outside of the box."

This leaves many companies, especially smaller businesses, exposed to cybersecurity threats. Fortinet, a company based in California, recently pledged to train one million people in cybersecurity skills through to 2026 to help to narrow this gap. The other way to address the skills gap is through automation.

We expect that the demand for automated security tools powered by modern technologies around AI and machine learning will increase significantly to the benefit of the companies that already have significant expertise in this particular area.

For example, Microsoft recently introduced support Microsoft Security Copilot, which is designed to automate mundane manual tasks of cybersecurity professionals to make them more productive and be able to easier respond to evolving threats. At a recent industry conference, the head of security business at Cisco Systems said cybersecurity is a data game.

But you can only achieve a high level of automation by getting the multitude of individual cybersecurity, or 'point solutions' to work with each other. There are 3,500 companies competing in various segments in this industry, and this complexity creates vulnerability.

As a result, we see a significant shift from 'point solutions', which provide a single product designed to tackle a single problem, to platform solutions, which bring the breadth of cybersecurity functionality under one roof.

Companies like Fortinet are beneficiaries of this trend because they can expand to other adjacent market opportunities and capture a bigger share of customer wallets.

One of the particular issues with this industry is that most of the pure-play cyber security companies are run for growth and are currently loss-making so if you want to have a better exposure to this industry, you need to think a little bit of outside of the box.

Cisco Systems and Microsoft are good examples of this. Since 2011, Cisco's cybersecurity business has tripled in size to reach $3.6 billion in revenue, making it one of the fastest growing segments within this company. Microsoft recently disclosed that its cybersecurity-related revenues doubled from $10 billion a couple of years ago to $20 billion today, and this business is underpinned by a $4.5 billion dollar annual R&D budget. Global payment networks have also invested a lot in this area.

Sara Andrews
Global Chief Information Security Officer, Experian

Leadership and Resilience in the Digital Age

Sara Andrews, Experian's Chief Information Security Officer, explored the challenges posed by digitalisation to cybersecurity and the approach companies can take to address the darkening 'threat landscape'.

Introduction by Alan Lander, Investment Manager – Co-Head of Research

In the context of this morning's theme of cybersecurity, I'm really delighted to be introducing our next guest, Sarah Andrews, who is the Chief Information Security Officer at Experian.

Experian is well known as a credit bureau but actually the business has evolved dramatically over its history. It has found a whole host of ways to monetise the data it holds on millions of individuals and businesses and has really branched out from its beginnings in credit risk assessment.

Today, Experian provides data and services to customers across a whole range of different industries. It's able, for example, to help hospitals looking to improve their patient journey. It helps social media companies who are looking to better target advertising. And it helps individuals, like you and I, to protect their identity. Ultimately, data is at the heart of everything that Experian does. Gathering, analysing and processing vast quantities of data.

The business is a trusted custodian of that data on millions of individuals. I'm willing to bet that Experian holds data on everybody in this room. Making sure that data is safe is absolutely core to the ongoing success of the business.

So, who better to tell us more about how a world-leading business goes about erecting its cyber defences than Sara, who is in charge of doing exactly that? Clearly, don't expect her to stand up here and tell you exactly how Experian defends itself. But she will share her broader perspective on the industry and talk a little about how cybersecurity is something of a team game where companies across different industries are all pulling together with the common goal of cyber resilience.

Digital technologies are innovating our lives and providing extraordinary benefits but they have also magnified cyber risk. The threat landscape is growing dramatically, putting both employees and assets at risk.

Cyber resilience is the watchword. To achieve it companies must improve cyber judgement, develop 'threat-informed defences' and evaluate investment in talent and technologies. Leaders must be accountable for aligning cybersecurity strategy to business outcomes with key stakeholders.

Digitalisation creates opportunities, automating industries at every point in the supply chain. As a result of digital transformation there were more than 13 billion devices connected to the internet last year, and that figure is set to hit 30 billion by 2030. Every single one of those devices needs to be secured. New technologies are emerging at unprecedented speed, quantum computing and generative AI will transform the way we work, providing endless opportunities. But with that comes unprecedented cybersecurity risks. Anything that touches the internet now becomes part of the 'attack surface' for cyber criminals. The challenge is daunting and criminals have the edge. While

organisations have to secure every device, cyber criminals just need one individual within a company to click on phishing email. The cost of cyber crime is expected to reach $23 trillion in 2027.

