The lights of Mumbai at night. But keeping them switched on will require greater investment in electricity generation and a reform programme to tackle India’s infrastructure deficiencies. See article on page 20.

PHOTO: FREDERIC SOL TAN/CORBIS

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INTERVIEW: PHILIPPE MELLIER, CHIEF EXECUTIVE OF DE BEERS

PEACE RIVER COAL: PRODUCTION GROWTH IN CANADA

SAFE DISCOVERY: OVERCOMING EXPLORATION CHALLENGES

CAPACITY BUILDING: EMPOWERING COMMUNITIES
The acquisition by Anglo American of an additional 40 per cent shareholding in De Beers creates new opportunities for both companies. I have worked closely with De Beers chief executive Philippe Mellier from the start of negotiations to ensure we align our interests. It was enlightening to read Optima’s interview with him and his views on the potential for greater synergies between our organisations.

Meeting consumer demand for commodities will be a severe test for mining companies, which are having to venture into unfamiliar geographies, and are encountering difficulties in finding resources of sufficient scale, with the likelihood of poorer grades in the future. Our exploration team (see article on page 32) will be crucial in helping Anglo American meet such challenges.

India is in a period of transition as one of the major developing economies. We are pleased to have Vijay Joshi, author and economics expert, contribute to this issue with his reflections on the reforms needed to ensure the country exploits its growth potential.

I look forward to seeing how these developments and emerging markets shape Anglo American’s future. Although I am stepping down as chief executive in 2013, I am proud to have led the organisation for six years through one of the most challenging periods of its history.

CYNTHIA CARROLL
CHIEF EXECUTIVE, ANGLO AMERICAN
42 CAPACITY BUILDING

Municipalities are not always prepared for a large mining project’s impact on their social and physical infrastructure. In South Africa and Brazil, Anglo American is partnering with governments and NGOs to ensure councils and communities embrace and are ready for such change.

ANDREA CHIPMAN

Andrea Chipman has been working as a freelance journalist since 2004 and is based in Nottingham, England. She writes about healthcare, business and science policy topics for a range of publications, including the Economist Intelligence Unit, for which she has authored a forthcoming report, Out With The Old: New Thinking For Europe’s Ageing Society. Andrea writes for The Wall Street Journal and Nature Magazine, and spent eight years as a reporter for Dow Jones Newswires, working in New York, Moscow and London.

CLARA ELLIOTT

Claire Adler is a contributor to the Financial Times, specialising in the luxury sector, covering jewellery, watches and diamonds. She writes a weekly blog for Sotheby’s on the world of jewellery. Her work has appeared in Vanity Fair, The Times, The Washington Post, The Economist Intelligent Life, The Guardian, The Spectator, Wallpaper and Hong Kong Tatler. Claire consults, writes and speaks on behalf of luxury brands, including De Beers, Sotheby’s and the World Gold Council, helping them communicate more effectively with the media and their customers.

VIJAY JOSHI

Vijay Joshi is an Emeritus Fellow of Merton College, Oxford. He has published widely in his key focus areas of macro-economics, international economics and development economics. He has jointly authored two books on India, India’s Economic Reforms 1991-2001 and India – Macroeconomics and Political Economy 1964-1991, and is co-writing a third, on India in the coming decades. He has served as economic adviser for India’s Ministry of Finance, and as special adviser to the governor of the Reserve Bank of India.

SEE PAGE 32

48 BOOK REVIEW

Jonathan Fenby’s new book explores how China’s swift growth comes with a plethora of challenges.

MARTIN BEAVER (PAGE 6); ANDY PEARSON (PAGE 30); CHRISTINE O’LEARY (PAGE 38); DAVE PRESCOTT (PAGE 42)

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CHILE DEAL PROVIDES WATER SOURCE FOR COMMUNITIES

Anglo American has signed a new agreement in Chile to help tackle local water shortages.

The company’s Mantoverde copper operation is situated in Chile’s Atacama Desert, one of the driest regions in the world, and is dependent on the Capiapó aquifer for all of its water. Capiapó was decreed a permanent water shortage area in 2011, meaning the government is allowed to take all necessary measures to overcome the emergency.

In light of this, Anglo American has agreed a deal with the Ministry of Public Works to ensure the availability of drinking water for Capiapó, as well as other nearby coastal cities Caldera and Chañaral. Anglo American will allow the Ministry to provide water company ECONSSA with a free five-year contract for half of the groundwater rights in the Capiapó aquifer.

GLOBAL PLATINUM MARKET SET FOR DEFICIT

Decreasing supply levels in South Africa are contributing to a dip in the global platinum market.

According to Johnson Matthey, supply levels are at their lowest for more than a decade. In its annual interim platinum and palladium market review, the speciality metals and chemicals company predicted a global platinum market deficit of 40,000 troy ounces this year, a marked turnaround from the 430,000-ounce surplus in 2011.

TAKING THE LEAD ON SUSTAINABILITY ISSUES

Anglo American heads the mining sector for sustainability, after a full decade of recognition from the longest-running, and one of the most respected, worldwide benchmarks in the field.

For the 10th consecutive year, Anglo American has featured in the Dow Jones Sustainability Index, which measures the financial, economic, social and environmental performance of global sustainability-focused organisations. Ultimately, only 10 per cent of 2,500 companies invited to participate are included in the Index.

Thanks in part to more comprehensive and transparent reporting, Anglo American this year recorded the highest total score across the industry.

In addition, the Carbon Disclosure Project (CDP) has commended Anglo American for its internal data-management practices relating to the measurement of greenhouse gas emissions and energy use, as well as the action the company is taking to mitigate the risks of climate change.

Anglo American features in CDP’s Carbon Disclosure Leadership and Carbon Performance Leadership Indexes. Both, compiled by PricewaterhouseCoopers, highlight FTSE 350 companies that have demonstrated a best-practice approach to climate strategy, emissions reduction and disclosure regarding climate change.
De Beers is the latest industry player to earn certification from the Responsible Jewellery Council (RJC), a standard that is attained by meeting the ethical, social and environmental standards established by the organisation’s member certification system.

De Beers is the largest diamond mining group to achieve RJC certification. Other industry heavyweights already RJC-certified include Cartier International, the Gemological Institute of America, Leo Schachter Diamonds LLC, Pandora, Rio Tinto and Tiffany & Co. The RJC is a not-for-profit organisation bringing together more than 400 member companies committed to ethical practices in a transparent and accountable manner throughout the jewellery industry, from mine to retail. Additional information about the RJC can be found on its website.

**ECONOMIC PROFILE: CHINA IN NUMBERS**

7.4%
The amount by which real GDP grew year on year in the third quarter of 2012. While this was a slight dip from the second quarter, positive figures for industrial production and investment suggests the economy is set to improve.

7.8%
The predicted average economic expansion per year between 2013 and 2017, with net exports subtracting from overall growth for most of the period. Private consumption will overtake investment as the main drive of growth during this period.

9.9%
The rise in exports year on year for September 2012, despite weak demand from China’s traditional main overseas markets.

Source: Access China

**RESPONSIBLE JEWELLERY COUNCIL CERTIFIES DE BEERS**

**AUSTRALIA’S MINING SECTOR SET TO PROFIT FROM ASIA’S ECONOMIC RISE**

Asia is forecast to leapfrog the economic output of Europe and North America combined by 2020 to become the world’s largest economic superpower.

The prediction in the Australian government’s white paper, *Australia in the Asian Century*, suggests that this colossal Asian growth will open the door for opportunities in Australia’s resources economy, as well as sectors including services, agriculture, manufacturing and utilities.

The epitome of romance and a sign of love and commitment, a diamond is forever – and so, it seems, is De Beers. Martin Beaver examines 125 years of unparalleled success.

This summer, in the Treasury of Istanbul’s Topkapi Palace, I saw what effect a very large diamond can have on people.

Women in particular – western women in shorts and T-shirts, Muslim women dressed head to toe in black burkas – swooned over the “Spoonmaker’s Diamond”, an 86 carat (17 gram) pear-shaped gem, which is one of the largest jewels of its kind in the world. Their response was visceral: neither greed nor envy, but one of awe and excitement.

Diamonds cross cultural boundaries. And with good reason: they are rare and exceptional.

Most natural diamonds were formed deep in the Earth’s crust up to 3.5 billion years ago and have surfaced as a result of volcanic activity. Others come from space. No new finds of any significance have been made for several years, and the success rate of converting even good geology into a productive mine is exceptionally low, at around one per cent.

But the scarcity of the stones is matched by the rarity of a single company – De Beers – leading any market for a long time. De Beers is synonymous with diamonds.

DE BEERS – A SHORT HISTORY

De Beers Consolidated Mines Limited was founded in 1888 in South Africa, and by the early 1900s accounted for the great majority of the world’s diamond production and distribution. Under the astute leadership of Sir Ernest Oppenheimer, who chaired the company from 1929 until his death in 1957, and his successors, De Beers developed its mining interests in South Africa, while expanding mining operations elsewhere on the continent in Namibia, Tanzania and Lesotho, as well as Botswana – now the most important contributor to De Beers Group diamond production – and more recently in Canada, where it has two mines in operation. And through its longstanding relationships with national governments, De Beers maintained a leading position in the trading and marketing of diamonds almost throughout the 20th century.

Early in its history, De Beers established the Sight system, whereby a select group of the world’s leading diamantaires, known as Sightholders, visited De Beers’ London office up to 10 times a year to buy diamonds.
This system, though soon to be based at Gaborone in Botswana, is still core to De Beers’ sales process.

By the 21st century, there were great shifts in the market. Ever-increasing competition in the luxury goods market, the emergence of several new products and the need to have a more sustainable and efficient basis on which to allocate its finite availability of diamonds led De Beers to sell only those diamonds produced from its own mines and to create a new, demand-driven sales strategy. Today, De Beers’ share of worldwide rough diamond supply by value is around 38 per cent.

