

**The
Economist**

OUR ANNUAL SUPPLEMENT: THE WORLD IF

Rwanda's Kagame, visionary or villain?

Donald junior and the sins of the father

Rejuvenation—young blood in old bodies

JULY 15TH–21ST 2017

Liu Xiaobo, China's conscience



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On the cover The dignity and suffering of Liu Xiaobo, a remarkable political prisoner, hold a message for China and the West: leader, page 9. President Xi Jinping has launched China's third stage of political repression, page 24

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Politics



The **White House** denied that there had been any collusion between Donald Trump's election campaign and the Russian authorities, after e-mails surfaced of a meeting between Donald Trump junior and a Russian lawyer. Donald junior met the Russian hoping to obtain incriminating information on Hillary Clinton, possibly breaking American campaign law even though no information was forthcoming. The president was apparently not aware of the meeting.

Hearings to confirm Mr Trump's replacement for James Comey as director of the **FBI** were held in the Senate. Christopher Wray told the Judiciary Committee that he would resign if the president asked him to do anything illegal and that he had not been asked to pledge his loyalty to Mr Trump, unlike Mr Comey, who claims he was asked to.

Mr Trump's commission on **electoral fraud** suspended its request for states to submit information on voters, after legal challenges from privacy and civil-rights groups. The commission was created by Mr Trump to investigate his claim that millions of people voted illegally in last year's election, which he has not substantiated with any evidence.

Unlucky Lula

A federal judge in **Brazil** found Luiz Inácio Lula da Silva, a former president, guilty of taking a bribe and sentenced him to almost ten years in prison. The judge, who leads the "Car Wash" investigations into bribery of politicians and

officials by large Brazilian companies, found Mr da Silva guilty of receiving a beachside apartment in the state of São Paulo worth 2.2m reais (\$690,000). Mr da Silva, whose lawyers say the conviction is politically motivated, can remain at liberty while he appeals.

Venezuela's supreme court ordered that Leopoldo López, a leader of the opposition to the country's authoritarian regime, be moved out of prison and placed under house arrest. Mr López had served three years of a 14-year sentence for inciting violence during protests in 2014. The opposition says the accusation is false.

Colombia's president, Juan Manuel Santos, signed a decree giving amnesty to 3,600 members of the FARC. They are the last of the 7,000 guerrillas deemed not guilty of serious crimes who have been granted amnesty or released from prison. FARC fighters accused of serious crimes will be put on trial by a special tribunal.

Bonfires and the vanities

The **G20 summit** in Hamburg saw Donald Trump and Vladimir Putin hold their first meeting, America lambasted for pulling out of the Paris accord on climate change and Xi Jinping pledge China's support for an open global economy. Hamburg's mayor was criticised for not doing enough to stop three nights of rioting by anti-globalisation protesters.



In **Turkey** hundreds of thousands of protesters rallied in Istanbul against the crack-down on the opposition that has been in force since the attempted coup a year ago.

The EU approved an association agreement with **Ukraine** after years of delay. It was the refusal of the former Ukrainian president, Viktor Yanukovich, to sign this agreement and his turn towards Russia that sparked the Maidan protests in 2013 and 2014 that led to his downfall.

Claiming victory

Iraq's prime minister, Haider al-Abadi, visited Mosul, to mark its liberation from Islamic State. However, a few small pockets of its resistance remain in Iraq's second city.

The respected Syrian Observatory for Human Rights said it believes the leader of IS, **Abu Bakr al-Baghdadi**, has been killed. However, there is still no confirmation of this.

America's secretary of state, Rex Tillerson, visited **Qatar** hoping to broker a solution to the crisis that has seen the Gulf state partially blockaded by its neighbours. He said he had reached an agreement with Qatar on counter-terrorism.

Boko Haram, a **Nigerian** jihadist group, released a video showing its members murdering eight villagers it accused of being apostates. Nigeria's army has pushed the group out of cities and towns in northern Nigeria but has not been able to stop it from attacking civilians.

The head of the electoral commission in the **Democratic Republic of Congo** said that it would probably not be possible to hold a presidential election this year, as it promised in a deal struck between opposition parties and Joseph Kabila, the president whose final term ended last year.

Hidden fortunes

Court-appointed investigators in **Pakistan** found that Nawaz Sharif, the prime minister, could not adequately explain where his wealth comes from. The supreme court is due to decide how to respond to the findings on July 17th. It could remove him from office or refer him to a corruption tribunal.

Liu Xiaobo, a Chinese political prisoner and Nobel peace laureate, was reported to be in critical condition. The hospital treating him for advanced liver cancer said he was suffering from organ failure. Mr Liu is eight years into an 11-year jail sentence for his pro-democracy writings.

Chinese ships set sail for Djibouti carrying troops who will open China's first overseas military base. The government says the base will be used to support peacekeeping and humanitarian projects in Africa.



The candidate of the Democratic Party, Khaltmaa Battulga, won **Mongolia's** presidential election, prolonging a period of divided government. Mr Battulga promises to share out the country's mineral wealth.

India's supreme court suspended a government order banning the sale of cattle for slaughter. The protection of cows, which are sacred to Hindus, has become a sectarian issue in India, where many in the meat-packing industry are Muslim.

Breaking news

Satellite images showed that a huge **iceberg** has split from the Larsen C ice shelf in Antarctica. The 5,800 square kilometre chunk of ice, about five times the size of Hong Kong, is one of the biggest ever recorded. Such calving of ice-shelves occurs naturally and is not directly linked to rising global surface temperatures related to climate change. There are fears, however, that the shelf could in future share the fate of its neighbour, Larsen B, which disintegrated entirely within a few weeks in 2002. ►►

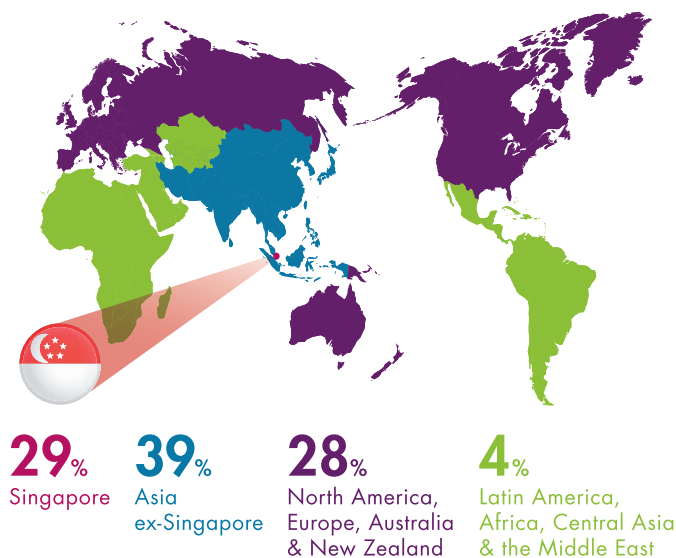
Embracing the Future



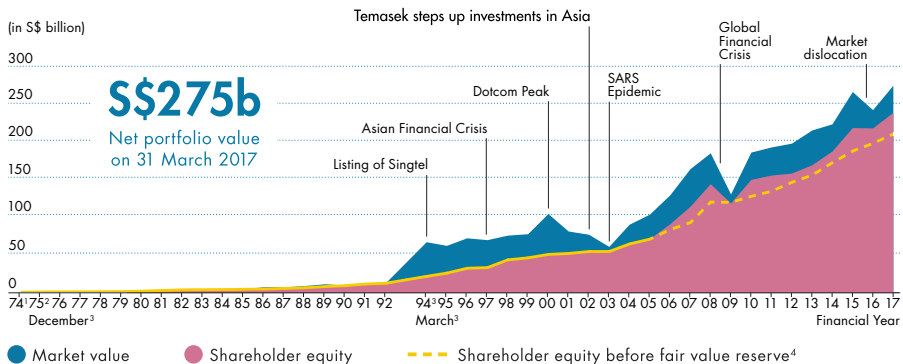
Shaping a Sustainable Future

We actively shape our portfolio by increasing, maintaining or decreasing our holdings. This enables us to capitalise on opportunities when they arise and build our portfolio towards longer term as well as emerging new trends.

Global Exposure^{5,6}



Temasek Net Portfolio Value since Inception



Sector ^{6,7} (%)	2017	2016	2015
Financial Services	25	23	28
Telecommunications, Media & Technology	23	25	24
Transportation & Industrials	17	18	17
Consumer & Real Estate	17	17	15
Life Sciences & Agribusiness	4	4	3
Energy & Resources	3	3	5
Multi-sector Funds	8	7	5
Others (including Credit)	3	3	3

Liquidity ⁷ (%)	2017	2016	2015
Liquid & sub-20% listed assets ⁹	33	31	34
Listed large blocs (≥ 20% and < 50% share)	9	10	12
Listed large blocs (≥ 50% share)	18	20	21
Unlisted assets	40	39	33

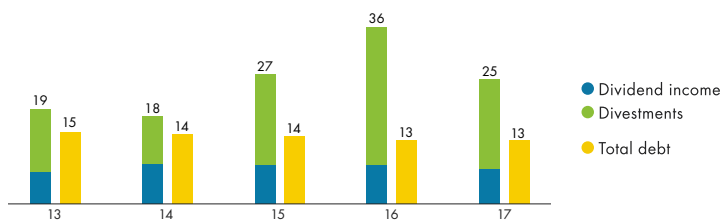
Balancing Risks, Delivering Sustainable Returns

We manage our finances for a resilient and flexible balance sheet that allows us to take advantage of opportunities and favourable developments in good times and bad.

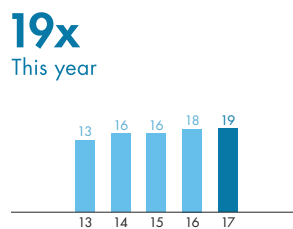
Our main sources of funds are divestment proceeds, as well as dividends and distributions received from our portfolio. These are supplemented by our Temasek Bonds and Euro-commercial Paper.

We plan for a well distributed debt maturity profile that includes both short term and long term debt for flexibility and cost efficiency. We ensure that our primary sources of cash flow can comfortably cover our non-discretionary expenses.

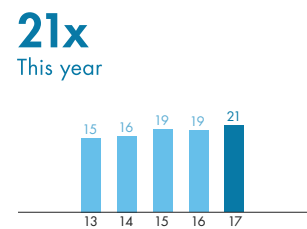
Key Recurring Income vs Total Debt¹⁰ (\$\$b)



Dividend Income over Interest Expense¹⁰ (x)



Net Portfolio Value over Total Debt⁷ (x)



1 Incorporation of Temasek on 25 June 1974.

2 Financial year 75 began on 25 June 1974 and ended 31 December 1975.

3 Financial year-end was changed from 31 December before 1993 to 31 March from 1994 onwards.

4 FRS39 Financial Instruments: Recognition and Measurement, introduced during the financial year ended 31 March 2006, requires available-for-sale financial assets to be measured at fair value.

5 As at 31 March 2017.

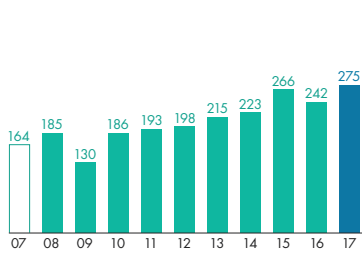
6 Distribution based on underlying assets.



Net Portfolio Value⁷ (\$\$b)

Up \$111b

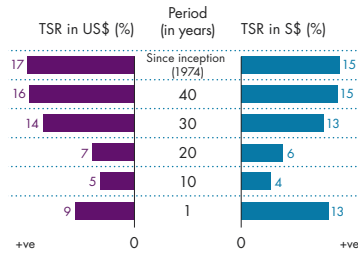
Over the decade



US\$/S\$ Total Shareholder Return⁵ (%)

15%

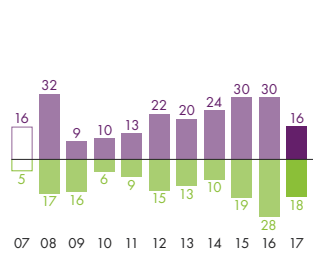
S\$ Total shareholder return since inception



Investments & Divestments¹⁰ (\$\$b)

\$16b

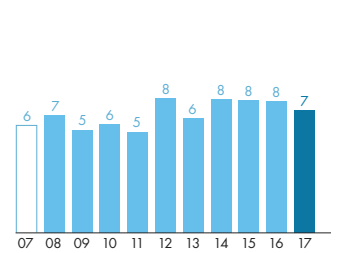
Invested during the year



Dividend Income¹⁰ (\$\$b)

\$7b

Dividend income



● Investments ● Divestments

Building an **abc** World

Our collective action is needed to achieve the 17 UN Sustainable Development Goals (SDGs) for an ABC World of Active economies, Beautiful societies, and a Clean Earth.

These UN goals cover a wide-ranging set of ambitions to uplift human life, and safeguard our world for future generations. They resonate with Temasek's commitment to sustainability and good governance as a steward, institution and investor.



ACTIVE ECONOMY

Productive jobs
Sustainable cities
Fulfilling lives



An active, robust economy delivers good jobs and creates opportunities.

It is the foundation of stable, secure and sustainable societies. Productive workers have a sense of pride and dignity, provide for their loved ones and themselves, and look to the future with confidence.



BEAUTIFUL SOCIETY

Resilient individuals
Cohesive families
Inclusive communities



A sustainable and beautiful society fosters resilient individuals, cohesive families and inclusive communities.

Shared values that embrace justice and equality, and expand our common spaces, will strengthen our tolerance, mutual respect, and the ties that bind us together.



CLEAN EARTH

Fresh air
Clean water
Cool world



A clean, cool Earth is our home and common inheritance.

We must act today to preserve our living space for ourselves and future generations. Fresh air, clean water and a cool world are Earth's natural gifts, which we must treasure and protect.

⁷ As at 31 March.
⁸ Exchange rates as at 31 March 2017.

⁹ Mainly cash and cash equivalents, and sub-20% listed assets.
¹⁰ For year ended 31 March.

Business

The Trump administration nominated Randal Quarles to be **vice-chairman for supervision** at the Federal Reserve. Mr Quarles is a former investment manager and Treasury official. He is sympathetic to the industry's push for a lighter regulatory touch, and has supported a Republican recommendation to restrict the Fed's flexibility on interest rates by basing those decisions on a mathematical formula.

Steady as she goes

Speaking to Congress, **Janet Yellen** said that although inflation remained an uncertainty, the Fed was on course to unwind the asset portfolio it had accumulated since the financial crisis and to continue with rate rises. The guessing game has already begun about whether Donald Trump will choose a new chairman of the Fed when Ms Yellen's term is up in February.

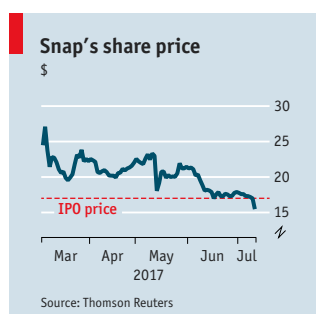
The **Bank of Canada** raised interest rates for the first time in seven years, increasing its benchmark rate by a quarter of a percentage point to 0.75%. The central bank said it was responding to strong economic growth. Higher rates could temper a sharp rise in housing prices and in household debt.

Royal Bank of Scotland agreed to pay \$5.5bn to settle claims brought by America's Federal Housing Finance Agency relating to risky mortgage-backed securities that RBS sold between 2005 and 2007. The bank has set aside money to pay for this fine, and for another whopping penalty expected from the Department of Justice later this year.

Elliott, an activist hedge fund founded by Paul Singer, launched a counter-bid for an electricity-distribution company that Warren Buffett's **Berkshire Hathaway** recently offered to buy for \$18bn. **Energy Future Holdings** (which used to be known as TXU) has been in a bankruptcy-protection programme for three

years. The source of its allure is its stake in **Oncor**, the biggest electricity distributor in Texas, which is independently managed. Elliott is Energy Future's biggest creditor and has a stake in any final deal.

A French court ruled that **Google** did not have a "permanent" base in France and therefore did not have to pay the government \$1.3bn in taxes. The decision applies to France only, but it was a rare victory for Google in its battles with European tax and regulatory authorities.



Snap's share price fell below \$17, the price at which it made its stockmarket debut in March. Investors were spooked by a note from one of the flotation's underwriters that said it had been wrong about the social-media company's "ability to innovate and improve its ad product".

Pearson sold almost half its 47% stake in **Penguin Random House** to **Bertelsmann**, lifting the German media company's holding in Penguin to 75%. Pearson has been selling off its assets in conventional publishing in order to focus on its digital education business.

What's the skinny?

The share price of **Abercrombie & Fitch** fell by 20% after the fashion retailer said it had not been able to find a buyer for its business. Once the favourite brand of svelte teenagers, Abercrombie has struggled to compete with fast-fashion rivals, such as H&M and Zara.

With China's new cyber-security law in mind, **Apple** said it would open its first data centre on the Chinese mainland to store the personal information of Chinese iPhone and iPad users. The data have been mostly held on Apple's servers in America. Apple stressed that privacy and security protections will remain in place.

Marking a retreat from its ambition to become a global entertainment powerhouse, **Dalian Wanda**, a Chinese conglomerate, struck a deal to sell its 13 tourism projects in China and 76 hotels to **Sunac**

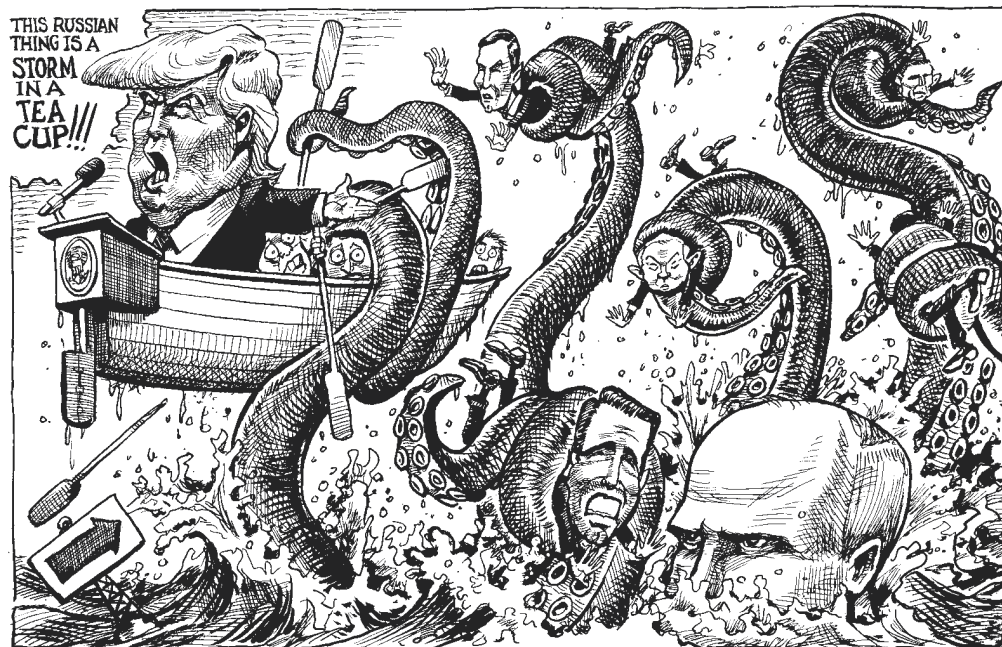
China, a property developer, for \$9.3bn. Wanda's expansion over the years, such as buying cinema chains in America, has been fuelled by debt, which it will pay down with proceeds from the sale. The Chinese government warned recently that the build-up of company debt could pose a risk to China's banking system.

In another big Chinese acquisition, **COSCO Shipping** offered to buy **Orient Overseas**, a smaller Hong Kong-listed rival, for \$6.3bn, the latest deal in a wave of consolidation in the shipping industry. COSCO will be the world's third-biggest container line.