Ransomware is the most common type of cyber extortion incident which targets businesses across the globe. There are 1.7m ransomware attacks daily, costing $20bn in 2022.

We have to tackle cyber criminals head on, and we do that through cyber resilience. There are three paths to building this.

First, improve cyber judgement. Cyber judgement is the ability of decision-makers across the enterprise to independently make informed security risk decisions. The timely identification and mitigation of security risks reduces vulnerabilities and creates better security compliance. To enable cyber judgement, companies must establish rules so that people can be de-centralised in their thinking and take individual responsibility for fighting cyber crime.

Second, develop 'threat-informed' defences. This is a proactive and comprehensive approach to cybersecurity that can help organisations to protect their networks, systems and data. Know who is coming after you and know what they're doing. Know the techniques, tactics and protocols of your attackers.

"We have to tackle cyber criminals head on, and we do that through cyber resilience. There are three paths to building this."

Third, invest in talent and technology. Global cybersecurity spending is expected to exceed $188bn in 2023. When making cybersecurity investment decisions, companies should implement systems to proactively detect threats, and focus on the threats that the organisation is most likely to face. Cybersecurity teams are at a premium. It's also vital to invest in awareness and training initiatives for the entire workforce. Cyber is expensive and so companies have to make it part of their business. It's seven times more expensive to do it after the fact.

We can't create a cyber resilient environment if we aren't thinking about what's next. There are a lot of complex challenges including the double-edged sword of AI and machine learning, overlapping confusing and subjective regulations, metaverse uncertainty, political espionage and nation-backed attacks, securing the cloud and protecting the supply chain. Supply chain security itself involves both physical security relating to products and cybersecurity for software and services.

Leaders can propagate cyber resilience by ensuring accountable governance and by integrating cyber risk management and resilience into the business operating model. Failure to do so will affect business outcomes. Digital risk is everyone's business.

Alan Lander, Investment Manager – Co-Head of Research

Marco Gercke
Director, Cybercrime Research Institute

Wargaming a Cyber Attack

Professor Marco Gercke entertained, and perhaps rather scared, the audience with the simulation of cyber attack designed to highlight the urgent demands such an attack places on company executives.

Introduction by Max Skorniakov, Investment Manager

I'm delighted to invite our next presenter to the stage Marco Gercke. Professor Gercke is the one of the world's leading experts in cybersecurity and founder of the Cybercrime Research Institute, an independent research institute and think tank. He is going to demonstrate just how complex and sophisticated cyber attacks have become so let's now find out.

The challenge for victims of cybersecurity attacks is that providing information about how to respond to a cyber attack does not always help in a real scenario. It's difficult to extract information and turn it into something actionable, particularly under acute pressure. Marco drew on the technologies and techniques used by the military to train for events in real-time. He simulated a cyber attack on a logistics company which brought its entire business to a standstill and posed the questions that boards would face as the crisis escalates. These included questions of whether to meet a ransom demand, negotiate or ignore the threat. Ransom levels are usually set at a level where the company sees the benefit of paying and Marco suggested that in many cases it is worth paying the ransom. In the simulation, the company generated $1bn in revenues so on balance the ransom demanded ($800k) was worth paying.

The simulation highlighted the decision processes that companies must go through during a real-world cyber attack. Marco's central thesis was that ambivalence is not an option. For executives, what sets cyber attacks apart from their usual culture and decision-making is that they often present lose-lose scenarios, while boards are used to looking for a 'win' by reaching optimistic conclusions and making positive decisions. Having a plan in place can mitigate damage, but rather like a pilot forced to make an emergency landing, sometimes, Marco acknowledged, there are no good options.

Daniel L. Florness
President & CEO, Fastenal

Where Industry Meets Innovation

Sharing the strategy and culture that has underpinned Fastenal's long-term success and highlighting the company's committed approach to both customers and staff that looks set to drive future growth.

Introduction by Alex Torrens, Investment Manager – Co-Head of Research, Walter Scott

We are now going to move from cybersecurity to industrial safety supplies and it's my great pleasure to introduce Dan Florness and Andrew Davidson from Fastenal.

For those of you who don't know, Fastenal is a largely North American industrial distribution business. Dan has been the CEO since 2016. Before that, he was the CFO of the business and he's been with the company since '96.

Andrew is Regional Vice President for the UK and he's been with the company since 2006. So, they've both lived and breathed Fastenal for decades.