DIAMONDS ARE FOR ROMANCE

The valuation of diamonds is inherently different from that of most commodities, even precious ones such as gold, which has a consistent quality and a market price. No two diamonds are alike. Even before cutting, they vary by colour, by size, by shape and by clarity. De Beers sorts diamonds according to more than 12,000 different categories and price points. Diamonds, rather than being mere commodities, are a unique luxury product.

While it was the world’s leading supplier, De Beers was also investing up to $200 million a year in generic advertising promoting diamonds. In 1947, it struck lucky with what is now regarded as one of the greatest advertising lines of all time – “A Diamond is Forever”. And thus, in the way that Coca-Cola’s red and white captured Christmas for a soft drink, De Beers’ diamonds captured romantic love.

In 1939, just 10 per cent of American brides-to-be had a diamond engagement ring. By the end of the century, the figure was more than 80 per cent. Other markets have followed similar patterns. In Japan in the early 1960s, six per cent of women had diamond engagement rings. The figure was almost 80 per cent by the beginning of the 1990s. Now China is seeing significant demand growth – rising from around one per cent in the early 1990s to more than 30 per cent of engagements over the past two years.

This is good news for De Beers. While about 30 per cent of the volume of world diamond production goes into gemstones – the rest goes to industry – gems account for 99 per cent of the value.

The value chain for gem diamonds is long, and pricing surprisingly opaque. But the best margins are made at either end of the chain – in production and retail.
At the start of the 21st century, De Beers formed a retail joint venture with French luxury goods company Moët Hennessy Louis Vuitton (LVMH) called De Beers Diamond Jewellers. The first De Beers store opened in 2002 in London selling high-end diamond jewellery. There are now around 45 stores located in sought-after locations such as Fifth Avenue in New York, Printemps and Galeries Lafayette in Paris, Old Bond Street in London, The Landmark in Hong Kong, Shin Kong Place in Beijing and Ginza in Tokyo.

In addition, in response to the changing needs of the more discerning consumer, De Beers developed its own proprietary diamond brand, Forevermark. Diamonds inscribed with the Forevermark brand are carefully selected and come from sources committed to high ethical standards. They are beautifully crafted by an elite group of diamantaires, and are exclusively available in select jewellers.

The fundamentals and outlook for diamonds are good. America still dominates sales of diamond jewellery, but according to US market analyst Bain, global market growth is expected to be more than 6.5 per cent a year up to 2020, driven by demand from China, India and the Persian Gulf. Supply, on the other hand, is only forecast to increase by around three per cent a year, which means diamond values are expected to continue their upward trajectory for the long term.

De Beers geologists discover Jwaneng, the world’s richest diamond mine, 150 metres below the Botswana desert. 

1972

De Beers begins developing new diamond-inscribing technology – the forerunner of Forevermark.

1998

A partnership with LVMH (Moët Hennessy Louis Vuitton) establishes a new luxury retail brand, De Beers Diamond Jewellers.

2001

Forevermark launches in select countries, guaranteeing rare, beautiful and responsibly sourced stones.

2008

A century after its establishment, De Beers unveils the 273.85 carat Centenary Diamond.

1988

De Beers welcomes in the new millennium with the 203.04 carat De Beers Millennium Star.

2000

De Beers’ diamonds are certified conflict-free by the new Kimberley Process Certification Scheme.

2003

De Beers becomes a member of the Anglo American plc group.

2012

Martin Beaver is a freelance writer with a special interest in sustainable development issues, which he has covered for companies such as Shell, Centrica, Lloyd’s Register and National Express.
A NEW LINE OF SIGHT

After 30 years working in the automobile and transport sectors, Philippe Mellier took up the role of CEO of De Beers in 2011 at a transformational time. Here, he talks to Claire Adler about the company’s heritage, and future as a customer-driven organisation.
For the first 30 years of his career, Philippe Mellier dealt almost exclusively with end-products weighing no less than a tonne. Speaking to *Optima* in the Diamond Information Office of De Beers in London, surrounded by encased wall-to-wall tiny, precious diamonds and replicas, as well as the instruments used to cut and polish them, the former automobile and engineering executive might wonder if he has stepped into another world.

Far from being dazzled by his new environment, Nancy-born Mellier speaks confidently and knowledgeably about the challenges he – and indeed De Beers – faces, while simultaneously recognising the unique nature of diamonds.

In appointing Mellier as CEO, De Beers made what many would have described as a bold move. Founded in 1888 through the merger of the diamond companies of mining magnates Cecil Rhodes and Barney Barnato, and chaired for all but 12 years since the 1920s by the founder of Anglo American, Sir Ernest Oppenheimer, and his descendants, De Beers needed someone who could bring a new approach to the business in a sector that had changed enormously over the previous decade.

In 2011, sensing this was an opportune time to draw inspiration from outside of the diamond industry, then De Beers chairman Nicky Oppenheimer began the search for its new leader.

Mellier, a former chairman and CEO in the transport and automobile sector – with Ford, Renault, Volvo and, immediately prior to his De Beers appointment, Alstom – says the transition from cars and trains to carats felt natural. “The chemistry between the shareholders and myself was really good. I sensed this was going to be the right role for me.”

His first year saw great change. In August 2012, Anglo American completed the purchase of the Oppenheimer family’s 40 per cent share, thereby assuming majority control of De Beers. But even before this, a cultural change was taking shape.

De Beers’ new strategy to be more consumer-driven and customer-focused sounds a rather obvious move. But for De Beers, which had traditionally helped to steer, rather than been steered by, consumer demand, it is an important statement about the future direction of the company.

“We want to better understand the needs of our customers,” insists Mellier. “We want them to tell us what they expect of De Beers, and we will then adapt to try to meet their needs. We are really turning the company upside down.”

**CLAIRE ADLER:** How was De Beers’ business model changing as you joined?

**PHILIPPE MELLIER:** Coming from the outside, it was important for me to take sufficient time to learn about both De Beers and the diamond business. I discovered that we were facing a lot of challenges and that we had to adapt to the changing conditions.

Let’s remember where we were coming from. In the previous 10 years, the landscape of De Beers had altered completely. For about a hundred years, De Beers operated as the diamond company, accounting for approaching 80 per cent of the global diamond industry production and marketing. We were in a very strong leadership position.

Obviously, once De Beers moved to selling only those diamonds we mined ourselves, our market share dropped accordingly. Today, De Beers has a rough diamond share of supply of approximately 38 per cent, by value. We are undoubtedly a leading player, but we now face stiff competition from other players along the diamond pipeline and we must respond to the challenges that this brings – but this is all healthy, normal business.

As part of this, we had to change our way of doing business from being the “buyer of last resort” to becoming the “supplier of choice”. It’s a totally different approach that has meant we had to change all that and start listening to our final customers – the retailers and the end-consumers – so we could understand what their real needs were.

“In any type of business, you have to be customer-focused. In order to serve our customers and be receptive to their needs, we must better understand the pictures of the wholesale and retail markets and the nature of consumers’ demand for diamonds.”

PHILIPPE MELLIER
ADLER: Your strategy now puts the consumer at the centre of your activity. Does this reflect an industry-wide shift?

MELLIER: It seems strange to say we are a customer-focused organisation, but, in any type of business, that’s what you have to be. In order to serve our customers and be receptive to their needs, we must better understand the pictures of the wholesale and retail markets and the nature of consumers’ demand for diamonds. It’s going to take some time to change the culture of the organisation.

We have world-class wholesale and retail experience, because we have always sold our own production. So we understand exactly who our customers are and how they behave. We also have a growing presence at the high-end retail level through De Beers Diamond Jewellers, our 50/50 joint venture partnership with LVMH, Moët Hennessy Louis Vuitton. Today, there are around 45 De Beers stores worldwide, so we understand different marketplaces. We also have Forevermark, our proprietary diamond brand, which is being sold in a number of markets around the world, including Hong Kong, China, the US, Japan and South Africa – and is expanding. Retailers are giving us feedback about current trading conditions and how markets at a retail level are moving.

ADLER: De Beers has become more integrated as an organisation. How does it fit in to Anglo American?

MELLIER: De Beers plays a leadership role in a number of parts of the diamond pipeline. We are involved at each stage, from exploration to mining, sorting and valuing, to retail with Forevermark and De Beers Diamond Jewellers. I think our scale and position as the world’s leading diamond company, in a growing market, was one of the reasons why
the acquisition of the Oppenheimer family’s shares in De Beers was so attractive to Anglo American.

Don’t forget, though, that Anglo American has been the biggest shareholder of De Beers for well over 80 years, so it has a good understanding of our business. It appreciates that diamonds are not a commodity. As Nicky Oppenheimer himself said, Anglo American is the natural home for De Beers.

I also believe Anglo American could benefit from De Beers’ own trading knowledge, particularly in Platinum, which takes things further downstream than Anglo American’s other businesses. Take auctions, for example. Although 90 per cent of our rough diamond sales are through long-term contracts with our Sightholders – the world’s leading diamantaires – we sell around 10 per cent through online auctions. I think our experience in this space could be valuable to Anglo American.

**ADLER:** Will there be advantages in terms of shared technology and R&D knowledge between De Beers and Anglo American?

**MELLIER:** It’s important we benefit from each other’s mining experience. Anglo American has huge experience of managing tier-one assets all around the world, with brilliant engineers.

We are both working on an asset-optimisation programme, and that will help our mining operations tremendously. We are excited by all we can learn from Anglo American, and we also think there may be some things that we can share. We have also developed mines in very challenging geophysical conditions, for example in the Canadian Arctic and undersea off the coast of Namibia. We have some mining techniques that could be useful to Anglo American in remote environments.

Downstream, I think De Beers can lend significant value, most notably through Anglo American’s new trading platform based in Singapore.

“Anglo American has been the biggest shareholder of De Beers for well over 80 years. It appreciates that diamonds are not a commodity.”

**PHILIPPE MELLIER**

**ADLER:** Why do you think the Oppenheimer family wanted to sell their shareholding in De Beers, and why was Anglo American so keen on gaining majority control?