Every cloud...

Proving that not every item is suitable for the sharing economy, a Chinese entrepreneur, **Zhao Shuping**, who launched an **umbrella-sharing** service in April, reported that nearly all his brollies had gone missing. Customers paid a small deposit to unlock a code in the umbrella handle, but most have not been returned to their stands after use. Undeterred, Mr Zhao still plans to roll out his scheme across the country, come rain or shine.

Other economic data and news can be found on pages 68-69



China's conscience

The suffering of a remarkable political prisoner holds a message for China and the West



LIU XIAOBO is hardly a household name in the West. Yet of those in China who have called for democracy, resisting the Communist Party's ruthless efforts to prevent it from ever taking hold, Mr Liu's name stands out. His dignified, calm and persistent calls for freedom for China's people have made Mr Liu one of the global giants of moral dissent, who belongs with Andrei Sakharov and Nelson Mandela—and like them is a prisoner of conscience and a winner of the Nobel peace prize.

Mr Liu is now lying on a hospital bed in north-eastern China in the terminal stages of liver cancer. As *The Economist* went to press, doctors were warning that his death could come soon (see page 23). The suffering endured by Mr Liu, his family and friends has been compounded by his miserable circumstances. Mr Liu, an academic and author specialising in literature and philosophy, is eight years into an 11-year sentence for subversion. His crime was to write a petition calling for democracy, a cause he had been championing for decades—he was prominent in the Tiananmen Square protests of 1989. Though in a civilian hospital, he is still a prisoner. The government has refused his and his family's requests that he be allowed to seek treatment abroad. It has posted guards around his ward, deployed its army of internet censors to rub out any expression of sympathy for him, and ordered his family to be silent. The Communist Party wants the world to forget Mr Liu and what he stood for. There is a danger that it will.

A cynical game

Western governments have a long history of timidity and cynicism in their responses to China's abysmal treatment of dissidents. In the 1980s, as China began to open to the outside world, Western leaders were so eager to win its support in their struggle against the Soviet Union that they made little fuss about China's political prisoners. Why upset the reform-minded Deng Xiaoping by harping on about people like Wei Jingsheng, then serving a 15-year term for his role in the Democracy Wall movement, which had seen protests spread across China and which Deng had crushed in 1979?

The attitudes of Western leaders changed in 1989 when Deng suppressed the Tiananmen unrest, resulting in hundreds of deaths. Suddenly it was fashionable to complain about jailing dissidents (it helped that China seemed less important when the Soviet Union was crumbling). From time to time the government would release someone, in the hope of rehabilitating itself in the eyes of the world. Western leaders were grateful. They wanted to show their own people, still outraged by the slaughter in Beijing, that censure was working.

By the mid-1990s China's economy was booming and commerce consigned dissidents to the margins once again. In the eyes of Western officials, China was becoming too rich to annoy. The world's biggest firms were falling over themselves to enter its market. America, Britain and other countries set up "human-rights dialogues"—useful for separating humanitar-

ian niceties from high-level dealmaking. The global financial crisis in 2008 tipped the balance further. The West began to see China as its economic saviour. Earlier this month leaders of the G20 group of countries, including China's president, Xi Jinping, gathered in Germany for an annual meeting. There was not a peep from any of them about Mr Liu, whose terminal illness had just been made known.

Time to name names

Why complain? China retaliates against countries that criticise its human-rights record. It restored relations with Norway only last year, having curtailed them after Oslo had hosted the Nobel ceremony in 2010 at which Mr Liu got his prize (as China would not free him, he was represented by an empty chair).

Moreover, Mr Xi is unlikely to listen. Before he took power in 2012 he scoffed at "a few foreigners, with full bellies, who have nothing better to do than try to point fingers at our country." In office he has ratcheted up pressure on dissidents and others who annoy the Communist Party, helped by new security laws (see page 24). He is also embracing new technologies, such as artificial intelligence, which promise to monitor troublemakers more effectively (see page 48).

Yet there are good reasons why Western leaders should speak out loudly for China's dissidents all the same. For one thing, it is easy to exaggerate China's ability to retaliate—especially if the West acts as one. The Chinese economy depends on trade. Even for little Norway, the economic impact of the spat was limited. For another, speaking out challenges Mr Xi in his belief that jailing peaceful dissidents is normal. Silence only encourages him to lock up yet more activists. And remember that, for those who risk everything in pursuit of democracy, the knowledge that they have Western support is a huge boost even if it will not secure their release or better their lot.

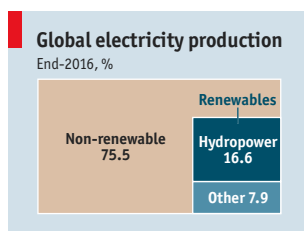
A vital principle is at stake, too. In recent years there has been much debate in China about whether values are universal or culturally specific. Keeping quiet about Mr Liu signals that the West tacitly agrees with Mr Xi—that there are no overarching values and the West thus has no right to comment on China's or how they are applied. This message not only undermines the cause of liberals in China, it also helps Mr Xi cover up a flaw in his argument. China, like Western countries, is a signatory to the UN's Universal Declaration, which says: "All human beings are born free and equal in dignity and rights." If the West is too selfish and cynical to put any store by universal values when they are flouted in China, it risks eroding them across the world and, ultimately, at home too.

The West should speak up for Mr Liu. He represents the best kind of dissent in China. The blueprint for democracy, known as Charter 08, which landed him in prison, was clear in its demands: for an end to one-party rule and for genuine freedoms. Mr Liu's aim was not to trigger upheaval, but to encourage peaceful discussion. He briefly succeeded. Hundreds of people, including prominent intellectuals, had signed the charter by the time Mr Liu was hauled away to his cell. Since then, the Communist Party's censors and goons have stifled debate. The West must stop doing their work for them. ■

Renewable-energy targets

A green red herring

The goal should be to curb global warming, not to achieve 100% renewable energy



NOT that long ago, the world wondered whether clean energy could survive without lavish government support. Now the question is how far it can spread. The number of electric vehicles, which breached 1m in 2015, last year reached 2m;

countries like France and firms like Volvo are looking ahead to the demise of the internal combustion engine. In electricity generation, too, momentum is with the greens. In June the Chinese province of Qinghai ran for seven consecutive days on renewable energy alone; in the first half of this year wind, solar and hydro generated a record 35% of Germany's power.

Greater success is breeding greater ambition. California is proposing to reach 60% renewable energy by 2030; 176 countries have clean-energy goals. Hawaii, America's most oil-dependent state, has pledged to be 100% renewable by the middle of the century. So have 48 poor countries vulnerable to climate change. This week the number of multinationals making a commitment to running their operations on 100% renewable energy rose to 100.

Even if such targets are never met, they galvanise effort. They also provide reassurance about long-term climate policy, despite reversals such as America's withdrawal from the Paris agreement. The resulting economies of scale help bring down the costs of wind and solar projects.

But not every target is helpful. To see why, consider that goal of 100% renewable energy. It makes solving climate change seem deceptively easy. In fact, though wind and solar can generate all a country's electricity on some days, renewables still account for less than 8% of the world's total power output. Moreover, cleaning up electricity is only part of the battle. Even though gas-fired heating and cooking can be at least as big a

source of greenhouse-gas emissions, renewable heating gets minuscule attention. Transport policy is erratic, too. Carmakers may hit their goal of annual sales of 10m electric vehicles in a decade, but battery-powered road haulage, shipping and aviation are dreams. A much-quoted claim that America could rely on wind, solar and hydro alone for its electricity has recently been witheringly criticised by a group of respected academics (see page 54).

Most important, a 100% renewables target confuses means with ends. The priority for the planet is to stop net emissions of greenhouse gases, especially carbon dioxide. Putting too much emphasis on wind, solar and other renewables may block off better carbon-reduction paths. After decades of investment, it is wrong to leave nuclear power off the table. Carbon emissions in Germany actually rose because it chose to phase out nuclear power and so burned more coal. New technologies, such as "direct air capture" systems designed to separate carbon dioxide from the air, may in time prove vital.

Likewise, greater energy efficiency could reduce emissions by even more than deploying renewables would. Indians last year consumed twice as much energy from newly installed air conditioners as they produced from new solar farms. More accurate metering of energy consumption could encourage companies and households to rein in power demand.

Putting the wind up

It would be better, as the Paris agreement urges, for countries to focus on reductions in emissions rather than to set goals for renewable energy. Global emissions have stabilised in the past three years, which is encouraging. But to stand a chance of mitigating global warming, they must start falling sharply and keep doing so for decades. The world will move in that direction with the help of wind and solar. It will not get there without big advances on every other front as well. ■

The Trumps and Russia

He loves it

If the revelations about the president's son do not shock Republicans, perhaps nothing will



THE first rule of modern conspiracies is that you do not talk about them in e-mails. It always seemed unlikely that, if Donald Trump's associates had conspired with the Kremlin, they would have been amateurish enough to leave a paper trail.

At least, it seemed that way until July 11th, when the president's son, Donald junior, released astonishing messages he sent and received in advance of a meeting, in 2016, with a Russian lawyer. In the convoluted saga of the Trumps and the Russians, this may be the most explosive revelation yet.

It is no good arguing, in the younger Mr Trump's defence, that he gave the e-mails up himself: he knew the *New York Times* was about to publish them, because it had asked him for his side of the story. It scarcely helps to note that the lawyer, Natalia Veselnitskaya, says she does not work for the Kremlin. Her use of such a meeting to assail American sanctions, a neuralgic subject for Vladimir Putin, suggests that she was not simply a private citizen. Nor does it help that Donald junior says she did not, in the end, provide the dirt on Hillary Clinton he craved. Whoever she was, whatever the outcome, the intent to collude is plain. That vindicates what has always been the real charge: not that the Russians swayed the election, a claim that is impossible to verify, but that Mr Trump's team overstepped ►►

▶ the bounds of propriety, and maybe the law (see page 31).

In the e-mails Donald junior was promised “very high level and sensitive information” that “is part of Russia and its government’s support for Mr Trump”, then a candidate. “I love it,” the son replied. Ms Veselnitskaya is described as a “Russian government attorney”; the goods are said to come from a Russian prosecutor. Rather than calling the FBI, Donald junior took the meeting—bringing Jared Kushner, his brother-in-law, and Paul Manafort, who later quit as campaign manager amid uproar over his ties to Russian-backed Ukrainian politicians.

Contrary to claims from defenders of Mr Trump, a freelance bid by a junior Democratic operative to get dirt on Mr Manafort from the Ukrainians does not compare to this intrigue. Among other things, Ukraine is not a hostile power. Not only does this reinforce a pattern of fishy meetings involving Russian officials and Mr Trump’s advisers, many of which were mysteriously forgotten when they filled out security forms or testified in Congress; this looks worse, for both the Trumps and America. It is worse than Mr Kushner’s bizarre bid to set up a back-channel to talk to Moscow. It is more nakedly collusive than what has so far emerged about Michael Flynn, forced out as national security adviser for lying about his contacts with Russia’s ambassador. It ought to be damning.

That the reaction to such a bombshell could be in doubt exemplifies the damage being inflicted on America. As the president’s support holds up among ordinary Republicans, most Republican congressmen have dismissed the Russian affair as chatter or partisanship. Maintaining that blithe posture now will imply—or confirm—that they have entirely ditched principle for short-term self-interest. Another big risk is that misleading accounts of Russian meetings, which continue to multiply, may even now give the Kremlin leverage over the White House. The administration was told of that worry over Mr Flynn, but the president fired him only when he had no choice. (Soon, of course, he also fired James Comey, who was overseeing the FBI’s Russia probe, and whose treatment may itself constitute obstruction of justice.) Mr Trump claims not to have known about Ms Veselnitskaya; but then he would.

The gun smokes

The scandal is becoming a clash between the worst aspects of American democracy and the best. The worst is its bilious, myopic hyper-partisanship; the best the unrivalled ability of American institutions, including journalists whom Mr Trump reviles, to hold the powerful to account. Legally and politically, the ending is unclear. Morally, the verdict is already in. ■

Regulating insults and criticism

When words hurt

Defamation laws are a necessary curb on free speech. But they must be narrowly drawn



A GROUP of Burmese migrants working on a farm in Thailand told the authorities that they were being forced to work endless hours and sleep in chicken sheds. Their complaint was dismissed. Now they face defamation charges brought by

their employer. The proper purpose of defamation laws is to deter and punish malicious lies. Courts can order compensation for any material injury. However, in dozens of countries defamation is not just a civil offence, but a crime (see page 46). In such places, criticising a powerful politician or businessman, publicising wrongdoing or merely expressing an opinion can lead to bankruptcy or jail, regardless of whether the criticism actually hurts anyone.

For repressive governments, criminal-defamation laws can provide a more palatable way to silence critics than locking them up. In several countries people not directly involved can bring defamation cases. In Myanmar other members of the political party led by Aung San Suu Kyi, the country’s most powerful politician, have filed suits on her behalf. Such laws can have public backing. The Burmese are much keener on Ms Suu Kyi than on the journalists who set out to scrutinise her as they would any other politician. Similarly, Thais revere their king, and Thailand has long made criticising him a crime. The military junta that is now ruling the country has deployed strict *lèse-majesté* laws against its critics. One particularly effective human-rights lawyer faces decades in prison for the “crime” of sharing a few Facebook posts.

Laws against defamation infringe the right to free speech—a

right this newspaper champions. That right is not absolute. Just as directly inciting violence carries legal consequences, so should spreading harmful lies. However, for the protection defamation laws provide to outweigh the limits they put on speech, they must satisfy four conditions.

The first is that defamation should not be a criminal offence, only a civil one. Hurting someone’s feelings should never lead to jail. Second, damages should be compensatory, not punitive—a means of redress, not a way for powerful people to bankrupt their critics. A plaintiff should thus have to show that a lie caused material damage. Third, the right to bring a defamation case should be limited to the person who claims injury; suits should not be available to anyone who takes vicarious offence. Myanmar’s parliament says it wants to amend the country’s defamation regime to ban third-party suits, but the law is so noxious that it should be revoked outright.

Last and most important, it should be hard for powerful people to bring defamation suits. This weapon should never be available to political parties or state institutions. The standard to demonstrate injury ought to be higher for politicians and public figures than for private citizens.

Statements, sticks and stones

As in much else involving free speech, America gets the balance right. To prevail in a defamation suit in an American court, a public figure must prove not merely that a statement was false but that, beyond doubt, the person uttering it knew it was false. This protects powerful people from deliberate, malicious lies, while leaving space for oversight and criticism in the public interest. They will often find such scrutiny unwelcome. But that is the point. ■

Rwanda

Intimidation nation

Many Africans see Paul Kagame's Rwanda as a model. They are wrong



WHEN Paul Kagame was 28, he helped topple the government of Uganda. At 36 he overthrew the government of Rwanda. At 39 he ousted the government of Congo (which was then called Zaire). It is hard to think of another leader who has won so many wars, against such repulsive enemies, on such a tight budget. Mr Kagame is perhaps the most successful general alive, and this is only part of his claim to renown. The boy whose first memories included watching his village burn, and who went to school in a refugee camp, grew up to stop a genocide. As a rebel, he said he had no political ambitions. He has now ruled Rwanda for 23 years, during which the country has been transformed from a blood-spattered wreck to an orderly society with robust economic growth, falling poverty and declining inequality. Many African leaders see him as a model to emulate. He is not.

Granted, first impressions of President Kagame's Rwanda are often excellent. The streets are clean and safe. The traffic cops are honest. Officials welcome foreign investors and innovators. There is much talk of respect for women's rights. "If oppressed women should wage a war, I would readily smuggle ammunition to them, for it would be a justified war," Mr Kagame once said. Donors swoon when they hear that 56% of Rwandan MPs are female—the highest share in the world.

Yet there is another side to the Rwandan miracle that has so impressed the Davos crowd. Rwanda is a police state (see page 16). The media are stifled. Members of opposition parties are harassed and occasionally murdered. Senior defectors from the regime typically flee abroad, where they are still not safe. A former intelligence chief was strangled in a luxury hotel room in South Africa; a former interior minister was shot dead in Kenya. The parliament that boasts so many women is little more than a rubber-stamp.

On August 4th Rwandans will re-elect Mr Kagame. The outcome is not in doubt. He has always won more than 90% of the vote in the past. His opponents are largely prevented from campaigning. He was barred by the constitution from standing again this year, but a "spontaneous" petition to let him do so attracted only ten "no" votes in a country of 11m. The petition was followed by a referendum in which 98% of voters gave him the go-ahead. He could remain in charge until 2034. That is a terrible idea. Rulers seldom improve in their second decade in power, let alone their third or fourth.

The problem from hell

Any fair assessment of Mr Kagame's record must start by noting that, 23 years ago, he took over a country that looked ungovernable. The population was 85% Hutu at the time of the genocide, and probably most Hutus either took part in or did nothing to prevent the killing of 500,000 mostly Tutsi victims. Mr Kagame, leading an army of Tutsi exiles, fought his way to power with one aim—to prevent a repeat of the genocide. He has pursued it with ruthless singlemindedness. When the

genocidal Hutu militias fled into Congo, he hunted and slaughtered them. When the Congolese government abetted the *génocidaires*, he overthrew it. When the next Congolese government made the same mistake, he tried to overthrow it, too, sparking a many-sided war in Congo that killed millions.

Mr Kagame no longer meddles as much abroad, partly because donors leant on him but mostly because he has wiped out his greatest external threats. At home, however, he maintains a suffocating grip over his people, fretting that if he lets go, they will rise up and wipe out the ruling Tutsi elite. His party, the Rwandan Patriotic Front (RPF), has eyes in every village, and enforces obedience through fear. Peasants face ruinous fines for minor offences, such as looking scruffy or refusing to dig communal ditches. Any criticism of the RPF can be deemed "divisionism", or incitement to genocide. Speech is less free in Rwanda than in any other African country, except Eritrea. "Everything is taboo," says one opposition candidate who has been barred from running for president.

No man is indispensable

There is much that Mr Kagame gets right. If other poor countries wanted to learn from the way he has rolled out basic health insurance or held cabinet ministers accountable for measurable targets, that would be fine, and donors should support such things in Rwanda and elsewhere. But for many poor-country potentates, the appeal of the Rwandan model is precisely the unchecked power that it bestows on the president and his party. Some cite Rwanda, along with China and perhaps Ethiopia, as evidence that authoritarianism is more likely than democracy to bring stability and growth.

This is self-serving and dangerous. All Rwanda's bursts of ethnic slaughter since its independence took place under authoritarian regimes, as did those in next-door Burundi, which has a similar ethnic make-up. Silencing alternative voices does not banish discontent; it bottles it up. Rwanda must allow more space for dissent or risk an explosion in the future.

The things Rwanda's government does well, such as data-driven policymaking, are compatible with more pluralism. And a more open system would be more durable. The current set-up, which concentrates power in the hands of one man and one party, is brittle. Mr Kagame cannot live for ever, and the only robust, independent institution he has built is the RPF itself. He may have kept street-level corruption in check, but cronyism is rampant. The investment arm of the RPF, which has stakes in most of the biggest companies in Rwanda, dominates the economy. Having the ruling party, rather than the state, exert such control is trebly worrying. It is an invitation to rent-seeking. It is a deterrent to private investment at a time when growth is slowing and debts are rising. And it virtually guarantees that no other party can compete with the RPF.