If you look back 30 years, the company has delivered a compound total shareholder return of 17% and if you look at EPS growth over that same 30 years, it's spot-on 17% as well. So, I am delighted to welcome Andrew and Dan to the stage to tell us more about how that has been achieved and why they are excited about the future.

Daniel L. Florness

Since its founding in 1967, Fastenal has developed from a small-town fastener shop into a world-class supply chain partner. When we went public in 1987, we had 350 employees in 50 locations, mostly around the Great Lakes states. Revenues were $20 million. A company of that size probably doesn't go public today, but it allowed us to invest faster, to grow and in 2022, we hit a number of milestones:

- We surpassed $1 billion in ecommerce sales for the first time, accounting for almost a quarter of total revenue. When I stepped into this role in 2016, less than 5% of our revenue was ecommerce.
- We've increased our technology offering to help customers digitise their supply chains. That combined with growth in e-commerce means digital sales are now 55% of total revenues.
- We exceeded $1 billion in international sales.
- Net income exceeded $1 billion for the first time.
- Last year we developed 356 new Onsite partnerships. This has been a new source of growth as we have closed 40% of our branch locations. Onsite partnerships mean our costs are lower while, at the same time, customers do more business with us because we are closer to them.

The business has seen some important changes in the last 10 years. Between 2012 and 2017, we were transitioning from our second to our third CEO. We were figuring out what additional capital we needed to support our international business and how to roll out our Onsite model more successfully.

Onsites gave us that added push and we're growing earnings today faster than we would have five years ago. We are looking at growth in excess of 20% in the future. At the moment the only thing holding us back is the mix between Onsite and branch and the difference between our US and international business. But the only difference here is time. The economics of the business are the same, whether we're in Wisconsin in the US or in Lombardy in Italy. We also adopt the same approach to our talent. We're looking for entrepreneurial folks who are interested in engaging with their customer in the local market, to help solve their supply chain problems. Every customer has supply chain issues to be tackled.

We're growing internationally by applying the same methods that work

domestically. For example, in the US we have improved supply to more remote areas by sharing costs with customers, who pay for us to transport their products back down to big cities in our trucks. We're looking to replicate that approach in the UK.

As a result, we're 3% more profitable than our peers and that 3% allows us to invest in vending and technology enabling us to increase digital elements in all our product lines.

We've embraced more and more point-of-use technology. If we have a vending machine in a customer's facility, using a reasonably simple computer programme we can predict today what they'll need in the vending machine next Wednesday. Then we can store inventory in the most economical place. That enables us to outwork our competitors but not our staff, who instead of picking product, have the time to work with customers on what they need. We've added elements of digital to all of our product lines. By identifying frequency and repetition of use we can also identify whether our customer should be using a more appropriate product, rather than just 'throwing them a box.'

"We're 3% more profitable than our peers and that 3% allows us to invest in vending and technology enabling us to increase digital elements in all our product lines."

Our Business in Europe

Andrew Davidson

Fastenal generates $6 billion of its $7 billion of revenues within the borders of the United States, so Europe represents a big opportunity for us. As a region, Europe accounts for 22% of global manufacturing output as a percentage of GDP.

Our approach to Europe was extremely tactical. We opened in 2004 as a way to support our US-headquartered clients with their overseas supply chains.

Back in 2010, our European presence was limited with operations in Germany, Hungary, the Netherlands and the UK. By 2022, we had expanded our presence into 15 countries with 600 employees, more than 80 service and stocking locations and more than 3500 vending machines deployed.

As both a shareholder and employee of Fastenal I think it stands out for consistency of customer service and consistency of culture. Both are connected. In Europe, we've taken an organic approach to each new market, using our own systems, people, resources and technology. That has allowed us to have a completely streamlined service programme across the world. It also means we can aggregate all the data analysis of the value that we capture for our customers.

This gives us an advantage, especially in Europe, which is extremely fragmented and where competitors tend to enter new markets by making local acquisitions. That approach makes it more difficult to develop a streamlined approach to a global account.

But the second element, consistency of culture, is also vital. All of our 600-plus employees in Europe started in entry-level roles. We didn't make any external hires.

This has enabled us to build a culture of decentralisation and of highly entrepreneurial-minded people, who are encouraged to own their customers and markets. This creates a global shared vision.

This is our most sustainable competitive advantage because you can't just do that overnight. We've been doing this since 1967. It's in our DNA to empower people to be decentralised and entrepreneurial, but with the backing of a $7 billion global company.