**MELLIER:** I had a lot of exchanges with the family at the time, and I know that it was not an easy decision for them to sell. It was the Oppenheimers’ business and life for four generations. But, in Africa, you take care of your family first and worry about yourself second. After what must have been a long and difficult discussion, the decision was taken to sell the family’s interest in De Beers.

It’s important to understand, too, that they weren’t proactively selling; they were responding to an offer from Anglo American.

Anglo American was already the biggest shareholder with 45 per cent – an even bigger shareholder than the family, which held 40 per cent. Clearly, there was a decision at the Anglo American board level that diamonds were a core business and a differentiator between it and other mining companies. Other majors have diamonds, but they are not businesses of particular scale.

**ADLER:** Why do you think the Botswana government declined the option to increase their stake in De Beers?

**MELLIER:** Well, I can’t speak on their behalf. It’s important to realise, though, that they are not only our shareholders, but our partners too. Botswana is the leading diamond-producing country, by value, and the Botswana government is a 50/50 shareholder in Debswana, which contributes around two-thirds of the De Beers Group of companies’ annual production. It is also an equal partner in DTC Botswana, the largest and most sophisticated rough diamond sorting and valuing centre in the world.

So Botswana’s presence extends way beyond their 15 per cent shareholding. Late in 2011, we signed a new 10-year contract to sell all Debswana’s production, except a small portion that is made available for sale locally. This secured De Beers’ long-term access to the largest supply of diamonds in the world. As part of that agreement, De Beers agreed to move its sales operations from London to the Botswana capital, Gaborone, by the end of 2013. This includes staff, technology and equipment, while the international Sights that have taken place in London for over 80 years will also take place in Gaborone, thus further transforming Botswana into a leading trading centre.
ADLER: How important are these partnerships?

MELLIER: De Beers believes in partnerships. They are essential to our business, because we are mining a country’s natural resource. Diamonds are a long-term business, and in order to maintain our social licence to operate for the long term, we must understand the aspirations of the countries and communities in which we operate and make them our own. Operating as true partners means everyone has a vested interest in maximising the value of the diamonds we find.

ADLER: The Debswana partnership is nominally a 50/50 arrangement, yet the Botswana government ends up reaping around 80 per cent of the profits...

MELLIER: That’s correct – four out of every five dollars generated from Botswana’s diamonds goes back to the people of Botswana, both as dividends from the joint venture and through taxes and royalties. The real question is what the government uses those revenues for. The government of Botswana is recognised around the world for its prudent management of the revenue from its natural resources. It has used its diamonds to build infrastructure, schools and hospitals. In fact, US secretary of state Hillary Clinton said it best when she noted: “When you buy a diamond from De Beers, part of that money still today goes to help build and maintain roads and clean-water systems in Botswana.”

This is not just a good arrangement for Botswana. It is critical for our business as well. As I said earlier, diamonds are a long-term business. We have worked in Botswana for about 45 years. For a business like ours to confidently invest that sort of time, resource and capital, a country must be focused on stability, good governance and economic growth for its people. We therefore have a clear commercial responsibility, through our partnership and the way in which we do business, to help cultivate that environment – which is good for Botswana and good for De Beers.

ADLER: Some people still associate diamonds with conflict. What is the industry doing to change that?

MELLIER: Obviously, it’s important to maintain consumer confidence, and protecting the image of diamonds is fundamental to that. The Kimberley Process Certification Scheme, or KPCS, an inter-governmental certification scheme to guarantee that diamonds are conflict-free,
was established in 2003. More than 99 per cent of the world’s rough diamonds are conflict-free today.

To complement the KPCS, the diamond industry designed the System of Warranties, which is a guarantee on all invoices for rough and polished diamonds that those goods are conflict-free. That’s very reassuring from a consumer point of view, because having so-called ‘blood diamonds’ in the system could have harmed the image of diamonds, which is associated with love and romance.

**ADLER:** Another perpetual issue is around the working conditions for miners. Do you see this as a challenge?

**MELLIER:** Always. De Beers is doing a lot for its workers. We want to be perceived as an employer of choice. Anglo American has a saying that “safety begins with me”, and this is very true. We are working very hard to protect our employees and make sure they are not hurt at work, and we are making progress, but we all need to work on safety, day in and day out.

Decent working conditions aren’t a ‘nice to have’ – they are a business imperative. In our own facilities, we are putting in a lot of effort to make sure they are the very best environments for our workers. We are doing a great deal of work from a health perspective – through our HIV and TB programmes, and other initiatives. I strongly believe our standard is far higher than the norm in the countries where we work.

I know there is a lot of unrest in South Africa, but we have just set the pay conditions for the next two years in Namibia, where the unions are very strong negotiators and the strike period has been so lengthy. That’s a sign that yes, we care; yes, we listen; we can negotiate. We are very happy, too, to have completed pay negotiations at the Venetia mine, our biggest diamond mine in South Africa.

**ADLER:** How has a luxury-industry company like De Beers been affected by the financial crisis?

**MELLIER:** Everybody is affected, though, to date, there has been less of an impact in the luxury world. In our business, last year was exceptional, with China buying diamonds heavily.

This year, our final market, the retail jewellery market, is likely to grow by around three to four per cent, at a time when you don’t have too many markets that are growing.
A lot of our sales, however, are conditioned by the fact that retailers buy polished diamonds coming from our own rough diamonds. Although these retail sales are going satisfactorily, if there is uncertainty about the state of the economy and exchange rates, for instance, or if they are anxious about the future, retailers will stock more cautiously than before. So, yes, we are impacted, but the demand for diamonds is there and growing.

ADLER: What are your most important projects over the next decade?

MELLIER: The biggest current project is at Jwaneng, the world’s richest diamond mine, where work is already under way to extend its life.

The existing open-pit mining operation is expected to have run out of ore by 2017, by which time the mine would have effectively closed down. In 2009, however, Debswana agreed to fund a ‘stay in business’ $3 billion project to extend the mine’s life by another eight years until at least 2025. This extended life is expected to yield a further $15 billion’s worth of mainly high-quality diamonds.

But that’s by no means the only project on our hands. We are also progressing the project to take our Venetia mine in South Africa underground, while in Canada we are moving the Gahcho Kué project through permitting.

And beyond our mining operations, De Beers stores in the world’s major cities continue to open up – there are now four in China, which accounts for around 10 per cent of the world’s gem-diamond purchases; and by the end of this year we aim to license the thousandth location where Forevermark diamonds are available.

“Diamonds are unique, special and an extremely attractive product. Special products excite me... I was excited by the product and also by the challenge, because I realised quickly that something had to be done here. And we are in the process of doing it.”

PHILIPPE MELLIER
ADLER: How confident are you in the diamond industry’s prospects?

MELLIER: I’m very confident. Over the past two years we have seen a rapid recovery in the diamond market post-recession. Looking ahead, we’re optimistic about the fundamentals for rough diamonds, as we see medium-term demand growth being led by China’s aspiring middle class alongside flat levels of availability – which will likely push values up.

The fundamentals of the industry are strong. Firstly, diamonds are rare – there hasn’t been a major diamond find for many years. Second, we continue to see strong diamond demand growth from the emerging markets. Over the next three or four years, we expect to see combined demand from China, India and the Gulf catch up with the US, the current leader.

Unless there is a substantial diamond discovery in the next few years, we see demand significantly outperforming supply. That would lead to a substantial structural supply/demand gap, which is expected to continue supporting rough-diamond values.

ADLER: What are your objectives for De Beers?

MELLIER: My brief is to define and implement what will bring success for De Beers over the next 100 years. We are 125 years old. You don’t find many companies that old, let alone ones that have led an industry since their inception, as De Beers has. Clearly, we have to make sure that this company has a very good future, and we are taking the first steps to make sure that is the case, adapting to conditions and listening to our Sightholders and the ultimate source of value in the industry, the consumer.

ADLER: Finally, coming from a very different industry, did you have a James Bond moment, moving into the diamond world?

MELLIER: Obviously I was very impressed when I saw a layout of diamonds on our sorting floor for the first time. They are unique, special and an extremely attractive product. Special products excite me. In the past, I have sold high-end luxury cars. I wouldn’t have joined a company selling… socks, for example – nothing against socks, but I don’t know if that would have excited me.

De Beers is an integrated business, like the car business can be – from research, R&D and production to sales. Before joining De Beers, I worked in trains – and I like trains. When you sign a contract and five years later you see Virgin Train’s Pendolino, which weighs 300 tonnes and runs at 220 kilometres per hour, you think, Wow! This is what I have achieved.

With diamonds, I was excited by the product and also by the challenge, because I realised quickly that something had to be done here. And we are in the process of doing it, and I am having a lot of fun.

The one downside is that my wife certainly prefers diamonds to trains. And my three daughters, too, have also developed a love for diamonds.
HAS INDIA’S MOMENT COME AND GONE?

India’s rapid growth earlier in this century has now slowed considerably, and major changes are needed to ensure the slowdown does not become permanent. Vijay Joshi, author and former economic adviser to the Indian government, is seeking a new wave of reforms to set the country in the right direction.
While India builds on its promise, the imbalances remain clear. Here outside Delhi, a barefoot child from a slum colony looks on at the construction of new apartments.
India achieved independence from British rule 65 years ago. For the first 30 years or so, the country’s economic performance was disappointing. The annual growth rate of national income was about 3.5 per cent – little more than one per cent per head. From around 1980, there was a marked improvement: growth has averaged 6.2 per cent a year – about 4.5 per cent per head – and living standards have risen more rapidly. Even so, with around a third of its 1.2 billion people still living in acute poverty, India has a long way to go.

In the first three decades after independence, national saving and investment doubled as a proportion of GDP, but the modest growth trend was unchanged owing to the low productivity of investment. The latter, in turn, was the product of pursuing a ‘command and control’ model of policy. Its distinctive features were comprehensive and convoluted state regulation of economic activity, and a dominant role for the public sector.