In 1994 Mr Kagame was a necessary (if too brutal) solution to a problem from hell. Now he is the problem. He once said that if he was unable to groom a successor by 2017, "it means that I have not created capacity for a post-me Rwanda. I see this as a personal failure." He was right. After the election, Rwanda's hard man should retire gracefully. ■

Executive Focus

National Payments Corporation of India (NPCI) is the umbrella organization for all retail payment systems in India, aiming to provide inclusive access to e-payment services to all Indian citizens. Founded in 2008, it is a not-for-profit company (section 8 of the Companies Act 2013); conceptualized by the Reserve Bank of India, owned by a consortium of major banks. The organization has recently developed the Unified Payments Interface with the aim to move India to a digital transaction driven cashless society.

The Board of Directors of NPCI desire to recruit a Managing Director & Chief Executive Officer for the organization and invite applications from eligible candidates aspiring for this role.

NPCI is a crucial ingredient in the nation building agenda and is poised to contribute substantively to the economic and social changes taking place in the payments space. Therefore, this role offers a unique opportunity to make a difference.

The position is based in Mumbai, India.

NPCI is looking for a Dynamic & Tech-savvy leader as Managing Director & Chief Executive Officer

About the Candidate

- A proven leader with 20 years of experience in financial services with an in-depth understanding of the retail payments eco-system.
- Successful track record in working with multiple stakeholders and managing their expectations
- In-depth understanding of the market and regulatory framework coupled with a strong ability to engage with emerging and existing stakeholders in the payments eco-system.
- A tech savvy leader with an innovative bent of mind to drive sustained business results.
- Leadership of results, business and people with a high sense of integrity.
- Demonstrated leadership experience in driving businesses, building teams & organizations.
- Ability to develop, grow and nurture a highly motivated and result oriented team.
- Minimum Qualifications: Graduate from the Institute of repute, Advance qualification from similar institute will be well regarded.
- Indian passport holders with strong experience in international markets and understanding of emerging global payment trends are welcome to apply.

Interested candidates may please send their CVs via email to npcimdcceo@kornferry.com OR in hard copy in a closed cover (marked confidential) to: Korn Ferry International, 10th Floor, DLF Plaza Tower, DLF City Phase-1, Gurgaon -122002

The application will be held in strict confidence and should be received latest by 6 pm IST on 31st July 2017. The decision of the Board on the selection will be final



Deputy Executive Director, Management and Governance Assistant Secretary General

The Joint United Nations Programme on HIV/AIDS (UNAIDS) is an innovative partnership that leads and inspires the world to achieve its shared vision of zero new HIV infections, zero discrimination and zero AIDS-related deaths. UNAIDS unites the efforts of 11 UN organizations – UNHCR, UNICEF, WFP, UNDP, UNFPA, UNODC, UN Women, ILO, UNESCO, WHO and the World Bank and a Secretariat – and works closely with global, regional and national partners towards ending the AIDS epidemic by 2030 as part of the Sustainable Development Goals.

The UNAIDS Secretariat seeks to recruit for the position of Deputy Executive Director, Management and Governance Assistant Secretary General

The Deputy Executive Director supports the Executive Director of UNAIDS in the overall management of the Joint Programme and is a member of the executive and senior management bodies of the UNAIDS Secretariat. The Deputy Executive Director leads UNAIDS efforts in promoting effective governance of the Joint Programme and in the overarching management functions of the UNAIDS Secretariat, to enhance UNAIDS' capacity and efficiency to implement its mandate and vision.

The ideal candidate has a minimum of eighteen years' experience in increasingly challenging leadership functions at the senior management level at national and international levels, with demonstrated achievement in developing countries; experience with and knowledge of the United Nations system, complemented by demonstrated experience in relevant areas; demonstrated ability to foster strategic partnerships and innovation; successful experience with leading multisectoral programmes and multicultural teams.

An advanced university degree and fluency in English are required, with knowledge of French and/or another UN official language an asset.

Applications should be submitted through the UNAIDS website www.unaids.org no later than 21 August 2017.



PRESIDENT OF THE EUROPEAN PATENT OFFICE

The post of President of the European Patent Office falls vacant on 1 July 2018.

The President manages the Office, under powers laid down in the European Patent Convention (Article 10 EPC). The official languages of the European Patent Office are English, French and German.

Candidates must have a diploma of completed studies at university level and proven high-level management experience. Their past career in the private or public sector must give evidence of:

- in-depth understanding of the needs of an international organisation.
- thorough knowledge and proven practical application of modern management methods, including an outstanding ability to establish and foster social dialogue.
- a genuine aptitude for communication, negotiating skills and the ability to make their opinions count.
- an excellent command of at least one of the official languages.

Practical experience in patent matters, in-depth understanding of the patent system and knowledge of the European Patent Organisation would be an advantage.

The complete application files of the candidates must be sent to the Council Secretariat* to arrive by 14 September 2017 (date of receipt by the Secretariat). They must be submitted in one of the Organisation's official languages. They must include a curriculum vitae showing nationality of at least one contracting state, official confirmation of that state's support, and a letter of motivation. The submission of any further items with a view to clarifying and supporting the application is at the candidate's discretion.

The appointment will be made by the Administrative Council, in a decision taken under Article 11(1) EPC (the applicable majority being three-quarters of the votes of the contracting states represented and voting, in accordance with Article 35(2) EPC). External professional advice may be used in the evaluation process.

The term of office is five years, starting on 1 July 2018, and it may be renewed. The conditions of contract are subject to negotiation between the successful candidate and the Chairman of the Administrative Council, within a framework (model contract) set by the Council.

*Address:

Council Secretariat
- Reference P2018 -
Isar building / Room 1041
European Patent Organisation
80298 Munich
Germany

E-mail: council@epo.org



DIRECTOR-GENERAL (Grade AD15)

European Anti-Fraud Office (OLAF), Brussels COM/2017/10373

The European Commission is looking to recruit the new Director-General of the European Anti-Fraud Office (OLAF), who has a non-renewable mandate of seven years.

OLAF investigates allegations of fraud and other illegal activities with financial consequences for the EU Budget. As a Directorate-General of the European Commission, OLAF protects the EU's financial interests, assists the Member States in the fight against fraud and prepares the Commission's legislative and regulatory initiatives in this domain. The Director-General is responsible, in full independence, for the investigative activity of OLAF.

The European Commission applies an active equal opportunities policy aimed at further increasing the share of women in management functions and it particularly encourages applications from women.

Please consult the Official Journal C 204 A of 28/06/2017 for the detailed vacancy notice as well as the eligibility and selection criteria.

Registration for applicants: <https://ec.europa.eu/dgs/human-resources/seniormanagementvacancies/>

The closing date for registration is 27 July 2017, 12 noon Brussels time.

The Economist Group

Deputy Director – World Ocean Initiative

The Economist Group is the leading source of analysis on international business and world affairs. We deliver our information through a range of formats, from newspapers and magazines to conferences and electronic services. What ties us together is the objectivity of our opinion, the originality of our insight and our advocacy of economic and political freedom around the world.

We are looking for a Deputy Director for our World Ocean Initiative. This is an opportunity to shape and guide one of the world's most exciting and innovative ocean programmes, as The Economist Events' World Ocean Summit evolves into an ambitious World Ocean Initiative. This new role is being created to help realise our goal of driving progress in the sustainable use of the ocean, and improving ocean health. It will bring editorial vision and powerful content to the heart of the Initiative, and be responsible for translating this into outcomes-driven programmes that resonate with a wide cross-section of those involved in the ocean, and which have an impact on change. Essential will be a robust grasp of ocean issues, and keen understanding of—and critical eye to—the 'blue economy'. Knowledge of the ocean landscape, of its complex national and international makeup, of the growing universe of partnerships, of public and private sectors, and therefore of the strategic positioning and possibilities for the Initiative, is a key consideration.

Please note that although London or Hong Kong are the preferred locations for this role, we are flexible for the perfect candidate.

In this role you would be expected to:

- Help shape the future of an ambitious new World Ocean Initiative as it emerges from the foundations of the World Ocean Summit
- Develop and implement a new strategic framework and goals aligned with the vision and aims of the Initiative, consulting with stakeholders externally and internally
- Develop in detail the specific areas of focus for the Initiative (ocean finance, fisheries), and the research, programmes, workstreams and partnerships to deliver them
- Oversee, and provide direction and support to, the development of the World Ocean Summit programme, ensuring the Summit reflects the Initiative's wider vision and aims
- Co-ordinate and support a senior team across Economist Group businesses to build the Initiative in an integrated and coherent manner
- Co-ordinate and support a global advisory group of ocean leaders for the Initiative
- Further develop and engage the World Ocean Summit community around the Initiative, with a special focus on the private sector, particularly the financial-services sector
- Maintain and develop key partnerships and relationships with the ocean community necessary to build the new Initiative
- Support, and where appropriate lead, the Initiative at the Summit, in meetings, webinars, on film and in the media
- Support the Initiative's business-development team to ensure we identify, develop and engage key strategic partners in a coherent way

To succeed in this role you must have:

- Extensive experience in innovative ocean research and/or programmes
- Strong intellectual and editorial capabilities, and particularly robust judgment on issues related to the ocean and sustainability
- The ability to represent credibly The Economist Group and the World Ocean Initiative, both to our stakeholders and in public
- The ability to work in a matrixed system, and to convene teams of people from disparate parts of the business to collaborate
- The ability to be a self-starter and work independently

To apply for this role, please visit our careers website
<http://economistgroupcareers.com/>

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The Indian School of Business (ISB), is a not for profit, independent, research-driven, global business school with two campuses located in Hyderabad and Mohali, India. ISB is one of the youngest schools to have consistently been ranked among the top business schools globally by the Financial Times Global MBA rankings since 2008.

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The Centre aims at providing thought leadership and developing best practices in family businesses in India and other parts of Asia. The Centre is generously funded by Dr Thomas Schmidheiny, Founder of Spectrum Value Management, Zurich and former Chairman of Holcim Group. The Centre contributes to the body of knowledge in the growing field of family business through individual research and academic collaborations in the major themes of Governance, Professionalization and Strategy.

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ISB invites applications for full time practice and tenure-track faculty positions at all levels with major interest in family business, but with strong background in any functional area.
For more information, visit:
<http://www.isb.edu/faculty-research/faculty/faculty-recruitment>

ISB has a tenure system similar to the top schools in the United States and is an equal opportunity employer.

Interested candidates are requested to send their CV, sample publications and working papers as well as arrange for three reference letters to:
Familybusiness_recruiting@isb.edu with a copy to
k_ramachandran@isb.edu

Italy's banking bail-outs

You are correct to point out that under the framework for resolving Europe's failing banks there is an unwillingness to impose losses on senior bondholders, who rank above the holders of junior bonds and shareholders ("Senior moment", July 1st). Unfortunately, this is mostly because of the regrettable timing in implementing the bank recovery and resolution directive (BRRD). Following the principle that no taxpayers' money should be used to save failed banks, the BRRD introduced a completely new system and a new procedure to deal with bank crises.

To avoid a disorderly unwinding of a bank, the BRRD compels banks to comply with a new requirement, the "minimum requirements for eligible liabilities", under which they must hold sufficient liabilities eligible for a "bail-in" (when investors, not taxpayers, take the hit). However, the BRRD implemented the resolution mechanism, and only then asked banks to adjust the liabilities in their balance-sheet to take account of the new bail-in procedure.

This implementation sequence was completely wrong, implying, among other things, that liabilities issued well before the drafting of the BRRD were vulnerable to being bailed in. If the reverse had happened, giving time for banks to issue sufficient "bail-in" liabilities and then replace those issued before the BRRD was enacted, the problems with the new mechanism would have been minimised.

GIOVANNI SABATINI
General manager
Italian Banking Association
Rome

The dispute with Qatar

I regret the misleading use of the term "blockade" in your reporting on the dispute between Qatar and its Gulf neighbours ("Hands off Al Jazeera", July 1st). A blockade is a military measure which has a specific meaning under international humanitarian

law. There is no military aspect to the diplomatic measures that have been taken, and they are not a blockade as they do not prevent entry to, or departure from, Qatar's ports.

The actions taken are permitted under international law and are a justified and proportionate response to the grave violations committed by Qatar, including its ongoing financing of terrorist organisations and its incitement of extremism through state-owned media. This has had devastating effects. The family of one of the men who attacked London Bridge, Youssef Zaghba, has said he was radicalised by watching Al Jazeera. The United Arab Emirates continues to uphold international law while confronting such incitement.

AMBASSADOR LANA NUSSEIBEH
Permanent Representative of the United Arab Emirates to the UN
New York

India is shining again

Some of the arguments presented in your briefing on India's economy did not consider constitutional limitations that constrain the federal government ("The constant tinkerer", June 24th). The Goods and Services Tax is a case in point. Although far from perfect, it needed the consensus of 28 states and seven union territories, each with their own agendas and insecurities. Getting everyone to agree on a common denominator was a painfully demanding task and necessitated compromises. Re-negotiating its structure, even if it were possible, would have undone years of progress.

And it is true that the banking system is in trouble, but the government has enacted a bankruptcy law and empowered the central bank to take corrective steps. This is perhaps the first time that banks have acknowledged the extent of their problems. India's economic growth has rebounded from a wobbly 5.5% in 2012-13 to 7.1%. This is a decent performance.

ADIT JAIN
Delhi

Prying eyes

I read the Technology Quarterly on civilian drones (June 10th) but found no mention of privacy. There have already been incidents of drones being used for snooping and voyeurism. An increase in their number with real-time cameras will surely make privacy matters far worse. We are accustomed to protecting privacy with fences and hedges. No such solution is available against airborne observation.

DICK DUNN
Hygiene, Colorado

Insect society

Your claim that no species other than humans has a more complex society than elephants is absurd ("In praise of pachyderms", June 17th). Take leafcutter ants. They have four distinct castes, each with their own life tasks. They practise agriculture with a species of fungus that they have domesticated to the point that it can no longer survive without the ants' care. Their agricultural ways resemble an assembly line, with different ants doing different jobs. The ants have huge colonies with millions of citizens all co-operating. One found in Brazil covered 500 square feet and extended 26 feet below the surface.

They change jobs as they age, have complex waste-management systems and construct highways to ease their leaf gathering. They learn to avoid the leaves of plants that are unsuitable for their symbiotic fungus and remember to avoid those plants for up to 16 weeks. All of which makes their society far more complex than your elephants, with their feats of memory and emotional snivelling.

STEPHEN BAINBRIDGE
Professor of law
University of California, Los Angeles School of Law

If at first you don't secede

I fail to see why reversing Brexit is out of the question ("Storm clouds and silver linings", June 17th). Whatever deal is reached, it will most

certainly be inferior to continued membership of the European Union. Also, the 51.9% who voted Leave did not do so for a single reason. Some did as a matter of principle, others to register disapproval of government austerity policies, and so on and so forth.

The EU would most certainly re-offer the deal that was extended to David Cameron, including limiting free movement of people to only those seeking work. Given these and other factors, Parliament would insist on the deal being presented to the electorate in either a second referendum or general election. Now that all the claims regarding how much Britain pays to the EU have been thoroughly discredited, the Conservatives have lost their majority, and some government ministers have expressed their antagonism to a hard Brexit, the outcome might very well be to remain.

ALI EL-AGRAA
London



The present mess reminds me of the last episode of "Yes, Minister". Sir Humphrey Appleby, as incoming cabinet secretary, is discussing who the next prime minister might be with Sir Arnold Robinson, the incumbent, over lunch. Sir Arnold, with world-weary cynicism, dismisses the importance of who it might be, saying that it is more or less the same as choosing which lunatic should run the asylum.

JOHAN ENEGREN
Stockholm ■

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The hard man of the hills

KIGALI

Foreigners love President Paul Kagame. Why are his people so frightened of him?

“IF YOU have plastic bags, please leave them on the plane,” the cabin crew warn. Welcome to Kigali, Rwanda’s spotless capital. Plastic bags are banned. Traffic is orderly. Crime is rare. Hawkers, beggars and street prostitutes are nowhere to be seen. Motorcyclists even wear helmets.

Organisations that dish out development aid love Rwanda. So do foreign businessfolk. “It’s the best-run country in Africa,” says one. “It’s a shining star,” says another. “The professionalism; the way the government deals with us...everywhere else in Africa you feel [corruption] from the traffic cop to the top. Here, no one has asked me for a bribe.”

Under President Paul Kagame, who has been in charge since 1994, Rwanda has been transformed. After the genocide, the country was in ruins. Independent estimates suggest that at least 500,000 people had been hacked or clubbed to death; the government says it was twice as many. Most of the middle class had fled or been killed. Nothing worked. Hardly anyone had enough to eat.

Mr Kagame, whose seizing of power ended the genocide, reimposed order. He executed some of ringleaders and put ordinary killers through informal village courts that encouraged confession and contrition. Some 2m of the 6m Rwandans

still alive in 1994 were eventually put on trial—that is, most of the adult population.

In the two decades of Mr Kagame’s rule, Rwanda has become a much more peaceful place. It has also, in a modest way, started to become a prosperous one, with strong and consistent growth. Rwanda’s income per person halved to \$150 during the civil war of 1990-94. Today it is \$700. This revival involved a great deal of foreign aid. In 2006 aid was a quarter of GDP and half the government’s budget; those figures are now 5% and 17%, respectively. For the most part, this cash was neither squandered nor stolen. Buoyed by better farm incomes, since 2000 Rwanda has notched up growth rates of 8% a year, making it one of the fastest-growing economies in the world (though still one of the poorest). Many talk of a “Rwandan miracle”, and look to it for lessons in development.

Born in blood

Yet consider those clean streets in Kigali. Why, if Rwanda is so harmonious, are there soldiers everywhere? And what happened to all the hawkers, beggars and prostitutes? Human Rights Watch, an American NGO that cannot operate openly in Rwanda, says they are rounded up and put in “transit camps”, where they are held without charge and flogged. “They correct

us by beating us with sticks,” one detainee told the group.

Johnston Busingye, the justice minister, says the camps are to reform drug takers and other petty criminals. “You don’t have the right to be delinquent,” he told *The Economist* in May. Wrongdoers are taught new skills, he says, and street vendors urged to form co-operatives. As for beatings, he says: “I will investigate that.”

On August 4th Rwandans will vote to give Mr Kagame another seven-year term. He will undoubtedly win. He captured 95% of the vote in 2003 and 93% in 2010. At that point he was constitutionally barred from standing again. But in 2015 the ruling party, the Rwandan Patriotic Front (RPF), organised a “spontaneous” petition to let him stay on. Some 4m signed it; only ten people openly opposed it. A constitutional amendment then passed with 98% of the vote. Mr Kagame can in theory remain president until 2034, when he will be 77.

Mr Kagame’s supporters and admirers take the view that a strongman with a long-term plan can be better for development than lots of squabbling factions. Too often in Africa, multiparty politics has degenerated into tribal feuding. Rwanda, of all places, cannot take that risk.

His detractors note that, however keen you are on strong and stable government, 40 years in power is too much. They argue that the Rwandan growth “miracle” is less impressive than it seems. And they say Rwanda is calm and orderly because Rwandans are terrified of Mr Kagame—a recipe neither for happiness nor for durable peace. Where the likes of Tony Blair see “a visionary leader”, people like David Himbara, a former aide now in exile, see ▶▶

▶ the creator of “a repressive totalitarian apparatus that controls almost all aspects of national life”.

The run-up to the election illustrates how narrow is the space for dissent. No independent media are tolerated (though foreign journalists can visit easily enough). Opposition candidates are allowed, but barely permitted to campaign. One of Mr Kagame’s opponents is Diane Rwigara, whose father, a businessman, died in a car crash in 2015. The family believes he was murdered, perhaps because he did not let ruling-party bigwigs muscle in on his business. Two days after Ms Rwigara announced she was running, naked photographs of her appeared on the internet. She sees this as an attempt to intimidate her. “To resolve issues in our country, first we need to be able to talk about them,” she says. Few Rwandans have heard her message. The election commission has refused to let her register her candidacy.