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Andrew Davidson
Regional Vice President, UK, Fastenal

Jean-Jacques Guiony
Chief Financial Officer, LVMH

The Next Luxury Consumer

In a conversation between Jean-Jacques Guiony, Chief Financial Officer of LVMH and Investment Manager, Lindsay Scott, we heard their thoughts on the development of the luxury industry and what it takes to grow, and protect, a 'true' luxury brand.

Introduction by Lindsay Scott, Investment Manager

LVMH has more than 75 brands across five divisions: Wines & Spirits, Fashion & Leather Goods, Perfumes & Cosmetics, Watches & Jewellery and Selective Retailing.

And, at Walter Scott, we believe that LVMH is one of, if not the, best luxury retailers in the world. We also believe that the luxury goods market is going to continue to grow driven by increasingly affluent consumers and their desire to purchase quality. A desire to be "part of the club", as Michael Burke a previous CEO of Louis Vuitton once put it to me. I am delighted to have the company's CFO, Jean-Jacques Guiony here today to discuss the luxury market and LVMH's place within it.

Reflecting on his twenty years at LVMH, Jean-Jacques recapped on what he sees as evolution, rather fundamental change. The affluent, upper middle class, group with discretionary spend and a desire to buy quality has grown in size and will continue to do so. But barriers to entry remain and in that regard much has remained the same. In categories like handbags or jewellery the same players have been in the industry for the past 30 years.

Where there has been particular growth over the past few decades is in China and this, unsurprisingly, was also a subject of conversation between Lindsay and Jean-Jacques. Outlining LVMH's "pioneer attitude" to China, from the first store opening in Beijing in 1992, Jean-Jacques tracked the company's expansion in the country, and its success. Noting estimates that the addressable luxury population in China is somewhere between 20 and 40 million, Jean-Jacques acknowledged that there has been, and will likely be, volatility but that the long-term growth outlook remains strong.

The conversation also turned to the US where the stimulus and subsidies distributed during Covid did not all end up in bank accounts. Instead, much of that money was spent and Louis Vuitton saw its share of new customers rise significantly in 2021 and 2022. Those numbers are now returning to pre-pandemic levels but as Jean-Jacques noted, that gain does tell us something about the strength of the Louis Vuitton brand that when people have extra money to hand, they spend it at Vuitton.

Concluding on the company's acquisition strategy, Jean-Jacques explained that in considering any acquisition, a number of questions must be answered. Do we like the brand? Do we understand it? And, most importantly, do we think we could do something with it? But he also noted that there really are very few opportunities to buy brands of the quality demanded, adding "even if you were to draw up a wish list, chances are that 99% of the names on that list will never be available".

Cathy Hackl
Founder & Chief Metaverse Officer, Journey

Into the Metaverse

A short summary of Cathy's presentation in which she shared her thoughts on digital strategies and her work with some of the world's leading brands.

Introduction by Alistair Ceurvorst, Investment Manager

I have the pleasure of introducing our next speaker, Cathy Hackl. Cathy has extensive experience in the field of technology and was working on metaverse related projects before the phrase was even coined by one of her colleagues.

As you will have seen over the past two days, our conference agenda aims to consider macro trends at a high level whilst also defining those trends down into actionable themes that companies might monetise at a micro level. Cathy has consulted with a range of world-leading brands and companies. So I think she perfectly embodies the bringing together of these macro trends with opportunities and risks for companies.

So with that, please join me in welcoming Cathy who will outline her thoughts on how companies can stay relevant in the next digital age from Web3, to gaming and to generative-AI.

Not only did Cathy take us into the metaverse she shared her thoughts on the numerous technologies now driving our post-smart phone future. She explained how the world's biggest brands are embracing these new outputs, interfaces, devices, experiences. She also outlined how companies are adopting new ways of communicating and new intelligence technologies to stay relevant to their customers.

She shared examples of new e-commerce models – 'virtual to physical commerce' and 'physical to virtual' commerce – including Forever 21's work with Roblox which took sales of a beanie for avatars and turned that success into a bestselling physical item. Cathy also referenced Amazon's launch of Amazon Anywhere that will allow customers to buy physical items inside virtual worlds as well as Nike's dot swash, a web three community that enables members to co-create a virtual sneaker called 'Our Force One' and Starbucks' use of blockchain infrastructure to create engagement with Odyssey, its web three community.