Under the ‘licence raj’, controls governed every aspect of business decision-making, including entry, expansion, exit, pricing and distribution, employment, credit and foreign trade. The result was massive inefficiency, as well as a stifling of entrepreneurial energies.

In the 1980s, there were some piecemeal reforms, and even these small changes led to a rise in the growth rate to 5.5 per cent a year. But the reform was too shallow to have an enduring effect. Moreover, it was accompanied by unsustainable fiscal expansion and foreign borrowing, which resulted in a full-blown macro-economic crisis at the end of the decade. In 1991, in response to the crisis, the government introduced a historic and radical reform programme that moved the economy much more decisively in a market-oriented direction.

Apart from macro-economic stabilisation, this reform programme involved principally a liberalisation of controls on trade, industry and finance. The effects were certainly dramatic.

“In my view, it is going to be difficult for India to achieve the sustained growth necessary to abolish poverty in the next couple of decades. The 1991 reforms were significant, but... their impact is now subject to sharply diminishing returns.”

VIJAY JOSHI
DELEVERING ON GREAT EXPECTATIONS

In the last two decades, India’s saving and investment rates have risen substantially. Reduction of controls and exposure to international competition have made Indian industry much more efficient and enterprising. India now has world-class companies in many sectors, such as iron and steel, cement, mining, automobiles, pharmaceuticals, telecommunications, and information technology.

In the past decade as a whole, GDP grew at more than seven per cent a year. In the five years from 2003 to 2007, it grew at an impressive nine per cent a year. India also came out of the recent global credit crisis relatively unscathed. The growth rate fell to 6.7 per cent in 2008 but recovered to around eight per cent in the following two years. Many sober observers thought that India’s momentum was such that it would achieve widespread prosperity within a fairly short time span.

Expectations have cooled since then. In 2011, growth slowed to 6.5 per cent; it promises to fall another percentage point in the current year. The big question is whether this is a blip or the start of a more permanent adverse change in the growth trend. The government, which had seemed to be gripped by paralysis for some considerable time, has, in the past few months, announced various reform initiatives.

In my view, it is going to be difficult for the country to achieve the sustained growth of between eight and 10 per cent a year necessary to abolish poverty in the next couple of decades. The 1991 reforms were significant, but also partial and incomplete. Their impact is now subject to sharply diminishing returns. India needs a massive second wave of reforms to put the economy on a high-growth path. It could be done, but the political conditions are not propitious.

It is rare for a low-income country to experience continuous rapid growth all the way to reaching western levels of income per head. In the 20th century, it is hard to think of any cases apart from Japan, South Korea and the city states of Hong Kong and Singapore. Many countries have fast-growth episodes, but most are not able to stay the course. They fall prey to fiscal crises or oligarchic rent-seeking, or simply fail to sustain the rate of productivity improvement. India is currently at such a crossroads. Its growth spurt is in danger of fizzling out if various identifiable stumbling blocks are not removed.

There is a general point that underlies all the problems that have to be tackled: India has not yet found the right approach to balancing the state and the market. Though the 1991 reforms withdrew state intervention from several areas, the state still has its fingers in nearly every pie.

Output markets have been substantially liberalised, but that does not apply to either input markets or the markets for factors of production like land and labour. At the same time, the state is not performing the core functions that are properly in its province, such as the provision of public goods and services. I outline below the main priorities for a new wave of reform. My focus is on medium- and long-term issues, not on short-run inflation and balance-of-payments management.

FISCAL CONSOLIDATION

Fiscal consolidation is imperative. Government debt is in the region of 80 per cent of GDP, which is well into dangerous territory. The combined fiscal deficit of the central and state governments is around nine per cent of GDP, which is far too high. It leaves little space for counter-cyclical policy to deal with unexpected shocks and threats to crowd out private investment. At the same time, the government faces legitimate demands that it should spend more on those aspects of infrastructure investment and social protection that cannot wisely be left to private initiative. To square this circle, progress has to be made on two fronts.

The first is a squeeze on the super-abundance of dysfunctional subsidies that pervade the economy. Food, fertilisers, fuel, electricity, irrigation water and many other goods and services are sold well below their costs of production, mostly to the advantage of the better-off sections of society. The urgent priority is to end these subsidies and charge economic prices, while cushioning the poor by transferring purchasing power to them directly in the form of cash or vouchers. This is now increasingly feasible due to advances in information, communications and banking technologies.

The second requirement is a much more aggressive programme of privatisation, accompanied by regulation where necessary. This would help to reduce the large burden of interest payments by retiring government debt or curbing the growth of new debt. So far, many loss-making government enterprises have been kept going at the taxpayer’s expense, and efforts to commercialise their operations have met with little success. A glaring example is Air India, the national airline, which has been making huge losses for years. Indeed, a quarter of the 200 enterprises owned by the central government and many of the 1,000 state government enterprises are loss-making.

Recently, the political winds have been blowing strongly in the direction of a massive expansion of entitlements. India must avoid this primrose path.
SHORTCOMINGS IN AGRICULTURE

Agriculture accounts for less than 20 per cent of GDP, but the sector still contains 60 per cent of the workforce and three-quarters of the country’s poor. Agriculture has not received enough attention in the reform process. The social pay-off of a rise in the growth rate of agriculture from the present three per cent to four per cent a year would be enormous.

Though agriculture is almost wholly in private ownership, the presence of the state is pervasive. Unfortunately, much of it is of the wrong kind. In production, state intervention takes the form of input subsidies, which create a large fiscal burden. They also distort the use of inputs. For example, water and electricity subsidies lead to over-exploitation of groundwater. In addition, they are not equitable and go disproportionately to rich farmers.

Less widely known is the excessive state interference in agricultural trade through controls on movement, storage, marketing and processing. There is, however, a crying need for public investment in areas where the market on its own will not stimulate private-sector investment. Rural roads, electrification, irrigation, water management and environmental protection are obvious examples.

It has been evident for some time that too much reliance has been placed on a few northern and southern states, such as Punjab, Haryana, Uttar Pradesh and Andhra Pradesh, for supplies of wheat and rice. But these states suffer from groundwater stress and soil degradation. It would be sensible, with government incentives, to induce a partial shift of production to eastern states, which have plenty of water and scope for increased use of fertilisers. But they urgently need improvements in rural infrastructure, especially roads and flood control. The northern states need to diversify into less water-intensive vegetables and fruits.

The current position is that four-fifths of public spending in agriculture is on subsidies and one-fifth is on investment. This mix needs to be turned on its head.

REFORMING INFRASTRUCTURE AND ENERGY

Infrastructure deficiencies remain a major constraint on growth. There have been some outstanding success stories, such as mobile telephony, but progress in road and rail transport and ports is lacking. The main black spot is electricity, an issue highlighted by the sensational power failure that affected large parts of northern India recently. Power supply is erratic and there are frequent shutdowns. Peak demand exceeds supply by 15 per cent. As a result, many large companies produce their own costly ‘captive power’. Since small- and medium-sized firms cannot afford to do so, their expansion is hampered.

The electricity sector continues to suffer from fundamental problems. Coal is an important input, but it is in short supply as a result of huge inefficiencies in Coal India, a nationalised industry. Investment in electricity generation is unattractive for that reason and also because, in most states, there are still monopoly buyers, namely the state electricity boards, which are virtually bankrupt and cannot pay their bills. They sell electricity cheaply as a populist device, under pressure from politicians. The boards also lack commercial orientation. They have not been able to stop theft and non-billing, so there are large transmission and distribution losses of around 30 per cent of electricity sales.

Reform in this sector requires gradual but firm moves towards economic pricing of electricity, and privatisation – combined with arm’s-length regulation – of state electricity boards. Poor consumers should be directly and explicitly subsidised by income transfers. Most consumers would be happy to pay a higher price in exchange for better availability.

THE LAND MARKET

The land market in India is thoroughly dysfunctional. In common with many other countries, the Indian government can acquire land for public purposes using its legal powers of ‘eminent domain’. But this process can command acceptance only if it is, and is perceived to be, fair. Unfortunately, there are many examples of the government acquiring land and making it available cheaply to developers, who then subsequently make a commercial killing. There is a perception, much of it justified, of huge rents shared between business tycoons, politicians and bureaucrats.

This unholy mess clearly needs to be resolved.

It is obvious that the demand for land will explode in the future, in response to urbanisation and mineral exploration to support investment in infrastructure. It is also a material fact that much of India’s mineral wealth is in forested lands occupied by tribal people who have customary rights. What is required is a process of auctioning land and mining rights that is transparent and accompanied by a system of fair compensation. There are some moves to do this, but the legislation is pending. What is true of land is also true of the sale of other resources, including Spectrum in the telecoms sector, which has been the subject of a huge swindle.

REVISITING LABOUR LAWS

In essence, India’s employment problem is about the low quality of work in the informal sector, which still contains 90 per cent of the labour force. Amazingly, this percentage is no different from two decades ago. Though parts of the
sector are dynamic, it also contains a huge number of people scratching a living in low-productivity occupations. The challenge is to move these workers into decent jobs. East Asian countries did this in the past by absorbing low-skilled labour into the production of labour-intensive exports. In contrast, nearly all the successful industries in India are highly capital-intensive or skill-intensive. The problem is made worse by the flip side of the ‘demographic bonus’ – for the next three decades, the labour force is due to increase by around 12 million a year. What is the way forward?

One essential reform is to change the labour laws. These were enacted years ago with the best of intentions, but have ended up being profoundly anti-labour. Quite simply, they protect the interests of a small minority of workers in the formal sector at the expense of the vast majority. For any firm that employs more than 100 workers, the Industrial Disputes Act makes retrenchment of workers, or even productive rearrangement of labour, very difficult. A legal way round this Act is to employ contract labour. But the Contract Labour Act prohibits the employment of contract labour in core activities; and the definition of ‘core’ is left to administrative discretion.