Frank Habineza, the head of the Green Party, did manage to get on the ballot. But he complains of constant harassment and intimidation. His deputy was beheaded in 2010 by unknown killers. Party members are denounced as “enemies of the people” at village meetings, and risk losing their jobs and welfare benefits. “Local authorities say: ‘We’ll take away your cows,’” says Mr Habineza. (The government has a much-praised programme to provide a cow to poor rural families.) “They say: ‘Get cows from the Green Party.’”

Rwandans hesitate to complain, even in private. In the countryside RPF representatives watch over each unit of ten households. In Mbyo, a village south of Kigali, Jeanette Mukabyagaju, a leader of a farming co-operative, says that everyone will vote for Mr Kagame. “It’s a shame the election is so far away,” she says. “We want to vote for him now.”

The man she says everyone will vote for is an enigma. He presents himself as a soft-spoken, austere technocrat. He talks of running Rwanda like a business, always

open to innovation. He often cites a programme to deliver blood to clinics via flying drone. He is “very good at telling you what you want to hear”, says a long-time observer.

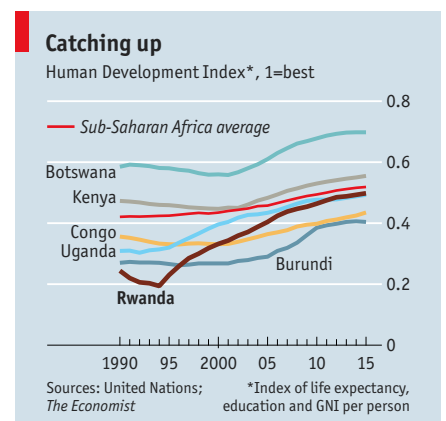
When Mr Kagame was born, in 1957, Belgium still ruled Rwanda. His family were of the Tutsi minority. The official dogma in Rwanda today is that there are no Hutus or Tutsis, only Rwandans, but that is not necessarily how people think. A stereotypical Tutsi is tall and thin (like Mr Kagame), and owns cows. A stereotypical Hutu is shorter, has broader features and grows crops. As independence drew near, anti-Tutsi pogroms broke out. Mr Kagame’s family was one of thousands that fled, settling in Uganda when he was five.

In 1981 Mr Kagame joined a tiny group of rebels led by Yoweri Museveni. In 1986 they ousted Uganda’s vile military regime and seized power. Mr Museveni became president, which he still is; Mr Kagame became his head of military intelligence.

Arms and the man

Four years later, to Mr Museveni’s surprise, a big chunk of his army defected overnight, taking their weapons with them. The Tutsi exiles who had helped him to power, enraged by discrimination against their kin in Rwanda, had set out to bring the Hutu dictatorship down. After their original leader was killed, Mr Kagame flew back from America, where he was attending a course for staff officers, to take charge. His forces were outnumbered and outgunned, but motivated, meritocratic and well led. Colonel Richard Orth, an American who observed the subsequent civil war, came to rate Mr Kagame as “among the top” military leaders in the world.

After the two sides reached a ceasefire in 1993, Hutu officers who did not want to share power decided to kill every Tutsi in Rwanda. The spark came in April 1994, when a plane carrying the Hutu president, Juvénal Habyarimana, was shot down by unknown assassins. Soldiers and militia



men immediately started murdering Tutsis and unco-operative Hutus. Hate radio howled for blood, warning that the Tutsi rebels were devils with bulbous eyes and tails. Bureaucrats organised villagers into death squads.

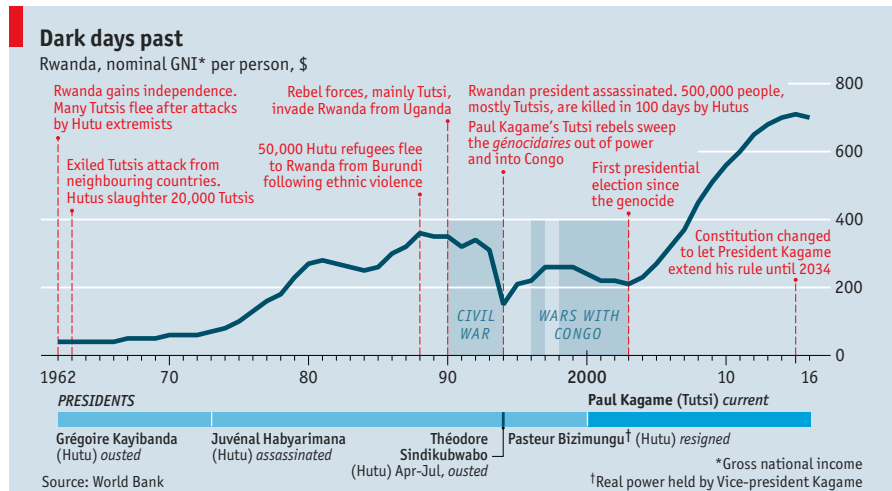
Thacién Nkundiye, a poor Hutu farmer, remembers it well. “There were village meetings in the morning, and [a local official] told us where to go,” he says. “They said anyone who doesn’t kill isn’t really a Hutu, and we’ll kill him.” Some peasants were supplied with machetes; others brought their own weapons. “I had a club with nails in it. I made it myself.”

Mr Nkundiye killed two Tutsis, both of them neighbours he found cowering in the bushes. “I hit them with the club. It was not difficult. We didn’t think it was a sin.” Afterwards, “we took their cows, their land and the contents of their houses. We killed the cows and had a party, to celebrate our achievement. We bought banana beer with the money we found on the dead.”

The genocide stopped only when Mr Kagame swept the *génocidaires* out of power and into eastern Congo (or Zaire, as it was then called). From the rainforest, the *génocidaires* regrouped and led raids into Rwanda. Mr Kagame responded by invading Congo, a state 27 times larger and ten times more populous than Rwanda.

His initial aim was to crush the *génocidaires*. To that end his men killed an estimated 200,000, including many civilians, in Congo in 1996 and 1997. In the process they discovered that Congo, which is rich in mineral deposits, would be surprisingly easy to conquer. Its ailing kleptocrat, Mobutu Sese Seko, who had given the *génocidaires* haven, was not popular. When confronted by a disciplined enemy, his unpaid soldiers ran away.

The Rwandans found a local front man, Laurent Kabila, and put him at the head of what was billed as a Congolese rebellion. In fact, Rwanda provided most of the organisation and much of the muscle. Mr Kagame’s men marched 1,600 kilometres through the rainforest in Wellington boots, toppled Mobutu and installed Kabila as president. Hardly any outsiders realised ▶▶



▶ what had happened. The headlines said that Mobutu had been ousted by a home-grown revolution.

However, Kabila refused to be a puppet. He double-crossed Mr Kagame and started helping the *génocidaires*, so the Rwandans invaded again in 1998. This time, instead of marching all the way across the country, they carried out a lightning airborne strike, seized the dam that powered Kinshasa, the capital, and turned off the lights.

The raid was bold and brilliant. The pilot of the first plane, a commandeered Boeing 707, was terrified that he would die trying to land at a fortified Congolese air base. A Rwandan officer assured him that the garrison commander had defected and radioed him to prove it. A voice said the plane was all clear to land. In fact, the voice belonged to another Rwandan officer at the back of the plane.

Mr Kagame would probably have overthrown Kabila, had Angola and Zimbabwe not intervened to save him. As it was, Rwanda's second invasion of Congo helped spark a continent-wide war of great brutality. Estimates of the country's population before and after suggest that between 800,000 and 5m perished. Kabila himself was murdered by a bodyguard three years in. No one knows who ordered the hit.

Mr Kagame's claim to be acting out of self-defence looked increasingly hollow as Rwandans systematically looted Congolese minerals. Rwanda officially pulled out of Congo in 2009, but maintains a network of spies and allies in the eastern part of the country. The *génocidaires* in Congo are no longer a security threat, though they remain an ideological one, says Louise Mushikiwabo, Rwanda's foreign minister.

These days Mr Kagame wants Rwanda



The road from certain suffering...

to be the "Singapore of Africa", where multinationals set up regional headquarters and hold conferences—and where visitors pay big bucks to watch gorillas. As the sun sets over Kigali, the dome of a new convention centre lights up. It cost \$300m.

His government has pursued some useful reforms. To help electrify the country, it has encouraged foreign investors to build solar farms, a peat-power plant and floating rigs that extract methane from the depths of Lake Kivu. With help from the World Bank, it has tried to raise output on the small farms that support three-quarters of Rwandans. It has terraced hills to create more cropland, built dams and dug irrigation canals. In the decade to 2011, says the government, farmers' earnings rose by a third. Between 2011 and 2014, it says, poverty fell by six percentage points, to 39%, and the Gini coefficient, which measures inequality, improved from 0.49 to 0.45. "Growth strong, poverty rapidly down, inequality falling: that's a rare hat-trick," says Paul Collier of Oxford University.

Some, however, doubt the government's statistics. Among them is Mr Himbara. In "Kagame's Economic Mirage", a book, he claims that the country routinely fiddles its numbers. Filip Reyntjens of the University of Antwerp argues that, by changing its definition of poverty, the government has masked a hefty increase in the share of Rwandans who are poor.

It is hard to assess such claims. As elsewhere in Africa, much of Rwanda's economy is rural and informal, so that any estimate of GDP includes heroic guesses about how much maize small farmers have grown and sold to their neighbours. Household surveys may be unreliable in a country where people are scared to upset local officials. However numbers that are hard to fake, such as tax receipts, have risen steadily, suggesting that much of the growth is real.

Is it sustainable? Rural productivity growth is slowing as farmers approach the limits of what can be done on their small plots. The government has borrowed heavily to build hotels, the conference centre and an \$800m airport. Rwandair, the loss-making national airline, is sucking in subsidies as it opens new routes. Net external debt has jumped to nearly 18% of GDP from less than 4% five years ago.

Some see this as a necessary gamble. Others fret that Rwanda has hocked itself to fund projects that may be marred by cronyism. Crystal Ventures, the investment arm of the ruling party, owns stakes in most big concerns in Rwanda, including the convention centre. Along with the Horizon Group, which reports to the Ministry of Defence, it dominates the economy.

Some economists argue that a small landlocked country in a rough region cannot easily attract private investment, so it makes sense for the state to step in and

kick-start things. But it is hard to see why the ruling party, rather than the government, should control such a big chunk of the economy. Local businessmen whisper that the RPF muscles in on their operations, demanding a stake and slowly squeezing them out. Several have had their assets seized; some have met fatal accidents.

Foreign investors who bring valuable technology are generally treated well. But many see clues that Rwanda is not a normal country. One describes being told that all his workers had decided to donate a large slice of their wages that month to the ruling party. The workers all agreed that this was entirely voluntary.

Not yet Singapore

Rwanda is tranquil, but it is an eerie tranquillity. The country is run by Mr Kagame and people like him—Tutsis who returned from exile. It is risky for a member of the Hutu majority to point this out, however, or to criticise the president in any way. Human-rights groups fear that the tensions within Rwanda could one day explode.

Nonsense, says Ms Mukabyagaju, who lost her mother and father during the genocide, and hid in the bush for weeks. Now she lives next to Mr Nkundiye, the peasant who killed his previous neighbours with a club. Yet she says she feels safe. Mr Nkundiye spent eight years in prison but was then released, having confessed and begged forgiveness. "There was anger before. Now we are friendly," he says. The two live in a government-sponsored "reconciliation village", where perpetrators and survivors live side-by-side in neat, subsidised homes. Ms Mukabyagaju says everyone in the village is happy, and everyone has made up. Then she sells baskets she has woven to visiting journalists. ■



...to seeming prosperity



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Politics in Pakistan

Pandora's boxes

ISLAMABAD

A corruption probe threatens the prime minister

THE big cardboard boxes that a team of investigators delivered to Pakistan's Supreme Court on the morning of July 10th were not much to look at. They were held together with two different kinds of duct tape, and bore several labels reading "EVIDENCE" in bright red letters. But their contents—a 275-page report summarising the findings of a two-month corruption probe into the prime minister, Nawaz Sharif, and his family, which the court released that evening—have turned Pakistan's politics upside-down. The report said that Mr Sharif and his children could not adequately explain their wealth. The opposition promptly called for Mr Sharif and his entire cabinet to resign. Although he did not oblige, and denies any wrongdoing, the scandal may yet bring him down. Even if he survives, his grip on power, along with Pakistan's recent and hard-won political stability, looks badly shaken.

For 20 years Mr Sharif has denied claims that he used ill-gotten gains from his first term in power, between 1990 and 1993, to purchase four flats on Park Lane, an expensive street in London. His government quashed one investigation into the subject in 1997, claiming it was politically motivated. A second collapsed in 2014, for lack of witnesses to substantiate the allegations. But the leak of a trove of documents from a Panamanian law firm last year suggested that the flats may have been owned by his children, via various offshore companies.

The leak prompted Imran Khan, the leader of the Pakistan Tehreek-e-Insaf (PTI), an opposition party, to petition the Supreme Court to dismiss Mr Sharif as unfit for office. It failed to reach a conclusive verdict on those charges, but instead appointed a "Joint Investigation Team" (JIT), composed of civilian and military officials, to look into the claims.

Back in the dock

The Supreme Court is due to decide what to do with the report on July 17th. It is likely to give Mr Sharif a few days to respond to the findings. It could then remove him from office, on the grounds that he does not meet the constitution's requirement that elected officials be "honest and upright". Or it could endorse the JIT's recommendation that the National Accountability Bureau, a normally timid watchdog, bring charges against Mr Sharif and his children.

Whichever course the court takes, the JIT's final report is "much worse" than Mr Sharif would have expected, says Fasi Zaka, a local pundit. Crucially, it finds that strict accountability laws adopted in 1999 shift the burden of proof onto Mr Sharif. He must show that all his assets were fairly acquired, or be presumed guilty—an arrangement that obviously boosts the chance of a conviction. During the original trial one Supreme Court judge likened the hunt for certifiable proof of money-laundering to "a blind man...trying to find a

black cat in a dark room".

The JIT's report finds a "significant gap" between Mr Sharif's known sources of income and his assets. It describes a bewildering web of companies around which the Sharif family's funds are continually shifted. It notes that between 2009 and 2017 his son, Hussain Nawaz, gave him 1.1bn rupees (\$10.3m), partly from the profits of one of these entities, which it labels a "likely attempt of money-laundering". The JIT also rejects Mr Sharif's explanation of the source of the money used to buy the flats on Park Lane. It calls the family's claim that a prince from Qatar, Sheikh Jassim bin Jaber al-Thani, provided the money for the flats a "myth". It finds not a "single document" to prove that the Sharifs invested 12m dirhams (\$3.25m) with the prince's family in the 1980s, nor any to show that the prince's family bought the flats in London for them as repayment. (Mr Sharif's family has produced several letters from Sheikh Jassim's son, Hamad, a former prime minister of Qatar, corroborating their account.)

The JIT also accuses Mr Sharif of failing to declare that he received a salary from an offshore company, Capital FZE, on an election form in 2013. And it contends that Maryam Sharif, his daughter and presumed political heir, forged documents submitted to the Supreme Court—a criminal offence which could see her disqualified from holding office. (One of the documents, a deed of trust dated 2006, appears to have been written in Calibri, a font made available only in 2007.)

Few Pakistanis had expected such a rigorous and ferocious report from the JIT. Such investigations are often the prelude to a whitewash. Officials from Mr Sharif's party, the PML-N, handed out sweets when the Supreme Court announced it would set up the JIT and defer its final verdict until ►►

▶ it provided its report. Now, anguished parliamentarians claim the JTR could only have been so categorical because it had been suborned by the army, which has long disliked Mr Sharif because of his willingness to seek better relations with India—an appalling prospect to the top brass.

Two of the JTR's six members are indeed soldiers. Both the breadth of its report and the speed with which it was produced, says Umair Javed, a columnist, "suggests it had support from undisclosed quarters". But equally, adds Mr Javed, that does not make the JTR's report a wordier version of the coup in which the army unseated Mr

Sharif in 1999. After all, the investigation stemmed from an external event—the Panamanian leak. And it was first requested by Mr Khan, the leader of a democratic political party, who has agitated incessantly for a full investigation.

Were Mr Sharif to resign, the PML-N would still have the strength in parliament to name his replacement—perhaps his brother Shabaz, the chief minister of Punjab, Pakistan's most populous state, or Chaudhry Nisar Ali Khan, the interior minister. But Mr Sharif seems determined to tough it out. Should the Supreme Court initiate further protracted legal proceedings,

they would completely overshadow Pakistani politics until the case is resolved. Mr Khan will doubtless initiate a fresh round of disruptive demonstrations demanding the prime minister's resignation. And instability always conjures the fear that the army might launch a coup, as it so often has, in the name of restoring order.

The debacle is particularly unfortunate given the relative stability and prosperity of Mr Sharif's current term in office. Terrorism, although still rife, has subsided dramatically. Economic growth has accelerated slightly, to a respectable 5.2% last year. Mr Sharif remains popular, and his government is widely held to be the least corrupt and most efficient in recent memory. It is beefing up Pakistan's infrastructure, building dozens of roads, improving the railway network and constructing a metro line in Lahore, the capital of Punjab.

Better yet, Mr Sharif's government succeeded another civilian administration—the first such transfer in decades. It also presided over the first routine retirement of an army chief in decades, which many interpreted as a sign of the growing clout of the civilian authorities. Whatever else the current turmoil yields, it will certainly have the opposite effect. ■

Sorcery in Papua New Guinea

When the hurlyburly's done

GOROKA

The gruesome consequences of accusations of witchcraft

IT BEGAN, as it usually does, with an unexpected death: in this case, of Jenny's husband, an esteemed village leader in the province of Eastern Highlands, in Papua New Guinea (PNG). Some local boys accused Jenny of having cast a spell to kill him. She says they began beating her over the head with large branches. Her family supported her accusers. She fled into the surrounding fields, eventually making her way to the provincial capital of Goroka, where she has lived for the past three years. "I can never go back to my village," she says, "and I never want to see my family again."

Jenny was lucky: she escaped. Every year, hundreds of suspected witches and sorcerers are killed in PNG. Accusers often enlist the aid of a "glass man" (or "glass Mary"): a diviner whom they pay to confirm their accusations. Most of the victims are poor, vulnerable women including widows like Jenny. "If you have a lot of strong sons," says Charlotte Kakebeeke of Oxfam, a charity, "you won't be accused."

When the accused try to take shelter with relatives, their families often reject ▶▶

Malaysian politics

No offence too small

The government harasses opponents as an election looms

“UNDEMOCRATIC”, “gerrymandered” and “fix-up” are good words to describe Malaysian politics, dominated since independence by a single party. So it was a bit rich for the prime minister's spokesman to employ them when smearing a big opposition group this month. On July 7th the national registrar confirmed that it had detected irregularities in a leadership ballot which the Democratic Action Party (DAP) conducted almost four years ago, and said it would be asking the party to re-run the poll. The DAP's supporters saw an effort to sow discord among the opposition, ahead of a general election due by next August.

Critics of the United Malays National Organisation, which has led Malaysia's government for six decades, are used to run-ins with the authorities. Prosecutors have twice brought charges of sodomy against Anwar Ibrahim, the leader of the opposition coalition, who began his second jail term in 2015. Lately police have also taken an interest in Lim Guan Eng, the DAP's secretary-general and chief minister of the state of Penang, an opposition stronghold. Mr Lim is awaiting trial on two charges of corruption (prosecutors allege that he used his authority to buy a bungalow for less than it was worth).