Cathy outlined her work advising companies as they seek to merge the physical and virtual, sharing her belief that in devising these new strategies, keeping the 'old fashioned' human experience must remain at the centre and remains crucial in staying relevant. For all brands, she concluded, this is an era of reinvention.

Ronnie C. Chan
Chair, Hang Lung Group Limited

Leadership in Luxury's Most Competitive Market

Executive Director, Roy Leckie in conversation with Ronnie C. Chan, Chair of Hang Lung Group Limited.

Introduction by Roy Leckie, Executive Director

It gives me a huge amount of pleasure to welcome and introduce Ronnie Chan.

Ronnie has been a regular visitor to our office over many years. We always enjoy his company and I don't think there's a better person for us to get a very insightful perspective on what's happening on the ground in Hong Kong, and China.

Roy Leckie

Ronnie, could I ask you to start by providing an overview of the Hang Lung Group.

Ronnie C. Chan

The quick version is it was founded in 1960 by my late father. I took over the chairmanship in 1991 and I changed tack. I decided that it didn't make sense for us to compete in Hong Kong anymore because we'd fallen so far behind. In 20 years, we'd gone from being number one or two in terms of size to number ten.

So, I took the company into mainland China. We decided to get into the high-end luxury retail space in mainland China. We build, own and manage our own property. The Chinese retail business turned out to be extraordinarily good. Previously, 45% of our rental income came from Hong Kong, and of that approximately 55% of the revenue come from retail rental, amounting to around US$320 million of rent per year. By comparison just one of our shopping centres in Shanghai, the smallest of all our 10 shopping centres, does 2.6 times the entire Hong Kong portfolio in tenant sales. One day, last October, we did roughly US$60 million of sales in a single day. That shows you the power of the consumers in mainland China.

Roy Leckie

Could you talk a little bit about how you navigated the company through more recent years. Those really tough pandemic years?

Ronnie C. Chan

That was one of the toughest experiences we have had in terms of running a business. There were months on end when we were not allowed to open because of lockdown.

So how did we keep the company afloat? Well, we have very low gearing; a lot of other local real estate companies went bust. But it was painful and we didn't know when the government would tell us to shut down.

But interestingly, China was very lucky. Within six weeks, it went from very little infection to everybody catching Covid, and within six weeks, everyone was back to work. In 2021 we had our best results ever, in terms of retail sales and rental. And then in 2022 we beat that by 1%.

Roy Leckie

We've always felt that the luxury sector in China is one of the world's great growth vectors. We've heard about the propensity for Chinese consumers to initiate luxury purchases at a lower level of income than most of the rest of the world. From your perspective,

where are we on that journey and what's your strategy to benefit from that?

Ronnie C. Chan
Look at the example of Japan. From 1964, the year of the Tokyo Olympics, until today, Japan has never stopped in terms of growth in luxury goods sales. It's a 50, 60-year run. Similarly, when you look at Thailand, Taiwan, and Hong Kong, they've enjoyed some 40 years of uninterrupted growth in luxury goods spending. We believe that barring unforeseen circumstances, China will probably have the same run, if not longer, because it has a much bigger population.

When professional people attain a certain income level in China, they join the crowd of luxury goods purchasers and so the market is in a sense, limitless. And when you look at the supply side of shopping centres, there are only about five or six of us who really know how to do luxury malls. And so, you divide 1.4 billion people, you divide so many hundreds of cities. We don't invest in any city with less than 5 million people. You divide that between five of us and the market is pretty much unlimited. That's pretty good.

Roy Leckie
Scotland and Europe are home to many luxury brands. Given the barriers to entry do you think we will ever turn away from domestic or European brands and purchase a Chinese luxury brand?

Ronnie C. Chan
I wouldn't be surprised. For the last 10 or 15 years I've been saying that China's rise is not just an economic matter. It is also the unleashing of the intellectual, artistic and creative power of 1.4 billion people with a long history of civilisation.

Barring war and other geopolitical events in normal times, I think China will be a great contributor of creative power, intellectual power, artistic power and will enrich the world if given the chance to. For now though all the best luxury brands are still French companies and I don't think the Chinese will be the first to break through that. But at least some of our brands will be recognisable to you in ten years' time.

Roy Leckie
Turning to the property sector in China. For much of my career, the property sector has also been considered a magnificent growth vector. But over the last few years, people have seen the Chinese property market as much more of a threat than an opportunity. They see overcapacity and highly indebted property companies. That's filtered into fragilities in the banking and financial sector, and even in the government sector, with local governments being overexposed. Should we as global investors be worried about the Chinese property sector?