All these restrictions effectively raise the cost of labour. Faced with India’s labour laws, many companies try to minimise labour use, while workers characteristically tend to hang on to a job for dear life because getting another is difficult.

Those who object to labour law reform are prone to say that it is unimportant because the formal sector is so small. But one reason the formal sector is so small is because labour laws are so restrictive. The important point to recognise is that labour market reform would be impossible without a concurrent move towards legislating unemployment insurance and generous redundancy packages.

No government has so far had the courage and the imagination to adopt this dual approach.

Many East Asian countries, including China, are now facing higher labour costs. India has a huge opportunity to capture their export markets in labour-intensive goods. Without labour market reform, that will not be possible.

**INCLUSION AND STATE CAPACITY**

Inclusion, meaning the wide dissemination of the benefits of growth, is the paramount objective of economic policy, but state hand-outs are not an enduring way to achieve it. Two other requirements are far more important: employment creation, discussed above, and ‘social empowerment’ to enhance people’s capabilities through education and health care.
The government’s record in social empowerment is far from satisfactory. School enrolment is high – but so are drop-out rates. The quality of education in the state sector is shockingly bad, owing largely to teacher absenteeism and lack of teacher effort. The quality of primary health care is equally poor. Again, non-attendance by doctors and nurses in health centres is a major challenge. There is a deep crisis in the provision of public services. As one observer memorably described it, India is not a “failing state” but a “flailing state”.

Delivery of basic services may improve if government provision is replaced by market provision, wherever possible, with the poor being enabled to exert purchasing power by direct transfers of cash or vouchers. Take the case of health. The government tries to deliver curative care, which the private sector could deliver. The government’s primary domain should be traditional public health, such as mosquito eradication, safe water and sanitation. Deplorably, less than 10 per cent of public health expenditure is on these essential public services that the private sector cannot provide. But market provision can only be a part of the solution. In health, education and public services more generally, a significant government presence will have to remain. But this presence needs to become more decentralised. Central and state governments are ill-equipped to monitor the behaviour of their functionaries in the country’s 600,000 villages. The constitutional amendments to transfer powers to local levels of government were enacted many years ago. But they have not been backed up by adequate fiscal devolution, without which decentralisation is bound to be ineffective.

**GOVERNANCE AND CRONY CAPITALISM**

The widespread perception, based on the almost daily revelation of scams, that high-level corruption and crony capitalism are rife in the country is not far off the mark. The prediction of some analysts that corruption would diminish as a result of the liberal reforms of 1991 is now seen to be hopelessly optimistic. It is true that the end of price controls reduced black marketeering and the end of import restrictions largely killed the smuggling business, but significant areas remain in which there is a large scope for discretionary action by the government, which opens the door to kickbacks.

Corruption and crony capitalism can damage the growth process and delegitimise the state. There are plenty of...
STRENGTHS AND OPPORTUNITIES

Despite these issues, India has many of the fundamental requisites of rapid growth. Growth of national income depends on an increase in labour supply, accumulation of capital and improvement in total factor productivity (TFP) — economists’ jargon for efficiency of resource use.

Unlike many countries faced with ageing populations, India is getting younger, so it is due to receive a ‘demographic bonus’: the population of working age is set to rise for the next three decades, and the ratio of workers to dependants will fall. Of course, the bonus will be realised only if the growing labour force is productively employed. The supply of skilled labour is potentially huge if educational opportunities can keep pace.

Capital is in elastic supply. The domestic savings rate is high, well above 30 per cent of GDP, and India’s large market makes it attractive for foreign savings in the form of capital inflows. The supply of savings translates into capital accumulation only if investment demand is strong. But India’s dynamic private sector is not lacking in animal spirits, so that is not likely to pose a problem if the government maintains a supportive climate.

As regards TFP, India has a technological late-comer advantage, so large gains are there for the taking. India’s embedded democracy, its respect for property rights, entrepreneurial spirit, and the widespread use of English in business are also sources of long-run strength.

India is very unlikely to have a political implosion.

IN CONCLUSION: REALISING INDIA’S POTENTIAL

The main purpose of economic reform is to create an environment and a policy framework that makes it possible to have continuous productivity improvement, along with measures to spread the resulting benefits to all, especially the very poor.

The impact of India’s successful early-1990s reform programme is fading. To maintain the momentum of inclusive growth, the government must set in motion a second generation of reforms that focus on the areas that were neglected or in which there have been serious policy mistakes or shortcomings: fiscal consolidation, resource markets, agriculture, infrastructure and governance.

India’s potential remains huge, but its realisation will require a deeper re-orientation of the state-market relationship. India needs both less of the state and more of the state.  

historical examples in other countries, such as Indonesia and Russia. While ‘robber barons’ certainly played a dynamic role in early US growth, their excesses were controlled in the late 19th and 20th centuries by deliberate policy choices, such as legislation to curb monopoly power, made by the executive and legislature, working in alliance with social and political movements.

In India, too, counter-forces to the patronage-corruption-political finance nexus have emerged in the form of middle-class civil society movements, supported by courts that encourage public interest litigation. This is an encouraging development for the future.

It is not difficult to specify some of what needs doing. Elections should be publicly funded. Many discretionary powers of the government should be shifted to independent authorities. The management of all public lands should be transferred to an independent investment trust. Public investigative bodies, such as the Vigilance Commission and the Criminal Bureau of Investigation, should be made independent of the government.

All this amounts to a proposal that the state should reform itself. For this project, there can be no blueprint, template or magic formula.

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All this amounts to a proposal that the state should reform itself. For this project, there can be no blueprint, template or magic formula.
Almost everybody depends on molybdenum (Mo). You may not realise it and you may not even have heard of it, but molybdenum is found in everything from aircraft engines and nuclear power plants to electrical components and filament lamps.

If you’ve ever wondered what gives replacement metal hip and knee joints their strength, or why saw blades can withstand wear, even at high temperatures, the answer is molybdenum. Add to this countless applications in industries as diverse as construction, petrochemicals, manufacturing and agriculture, and you can see why there is a growing demand for this versatile silvery-grey metal.

Molybdenum was identified as a new element in 1778 by German-Swedish chemist Carl Wilhelm Scheele after he heated molybdenite ore in air to yield a white oxide powder. It was another four years, however, before Scheele’s colleague Peter Jacob Hjelm was successful in reducing the oxide with carbon to obtain pure molybdenum metal.

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William Coolidge, an employee of General Electric, filed a patent for rendering molybdenum more ductile, or stretchable, almost a century later that things started to take off. Coolidge’s breakthrough enabled the metal to be used as a heating element for high-temperature electric furnaces and as the support for tungsten filaments in light bulbs.

Demand for molybdenum increased dramatically during World War I after it was found to be effective in improving the strength of steel alloys for use as armour for tanks and ships, and also as a substitute for tungsten. The automobile industry continued to drive demand and by the end of the 1930s molybdenum was starting to hit its stride as a cost-effective alloying element for steel. The conclusion of World War II brought increased research and investment. Since then, the range of applications for molybdenum and its alloys and compounds has swiftly expanded along with the new sources of supply and improvements in processing technologies.

Today, molybdenum is primarily used as an alloying agent in the manufacture of high-strength steels, super-alloys and cast iron, which is used in hardware, structural items, fireplaces and piping. Aside from its strength-giving properties, what makes it such a useful metal is its extremely high melting point coupled with the lowest heating expansion of any commercially used metal.

Its ability to withstand extreme temperatures, without significant expansion or softening, makes its addition particularly useful in applications where metals have to operate in extreme temperatures under high stresses and often in corrosive environments. The jet engines of the Airbus A380 must propel the huge 360-tonne aircraft and its 800 passengers
through the air for thousands of hours without failure. Nickel-based super alloys containing three to 10 per cent molybdenum are the material of choice for both the turbine blades and the disks that support them in this punishing environment.

The metal is also used as a lubricant for the engines of the A380. Molybdenum disulphide is one of the few lubricants capable of operating in the extremes of both high and low temperatures found inside the engines, which suck air in at temperatures as low as -60°C and blast it out at a blistering 600°C.

Molybdenum is one element that gives stainless steel corrosion resistance. This versatile alloy has a dizzying array of uses, from processing chemicals and petrochemicals to hospital and laboratory applications. These same corrosion-resisting properties also make stainless steel ideal for architectural applications; the twin Petronas Towers in Kuala Lumpur, Malaysia, two of the world’s tallest buildings, are clad in stainless steel containing three per cent molybdenum.

Alongside its uses as an alloying agent and lubricant, molybdenum’s complex and unique properties have seen it increasingly used as a catalyst in petroleum refining. Molybdenum-based catalysts increase the rate at which organic sulphur compounds are removed during refining; this not only makes the process more economical but also contributes to a safer environment through lower sulphur emissions. And, with the availability of high-quality, low-sulphur crude oil starting to decline, refiners are increasingly turning to other sources; as they do, the use of molybdenum-based catalysts is forecast to increase significantly.

MOON METAL

Molybdenum is the 42nd most abundant element in the universe. It has even been found on the moon by the Russian Luna 24 mission. Terrestrially, however, the metal is less common. It is ranked 54th in the list of most common elements in the Earth’s crust, where it occurs naturally in ores of molybdenite, wulfenite and powellite in combination with other elements.

The world’s production of molybdenum was 250,000 tonnes in 2011. The relatively low grade of most molybdenum ores necessitates the use of high-volume, low-cost mining. Some mines are dedicated purely to molybdenum production, such as the Knaben mine in southern Norway, which opened in 1885. More generally, molybdenum is cost-effectively recovered as a by-product of copper and tungsten mining, as is the case at the Los Bronces (50.1 per cent owned by Anglo American) and Collahuasi (44 per cent held by Anglo American) copper mines in Chile. Last year, molybdenum output attributable to Anglo American from these two open-pit mines was 3,878 tonnes, which was just under three per cent of global production.