Meanwhile in late June the government announced that it was opening a national inquiry into big losses incurred by Malaysia in the early 1990s, when the central bank indulged in risky currency trades. The decision to dredge up this old saga supposedly has nothing to do with the dramatic return to politics of Mahathir Mohamad, who was prime minister at the time. Now 92, Dr Mahathir says he has lost confidence in his old party and joined hands with the opposi-

tion. The speculation is that he will serve as prime minister in the event of their victory (at least for as long as it would take to secure a royal pardon allowing Mr Anwar to take the job instead).

Given the zeal of Malaysia's watchdogs and corruption-busters, it seems odd that they have yet to find anyone responsible for the disappearance of billions of dollars from 1MDB, a state-owned investment firm set up shortly after Najib Razak, the current prime minister, took office. Government investigators in America have applied to seize around \$1.5bn-worth of goodies bought with money they say was siphoned from the firm; a court in Singapore this week sentenced a banker to four-and-a-half years in jail in connection with the scandal. Swiss investigators are also on the case. But Malaysia has convicted only one person: a whistle-blowing MP who leaked documents relating to the affair and who belongs—would you believe it?—to an opposition party.



Another court date for Lim

▶ them: the supposed witches' husbands have paid their families a "bride price" which would have to be returned if the bride left the husband's family. Sometimes accusers come from within the family: Eriko Fufurefa, who runs the KAFE Women's Association, a feminist group in Eastern Highlands, says that the nephew of a local politician blamed his own mother for his uncle's death.

"They chopped her with a machete and beat her with iron bars," says Ms Fufurefa, putting her in hospital for a month. This too has grown more common: Ms Kakebeeke says accused sorcerers used to be dispatched quietly, at night. Now they are subjected to "public torture spectacles—it has become a mass movement".

Belief in sorcery is widespread in PNG. Only in 2013 did the government repeal a

law that criminalised sorcery and allowed accusations of witchcraft as a defence in murder cases. Locals do not believe that sorcerers or witches are inherently malign: many claim—or believe in—magical healing powers, and the ability to bring favourable weather.

Monica Paulus is a human-rights activist whose brother once accused her of using sorcery to kill their father (she thinks he wanted the family house). She tells people they have a right to believe what they want, but "they do not have the right to cause violence or take a life." She also reminds people that, as Christians, they believe that the body dies, but the spirit lives. The spirit, she says with a glint in her eye, "will find another body to live in, and it could be you: if you kill a witch, that means you could become a witch yourself." ■

and shops of Nogoön Nuur, a ger district less than seven kilometres to the north.

Beyond the poor shopping options, places like Nogoön Nuur lack such basic facilities as running water, sewers and power for heating. Residents, including those in the small, simple houses of wood or brick interspersed among the gers, have no choice but to use pit toilets and to burn dirty coal for heating. This is the main cause of the atrocious air pollution that plagues Ulaanbaatar each winter. During the recent presidential election campaign the opposition party's candidate, Khaltmaa Battulga (who won the race on July 7th in a run-off), promised better facilities, more housing and more jobs for the residents of ger districts.

Those promises, however, were aimed less at the putative beneficiaries than at those in the more developed parts of the city, who consider ger districts an eyesore. In a survey conducted in 2011, 68% of households in ger districts declared satisfaction with their dwellings, and 69% said they liked their neighbourhoods. According to Enkhtungalag Chuluunbaatar of the Ger Community Mapping Centre, an NGO in Ulaanbaatar, ger districts do need better services, but they are also "the original form of the city" and an important part of its heritage. It is people living elsewhere, she says, who have an exaggerated view of them as "a problem for the city, and a source of pollution, crime and poverty".

A senior executive at a Mongolian bank thinks many in the city tend to look down on ger districts and unfairly blame the residents for the poor conditions there. "They are rural people who are very good at putting up their yurts in the open steppe," he says, "but very bad at urban planning." That, of course, is the job of the government, and the newly elected President Battulga is not the first politician to promise to do it better. ■

City life in Mongolia

Villas v yurts

ULAANBAATAR

A tale of two neighbourhoods

THE view northward from the centre of Mongolia's capital takes in not only the mountains that rise at the edge of the city, but also sprawling settlements of nomadic herders who have moved to their slopes. Over the years the view has gradually changed. Yurts made of white felt are creeping steadily up the hillsides, like a glacier in reverse.

These neighbourhoods, called ger districts after the Mongolian word for yurt, house 60% of the city's population. They are most dense to the north of Ulaanbaatar, but have taken root elsewhere on its pe-

riphery—everywhere but the south. Instead, the southern edge of the city, and especially an area called Zaisan, is home to the wealthiest of Mongolia's emerging upper class, as well as many expatriates.

Zaisan boasts luxury villas, fancy shopping malls and at least one gated community. It is also close to Mongolia's first proper golf course. The area's biggest and best-stocked supermarket sells imported treats including avocados, mangoes, gluten-free flour and an impressive selection of European cheese. It is a far cry from the meagre and stodgy offerings at the kiosks



A yurtful divide

Banyan | Fantasyland

No one is well-served by sexism in Japan



AT FIRST glance, Sora Tob Sakana is aimed squarely at the pre-teen market. After all, the pop group's four members are 14- to 16-year-old girls who sport ponytails and cutesy frilly dresses and pump out bubblegum tunes accompanied by wobbly dancing. Yet at a festival of similar "idol" bands in Yokohama on July 9th, the fans were mostly single men aged between 20 and 50 who might well describe themselves as *otaku*—nerds. When asked, some men say they do not need to marry; their idols give them the romantic fulfilment they need.

Creepy? It is true, says Rei Kazama, one of the band members, looking slightly uncomfortable, that many of the fans are *ojisan*—middle-aged blokes. She would prefer a younger audience. But, she adds, the *ojisan* are supportive: "It's like they're nurturing us as we grow up." Purity, a band manager says, is a selling-point. The girls are under contract not to have boyfriends—presumably to encourage fans to project their own fantasies onto their favourite band members. (When a member of Japan's biggest-selling idol band, AKB48, recently announced that she was leaving to get married, fans were as outraged as jilted lovers.) Also essential is offering fans the chance to meet band members, including photographs and 20-second handshakes. It is all part of the *setto*, as in a set menu, and can cost ¥4,000 (\$35) a pop. The promoters have found lots of ways to part *otaku* from their money.

This is the more palatable end of Japan's striking knack for transmuting sexual urges into efficient industries. Akihabara, Tokyo's mecca for manga and anime, is also the heart of a fetish for schoolgirls and their uniforms. There, in "JK salons" (*joshi kosei* means high-school girl) a young woman in uniform will tell your fortune. Or, for ¥3,000 for 20 minutes, you can lie next to her. In many places that is all you may do. But sex is on offer if *otaku* know where to look. A new city ordinance barring girls of 17 or younger from working in the JK business may serve only to drive it underground—or onto the internet.

It is, to many, proof of the misogyny of Japanese society: often demeaning and sometimes dangerous to women. Yet some sociologists argue that life in Japan is not much fun for men, either. As evidence, they point to the decline of marriage and romantic relationships. Three-fifths of men between the ages of 25 and 35 remain unmarried. A survey by the research arm of Meiji Yasuda,

an insurer, found that 53% of men in their 20s had never gone out (vaguely defined) with a woman; in contrast, 64% of American men claim to have had sex by the age of 20.

Labour practices forged during a high-growth industrial era do men no favours. Male-dominated workforces are expected to put in long hours, often without overtime pay—and then stay drinking in smoky bars with the boss until the last train home. The assumption is that employees have a spouse who is a full-time housewife back home. But even young employees lucky enough to be on permanent contracts now struggle to raise a family on a single income.

As for the growing "precarariat" of young Japanese men on non-permanent contracts—forget it. Now that women have more, if hardly stellar, work options, they can afford to hold out for a better partner, ie, one earning a good salary. In canvassing opinion among unmarried women seeking a partner, ¥7m a year seems a common floor among the better educated. The price tag on love and marriage, says Kaori Shoji, a social commentator, seems to go up by the year. Who wants to marry a loser?

Japanese marriages are surely the least fulfilling in the rich world. Open affection is in short supply. Once they have children, sociologists say, mothers feel under intense pressure to go into overdrive at mothering. Lunch boxes are scrutinised critically by other mothers; hiring a babysitter or cleaner is frowned upon. In conventional households the husband has few responsibilities—and offers little help in raising the children or doing housework.

But he also accepts a diminished role. His salary goes straight to his wife, who manages the household finances and hands him back a little pocket money. A wife will often discourage her husband from coming home until after she has put the children to bed. Japanese children sometimes sleep with the mother until they are ten or 11. Toko Shirakawa, who sits on a government panel on gender issues, says: "I don't know if a separate bedroom for the husband is the norm, but it's certainly typical." Sexlessness among married couples appears to be increasing.

Mother's boys

For many a young male, a doting mother is his chief experience of women. He may feel it is unlikely to be bettered. When young men are asked why they are not looking for a girlfriend, the word they most often use is *mendokusai*—too much trouble. That covers a multitude of issues. One, says Masahiro Yamada of Chuo University, is the power of the in-group in Japanese society and the fear of gossip, or even bullying, amplified by social media, if you draw attention. A related factor is Japan's striking social segregation by sex. As Ms Shoji points out, it is common in pubs to see a table of young company men complaining about their bosses next to one of young single women moaning about the lack of suitable men. Yet each group keeps to itself, rather than spying a chance to seek new friendships and possible mates. Japan does lust and passion well, but sucks at love, she adds.

Here the market can be of assistance. With self-esteem among young men low, and fear of rejection by women high, you can see the appeal of teen idols. But why stop there? Orient Industry, Japan's oldest maker of love dolls—which now have removable heads and genitalia and remarkably tactile silicone skin, and sell for ¥800,000 or more—wants buyers to think of their purchases as works of art. Cheaper than that come curvaceous pillows (also with add-ons) intended to invite their human users into a fantasy dreamworld. After all, a pillow will never humiliate you. ■



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Liu Xiaobo

As Liu lay dying

BEIJING

Praise and propaganda meet at a Nobel laureate's deathbed

AT BEIJING'S Number One Intermediate People's Court in December 2009, Liu Xiaobo, who was about to be sentenced to 11 years in jail for incitement to subvert state power, said in his closing argument that hatred could "poison the spirit of an entire people". As *The Economist* went to press, the scene at his death bed in a hospital in the north-eastern city of Shenyang exemplified both the poisonous spirit of the government against which Mr Liu had spoken out, and the bravery and restraint that he hoped would transcend his imprisonment and which helped win him the Nobel peace prize in 2010.

In late May Mr Liu, a university lecturer in Beijing who had risen to prominence during the Tiananmen Square protests, was found to have late-stage liver cancer. He was transferred from his prison cell to the First Hospital of China Medical University. His treatment there showed the calculated and petty cruelty that China's government sometimes metes out to peaceful dissenters like Mr Liu.

His wife, Liu Xia, who has been under house arrest during most of his imprisonment, was permitted to see him. But she and other relatives were ordered not to talk about him in public. The authorities posted guards round his bedside and outside his room on the 23rd floor of the hospital.

According to Mr Liu's lawyer, the government refused his client's request for medical treatment in Germany or Ameri-

ca, claiming he was too ill to travel. That assertion was contradicted by two foreign doctors who visited him on July 8th. Video and audio tapes of the medical consultation were promptly leaked—apparently by the security services against the doctors' wishes—and splashed all over China's state-run media. Their aim, apparently, was to show off the quality of care that Mr Liu had been receiving in China—the hospital put out an online bulletin claiming he could not have got better treatment anywhere. The government even referred to Mr Liu as an ordinary criminal. (It has often scoffed at his peace prize—accusing the Nobel committee of awarding it at the West's behest simply in order to retaliate against the Chinese Communist Party for jailing one of its opponents.)

Special treatment, of sorts

Yet at the same time the government has indirectly made clear that Mr Liu is not at all ordinary. The invitation to the American and German doctors showed that. So did the unprecedented flurry of medical bulletins; the hospital put out 13 of them between July 6th and 13th. One on July 11th said that Mr Liu was suffering from multiple organ failure and septic shock. The doctors said they wanted to place a plastic tube down his windpipe but that the family had refused to allow the procedure. By that time, the rest of Mr Liu's life was being measured out in days.

As such gruesome scenes unfolded around his bed, China and the rest of the world began to debate his significance and legacy. The government rejected the idea that any other country should even show an interest. "The matter is China's internal affair," said a foreign-ministry spokesman, huffily. "No country has the right to interfere." European diplomats in Beijing have pressed the government to let Mr Liu go abroad on medical grounds. The Norwegian Nobel committee went further, saying that Mr Liu "should never have been sentenced to jail in the first place". It said the government would bear a "heavy responsibility" if Mr Liu had been denied necessary medical treatment.

Within China Mr Liu's name is still blocked on internet search-engines and social-media sites. If there has been any surge of sympathy for him, it has been suppressed. Most expressions of support from Chinese people have therefore come from abroad, including from Mr Liu's friends such as Cai Chu, who edits a website about democracy in China. Mr Cai tweeted that "we live as a free person or die as a free spirit: that has been Liu's life pursuit." But Ai Weiwei, a dissident artist who spends much of his time in Beijing, took a more downbeat view, calling Mr Liu "a rather moderate advocate of reforms". Some of the dying man's friends and supporters in China tried to organise a petition to have him released and to visit him in hospital. They were turned away. Around 100 plain-clothes policemen have been deployed around the facility to break up attempts to demonstrate or hold vigils.

When he made his statement to the court in 2009 (which was stopped by the judge halfway through) Mr Liu said: "I hope I will be the last victim of China's long record of treating words as crimes." Alas, that seems very unlikely. ■

Prisoners of conscience

Liu's comrades

BEIJING

China is inventing new ways to identify dissidents

TO CHINA'S authorities, Liu Xiaobo is a common criminal who was sentenced in 2009 to 11 years in jail for "inciting subversion of state power". In fact Mr Liu is no more common than he was a criminal. The only previous Nobel peace laureate to face death upon release from prison was Carl von Ossietzky, who was awarded the prize in 1935 while in a Nazi concentration camp. He succumbed to consumption shortly afterwards. China's equivalent of the Gestapo might not appreciate this parallel.

In a narrow sense of the term, however, Mr Liu is tragically all too common. He is the best-known of many hundreds of prisoners of conscience in China—people serving time for their political or religious beliefs. Mr Liu's terrible fate is a reminder of how many share it.

Secrecy, says Nicholas Bequelin of Amnesty International, an NGO, is paramount in China's handling of dissidents: the government often treats details of their arrest and jailing as classified. But the Congressional-Executive Committee on China (CECC), a branch of the American government, has kept track of those prisoners whose names have entered the public domain, usually because their arrest has been announced.

The CECC's database, based on work by Dui Hua, an NGO in San Francisco and the Tibet Information Network in London, had almost 8,500 names in October 2016. Of those, more than 1,400 people were still in prison. That gives a glimpse of the scale of repression. The real numbers are many times larger. In Xinjiang and Tibet, provinces in China's far west, tens of thousands are thought to have been arrested over the past decade. Still, the CECC's database is based on hard information. It suggests that over the past 30 years there have been four successive approaches to putting people away for peaceful dissent (see chart).

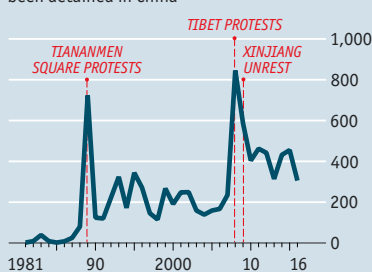
The Tiananmen surge

In the 1980s, before the protests, the CECC's database records few political prisoners, who at that time were usually accused of being "counter-revolutionaries". That may be because many arrests of such people were kept secret. After the Tiananmen Square uprising in 1989, far more cases became known—partly because of the scale of the crackdown, but also because families and friends of victims became more willing to risk publicising cases.

The second approach began around

On the party's conscience

Number of political prisoners believed to have been detained in China



Source: Congressional-Executive Commission on China

1997 when new criminal laws abolished the crime of being a counter-revolutionary and made "incitement to subvert state power" an offence. This was the charge on which Mr Liu was arrested. Subverting state power became the party's legal instrument of choice against dissidents accused of challenging its legitimacy.

During the early to mid-2000s arrests for political or religious crimes were running at around 150 a year. Many of those detained were members of Falun Gong, a spiritual sect viewed by the Communist Party as a threat to the state. Human-rights groups claim that more than 10,000 Falun Gong members were detained between 1999 and 2009, and that as many as one-fifth of them may have died in prison.

The third phase of repression began in the couple of years leading up to the Olympic games in 2008. At that time those who annoyed the party were more likely to be arrested not just for subversion, but also for the vaguer charge of threatening "maintenance of stability". The party also started to use pettier charges, such as disturbing public order, against its critics. This stage coincided, in 2008, with an uprising in Tibet, resulting in almost 900 recorded political arrests that year—as many as in 1989, the year of Tiananmen. The number then fell, and has settled down at around 450 a year for the past six years, about three times the level of the 1990s.

To judge by the overall numbers, there has been little change since Xi Jinping became president in 2012. But in reality he has adopted yet another distinctive approach to repression. As Sophie Richardson of Human Rights Watch, an NGO, points out, he has passed half a dozen new bills that beef up the security services. They include laws

on national security, cyber-security, counter-terrorism and NGOs. The effect has been to widen the number of charges available against the party's critics and to lower the threshold of what is unacceptable (dodgy behaviour includes gathering outside courts during political trials, as one activist, Liu Chunxia, found to her cost in 2014—see picture).

New groups of people have become political prisoners under new charges. In the past two years, so-called "rights lawyers" who have sought to use the courts to defend those harshly treated by officials have been accused of subverting state power. So have NGOs campaigning against corruption or environmental degradation. In the mid-2000s almost all the reasons given for arrests in the CECC's database fell into five categories, such as inciting ethnic tensions or being a member of Falun Gong. In 2016 and 2017, three-quarters of the arrests have been for other, often nebulous reasons, such as endangering national security.

The aim of Mr Xi's repression, argues Amnesty's Mr Bequelin, is no longer just to protect the party from challenge but also to control information. The party faces no direct challenge from political movements or organised ethnic groups. What worries its leaders more is that China's many social problems might one day generate such a challenge. To prevent that happening they are arresting people who spread information about social problems or link up with like-minded groups in the country—even if, as is the case with anti-corruption NGOs, the party professes to share their concerns.

Mr Liu has become a symbol of opposition to arbitrary power among a wide range of groups in China, not just Tiananmen-era dissidents. Perhaps, in Mr Xi's eyes, that is his unforgivable offence. ■



Liu Chunxia experiences a new approach



Politics

A Bolshevik in Beijing

BEIJING

Xi Jinping has chosen an unusual man to lead the capital city

IN CHINESE slang, it used to be said that an official who was rising unusually fast up the bureaucratic ranks was “riding a helicopter”. Nowadays it is more common to say that such a person is enjoying a “rocket-style promotion”. Cai Qi is a striking example of someone whose career has thus defied political convention. He was launched in May to the post of Communist Party chief of Beijing, becoming the capital’s most senior official, and is all but certain to be elevated directly to the ruling Politburo later this year, without first tarrying on the lower rung of the Central Committee. Mr Cai’s ascent is a sign that China’s president, Xi Jinping, is tightening his control over the city. He has turned to an unusual personality to help him.

The politics of the capital are hugely important to the central leadership. Beijing’s party chief is responsible for the city’s security, which the government sees as critical to stability elsewhere (in 1989 the Tiananmen Square pro-democracy protests in Beijing sparked nationwide unrest). Whoever holds the job runs a city that, in the party’s eyes, plays a crucial role in shaping China’s image abroad and projecting the country’s “soft power”. Reducing the city’s notorious smog and traffic jams is therefore regarded by central officials as a task of national importance, not just a local one.