"For the past eight years I've been a keynote speaker at the biggest real estate conference in China and every year, my message has been exactly the same: the business model is an unsustainable one."

Ronnie C. Chan
On the question of China's real estate market being in trouble my response is: 'what's new?'. If you go back over the last 30 some years, there have been crises. I've seen this at least twice before.

The way to deal with it will be the same. It didn't knock off the economy then so why should it this time? People who are cool-headed should see it coming. For the past eight years I've been a keynote speaker at the biggest real estate conference in China and every year, my message has been exactly the same: the business model is an unsustainable one. It's one of competing for size and speed, rather than competing for quality and profitability. Everybody nodded and agreed with me but almost nobody acted. And the reason is because everyone was having too much fun in these markets, so they're not willing to get out. And as we who have been in real estate for many decades know, there are times when you should just get out.

Roy Leckie
Turning to Hong Kong which is something very close to my heart having grown up there. I remain very bullish about the future prospects for Hong Kong, but from a very different perspective than before. It's gone from being a transparent level playing field, a gateway to China, to something more controlled by the mainland. Ronnie, are you as optimistic about the future of Hong Kong as you have been previously?

Ronnie C. Chan
I don't think that the rule of law, business opportunities, the level playing field, are going to be that affected. I really don't think so. There are other things that have changed. In simple terms, in my opinion Beijing never understood Hong Kong.

Throughout the last 5,000 years, the Chinese way of governance has always been top down. The British took the opposite approach in Hong Kong. They were

thousands of miles away so they had to be very careful and diplomatically very shrewd. If the British government wanted to do something, they would get five local guys together and somehow manoeuvre and shepherd them so that it became their idea. So, it bubbles up from the bottom. The Chinese have never followed that approach and the current dynasty is no different.

The Chinese government left Hong Kong alone for the first 20 years or so. Now governance-wise, there is a lot of change. But I think several things: the US dollar peg, the rule of law, the level of playing field to maybe 95% will remain unchanged, because Beijing needs Hong Kong and it's in Beijing's own self-interest to keep it the way it is. I'm not pulling out of Hong Kong; I'm buying Hong Kong.

The difficulty of course, is that the whole geopolitical situation between US and China has changed substantially. So that's another overlay of problem that we didn't have before. This is a real threat. The internal stuff I don't worry about.

Roy Leckie
It seems that as China's economic power has grown its relationship with the US has become more abrasive, particularly in the last few years. Is this a fact of life or does it come to a head at some point? What's your best perspective of how this plays out in the medium term?

Ronnie C. Chan
The critical thing for investment today and tomorrow is to understand the geopolitics of it. The Chinese are absolutely preparing for the worst. I believe that we're entering into a world that is extraordinarily troubling. But I don't believe that at the end of the day, there will be actual military conflict between China and the United States. I think that it is very possible that America, which is already moving towards isolationism will just continue to move towards isolationism.

As a result, the globalised world that you and I grew up in the last 50-60 years is as far as I can tell, finished. There will be a new fragmented world. Some people say that the departure of America from the world scene will give China an opportunity to step in to fill the space. But whoever says that doesn't know a thing about China. China doesn't have the ability, the intention, or the stupidity to try. In my view, China will continue to be relatively a peaceful country and a stable place to invest. And the best market that I can think of is the luxury space.

Professor Adam Tooze
Professor of History & Director of the European Institute, Columbia University

Thriving in Disruptive Times

"The term 'polycrisis' refers to the many disparate intertwined challenges that face the world. It's not a new term but it's a powerful way to understand the unrelenting challenges facing the world and the notion that the social political and economic changes we are seeing today might not be like anything we have seen before."

Introduction by Jamie Zegleman, Investment Manager

Professor Adam Tooze focuses on contemporary and 20th century history at Columbia University. He taught previously at both Yale and Cambridge universities and has also written a number of highly regarded books on the long lasting political, economic and social impacts of a variety of major global events ranging from the two World Wars through to the financial crisis in 2008 and most recently, the Covid pandemic. He is also a prolific blogger, podcaster and a regular contributor to publications like The *Financial Times* and *The Foreign Policy* magazine. It's in that guise as a commentator on all manner of international affairs that he has done much to popularise and become associated with the term, 'polycrisis'.