Led by increased demand from China, consumption of molybdenum is expected to grow by around 100,000 tonnes by 2020. As a result, Los Bronces is projected to increase production and new projects are expected to come on line. “Anglo American’s Quellaveco and Michiquillay copper deposits in Peru, and its 50 per cent-owned Pebble copper/gold resources in south-west Alaska all contain molybdenum,” says Sergio Godoy, vice-president geology for Anglo American’s Chile operations. “If these new projects become fully productive over the coming years, Anglo American’s molybdenum output would increase significantly.”
SAFE DISCOVERY IN ACTION

Working in hostile environments and with an industry-average discovery rate of one find for every thousand drill targets, exploring for resources can be a frustrating mission. But persistence and creative thinking are giving Anglo American an edge. Andrea Chipman reports.

Overcoming the limits of geology and geography while protecting fragile ecosystems and engaging communities are the key challenges of finding new resources. Over the past decade, Anglo American’s exploration unit has recorded considerable success, making 15 significant discoveries containing over 50 million tonnes of base metals. The company’s discovery costs are in the lower quartile of the industry benchmark, while its resource quality is in the top quartile.

Along the way, Anglo American has built on its high safety standards. Since March 2008, the team has had no fatalities and experienced an 80 per cent reduction in the lost-time injury frequency rate across global operations.

Such progress is due, in no small part, to having experienced people, says group head of exploration Tracey Kerr. “Successful and safe exploration and discovery is very much a team effort – having the right people in the right place with the right skills. We pride ourselves on having a team who, while they come from different backgrounds and with different levels of expertise, all share a deep passion for the field of geology and are committed to responsible exploration.

“Like others in the industry, we realise that competition for talent is fierce and we need to equip our teams – not just now, but also in years to come – with the skills and opportunities to grow their technical knowledge, as well as their ability to be leaders in their own right. After all, they will be the ones making our future safe discoveries.”

Anglo American’s exploration team has expanded its operations in both uncharted greenfield territory and brownfield sites on five continents, making discoveries of copper, nickel, platinum group metals and other resources. But making greenfield discoveries is becoming tougher for the whole industry, with access to land restricted by both physical geography and the socio-political context.

It is becoming increasingly important for teams to balance geological prospectivity with country risk, focusing on the what and where of exploration, rather than the how.

Graham Brown, group head of geosciences, says: “Years of operating around the world in key frontiers has given the Anglo American exploration team strategic insights that help us identify and assess new geographies, commodities and business development opportunities – and secure our licence to operate. But at the same time, there is no room for complacency. We need to continue to adapt to the world
PERSISTENCE AND DETERMINATION

Anglo American’s decade of safe discovery has been driven by three key traits – persistence, innovation and the testing of new frontiers.

Identifying promising deposits in large, remote and inhospitable regions can at times be like looking for a needle in a haystack. On average, Anglo American makes one find for every hundred drill targets it tests – much better than the industry’s ‘rule of thumb’ of more than a thousand to one.

The discovery of the Sakatti nickel deposit, 150 kilometres north of the Arctic Circle in Finland, was a career highlight for senior project geologist Stephanie Klatt. “It’s what every exploration geologist dreams of. On a personal level, it represents the art of what is possible – when a team comes together and is given the belief, space and tools needed to think, explore and try out ideas, no matter how impractical they might appear.”

In the Los Sulfatos area of Los Bronces in Chile, helicopter- and mule-supported drilling and movement of supplies were needed to identify potential copper targets in the remote Andean terrain. Their discovery five years ago was complicated by the high altitude and harsh environmental conditions, such as extreme weather and very steep terrain. Furthermore, field activities were limited to the summer months from December through March. It was only after Anglo American had drilled its 10th hole that the size and quality of the deposit became apparent – and this was after a century of mining and exploration activities in the region. The discoveries here have increased the area’s Inferred Mineral Resource by 1.2 billion tonnes.

“There is no doubt the conditions can be harsh and tough,” says exploration geologist Esmé Tristram, “but you remember the passion you have for geology and making a difference. That’s what makes the hours spent studying maps and logging metres and metres of core all worthwhile.”

INNOVATION AND CREATIVE THINKING

Creative and scientific thinking is essential for gathering information. It proved key in Anglo American’s exploration nickel project in Jacaré, Brazil. Old satellite image data was used to map biodiversity over a 60 km² region. A modelling technique normally used to calculate the resource value from a deposit was also used to estimate the biomass and biodiversity of vegetation across the entire deposit.

It was senior geologist Giorgio Sartorato’s idea to use data from the airborne radar survey to obtain topographic information. “It gives me great satisfaction to be able to bring something new to the company – an idea or a new application. I’m sure this technique could be used in similar locations all over the world, for instance deposits in forested areas in Oceania or even in Africa.”

The process will be hugely beneficial to the mine planners looking to understand the biodiversity impacts in preparing mitigation solutions right through the lifecycle of a potential mine.
Anglo American has developed new technologies on its own or in partnership with other companies in order to break new ground. Specialised Low Temperature Superconducting Quantum Interference Device (LT-SQUID) technology, for example, has been exclusively licensed to the exploration unit, while advances in tunnel-boring machine (TBM) technology have enabled the team to explore where previously they would not have been able to go.

LT-SQUID has been used in the discovery of three deposits by the exploration team and is a key technology for Anglo American field teams.

TBM technology was used to provide future exploration and resource drilling access for exploration teams seeking new copper deposits at Los Sulfatos. The technology allows for significant improvements in terms of development timeframes, safety and overall project risk in comparison with the more traditional drill and blast approach.

**QUANTUM LEAP**

A Low Temperature Superconducting Quantum Interference Device (LT-SQUID) is a sensitive magnetometer that measures extremely sensitive magnetic fields by using superconducting loops. The LT-SQUID technology is considered particularly useful for discriminating between discrete buried metallic deposits, such as nickel sulphides, which can be masked by other rock types that can also hold an electric current – for example, shale. LT-SQUID has been employed by Anglo American field teams to help search for so-called ‘blind’ deposits that have no visible expression on the ground surface.

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**WORKING ON ‘THE FRONTIER’**

Working in far-flung, less familiar regions represents a microcosm of all aspects of exploration – from science and technology to people and safety. The biggest initial challenge is physical geography, be it the arctic tundra of northern Canada and Finland, the high altitudes of Chile and Peru or the often-impenetrable jungle terrain of the Democratic Republic of Congo.

Travelling to and communicating with field work areas and keeping staff safe requires careful planning by field teams so they can identify risks and manage them. Anglo American’s exploration unit has produced a Safety, Health, Environment and Community guidance document, *The Exploration SHEC Way*, which helps its teams go through a detailed risk assessment and to plan field programmes.

The numerous transport options that are needed for exploring hostile environments and underdeveloped areas, including helicopters, mules, 4x4 vehicles and snowmobiles, have their own specific risks. And the monitoring of air safety procedures has been an essential part of exploration in areas of South America, where measures have ranged from audits of airline safety, hazard identification and risk assessment and mitigation to ensuring that helicopters, pilots and engineers are compliant with safety standards.

Yet, as well as navigating the complicated logistics of a ‘frontier’ project, exploration teams must manage the expectations and concerns of multiple stakeholders, balance their different interests and communicate how and when field work will be carried out.
Understanding the strong bonds local people have with their land can also have a key impact on the way exploration teams operate within a frontier region. In the Nunavik region of northern Quebec in Canada, Anglo American’s project team holds formal meetings with community leaders twice a year to give them an overview of work carried out and plans for the upcoming programme.

Gaining the approval of local indigenous communities is also crucial to maintaining a licence to operate – and the trust that goes with it. It’s a long process, with few shortcuts.

In Colombia, Anglo American’s local community relations team worked with the indigenous communities in the Putumayo and Antioquia regions for two years to understand their laws and traditions and to build trust and understanding, thereby helping to resolve concerns and dispel myths about the company’s copper-exploration project there.

Country community relations coordinator Laura Garcia and her team are in charge of drawing up procedures, social tools and engagement plans for each project across the country, which often requires previous consultation with the communities involved before Anglo American’s
In the Musgraves region of central Australia, traditional landowners had closed the area to all mineral exploration between the 1960s and the mid-1990s because many large ranges and outcrops in the region were important religious sites and ‘dreaming’ trails for the indigenous population. Anglo American’s exploration team established the trust of the local communities, on one occasion taking elders from three communities on a 10-day helicopter survey. The survey helped identify sensitive sites and expedite the process of locating dreaming trails and other ceremonial sites that would then be designated as no-go zones, while ultimately opening up other areas for low-impact work. By also voluntarily reporting some sites of significance that had been missed during the helicopter survey, Anglo American further improved the level of trust between the company and the community.

Senior geologist Paul Polito says he won’t forget his experience in the region: “From a purely exploration point of view, it can be frustrating working in an area with many cultural restrictions, but from a social aspect and at a personal level, it has been very rewarding. Some of these staff members have been gifted the stories of that dreaming trail first hand. That’s a rare privilege even for some of the district anthropologists who have worked in the areas for many years.”

**FUTURE EXPLORATION**

Clearly, successful exploration and discovery is a major differentiator in terms of leadership, expertise and value creation. In the past, the priority was finding and building mines, whereas today the focus remains not only on creating value but also building partnerships with host communities. Future deposits are likely to be harder to uncover, especially in harsher physical and socio-political environments. But with the industry dependent on viable finds, the determination of exploration teams is not diminishing. And investment remains high, with Anglo American and De Beers’ combined exploration expenditure likely to be in the region of $150 million in 2012. Determination, technical expertise, innovation and a richer understanding of local issues may well ensure the next decade is as promising as the last.