There is no doubt that Mr Cai (pictured), who is 61, is the president’s man. Much of his working life has been spent in Mr Xi’s shadow. He served as a senior official in the coastal provinces of Fujian and Zhejiang when Mr Xi was their party boss. In 2014, two years after Mr Xi took over the

leadership of China, Mr Cai was brought to Beijing to work in the National Security Commission (NSC)—a body newly established, and led, by the president.

It was in October 2016 that Mr Cai’s rocket broke the sound barrier. He moved rapidly through posts in the capital, from acting mayor to mayor to party chief in just eight months. His elevation to the Politburo—expected after a party congress late this year—would be just as remarkable.

Mr Xi doubtless feels far more comfortable with Mr Cai in charge of Beijing. The city’s previous party chief, Guo Jinlong, was a holdover from the days of Mr Xi’s predecessor, Hu Jintao. Replacing allies of Mr Hu, and of Jiang Zemin before him, appears to be one of Mr Xi’s main aims at the upcoming congress. Mr Guo is now 70, which, according to convention, means he will have to retire from the Politburo at the gathering. His replacement by Mr Cai as Beijing’s chief suggests that is the plan.

The capital’s kingdom

Having an ally in place will help Mr Xi to avoid a problem that has sometimes plagued the city (and that he may have encountered in his dealings with Mr Guo): a local government led by someone who is out of step with the central leadership’s thinking. Peng Zhen, the first party chief of Beijing after the Communist takeover in 1949, was a close confidant of Mao Zedong but was purged by him in 1966 for becoming too critical of the chairman’s policies. Chen Xitong, who ruled Beijing in the years spanning the Tiananmen unrest, was purged in 1995—ostensibly for corruption

but more likely for cultivating an independent power-base in the capital.

But the choice of Mr Cai has raised eyebrows. At that level of leadership, officials normally try their hardest to conform. Mr Cai, however, projects a more independent-minded persona. He refrains from dying his hair shoe-polish black (usually *de rigueur* for men of his age and rank). Instead, he sports short, salt-and-pepper hair. And, although a handful of people who have attended meetings with him say he tends to listen far more than he speaks, he was an avid microblogger before joining the NSC.

Some of the views Mr Cai used to share in his Zhejiang days on Tencent Weibo, a Twitter-like platform, lie far outside the cautious limits of party-speak. In 2011 he bemoaned the fact that Chinese censors block access to Facebook (and Twitter, too, he might have added). Less controversially, Mr Cai intervened in 2012 when a small boy was attacked and badly hurt by a dog in Zhejiang. He had learned of the matter during the annual session of China’s parliament—the boy’s family had posted bloody pictures of him. On his microblog, Mr Cai confirmed the family’s charge that the dog belonged to a government department and arranged compensation.

That Mr Cai tweeted at all was unusual enough for a senior official. That he did so engagingly was truly exceptional. With millions of followers on Tencent Weibo, he became one of the country’s biggest social-media celebrities (“a Bolshevik” is how he described himself in the blurb of his account). One of his most talked-about posts was addressed to a woman who complained that her son, a tax official, kept being forced to drink excessively at official banquets. “Tell me which tax department your son belongs to,” Mr Cai responded. “He won’t have to drink any more.”

During his four years of microblogging, Mr Cai averaged more than six posts a day. He compiled them into a book, which he called “A Room Made of Glass”. He said he chose the title because social media promote transparency and public supervision. These are hardly attributes that Mr Xi seems bent on encouraging with his ever-tighter censorship. But his promotion of Mr Cai suggests he is keen on someone who might be able to win the support of Beijing’s residents, who complain endlessly about the city’s faults, from its foul air to the high cost of housing.

Mr Cai is being helped, for now, by Chen Jining, who took over in May as the city’s acting mayor. At 53, Mr Chen (who attended university in Britain) is someone to watch as a possible member of China’s “sixth generation” of leaders who will take ▶▶

Correction: In our story in last week’s issue about relations between China and America (“The end of the beginning”), we stated that America did not have a deputy secretary of state. In fact, John Sullivan was confirmed in the post in May. Sorry.

over when Mr Xi retires. Curbing smog will be one of Mr Chen's priorities, though in his previous role as minister of the environment he made little progress in tackling air pollution. Some analysts believe he will be promoted to deputy prime minister next year.

Mr Cai's age—he is less than three years younger than Mr Xi—means he is unlikely to be groomed as a possible successor to Mr Xi when he retires in 2022 (assuming he follows precedent; there is some doubt that he will). But Mr Cai has a lot of work to do in Beijing. One task will be to implement Mr Xi's plans to improve Beijing's environment by downsizing the city: he wants to build a new one in the neighbouring province of Hebei that will take over some of Beijing's "non-capital" roles, for example as a centre for business and higher education.

Another job will be to move his own office: to ease congestion in the centre of Beijing, the city administration is due to relocate later this year to Tongzhou, a satellite town about 20km to the east. The grumbling of thousands of uprooted officials will add to that of bigwigs miffed by Mr Cai's queue-jumping career. ■

Ethnic minorities

The missing variety

ZHIJIN

The Communist Party has a rigid view of what constitutes an ethnic minority

“FIFTY-SIX stars, 56 flowers, brothers and sisters of the 56 ethnic groups belong to one family,” goes a popular song of the 1990s. Zhang Gang remembers that when he first heard the patriotic ditty he felt baffled. “Am I not part of that family?” Mr Zhang asked himself.

China declares that it has precisely that number of indigenous ethnic groups (by far the biggest of them is the Han, which makes up 92% of the population). But Mr Zhang, a 57-year-old former soldier, regards himself as belonging to none of them, even though his citizenship and ancestry make him indisputably Chinese.

In the living room of his flat in Zhijin county in the southern province of Guizhou (to protect him, this article does not use his real name, nor identify his town), there are signs that Mr Zhang's culture is different from that of Han people living in the area. Against one wall is an altar where he worships a god called Wuxian: a porcelain jar contains offerings of grain and pieces of gold and silver. Veneration of Wuxian distinguishes people who call themselves the Chuanqing (literally “Wear-blacks”, after the colour of their traditional

garb). There are about 700,000 of them, mostly in mountain villages in and around Zhijin. But they officially do not exist as an ethnic minority.

China's approach to ethnicities was inspired by the Soviet Union's. Like the Soviets, Mao wanted to give the impression that his country was a happy family of different peoples. After seizing power in 1949 he promised that minority-dominated areas would be granted “autonomy”. Each group would be represented in the national parliament. But this involved deciding which groups to include. A census conducted in the early 1950s, which allowed respondents to describe their ethnic identity in any way they liked, produced more than 400 categories. As Tom Mullaney of Stanford University argues, the government feared that would make it impossible for the legislature's ethnic mix to reflect that of China: with so many minority delegates, the body would need far more than its planned 1,200 seats.

So researchers were dispatched to look more closely. The Chuanqing, they concluded, did not count: they were deemed to be a Han clan that had migrated to Guizhou centuries ago. By applying exacting standards for ethnic status, officials came up with a new number: 38. By 1979 this had increased to 56. Since then, no further groups have been recognised, and the government has made it clear that none will be. The party's relentless propaganda about ethnic harmony has so effectively drilled the number 56 into people's minds that few stop to wonder how it was arrived at and whether everyone feels included.

Some, like the Chuanqing, do not. Among them are the Kaifeng Jews, numbering a few hundred people in the central province of Henan, who believe they are descendants of Jews who settled in China hundreds of years ago. Bizarrely, many such people are categorised as belonging to the Hui, China's third-largest ethnic

group, whose members are mostly Muslim. Another unapproved minority is the Mosuo, a matriarchal group of around 40,000 people. Most of them live in Yunnan province, which borders on Guizhou. Its members are designated as Naxi, a culturally distinct ethnicity.

In the early 1980s a group of ethnic-Chuanqing officials conducted research into their group's characteristics and submitted it to the government, hoping for recognition. Their efforts were ignored. But leaders in Guizhou worried that the Chuanqing might take to the streets to press their demands. To appease them, the provincial government made some concessions: it decided to let them use the name of their group on their government-issued ID cards, which among other things specify the holder's ethnicity. It also granted the Chuanqing preferential treatment in admission to universities, as other minorities are given. Unlike other minorities, however, they were usually allowed to enjoy this benefit only in Guizhou.

A flower yet to bloom

In recent years, however, officials in Guizhou have become more wary of attempts to affirm Chuanqing identity. They have pushed members of the group to change their ethnic designation to one of the permitted 56. But in Zhijin county, where one-quarter of the population are Chuanqing, a government survey found that only about half were willing to do so.

In Zhijin, very few people speak the Chuanqing dialect any more. Traditional houses, built using wattle and daub, are rare (even rarer are ceremonial outfits, like the one pictured). But a retired Chuanqing official says he still hopes his people will be accepted as the 57th ethnicity. Even if they are not, in his mind they are still a distinct community. “Ethnic groups are formed naturally,” he says. “They do not need to be recognised by any regime.” ■



No mistaking his identity



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The Gaza Strip

Hamastan at ten

GAZA CITY

Conditions in the blockaded enclave are deteriorating

THE smell hits you from a mile away. On the southern edge of Gaza City the crystalline blue Mediterranean is being transmuted into a vast, bobbing pool of raw sewage, the product of half a million people with nowhere else for their effluent to flow. A three-way row between Gaza, the West Bank and Israel has seen electricity supplies cut to a trickle. One casualty has been the strip's sewage treatment stations.

It is ten years since Hamas, an Islamist political party with a lethal military wing, took over Gaza. In June 2007 it threw out its rivals from Fatah, the nationalist faction that runs the Palestine Liberation Organisation. A year earlier, it had beaten Fatah in elections held in the territories occupied by Israel during the 1967 war. The split left Fatah to rule the West Bank, Hamas to control Gaza, and both sides to conspire in an elaborate fiction that the two still form a single whole. The intervening decade has not been kind to Gaza, its people or even its new masters. Hamas runs the strip as an increasingly corrupt and oppressive one-party state, with a strictly controlled press and a nervous populace who clam up or look over their shoulders before talking about the government.

Gaza probably has the highest unemployment rate in the world, at 40% or more. Among young people it is around two-thirds. For its 2m people, whose GDP per head runs at not much more than \$1,000 a

year, there are few jobs and little chance of leaving the strip. Because of a shortage of power and of raw materials, as well as the damage done to Gaza's few factories in the three wars fought between Hamas and Israel since 2007, virtually everything is imported, except for a few fish, tomatoes and bits of wooden furniture.

Donkey-carts are a common sight, because fuel is too expensive for most. The markets and some surprisingly plush new shopping malls groan with goods, but almost all are brought in from Israel through the border crossing at Kerem Shalom, the only one now open for trade. Most raw materials are banned or restricted (Israel says they could be used to make rockets or to dig terrorist tunnels), but you can buy an iPhone 7 or a large flat-screen TV, if you have the money. Not many people do.

Powerless in Gaza

Samir al-Ijlal used to run a thriving general-goods company on the eastern edge of Gaza City. In August 2014, during Operation Protective Edge, the most recent of Gaza's wars, Israeli shells destroyed his home, his warehouse and \$1m worth of stock. "People couldn't even figure out where their houses used to be," he says. "Everything was brought down. We found pieces of 17 bodies under the wreckage." His house has been rebuilt, along with around half of the 20,000 buildings de-

stroyed or badly damaged in the war. For his lost business there has been no compensation, and after quarterly payments of 1,800 shekels (\$510) that lasted for a year, the Hamas government has given him nothing to live on. He depends, he says, on savings which are rapidly running out. "No one around here has a job," says his neighbour, Abu Saber, who lost his four brothers in one dreadful evening. "Before, 120,000 people used to go daily into Israel to work. Now, no one can."

As Hamas marked the tenth anniversary of its takeover last month, there was little for it to celebrate. Its main supporter is the Gulf state of Qatar, which is under embargo from its powerful Arab neighbours. That means Qatari aid to Gaza has been partly suspended; and the rest is in doubt. At the same time, the cold war between Hamas and Fatah has intensified. Most analysts blame this primarily on Mahmoud Abbas, the president of the Palestinian Authority (PA), based in Ramallah in the West Bank. He appears to have concluded that cracking down on Hamas will win him favour with Donald Trump, and that this could strengthen his hand in any American-brokered Israel-Palestine peace talks.

Mr Abbas is squeezing the people in Gaza. He has cut the pay of civil servants there (many of whom went on being paid by Ramallah despite the split). He has reduced the amount of medicine, baby milk and other essential goods that the PA provides to Gaza, and he has cut the amount of money that the PA pays Israel to supply the bulk of Gaza's power. In mid-June, Israel decided to reduce power supplies proportionally, so most households now get two hours of power a day instead of the previous four. Sewage treatment, water desalination, hospitals and the telecoms system are foundering. Generators provide ►►

▶ backup, but these rely on fuel oil brought in from Egypt, and the PA is blocking payments for that. As another result Gaza's only power plant shut down on July 12th. The PA is also refusing permission to most Gazans who need to travel to the West Bank or Israel for medical treatment; three babies died as a result last month.

Israel's decision to let the PA squeeze Hamas seems to many foolish. "I spent years killing Hamas terrorists," says Noam Tibon, an Israeli former major-general. "But you have to give people some hope. When someone is in a corner, he has no choice but to kick out. It's in Israel's interest to support Gaza's economy, not to strangle it. We should be giving them a port, power, water and jobs in Israel." His view is not shared by the government, which has rejected overtures from Hamas to offer a ten-year *hudna*, or ceasefire, in return for being allowed to build a seaport. Israel controls not just the land crossings, but the waters off the Gaza coast, and there is no port at all. To be allowed one Gaza would probably have to agree to full demilitarisation, and this is a step too far for Hamas to take.

Many people now fear a return to war. The primary threat is not from Hamas or the other main militia in the territory, Islamic Jihad. The bigger risk is that more extreme Salafist groups will fire rockets at Israel, hoping to provoke a conflict that Hamas politicians currently want to avert, in the knowledge that more devastation will only increase the unpopularity of their rule. Hamas is reckoned to have hunted down and locked up as many as 300 Salafists, some of them engineers who know how to make simple rockets that can easily hit Israeli villages, or even Tel Aviv, only 60km away. But there are undoubtedly many more, and as tempers fray in the hot, powerless summer, they may lash out.

Others, including Israeli spooks, fear that Hamas's politicians may themselves turn more radical again, as the organisation's military wing seeks to assert itself. In May, the political leadership issued a new policy document that aimed to update Hamas's uncompromising founding charter. It hinted that it might accept, at least temporarily, a Palestinian state existing on less than the whole of the Palestine that existed before Israel was founded in 1948. But the elevation in February to Hamas's number-two slot of Yahya Sinwar, a former military leader, suggests that the moderate politicians are losing ground to the military wing. "They are preparing for war again, no question," says an intelligence source. "The military guys feel that the politicians have let them down." Others optimistically see signs of reconciliation between Hamas and Fatah in the rumoured possible return to Gaza of Mohammed Dahlan, the leader of Fatah in Gaza before the split. Meanwhile, Gaza's stinking summer just keeps getting more desperate. ■

Israel's Labour Party

Ninth time lucky?

JERUSALEM

Israel's opposition party tries yet another leader

ON JULY 10th Israel's Labour Party elected as leader one of its newest members: Avi Gabbay, who joined only six months ago. He represents a leap into the unknown for Labour, which was once Israel's party of government but has not been in power for 16 years. It has changed leaders eight times since then.

Mr Gabbay is the former chief executive of Bezek, Israel's largest telecoms firm. He entered politics in 2014, helping to found Kulanu, a centrist party, and served for a year as environment minister (though he failed to be elected to parliament). He resigned in May 2016, denouncing the coalition's rightward shift, and joined Labour. Last week he came second in the first round of its leadership election, beating Isaac Herzog, the leader for the past four years, into third place. In the second round he overcame another ex-leader, Amir Peretz, a trade unionist who ran on a resolutely left-wing platform and enjoyed the support of much of the party establishment.

At the election in 2015 Labour won only 24 seats in the 120-member Knesset. It has since slid to fourth place in the polls, losing half its support to Yesh Atid, another centrist party, which is led by a former chat-show host. Mr Gabbay's priority will be to draw these voters back, re-establishing Labour as the main party of the centre-left. That, however, will not be enough. To win power, he must splinter the right-wing and religious bloc of parties that has backed the

prime minister, Binyamin Netanyahu of the Likud party, for the past eight years.

In electing Mr Gabbay, Labour members are pinning their hopes on a centrist without much political experience who until recently was almost unknown outside business circles. On paper at least, he looks like a candidate who can connect with sections of the Israeli public that have long deserted Labour. Born in a working-class neighbourhood of Jerusalem to parents who emigrated from Morocco in 1964, he served as an officer in an elite intelligence unit and then worked in the finance ministry's powerful budget department before joining the private sector. His Likud-voting family are just the kind of voters Labour must attract.

But although he has the freshness of a newcomer, Mr Gabbay has yet to prove he has the stamina or skill to take on the prime minister. In a victory speech made in crumpled shirtsleeves, he delivered no clear message. His only memorable soundbite was that Israel's government should "take care of Dimona, not only Amona", referring to a hardscrabble town in the Negev Desert and a tiny illegal settler outpost which Mr Netanyahu is spending millions to relocate.

He may receive help from another quarter, though. On the day the second round of Labour voting was taking place, police detained for questioning six men suspected of involvement in a bribery scandal connected to an order for German submarines. They include Mr Netanyahu's former pick for head of the National Security Council and his personal attorney. The prime minister is not a suspect, but he is the subject of two other investigations. Even if Mr Netanyahu is brought down by his legal troubles, he is likely to be replaced by another Likudnik. Mr Gabbay is a long way from the top job. ■



Gabbay's a gamble

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Sanctions on Sudan

Deal or no deal?

ADDIS ABABA

Donald Trump ducks a big decision

FIRST came the Iran nuclear deal; then the Cuban thaw. But less remarked upon at the time was Barack Obama's rapprochement with another old foe: Sudan, whose president, Omar al-Bashir, is wanted by the International Criminal Court on charges of orchestrating genocide. In January Mr Obama temporarily lifted economic sanctions on Sudan that had first been imposed 20 years ago by Bill Clinton. The move was a reward for "positive actions" by Sudan. The regime has co-operated with America in fighting terrorism, allowed more aid workers to reach civilians hurt in Sudan's conflict zones and tried to end its wars with rebels in the south. Yet the decision on whether to end sanctions permanently fell to Mr Obama's successor.

On July 11th Donald Trump ducked the decision for another three months, with an executive order saying he wants to see "sustained progress". America's intelligence agencies, and some of its allies such as Saudi Arabia, had pushed hard for an easing of economic restrictions. They see Sudan as a useful ally in the fight against jihadism. Many in the State Department had also concluded that sanctions were not working.

Yet the conflict in Darfur and the oppression of Christians in the south by an Islamist regime in Khartoum have forged an unlikely alliance in America between liberals (one of Mr Bashir's most strident critics is George Clooney, an actor) and Christian conservatives. On June 30th 53 congressmen from both parties wrote to Mr Trump urging him to delay the decision on sanctions for another year, citing "state-sanctioned persecution of Christians and the denial of freedom of religion".