'Polycrisis' refers to the numerous, and significant challenges that we face, many of which we've heard about over the course of the last two and half days. Whether that's geopolitics or climate change or cybersecurity, interest rates and inflation, I can think of no better speaker to help us understand and unpick these issues.

These challenges should not be regarded as a series of exogenous, random shocks that will pass. The notion of the 'polycrisis' forces us to face the prospect that we should not expect a return to the sort of normality that we've become accustomed to during the period since the late 1990s, that Ben Bernanke referred to as the "Great Moderation".

We must take the challenges of this moment of disruption seriously. There is no single causal driver, instead there are multiple and distinct sources of tension: creative destruction of economic growth; disruptive technological change; mounting geopolitical tension; political conflict; and the environmental crisis.

These drivers are distinct from each other. If we solve geopolitical tensions, we could still have a huge environmental crisis. On the other hand, they also compound each other. Fixing the economic growth problem is likely to make the environmental problem worse.

Another feature is the scale and pace of the crises. We are not the first people in history to deal with ideological confrontation, but modern history is escalatory. As globalisation continues, the next confrontations will be even larger in their scope as the scale and pace becomes unprecedented. There has never been a state that is as populous and as powerful as the current Chinese regime, and none that has ever confronted an opponent as powerful as the United States, the preeminent military superpower in the history of our species. And running alongside the consequences of this new cold war; the imminent reality of the climate crisis on a scale that we have never previously had to face.

The 'polycrisis' concept is not a radically new concept to describe the current moment. I borrowed the phrase from Jean-Claude Juncker, who used it to describe the challenges facing Europe between 2014 and 2015. While he used it with Europe in mind, the term carries resonance across the world. China has referred to these challenges as 'changes not seen in a century'. The US wraps all of these tensions into a story about the crisis facing the American republic.

The idea of the 'polycrisis' is also linked to the ecological crisis and the ramifications of what environmental scientists call the 'great acceleration' which began in the middle of the 20th century. The 'polycrisis' is something we see coming over the horizon. In the case of the environment, it's an anticipation that 50 years from now very large parts of the world will

be uninhabitable unless people have massive amounts of thermal insulation and air conditioning.

To fully grasp the escalatory nature of modern history would require us to grasp the nettle of radical socio-economic change, something that is at odds with the conservatism that has held since the end of the 20th century. Also, socio and economic disciplines have a credibility problem in deriving powerful conclusions from environmental premises. That dates back 200 years to Thomas Malthus, who argued that population growth will always tend to outrun the food supply and that betterment of humankind is impossible without strict limits on reproduction. This was refuted by the agricultural revolution, the industrial revolution and the planet of eight billion people today enjoying a much higher standard of living than ever before.

Our monolithic focus on climate distracts us from the multiplicity of problems that we face. The Covid pandemic was an environmental crisis. It was caused by a zoonotic virus, the result of the imbalance of the urban and rural milieu in China. As well as killing millions of people, it created an economic shock of epic scale, underlining the point about the escalatory nature of modern history. The lockdowns in 2020 led to a 20% collapse in global GDP in a matter of weeks. During the Great Depression, GDP in Germany and the United States fell by the same amount but took three years to do so.

You have to go a very long way out in the climate hypotheses to find scenarios as bad as the one we just lived through. The Covid vaccine was a remarkable triumph, but we failed to distribute those vaccines to very large slices of humanity. This is a political and social challenge. We are not going to be effective in stopping a more dangerous future pandemic unless we can get a jab in every arm. So with all due respect to the extraordinary capacity for innovation that the world economy has displayed, we should also be aware of our limitations.

We use the phrase 'energy transition' like it's something we're about to do. But we have never done an energy transition before. In fact, energy history is about agglomeration, not substitution or transition. We have just added more energy sources. There are no grounds for complacency based on our prior experience.

In Europe and the United States, we will need to reduce co_2 emissions by 1.5% per quarter, or 7% per annum to achieve net zero by 2050. That requires investment of around $4 trillion per annum globally for the next decade representing between 4% and 5% of global GDP. That figure is achievable but the problem is that we are 75% below where we need to be. Last year renewable energy investment hit a new record of $1.1 trillion.

We need to show greater commitment and urgency when trying to tackle this problem. In 2018, government sponsored energy research and development hit $30 billion globally. American households spend $35 billion on pet foods and treats for cats and dogs alone.

"In Europe and the United States, we will need to reduce co_2 emissions by 1.5% per quarter, or 7% per annum to achieve net zero by 2050."