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**LAURA GARCIA, COUNTRY COMMUNITY RELATIONS COORDINATOR, COLOMBIA**

“Nowadays, communities are more informed, more aware of their rights and better prepared to face the demands of the world. They are changing their minds, and that poses an important challenge to our company – to help them make clear decisions by demonstrating what value we can bring.”
Freezing fog and -40°C temperatures aren’t problems encountered by many of Anglo American’s Metallurgical Coal employees. But for the 500-strong workforce at Peace River Coal’s open-cut Trend mine in British Columbia, in western Canada, they’re part of the job. Christine O’Leary reports on how PRC is helping turn Anglo American into a diversified global player in seaborne metallurgical coal.

A key area of Anglo American’s commodity focus, metallurgical coal used in steelmaking is a much rarer and more valuable resource than its thermal coal counterpart. It is a key driver in the industrialisation and growth of developing countries, especially China and India.

As part of that strategic focus, Peace River Coal (PRC) became a 65 per cent-held subsidiary of Anglo American in 2005, the first operation outside Australia for Anglo American’s Metallurgical Coal business, and subsequently came under the aegis of the newly created Metallurgical Coal business unit in 2011. Well established in Australia, with six operating mines and an industry-leading growth project pipeline, Metallurgical Coal was also looking at creating a long-term global growth strategy.

In late 2008 and the early months of 2009, however, world business was at its lowest ebb. With Anglo American looking to repair its balance sheet, the company considered selling the PRC operation.

But, as Carlos Davila, Metallurgical Coal’s head of strategy and business development explains, the business unit was looking to expand. “The seaborne coking coal trade quickly recovered from that deep early economic downturn and, by 2010, we were sufficiently confident to embark on a global growth strategy. Our resources in Australia have given us a magnificent footprint, but these areas have been under development for more than 40 years, so there is only limited opportunity to acquire additional quality assets.

“When we took a closer look at PRC, we saw its potential, not just in terms of mineral inventory on our own ground, but also opportunities to increase that further by acquiring the minority shareholders’ stakes and leases on near and adjacent blocks. What’s more, the coal is some of the highest quality found anywhere in the world. It’s in demand from steelmakers throughout north Asia and it attracts good prices.”

A HIGH-PERFORMANCE BUSINESS

Rather than sell the PRC operation, the Metallurgical Coal team instead saw an opportunity to improve it.

“At the time, it was producing less than one million tonnes per annum (Mtpa), but we knew that by putting in better equipment and planning, and bringing in an experienced management team, we could turn it into a high-performance operation,” says Davila.
The Peace River coalfields were discovered as far back as 1793, though mining activity was limited to small operations until the global steel industry started to expand in the 1960s.
The team took on charge in June 2011 and by September 2011 PRC’s integration into Metallurgical Coal was complete. The same month, Anglo American concluded the purchase of the minority shareholdings. PRC was now wholly owned by Anglo American and fully part of Metallurgical Coal.

Since then, the operation has gone from strength to strength, says Robert Craike, PRC’s general manager, who came to Canada from a similar role at Metallurgical Coal’s Foxleigh operation in Queensland.

“We now have a very strong focus on performance – people know what’s expected of them and they have very clear targets. We’ve also changed how we work – for example, shift changes that used to take more than an hour now take around 10 minutes – and we’ve removed bottlenecks in the plant. As a result, production has doubled to more than 400,000 cubic metres per week, and costs are down.”

But Metallurgical Coal’s plans for PRC don’t end there. As Craike puts it: “We expect the Trend mine to deliver 1.5 Mtpa this year, but we didn’t come all this way for just a 1.5 Mtpa operation.”

Now Metallurgical Coal aims to increase PRC’s total product to 4 Mtpa by 2016. Key to this growth is a development plan that involves the exploration of three areas adjacent to Trend: the Horizon, Roman and Hambler resources. Exploratory drilling is already under way on Horizon, with studies on Roman and Hambler expected to begin next year as permits are granted. Further afield are two more resources, Belcourt and Saxon (BelSax), which PRC owns in a joint venture with Walter Energy.

Davila says: “In the past 12 months, we have completed a number of additional lease acquisitions and applied for exploration ground in British Columbia and neighbouring Alberta. We have now increased our ground holding and
thus the potential mineral inventory of coal by a considerable factor, making PRC a significant asset.”

Gaining permits to exploit those assets is a key challenge, says Keith Prakke, Metallurgical Coal’s project director. “We’re working in a pristine natural environment that’s rich in wildlife, so the environmental and permitting processes are understandably rigorous and lengthy. In particular, there are a lot of sensitivities around fish and caribou, with the regulators keen to know what impact our project development and future operations will have.”

REGIONAL ISSUES AND CONDITIONS
Other issues include the rights of the local First Nation people, the area’s original residents. Following consultation and a tailor-made comprehensive training programme, First Nation people now comprise 14 per cent of the operation's workforce. “It’s a win-win situation,” says Craike. “The labour market is very competitive and, because we’re seen as being in a remote location, it can be tough to get people. By training members of the First Nation community, we’re providing careers to people who are committed long term to the area.”

PRC is also working closely with the local community of Tumbler Ridge to improve the town’s education, childcare and health facilities. The operation also helped locals celebrate Canada Day and has sponsored a challenging 20-kilometre run.

Surprisingly perhaps, the area’s severe winter weather has proved less of a problem than Metallurgical Coal originally envisaged. “There was some trepidation,” admits Davila, who recalls how, newly arrived from Australia, he was “frozen” on a day considered warm by locals. “However, our equipment is designed to operate at very low temperatures and has worked well.”

Craike agrees: “People here know how to mine in tough conditions and we’ve made the most of good, local knowledge.”

Following Anglo American’s purchase of Shell’s coal assets in Australia in 2000, the successful integration of PRC represented the second step towards becoming a global player in the seaborne coking coal trade. In July 2012, the company took its third step when it agreed to acquire a 58.9 per cent stake in the Revubóe open-cut coal project in Mozambique.

But that’s for the future, says Davila...
Large mining companies that operate in remote areas must engage with local councils and organisations in order to manage public services and communities’ expectations. A new partnership approach to municipal capacity building could offer a better solution. **Dave Prescott** finds out more.
In partnership with the Development Bank of Southern Africa, Anglo American supports infrastructure development so that townships can capitalise on the opportunities that come with new mining operations. Near the Union mine, part of Anglo American’s Platinum business, a new road is built by contracting teams comprising at least 80 per cent local workers.
Ensuring the benefits of a mining project are shared equitably among local citizens and businesses is not the exclusive responsibility of the operator. All stakeholders, especially local government, must play their part. However, a lack of skills, capacity and infrastructure means many communities are not sufficiently equipped to respond to the changes; increasingly, mine owners and operators are stepping in to assist them in making the transition.

Through strategic partnerships, Anglo American is empowering governments and municipalities and further developing their capabilities to provide better service delivery and shape the social development arising from its operations. Heading up the project on behalf of Anglo American is Jon Samuel, head of social performance. He sees the work as a contribution to building stable, prosperous communities around the company’s mines, as well as a sound risk-management strategy.

The company is required by the government to draw up and deliver social and labour plans in conjunction with municipalities. “If the municipalities don’t have the capacity to implement these plans, Anglo American may be held partly responsible for their failure,” explains Samuel. “Our aim is to create fully functional and sustainable municipalities that will deliver good quality services like water, sanitation and electricity to people cost-effectively and efficiently – and, over time, reduce the reliance on mining companies.”

However, since municipal capacity building is outside the core area of expertise for a mining company, Anglo American sought a collaborative approach, through a partnership with the Development Bank of Southern Africa (DBSA), which has highly regarded expertise in building the effectiveness of public institutions. This project is the first example in South Africa of a public-private partnership for municipal capacity building.

**SOCIETAL DEVELOPMENT**

In Brazil, at Anglo America’s nickel operations at Barro Alto, the company has long been taking innovative approaches to social development. Its socio-economic assessment toolbox (SEAT) was piloted in 2002, and launched a year later, with Barro Alto one of the first projects to implement it – before operations had even begun.

Sustainable development manager for nickel Juliana Rehfeld says that the company realised that limited municipal capacity was likely to be an increasing challenge in Barro Alto, especially as mining revenues started to flow into the town from central government. “We wanted to find a way to prepare both the local government and local citizens to live in a society that would grow.”

Anglo American has been collaborating with Agenda Pública on the project since 2008. Bruno Gomes,
CASE STUDY 1: THE DEVELOPMENT BANK OF SOUTHERN AFRICA

A FAR-REACHING PARTNERSHIP IN SOUTH AFRICA IS SKILLING UP OFFICIALS TO HELP REDUCE POVERTY LEVELS

In June 2009, a government minister stated that many of South Africa’s 283 municipalities were in a “state of paralysis and dysfunction so much that they needed extraordinary interventions”. To date, this has not changed much, with the majority of municipalities having received qualified audits. The struggle by municipalities to deliver basic services has resulted in local communities increasingly turning to companies, development institutions and NGOs to address these challenges.

Anglo American and the Development Bank of Southern Africa (DBSA) are collaborating in 10 municipalities around the country which either host mining operations or are significant labour-sending areas. The objective of this work is to determine the capacity levels of the municipalities and strengthen the ability of local governments to provide basic services, such as water, power and housing, to communities. The expectation is that this will allow municipalities to play their role in reducing levels of poverty and inequality in South Africa. Specifically, the partnership aims to:

- build technical capacity and transfer skills to municipal officials to operate and maintain municipal infrastructure
- help to implement projects to alleviate poverty within selected municipalities, in line with the Millennium Development Goals
- improve revenue-collection systems at local level
- help town halls to access available government infrastructure financing, as and when appropriate and when required.

The DBSA’s approach begins by measuring a municipality’s capacity in a range of areas, including institutional capacity, financial management capacity, governance arrangements, technical experience and engineering capacity. The bank identifies gaps – which may be a lack of skills, or policies, systems and processes – and then draws up implementation plans to help address them.

As a result of the interventions, the outcomes will include stronger integrated development plans through empowerment of community structures; and strengthened project-planning and project-management capacity among public officials. Social and labour plans form part of mining licences, but often can only be delivered with participation from local government (for example, housing or other construction projects where planning is required, or where the success of an initiative depends on municipalities putting in place supporting infrastructure, such as water and power).