The new executive order offers something to please both groups. It contains an explicit reference to human rights and to religious freedom. Eric Reeves of Harvard University, a fierce critic of Mr Obama's policy of reconciliation with Sudan, thanks the "extraordinary advocacy efforts" of those lobbying against sanctions relief for this change. He argues that ending the embargo would strengthen a regime he thinks is beyond redemption. He may be right. The regime has stopped bombing rebels and now allows aid into many previously inaccessible areas. It also appears more or less to have stopped meddling in neighbouring South Sudan, which seceded in 2011 and is in the grip of bloody civil war. But allegations of war crimes, includ-

Crime in South Africa

Crooks gone wild

JOHANNESBURG

Hollywood-style heists amid a breakdown in law and order

SOUTH AFRICA'S crime lords can be **S**audacious. This month they waited until the country's top security officials were busy preparing for a briefing on rampant crime at Johannesburg's international airport, then struck again, hijacking a truck loaded with valuable cargo as it left the gates. The incident was the latest of many. In a particularly brazen heist in March, gunmen impersonating police officers stole 20.7m rand (\$1.5m) as the bags of money were being loaded onto a flight to London. A few weeks later, thieves attacked a cash-laden van on a busy highway near the airport, blowing it open with explosives. This dramatic episode was caught on video.

After years of steady decline, serious crime is on the rise in South Africa. Aggravated robbery has jumped by 31% since 2012; murder is up by 20%. The crime appears organised, not opportunistic. Fikile Mbalula, the police minister, admits that many of the airport crimes are inside jobs with collusion from police, security guards and staff. Another type of robbery, known as a "follow home", is happening with unprecedented frequency. Spotters watch at airports for passengers arriving with fancy bags or exchanging large sums of money. The travellers are then tailed to their homes or hotels and robbed at gunpoint. In similar cases, affluent shoppers are followed home from high-end malls. In one recent attack, a van carrying businessmen was stopped and looted on the off-ramp leading into the airport; the driver was shot and killed. Tourism officials worry that such crimes will deter visitors; South Africa has worked hard to shed its dangerous reputation.

Even law-enforcement agencies and police stations are being targeted by

South Africa's robbers. A break-in this week at offices of the national prosecuting authority, in which laptops were stolen, followed a similar burglary at the Hawks, an elite crime-fighting unit. The office of the chief justice of South Africa's highest court was burgled in March. The opposition Democratic Alliance fears sinister motives, warning of "a culture of intimidation" against corruption-fighters.

Mr Mbalula has promised to crack down. "If they come with AK-47s, we will outgun them," he said. But it is the calibre of senior police, not the guns, that worries the critics. Top police jobs are routinely given to political appointees with few qualifications. All three national police commissioners appointed since 2000 have ended their terms in disgrace: one was jailed for corruption, one fired after a scandal over property deals and another found unfit to hold office.



Welcome to South Africa

ing the use of chemical weapons last year, persist. And Sudan does not obviously respect human rights more than it used to.

Those who favour lifting sanctions fret that the delay will push Mr Bashir's government to turn its back on the West and on the reforms it had been pursuing. "They may feel that the goalposts have been moved again," says Magnus Taylor of the International Crisis Group. On July 12th Sudan issued a statement saying that the country has frozen negotiation with America in response.

Yet Mr Trump's delay may be about far more than his unwillingness to pick a fight with Christian conservatives over an issue

in which he has never shown much interest. It also provides more evidence, if that were needed, that his administration lacks the know-how to weigh competing policy options in far-off places. Mr Trump has yet to appoint an assistant secretary of state for African affairs or a special envoy to Sudan and South Sudan. In all, five of the eight most senior posts in the department's Bureau of African Affairs are vacant or filled by people in an acting capacity. The government "has simply kicked the can down the road", says Harry Verhoeven of Georgetown University. "There appears to be little or no Sudan strategy and no deep thinking about how to move ahead." ■



Donald Trump junior and his e-mails

Very high level and sensitive

WASHINGTON, DC

This Russia scandal is different, but it probably will not result in prosecutions

“THE Crown prosecutor of Russia... offered to provide the Trump campaign with some official documents and information that would incriminate Hillary and her dealings with Russia and be very useful to your father. This is obviously very high level and sensitive information but is part of Russia and its government’s support for Mr Trump.” So wrote Rob Goldstone, a British tabloid-journalist-turned-publicist, in an e-mail to Donald Trump junior, son of the then presidential candidate, on June 3rd 2016. “Seems we have some time and if it’s what you say I love it especially later in the summer,” replied Donald junior, 20 minutes later.

The following day brought another exchange. “Emin asked that I schedule a meeting with you and The Russian government attorney who is flying over from Moscow,” wrote Mr Goldstone, who knew the younger Mr Trump from the Miss Universe contest, which the Trump family used to own. “How about 3 at our offices? Thanks rob appreciate you helping set it up,” came the reply. The meeting with the Russian lawyer duly took place on June 9th in Trump Tower in New York. Paul Manafort, Donald Trump’s campaign manager at the time, and Jared Kushner, his son-in-law and now senior adviser in the White House, went along too. Both at first forgot to mention the meeting, which was uncovered by the *New York Times*, on their respective legal disclosures.

The rolling scandal over Russian interference in last year’s presidential election is made from so many fragments that the whole is hard to see. Before Mr Trump was a candidate, Russian investors and customers played an important part in rescuing his property businesses from financial difficulty. Then, in the judgment of the then director of national intelligence, whose job it is to co-ordinate the many different intelligence agencies, the Russian government intervened in the election to help Mr Trump and damage Mrs Clinton.

Adjusting the antenna

That judgment was repeated this May by a new director of national intelligence. It is not clear whether the Kremlin actually wanted Mr Trump to win, or just wanted to sow mistrust and discord (if so, an aim it has accomplished). Last, before taking office Mr Trump talked in admiring terms about Vladimir Putin, Russia’s president, terms that were considerably more friendly than those he used about America’s allies, such as Angela Merkel, the German chancellor. At the beginning of his presidency, Mr Trump and his advisers dreamed of a grand bargain with Russia, lifting sanctions in exchange for help fighting Islamic State and containing China, though such a deal was never struck. These stories are unusual, but they do not necessarily amount to wrongdoing on the part of Mr Trump or his campaign.

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This one is different. Whether the “very high level and sensitive” information was forthcoming—and Donald junior says it was not—he intended to work with someone presented to him as a representative of the Russians, and who was offering to incriminate Mrs Clinton. The information appears to have been second-hand stuff about donations to the Clinton Foundation. “I don’t think my sirens went [off] or my antenna went up at this time because it wasn’t the issue that it’s been made out to be over the last nine months, ten months,” the president’s son told Fox News on July 11th, by way of explanation.

For those not in the beauty-pageant or property businesses, Russia certainly was an issue in the summer of 2016. By that time American government sanctions had been in place for two years, following Russia’s invasion of eastern Ukraine in 2014. Individual members of the Russian government had been singled out for sanctions under the Magnitsky Act, an attempt to hold accountable those involved in the murder of a Russian whistleblower. A proposed meeting with a “Russian government attorney” to discuss sharing information should have prompted Donald junior to call the FBI. Instead, he listened and seems to have been mildly disappointed by the grade of dirt on offer. “It was literally just a wasted 20 minutes, which was a shame,” he told Fox News.

The White House has repeatedly denied that people from the campaign met representatives of the Russian government, a line that was already proved wrong after meetings with Russia’s ambassador to Washington, Sergey Kislyak, came to light. “Did I meet with people that were Russian? I’m sure, I’m sure I did,” Donald junior told the *New York Times* in March. “But none that were set up. None that I can think of at the moment. And certainly ▶▶

▶ none that I was representing the campaign in any way, shape or form.”

Natalia Veselnitskaya, the “government” lawyer who met the Trump campaign, was not in fact working directly for the Russian government. Power in Russia is not a command-and-control system, with Mr Putin at the top issuing orders to everyone beneath him, though. It is more like a network, in which people pursue private interests which overlap with those of the state. Ms Veselnitskaya also defended the family of a former government minister accused of money laundering by the United States attorney for Manhattan, a charge that came from evidence supplied by Magnitsky. Mr Putin was defiant over the outcome of the Magnitsky case, in which a lawyer who was beaten to death in prison was posthumously charged with tax fraud. He awarded medals to some of the officials who worked on it. Ms Veselnitskaya seems to have lobbied the Trump campaign to repeal the Magnitsky Act.

If this all seems like evidence of an attempt at collusion with a hostile foreign power, the legal position is less straightforward. The Logan Act prohibits citizens from working against the government’s foreign policy, but nobody has been prosecuted under it since it was passed in 1799 and Donald junior is unlikely to break that streak. The portions of the constitution that deal with treason talk about aiding the enemy in a time of war, which he was not doing either. Next, campaign-finance law. The Federal Election Campaign Act of 1971 bans “contributions”, “donations” and “expenditures” from foreigners. The way it is written suggests that it means financial contributions rather than, say, electronic files. Some lawyers think the phrasing may be ambiguous enough to bring a lawsuit, but that opinion is not universal. That leaves the rest of the criminal law. If there is evidence that people working on the campaign asked for, or knowingly received, stolen e-mails, then they would be conspirators in a straightforward theft. Yet there is no evidence of this, and putting such a request in such a way as to leave a paper trail would be mind-numbingly stupid.

Politically, too, the reckoning may never arrive. The president has so often dismissed as fake news any suggestions that the Russian government was trying to help his campaign that his supporters tend to view the verdicts of the CIA and FBI on the matter as media inventions. Before Mr Trump’s election, Republicans were more likely to see Russia as an adversary than Democrats were, according to polling by Pew. In the months since, their positions have flipped. It would be nice to think that Americans could agree that political campaigns ought not to work with foreign governments who imprison and beat up their domestic political opponents. Nice, but probably unrealistic. ■

Not treating addiction

What would Hippocrates do?

LOS ANGELES

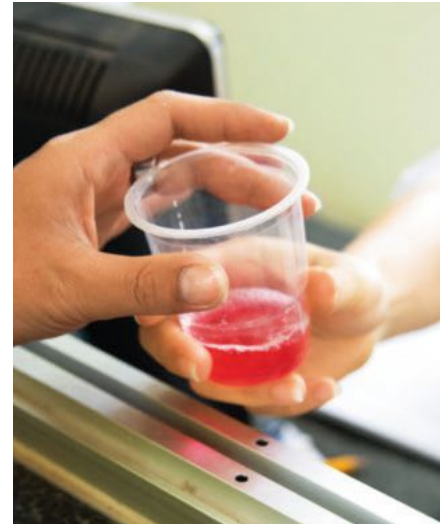
Why so few people addicted to opioids receive medical treatment

ON A sweltering morning, a motley crowd queues at the BAART Beverly clinic near downtown Los Angeles to receive methadone treatment for their heroin and prescription-opioid addictions. An older Latino man in a car-dealership uniform checks his Apple watch while a clinic worker measures his dose of pink liquid methadone into a plastic cup. He gulps the medicine down as one might take a tequila shot. As she leaves the clinic, a thin blue-haired woman wearing a sailor’s cap gushes to another patient about how taking methadone has allowed her to kick her heroin habit and save money. “I have a cellphone now. Do you have a cellphone?”

An increase in overdoses from prescription and illicit opioids, such as heroin and fentanyl, means that deaths caused by drugs exceed those from car accidents and firearms. Methadone, buprenorphine and naltrexone are the three medicines that are approved by the Food and Drug Administration (FDA) to treat opioid addiction. First synthesised in Germany and introduced after the second world war to treat pain, methadone was widely used in America after the Vietnam war, to treat soldiers who returned home addicted to heroin. Methadone is doled out in daily doses. Patients who consistently show up for daily treatment, attend counselling sessions and test negative for drug use are sometimes given larger doses of the medicine to take home.

Unlike methadone, which is dispensed in specialised clinics, any doctor with authorisation to do so can distribute buprenorphine. Whereas fewer studies have been conducted on naltrexone, experiments have proved buprenorphine and methadone to be effective at reducing hospital visits, curbing criminal behaviour and lowering mortality. A study by a Harvard Medical School doctor, published in 2015, showed that three-and-a-half years after treatment, only 10% of patients treated with buprenorphine met diagnostic criteria for opioid dependency.

Yet, even as the opioids kill someone nearly every 15 minutes, the share of opioid and heroin addicts who receive medical treatments remains small. According to the Substance Abuse and Mental Health Services Administration (SAMHSA), among those admitted and discharged for opioid-use disorders in 2015, only 35% of people received medication as part of their treatment. This represents an increase on the years from 2011 to 2015, when only 23% re-



In the pink

ceived medication. But it still means the majority of opioid and heroin addicts are not receiving treatments that have been proved effective.

Several things account for this. One is money. Without insurance, the medicines used to manage opioid addiction can be expensive. A year’s course of buprenorphine can run to about \$4,000-5,000, according to BupPractice.com, an educational website funded by the National Institute on Drug Abuse. Methadone generally costs between \$2,600 and \$5,200 a year.

For those on Medicaid, the cost burden is lower. At the BAART clinic, both methadone and counselling are fully covered by Medi-Cal, California’s Medicaid scheme. According to a June report from the Urban Institute, a think-tank, Medicaid spending on buprenorphine, naltrexone and naloxone, an opioid-blocker commonly used to reverse overdoses, increased by 136% between 2010 and 2016, but demand for such medicines still outstrips supply, says Lisa Clemons-Cope, one of the study’s authors. A recent report from Blue Cross Blue Shield, a private insurer, showed that whereas diagnoses of opioid-use disorders nearly quintupled between 2011 and 2016, medical treatment grew by only 65% in the same period. This is unfortunate: a paper published in 2015 in the *Journal of Substance Abuse Treatment* suggests that treating people with methadone and buprenorphine results in \$153-223 less spending on health care per month than treating addicts without these medicines does. Ad-▶▶

dicts are less than half as likely to relapse when treated with methadone or buprenorphine than if they receive treatment without medication.

Another barrier is regulation. Doctors must apply and take an eight-hour training course to administer buprenorphine. That may not serve as much of a deterrent in itself, but even after fulfilling such requirements doctors are limited to 30, 100 or 275 buprenorphine prescriptions per month depending on their experience level. "It makes no sense," says Molly Rutherford, a family doctor and addiction specialist in Crestwood, Kentucky. "I can write 1,000 prescriptions a day for Percocet and oxycodone [two widely abused opioid painkillers] if I want, but I can't treat more than 275 patients a month for opioid addiction."

Studies on the behaviour of doctors allowed to prescribe buprenorphine suggest other factors may be even more powerful deterrents than bureaucracy. Bradley Stein, a researcher at the RAND Corporation, recently found that even those doctors cleared to prescribe buprenorphine often seem reluctant to do so. One reason is that the drug is supposed to be combined with psychotherapy. In places where psychotherapy services are not readily available, doctors may be wary of prescribing it. Doctors may also think that their patients do not want to come into the waiting room and sit next to someone with an opioid-use disorder, says Mr Stein.

Swapping addictions

Such fears may not be misplaced. Up the block from the BAART clinic, the patron of a Mexican *bodega* complains that the clinic's patients take up the whole pavement when they are waiting for treatment, making it hard for children to get to the elementary school round the corner. Once, she says angrily, a patient used her shop to sell their dose of methadone to someone else.

Given that the opioid epidemic sprang from abuse of prescription medicines, concern about abuse of medication for addicts is warranted. Buprenorphine are methadone are opioids themselves. The drugs limit cravings and withdrawal symptoms associated with opioid addiction (heroin addicts, by contrast, require ever-greater doses of the drug). But they are addictive. Naltrexone, by contrast, is an opioid antagonist, or blocker. Some addicts continue treatment for years or even decades. Methadone clinics are often referred to as "maintenance" facilities. Isaac (not his real name) has attended the BAART clinic for ten years to keep his old heroin habit at bay. He has a seven-year-old daughter now, and doesn't want to risk relapsing.

Critics complain that when addicts give up heroin or prescription painkillers for methadone or buprenorphine they are just trading one addiction for another. But that is, in a way, the point. These drugs are still

considerably safer than illicit opioids such as heroin and fentanyl, an increasingly common synthetic opioid that is 50 times as strong as heroin and sold mixed with it, or in pills that look like painkillers. The choice on offer here may not be between addiction and no addiction, so much as between addiction that proves fatal and addiction that does not. Even if they never get off the medication, people who take methadone or buprenorphine can hold down jobs and be decent parents.

Yet rather than increasing the use of such treatments, the health-care legislation before Congress would probably curb medical treatment for opioid addiction. A study published in April by researchers at the University of Kentucky found that the introduction of the Affordable Care Act,

more widely known as Obamacare, and the accompanying expansion of Medicaid was associated with a 70% increase in buprenorphine prescriptions covered by Medicaid. One estimate suggests that the law resulted in coverage for an extra 220,000 addicts. The Republican health-care proposals promise to greatly reduce funding for Medicaid. After Republican senators from states that have been especially hard-hit by the opioid epidemic, such as Ohio and West Virginia, expressed concerns about such cuts, the authors of the Senate bill agreed to add \$45bn for states to spend on treating opioid addiction over the next decade. But a calculation by Richard Frank, an economist at Harvard Medical School, suggests the amount needed is at least four times that. ■

Infant mortality

Progress paused

The decline in mortality among black babies has stopped

BLACK babies born in America are more than twice as likely as white ones to die before their first birthdays. A large racial gap has been present for as long as statistics have been kept. Nonetheless, infant mortality has generally declined at a faster rate for blacks than whites, leading to hope that the disparity might eventually disappear.

That encouraging trend seems to have levelled off. According to a new study published in the *Journal of the American Medical Association*, black infant mortality in America stopped falling in around 2012. The paper found that if black babies had died at the same rate as white ones, in 2015 nearly 4,000 infant deaths would have been averted.

The main explanation for the racial gap is that black babies are much more likely than white ones to be born prematurely. What leads to prematurity itself is not fully understood: even a tentative cause can be identified in only about half

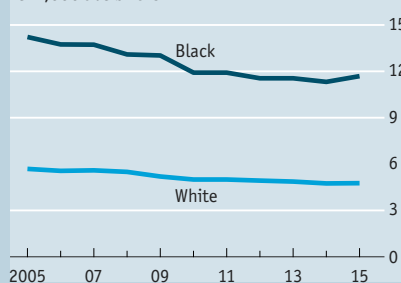
of such births. Risk factors linked to the mother include high blood pressure, smoking, diabetes and obesity. Mothers are also more likely to go into labour too early if they are aged under 20 or over 35.

Black mothers are more likely than white ones to be poor, unmarried and very young—three variables strongly associated with higher infant mortality. These are only partial explanations, though. Studies have found that even after accounting for differences in mothers' age, education, medical history and use of prenatal care, black women are still more likely than white ones to have babies that are born too early or weighing too little. Babies born to black mothers who have been to university are more likely to die than babies born to white mothers with less than a high-school education. Untangling the medical and social causes would shed light on the reasons—and on what can be done to reduce the mortality rate again.

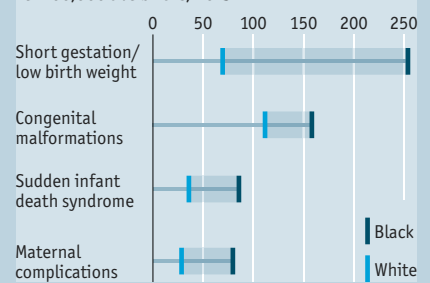
Empty cradles

United States, infant mortality*

Per 1,000 live births



Per 100,000 live births, 2015



Sources: "Trends in differences in US mortality rates between black and white infants" by Corinne Riddell, Sam Harper and Jay Kaufman, July 2017; JAMA Pediatrics

*Number of deaths of infants under one year old

Brooklyn Navy Yard

On the Waterfront

NEW YORK

The charms of urban manufacturing

FEW factories have a forest in their lobby. But Crye Precision, which designs and manufactures high-tech military body armour, wanted to make its vast new premises at the Brooklyn Navy Yard calming and beautiful for its 200 employees. Many of them now practise tai-chi among the indoor trees. Crye began in a studio in Chelsea, in Manhattan, but moved to the Navy Yard in 2002 because it needed space. It was soon leasing eight units in four different buildings and has now moved everyone under the same roof. Gregg Thompson, the company's co-founder, who sports the required Brooklyn man-bun and facial hair, says the borough and the Navy Yard have been crucial to Crye's success. He has no problem recruiting talent locally, from seamstresses to robot-operators, and the yard's operator has been very helpful as his firm has expanded.