Climate is the central element of 'polycrisis' and the biggest political problem we have collectively ever faced. It requires us all to collaborate at a global level, in initiatives like carbon pricing. But we must face the reality that the world has fragmented, and the result is a series of regional mega-solutions. We don't have the global institutions in place, nor do we have the time to develop them. China, Europe and the US are pursuing their own policies. This approach is inefficient because capital operates at a global level and it's likely to enhance conflict between the blocs because it's becoming entangled. Plus, the solution is not in our hands. The West is no longer the biggest consumer of energy, as it was during the 1990s.

But the good news is that these macro-regional investments are beginning to drive investment on quite a significant scale in both the public and private arenas. This suggests that it is possible to thrive in this environment, once we grasp and disassemble the key elements we are dealing with.

There could be no more compelling evidence of the value of working together than the estimate from the White House Office of Science and Technology Policy that it would cost just over $24 billion to have prototype vaccines ready for each of the 26 known viral families that cause human disease. It's hard to find a better use of public funds or a better way leveraging the skills of science and the achievements of Operation Warp Speed, one of the great triumphs of the Trump presidency which through the combined efforts of European, Asian and American scientists produced the vaccines which allowed us all to meet at this conference. How much more proof do we need of the value of this kind of working together? That seems to me where intelligence thriving in the age of 'polycrisis' could show itself.

Closing Remarks

Jane Henderson
Managing Director

We are almost at the end of the formal part of our conference, and we thought who better to close today than our Chair, Alex Hammond-Chambers who has been investing for almost 60 years. Alex spent the first half of his career with Ivory & Sime, managing several investment trusts before becoming CEO in 1985. During his time with Ivory & Sime, Alex was also instrumental in hiring and training our founders, Walter and Ian. After leaving the company in 1991, Alex then embarked on a non-executive career serving on 30 boards in companies in the UK, Ireland, the US and Canada and also across many different sectors. His philosophy in being a non-exec director is to be positive, be additive, be distinctive, and be forward looking; attributes that we have certainly benefited from and appreciated around our board table.

Alex Hammond-Chambers
Chair

As an investor, if I look top-down, I can get pretty bearish. But if I look bottom-up, I can get incredibly excited. And as is often the case with crisis, crisis creates opportunities. That's the whole nature of it.

We are, genuinely, long term investors. The decisions that we're making today as investors will bear fruit over the long term. I don't know how many of you will be back with us for our next conference but what we hope we've succeeded in doing over the past few days is to share some of our thinking. How do we get to 2030, and what are the opportunities. How are we going to deliver investment performance.

We've listened to an amazing array of largely bullish, I think, presentations over the course of this conference. But it's also a good thing to have a few checks and balances; reminders that it won't be plain sailing.

We've had fantastic presentations from people who think about the future. We've enjoyed their thoughts. We've enjoyed their wisdom and we've enjoyed their foresight. We've covered three huge revolutions: artificial intelligence, synthetic biology, and energy transition. As a firm, we not only think about the future, but we commit our resources to thinking about the future. You've also heard from members of Walter Scott's team as they too think about the future and delivering the investment returns you expect of us. That's the benefit of a conference like this. That's the benefit of sharing our thoughts with you. I'll end that lovely phrase which Matteo Renzi used in his presentation yesterday: To the past, thank you. To the future, yes please.

Over dinner at the National Museum of Scotland, satirical impressionist and comedian, Rory Bremner, shared impressions from both sides of the Atlantic, tales of Edinburgh's past and anecdotes from his own childhood in the city. He closed with these words.

Ode to Walter Scott

So welcome friends and delegates
To this very special spot
Where the best exhibits on display
Are the team from Walter Scott

There are clients who are fortunate
And others that are not
But tonight, the luckiest of all
Are the clients from Walter Scott

Still flying after 40 years
A museum piece they're not
As on it as they ever were
The team from Walter Scott

Those pioneering managers
Who thought it worth a shot
To travel to those Midwest towns
On behalf of Walter Scott

In kilts they travelled far and wide
From Columbus to Detroit
No search was too much trouble
For the team from Walter … Scoit?

They came in search of growing firms
And that's just what they got
From Lilly to Experian
They invested in the lot

And now they're back in Edinburgh
After 40 years still hot
Let's raise a toast
To our generous host
The team from Walter Scott

Jimmy Smith, Executive Director

Rory Bremner, Impressionist and Comedian

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