An important step in the process is securing the support of municipalities. Encouragingly, all those approached have agreed to participate, and service-level agreements are currently being drawn up between each municipality, the DBSA and Anglo American. Institutional-capacity assessments have taken place and action plans have been drawn up for each of the 10 pilot areas. The target is for all actions to have started by mid-2013 across the 10 areas and a decision will be taken as to whether or not to extend the project to other municipalities.
Anglo American and Agenda Pública began collaborating in late 2008 on a project in Barro Alto, a small city of about 8,000 people in the rural north of Goiás state.

In brief, the project involved:
- a mapping exercise, to identify leaders in the council, public administration and civil society
- the development of a broad agreement to work together with the council and with community groups
- a joint analysis of Barro Alto’s social make-up
- an assessment of capacity in the council and public bodies across numerous areas, using UNDP and World Bank approved tools that focus on: leadership; strategy and planning capacity; citizenship and societal participation; information and knowledge management; human resources; processes; and results
- the development of capacity-strengthening strategies, guided by local priorities
- formal agreements for joint working.

The programme’s approach uses a series of principles designed to ensure the sustainability of the intervention: promoting local ownership of the issues; identifying causes and solutions to problems; finding information to solve the problems; stimulating leadership; building social capital; engendering a desire for change; and institutionalising through state and government policies.

Project staff are based within communities, to gain a thorough understanding of local circumstances. The work covers all government sectors – for example health, education, urban policies and social welfare. In Barro Alto, some of the main outcomes so far include the establishment of a school of government and citizenship, which offers personal and professional development opportunities to government officials, and short-term capacity development to fill the most urgent gaps. The capacity of the city council has also been strengthened, which has involved building skills for cross-departmental cooperation.

Publication of information about public management, public policies and social and economic data using visual aids and infographics has increased transparency. Citizens have received letters containing the commitments of public bodies about the quality standards to which they want to be held accountable.
the NGO’s project director, adds: “The arrival of a large mine really changes a town like Barro Alto. We try to give society the means to decide what kind of development they want.”

In both Brazil and South Africa, the projects follow two broad strands: empowerment of communities to enable them to understand their rights and hold the government to account; and training and skills development for public officials to enable them to fulfil their roles and respond to public demand.

In both cases, the work is distinguished by the partnership arrangements that lie at the heart of the projects. Although Anglo American provides funding in both cases, the company’s knowledge of the local area, its input into project planning and evaluation, and its local relationships have all proved important elements of the work. As an illustration of the perceived value of Anglo American’s role, the DBSA has reduced the management fee that it would normally charge for this kind of work.

**EMPOWERING LOCAL COUNCILS**

A notable element of the Barro Alto programme was to strengthen the capacity of the city council. The council is an independent watchdog organisation, nominally set up to increase the accountability of the local government, but in practice struggling to fulfil its role. Training was provided to councillors so they had a clear understanding of the council’s role, and they were also given the skills to carry out the job effectively.

“As a result of the project’s intervention, the city council rejected the mayor’s budget for the first time, on the basis of poor value for money,” explains Rehfeld. “The city council had demonstrated its authority. If this had happened a second time, the mayor would have faced a lawsuit. It really focused the mayor’s mind.”

The work in South Africa is at an earlier stage than the work in Brazil. Among others, the partnership with the DBSA will initially focus on enhancing revenue-collection capacity in municipalities. Reuben Matlala, divisional executive for the DBSA development fund, expects that within six months an average municipality will be able to collect payment on 90 per cent of all its bills, rather than the current 60 per cent.

“Once there is more revenue within the municipality, they are able to improve services in other areas, as well as investing more money in capacity building,” he says.

Enough signs of progress have been made in Brazil that the approach is starting to attract interest elsewhere. Anglo American and Agenda Pública presented the project to others in the Latin American mining sector at Rio +20. And the project in South Africa will expand beyond the 10 initial sites if results are sound. But it’s a waiting game. All of the partners involved agree that the work is complex and it may take a long time to see any programme truly take effect.
Better to cry in the back of a BMW than laugh on the back of a bicycle,” said a young woman appearing in a Chinese television dating show; and that, says Jonathan Fenby, tells us most of what we need to know about 21st-century China.

Since China awoke in the 1980s, everything it has done has been on a scale that breeds shock and awe. Urban incomes have risen 40-fold. Shanghai now has as much purchasing power as Saudi Arabia. The People’s Republic makes more sombreros than Mexico. And by 2025, China should have 219 cities with more than a million residents, compared to 35 in the whole of Europe.

The list goes on, and Fenby gives us enough of it to make anyone’s jaw drop. The real strength of this fascinating book, though, is the balance it strikes between the wow factor and the challenges China will face in the coming decades. Fenby – a former editor of the South China Morning Post and a China-watcher of enormous experience – gives us a compelling, rich and readable account of economic imbalances, inequality, corruption, environmental degradation, an ageing population, lack of human rights, lack of trust... this list, too, goes on.

What are we to make of a country that holds $3 trillion in foreign reserves and makes half the clothes worn in Europe and the US, but still has 300 million people without clean drinking water and police who feel no embarrassment about announcing that detainees have died from face-washing or picking at acne? Seventy-odd years ago, Winston Churchill said that Russia was a riddle wrapped in a mystery inside an enigma; today, that sounds more like China.

Fenby offers us a solution to this riddle, suggesting that the reality behind this messy picture – the tiger head and snake tails of his title – is that the revolution begun by Deng Xiaoping is only half-finished. What is more, he argues, the generation of meteoric growth since 1978 may turn out to have been the easy half, because China now has to address the costs of its success.

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BREAKNECK GROWTH
Most pundits tend to insist either that China is about to take over the world or that it is about to implode, but Fenby’s vision of the future is less dramatic. China’s growth will slow, he says, although it will probably stay above five per cent through the 2010s; and its leaders will turn inward, focusing even more than they already do on holding

―Since China awoke in the 1980s, everything it has done has been on a scale that breeds shock and awe... Fenby gives us enough to make anyone’s jaw drop.‖
IAN MORRIS
on to power. This, Fenby suggests, is what China’s imperial rulers have been doing for the past 2,000 years, so we should not be surprised if its new Communist emperors do the same.

But that is not the only construction we might put on the facts that Fenby marshals so skilfully. China’s emperors were not so different from rulers anywhere else in the pre-modern world, who, from Rome to the Aztecs, all tended to put saving their own skins ahead of everything else. And if Fenby makes China’s combination of breakneck growth, anything-goes capitalism and casual violence sound a bit like the Wild West, that is perhaps because these aspects of contemporary Chinese society are not so unusual either.

Since the end of the 1970s, China has been going through an industrial revolution, similar in all kinds of ways to what happened in Britain and also the US in, respectively, the early and late part of the 19th century. If you want to find parallels to the plentiful sinners, occasional saints and rambunctious robber barons who fill Fenby’s book, simply open the pages of Dickens or turn on HBO’s television shows Deadwood or Boardwalk Empire. Larger-than-life characters like Lai Changxing, the “Fierce Smuggler” of Fujian who rose from making screws to driving a bullet-proof Mercedes with Army General Staff licence plates, only to disappear last year into detention in Beijing, seem to be a historical type. They abound in the early stages of unfettered industrialisation, but become much less common as the economy reaches maturity.

**VOLATILITY AND UNCERTAINTY**

After 50-plus years of chaotic, previously unimaginable growth, Britain bestrode the world like a colossus by 1850, only for its economic expansion then to slow to a crawl; whereupon the US repeated the pattern. Perhaps China is now reading from the same script, and its experience in the 21st century will end up having more in common with Britain’s rise to global domination in the 19th and America’s in the 20th than with the peaceful, inward-turned story that Fenby tells. If so, we should expect the next 50 years to be a time of unprecedented volatility, uncertainty, and international upheavals.

Or then again, perhaps we should not. If there is one thing recent Chinese history has taught us, it is that no one can really extract the mystery from inside the enigma and unwrap the riddle it hides. How many China hands 50 years ago foresaw the direction China would take after Mao’s death? And as recently as 2011, while Fenby was writing this book, it seemed certain that the princeling Bo Xilai would be a major player in the next generation of Communist leaders.

Whether Fenby’s predictions about the direction China takes in the 2010s turn out to be true or not, his entertaining and authoritative book is one that everyone involved with China will want to read.
Ore being delivered to a concentrator in the late 1920s at Potgietersrust Platinums Limited’s (PPL) opencast operation, the forerunner of Anglo American Platinum’s Mogalakwena mine on South Africa’s eastern Bushveld Complex. The platinum reef Hans Merensky had identified at Potgietersrus was regarded as the most convincing of any platinum strike in the world at the time, and was the basis for the formation of PPL in 1925, with Anglo American as a major shareholder. In 1931, PPL merged with Waterval Platinums to form Rustenburg Platinum Mines Limited, which would become the world’s major platinum producer and eventually be absorbed into Anglo American’s Platinum business.
IT TAKES A SPECIAL KIND OF PERSON TO WORK FOR ANGLO AMERICAN’S EXPLORATION TEAM.

PEOPLE LIKE MATTIAS JOHANSSON, WHO HAVE THE SKILLS TO FIND MINERALS IN THE HARSHEST ENVIRONMENTS BUT WHO ARE ALSO DRIVEN TO FIND WAYS TO MINIMIZE THE IMPACT ON THAT ENVIRONMENT.

EXPLORING HIGH UP IN THE ARCTIC, HE IS PART OF A TEAM THAT PIONEERED A CLOSED-LOOP DRILLING SYSTEM, WHICH REDUCED BOTH WATER USAGE AND WASTE.

IT’S ABOUT FINDING WAYS TO DISCOVER MINERALS AND SHOWING A RESPECT FOR THE LAND AND THE COMMUNITIES THAT LIVE THERE.

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