The Navy Yard itself is also growing fast. The 300 acres (121 hectares) on Brooklyn's waterfront, with panoramic views of New York Harbour and Lower Manhattan, has about 2.5m square feet under construction, which will increase its square footage by about 60%. Over the next three years it conservatively expects the number of people working there to increase from 7,000 to 17,000. And most of its tenants are in manufacturing.

The yard is no stranger to innovation. It began as a research and development centre for America's navy. Prototype ships were built there, and a naval surgeon perfected the manufacture of ether for anaesthetics in 1854. At its height during the second world war, about 70,000 workers clocked in at the Navy Yard every day. But when the navy closed its base in 1966, 12,000 jobs were lost overnight. By the 1970s, with the site now owned by New York city, only a couple of hundred people worked there. But in the past ten years manufacturing has grown again.

It is of a different kind, however, from the old giant-factory sort. Most of the Navy Yard's tenants—around 330 businesses, adding more than \$2bn a year to the city's economy—are smaller advanced manufacturing firms, making speciality products. The tools that helped create the software boom are now proving useful to foster hardware manufacturing in the middle of cities. For example, New York is a leader in 3D printing, which helps to speed up prototyping and to turn startups into fully commercial ventures.



Destructive manufacturing

The high wall, which for the best part of two centuries sealed off the yard from the rest of Brooklyn, is still there. But it is more porous now. The Brooklyn Navy Yard Development Corporation, a non-profit which operates the yard for the city, routinely recruits local people, training them for the high-paying jobs available there. It also gives tenants enough leeway with their rent to allow them to invest in their companies, no small thing in expensive New York. Robert Ferraroni, co-head of Ferra Designs, a metal fabricator, was able

to buy a \$500,000 laser. He points out that he began his career using the tools and skills of a blacksmith. Now he uses lasers and robotics.

The Navy Yard's New Lab also has robots. One of its companies made part of the Mars Rovers. New Lab is an 84,000-square-foot innovation hub for companies working on products and technology that centre on hardware. The building, once a heavy-machine shop, now houses 100 companies that range from Farmsheff, which grows plants and produce without soil, to Waverly Labs, which made an earpiece that translates 15 foreign languages in real time, and Dog Parker, a thermo-controlled dog house to park pooches outside shops and restaurants.

Manufacturing, once nearly dead in New York, is growing across the five boroughs. The industry has over 78,000 jobs: still only 2.1% of all private-sector jobs and small compared with the dominant finance and media sectors, but on the up since 2011. Moody's, a credit-rating agency, predicts that manufacturing will contribute an increasing share of the Big Apple's economy. Other cities are intrigued by the Brooklyn model, which seems to work best in places with a history of manufacturing and links to a strong local economy. Something like it is being tried with success in Boston's Seaport, Chicago's mHUB and in downtown Los Angeles. President Donald Trump, who has been promising an industrial revolution in America, would do well to visit Brooklyn, too. ■

Race and education

Separate and unequal

YAZOO CITY, MISSISSIPPI

An ingenious bid to force improvements in Mississippi resonates beyond the state

"I WENT to these trailers when I was in kindergarten," says Dorothy Haymer of her six-year-old daughter's temporary-but-permanent classroom at Webster Elementary school in Yazoo City, Mississippi. Some of the main building's windows are cracked; the guttering is broken. Ms Haymer says parents are required to donate paper towels and soap for the lavatories. Art and music lessons are not available, she laments: "They don't really have the resources to teach the kids." There is a high turnover of staff (the principal left this summer). Still, because Ms Haymer has no choice, her son will join the school next year. "It's just terrible," she says.

Yazoo City, on the edge of the Mississippi Delta, is graced by magnolias, wisteria and a pastel-painted high street that speaks genteel decline. It is predominantly

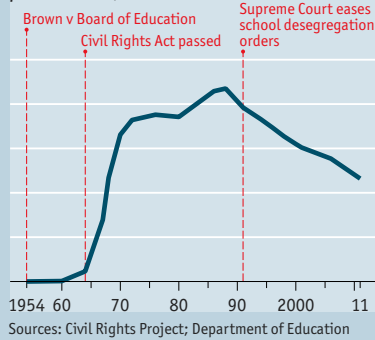
black, but Webster Elementary is almost completely so: 97% of its pupils, including Ms Haymer's daughter, are African-American. They are almost all poor: 99% receive subsidised lunches. The white people have their own school, Ms Haymer says matter-of-factly, referring to a private Christian academy on the outskirts of town. The school system was integrated peacefully (if belatedly) in 1970; but, as Willie Morris, a local author, records in "Yazoo", the children were more enthusiastic than their parents, and the graft didn't take. Today Webster lies near the bottom of state rankings in reading and maths.

Mississippi's schools are regularly judged to be America's worst. But they vary. The lowest-rated school districts, such as Yazoo City's, are overwhelmingly black; the best are mostly white. There is a ▶▶

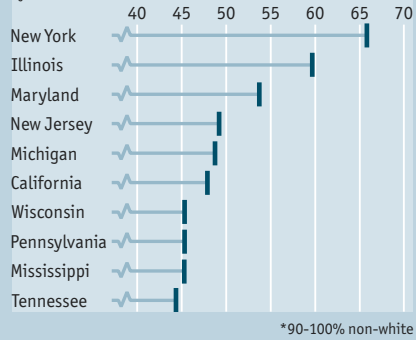
Alone, together

United States

Black students in majority-white southern public schools, %



Black students in intensely segregated* public schools
By state, 2013-14, %



► big disparity between black and white pupils' average attainment. Earlier this year a long struggle over school desegregation in Cleveland, 75 miles north, reached a well-publicised conclusion—but, in places, de facto separation is routine. Susan Glisson of Sustainable Equity, a pioneering consultancy, ran a summer scheme that, for some high-schoolers, was their first experience “with kids who don't look like them”.

“Something needs to be done,” says Ms Haymer. She is among the plaintiffs in a complaint recently filed in federal court by the Southern Poverty Law Centre (SPLC), a watchdog. It relies on research by two lawyers, Bill and Rita Bender (Ms Bender's first husband, Michael Schwerner, was among three civil-rights activists murdered in Mississippi by the Ku Klux Klan in 1964). After the civil war, Mississippi was obliged to pass a new constitution, which guaranteed “a uniform system of free public schools”. Crucially, the act that formally readmitted the state to the Union expressly forbade any abridgment of those “school rights”. Yet beginning with the new, racist constitution of 1890, that education clause has repeatedly been amended. As Ms Bender says, the dual aim was to perpetuate the disenfranchisement of blacks and ensure a pool of cheap labour. The clause in force today gives the legislature much wider discretion than the original one.

Meanwhile, although the gap in school resources has narrowed from the chasm of the segregation era, discrepancies remain. Critics say a state funding formula, introduced in 1997 to even out variations in local revenue in rich and poor neighbourhoods, underestimates the extra cost of teaching deprived children. In any case, the programme has been fully funded only twice in 20 years. A ballot initiative that might have forced the state to fill the shortfall failed narrowly in 2015. (During the campaign, a Republican politician gave warning that, if the measure passed, “a black judge” would oversee education spending.) As things stand, the SPLC's complaint alleges, the quality of education in Missis-

sippi “depends almost entirely on whether a child's schoolmates are predominantly white”. As a counter-example it cites Madison Station Elementary, which boasts pristine lawns, tennis and basketball courts, and a pretty pond. It is over 70% white.

Bending away from justice

In some ways Mississippi is an outlier. As well as being the country's least effective, its schools have the highest share of black pupils. But the extent of their segregation is less exceptional. Schools across the South—which, following the court rulings of the civil-rights era, became America's best-integrated—have become less mixed in the last few decades, according to data collated by the Civil Rights Project at the University of California, Los Angeles. But so, too, have schools elsewhere, even as the population has become more diverse: nationally, the proportion of schools composed almost wholly of minority pupils more than tripled between 1988, the high point of integration, and 2013. Such institutions are less likely to offer demanding

courses such as physics or advanced algebra. On some measures, the picture is worse than in 1970. Many of the most segregated schools are in states that were less touched by the civil-rights push than was the South: California, Illinois, New York.

The reasons for that grim retreat include the fragmentation of some school districts, the release of others from judicial oversight and court decisions that chilled integration drives. Since the era of white flight, economic inequality—with which the racial kind overlaps—has hardened. Barack Obama's administration made some efforts to encourage socioeconomic diversity; Donald Trump's has partly ditched them. As Halley Potter of the Century Foundation, a think-tank, says, counter-vailing initiatives by individual districts—redrawing catchment zones, rejigging admission criteria, opening magnet schools—have not offset the overall trend.

The suit in Mississippi does not expressly target segregation or discrimination, explains Will Bardwell of the SPLC, though race-based inequity is at the heart of it. Nor is it directly about money, even if the miserly, race-tinged funding of public schools in Mississippi and elsewhere is arguably as grave a problem for many African-Americans as mass incarceration. (Ronnie Musgrove, a former governor of Mississippi, is making the case for higher funding in a separate action in state court.) The SPLC, the Benders and Ms Haymer are merely seeking a declaration that the state has violated its duties under the law of 1870.

The state's response is due by July 24th. Officials declined to comment (privately, some teachers are scathing about school facilities in poor areas). Since litigation under the Readmission Act is more or less unprecedented, the outcome is unpredictable. “Mississippi”, says Mr Bardwell, “has dug itself a 150-year-old hole.” ■



The many shades of Yazoo City

Lexington | The kids aren't all right

The Trump family demonstrates why America shuns hereditary rule



THE hereditary principle is not just un-American but harms the children of great men, Benjamin Franklin declared soon after the revolutionary war, as rumours flew of plots to establish a new aristocracy with George Washington at its head. To honour parents is reasonable, Franklin averred. But to reward descendants for an accident of birth is “not only groundless and absurd but often hurtful to that posterity”.

Much about President Donald Trump would dismay the Founding Fathers. The rows now embroiling his children and son-in-law would surely have nudged them towards outright alarm. Even Franklin, a prescient sort, might have failed to imagine an American president's child expressing willingness to receive “very high level and sensitive information” about a political opponent from a hostile foreign power—as Mr Trump's eldest son, Donald junior, did during the election of 2016. But long before that was known, the president's use of his progeny as White House counsellors and as managers of his property empire—spurning advice to place his businesses in a blind trust—posed a grave threat to checks and balances crafted by the founders.

Defenders of nepotism—for they do exist—argue that close relatives are able to offer presidents more candid advice than any outsider. They note that by some counts 16 presidential children have worked in the White House, variously as private secretaries (a tradition begun by the 6th president, John Quincy Adams, himself a president's son), as unpaid gatekeepers (cf, Anna Roosevelt, daughter of Franklin), or as formal advisers (Dwight Eisenhower's son John served as a national security aide). But such a defence of nepotism breaks down when America has a bad president. When ordinary aides find themselves in that unhappy situation, a sense of duty to their country, to their office or to the rule of law may prompt them to question furtive actions and poor decisions, or to resign. Other aides may be more strongly moved by self-interest, and a desire to keep their good name from being soiled by an unfit boss. But when a child wields power at the pleasure of a parent, fidelity to country or to the law must vie with deeper, more visceral loyalties. That tug of loyalties is more painful still when a parent is like Mr Trump, a clannish, vengeful man who, by his own son's account, would send him to school with the growled warning: “Don't trust anyone.” As for trying to

preserve a free-standing good name, that is tricky if you are called Donald Trump junior.

Checks and balances are also disrupted when a child-counsellor to a president is at fault. Mr Trump may still resent the fact that he had to sack his first national security adviser, Michael Flynn, for fibbing about contacts with the Russians. But the systems of control and accountability that caught Mr Flynn, starting with a free press, did Mr Trump a favour. Senior Trump administration officials and Republicans in Congress found Mr Flynn, an angry and conspiratorial ex-general, almost impossible to work with.

In contrast, any hint of disrespect for a Trump child provokes indignation from the president, so that few Republicans in Congress care to exercise robust oversight of his daughter, Ivanka, or her husband, Jared Kushner, who both serve as senior advisers, with Mr Kushner wielding influence over dossiers from domestic economics to peace in the Middle East. In February Mr Trump attacked Nordstrom, a clothing chain, for dropping a fashion line branded by Ivanka, complaining on both his personal and government Twitter accounts that she had been “treated so unfairly”. The president took to Twitter again this week to defend his daughter, enraged by scoffing in the world press after he asked her to fill his seat briefly at the G20 summit. A press secretary for Mr Trump felt obliged to denounce such questioning of his daughter's role as an “outrageous attack against a White House senior adviser”.

Congress has been feeble in policing potential conflicts of interest involving the Trump Organisation, headed by Donald junior and his brother Eric, as foreign governments book rooms or receptions at Trump properties, including a hotel a few minutes from the White House.

Struggling to engage with a nationalist, America First president with a limited attention-span, foreign governments are learning to use his family to sway him. Angela Merkel of Germany invited Ivanka Trump to a summit on women's empowerment. Arab delegations in Washington enthuse that dealing with Mr Kushner is a great comfort, as talking to rulers' relations is the Arab way. As for Asia, “because China is not remotely interested in the democratic health of the United States”, its leaders and tycoons are happy to flatter Mr Trump or do business deals with his family, giving China an advantage over more squeamish Western powers, sighs a diplomat who sees this process up close.

The father, the son and the holey Russia defence

In private, envoys to Washington compare the Trump children to princes and princesses in a royal court. That is a bit unfair to princes: such modern examples as William and Harry in Britain talk of duty, of humility and of shunning politics precisely because they are unelected. The Trump children are more self-congratulatory, praising their father for selflessly giving up a life that was “the epitome of the American dream” to serve as president. Donald junior bragged to the Republican National Convention about youthful visits to construction sites: “we're the only children of billionaires” as happy in a bulldozer as in a car, he said.

Many grassroots conservatives cheer along. Last October Lexington watched Donald junior tell Republican campaign volunteers in Reno, Nevada, that his family was “sick” of “disgusting” media attacks, prompting one to reassure him: “I'd like to thank your family for going through the hell you are going through.”

America's founders recoiled from the hereditary principle. They feared a politics of tribal factions, too. The Trump clan is proving them right on both counts. ■

The
Economist

2017 EDITION

THE WORLD **IF**



WHAT IF...

FRANCE'S REFORMS SUCCEEDED
DONALD TRUMP WON A SECOND TERM
BORDERS WERE OPEN
BLOCKCHAINS RAN THE WORLD
HUMAN CLONING HAPPENED



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IF FRANCE'S REFORMS SUCCEEDED

The Macron miracle

PARIS, JULY 14TH 2026

Suppose France's president manages to transform his country and his continent

FOR as long as anybody could remember, the French president had given his annual Bastille Day address in front of the sweeping lawns of the Elysée Palace garden. But the July 14th speech of 2026 marked a revolution of a different sort. The president spoke from the modernist glass-and-steel presidency building, newly inaugurated in the Paris suburb of Seine-Saint-Denis. The moment was rich in symbolism. The move from the historic presidential palace, which is to be turned into a museum, marked not only the merger of the capital with its once-declining *banlieues*. It sent another message: nine years after his first election, Emmanuel Macron has turned France towards the future.

It was not always clear that things would work out this well. During his first years, Mr Macron made his share of beginner's errors. He underestimated the idealism of his first-time deputies, freshly recruited to *En Marche!* ("On the Move!") for the parliamentary elections in 2017, and narrowly avoided defeat on a bill to hand sweeping counter-terrorism powers to the police. He overestimated his ability to outwit Vladimir Putin, and got embroiled in an unfortunate overseas adventure against an Islamist incursion in Niger. "The ambition of young leaders is always humbled by foreign entanglements," sniffed a veteran Republican, who had lost his seat to a 35-year-old *En Marche!* debutant.

The new French president also misjudged the shrewd skills of Marion Maréchal-Le Pen, niece of Marine Le Pen, leader of the populist National Front (FN) whom he had defeated in 2017. Europe had celebrated that resounding victory as a watershed moment for the struggle against nationalist populism. The FN was considered a spent force: it was split, demoralised, and faced chronic debts. But Ms Maréchal-Le Pen sensed her aunt's weakness. She evicted Ms Le Pen in a dynastic coup, ejecting her coterie of anti-euro advisers. Returning the party to its traditionalist Catholic roots, the telegenic young Ms Maréchal-Le Pen built a formidable nationalist opposition party, helped by defections from Republican hardliners. Commentators recalled soberly that only 24% of voters had backed Mr Macron at the first round in 2017, and warned of a new Le Pen threat.

Yet, on the policy front, Mr Macron managed to get things broadly right. After the famous "autumn" ▶▶

The World If is our annual collection of scenarios. **Just suppose...**

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of *mécontentement*” in 2017, when strikes and demonstrations against his signature labour bill exasperated commuters and rubbish lay rotting in the unseasonal heat, the president stood firm. Editorialists called it his “Thatcher moment”. It was followed by a series of reforms that revamped the welfare and unemployment systems, to encourage job creation and train young people for work. Thanks also to a more stable fiscal regime, business confidence returned, and firms started to invest and hire. *La French tech*, which had fled to London’s Hoxton, returned to colonise edgy districts of northern and eastern Paris. Even France’s public finances were brought into line. From Berlin, into her fourth term as chancellor, Angela Merkel watched, speechless.

There was no immediate economic miracle. Mr Macron knew from German history that the return on such efforts took time. But he told the French as much, keeping up national morale as best he could. Thanks to the new can-do spirit, Paris won its bid to host the Olympics in 2024.

France first, then Europe

Mr Macron used this as a pretext to unify Greater Paris, erasing the divisive boundary of the *périphérique* ring road, and giving the *banlieues* the symbolic embrace they had long sought. Its first mayor, Jacques-Antoine Granjon, an online entrepreneur, was the brains behind moving the presidency. Xavier Niel, a tech billionaire, was made education minister. Coding became part of the primary curriculum. The French adopted new technology with all the zeal they had once reserved for Minitel, an early online service. Paris became a global research hub for artificial intelligence. Frédéric Mazzella, founder of a ride-sharing startup, was made transport minister; car ownership, and pollution, fell.

The timing of those early reforms proved crucial for Mr Macron’s re-election in 2022. They began to pay off just before the campaign got under way, enabling him to defeat Ms Maréchal-Le Pen in a run-off vote, despite her ice-cool performance in a televised debate that was contrasted with her aunt’s behaviour five years previously.

Mr Macron’s second term proved decisive. As Germany’s economy began to suffer the effects of years of public underinvestment, France’s new economic vigour challenged German dominance. German economists started to model a scenario in which France’s advantage in demography enabled its economy to outpace Germany’s. After decades of *morosité* the French came to recognise their strengths: not only population growth but world-class engineering schools, fine craftsmanship and high-end creativity.

The new dynamic at the heart of Eu-

rope was not just economic. Britain’s turn inwards after Brexit pushed France and Germany into each other’s arms. With his carefully calibrated German-speaking team, Mr Macron pitched his case to Berlin with just the right tone, restoring confidence with serious reform and fiscal rigour at home. Germany, seeing France respecting European budgetary rules and showing signs of economic confidence, started to put aside its habitual distrust. France began to press its own demands more credibly. At first, Franco-German initiatives

The German calculation began to shift

were symbolic. There was a joint investment fund, and some mutualised defence procurement. In an innovative experiment, each sent a bilingual minister to serve in the other’s government.

By the start of Mr Macron’s second term, however, with a more Macron-friendly team in the finance ministry in Berlin, the German calculation began to shift. Germany agreed to formal talks on institutional change, including the creation of a euro-zone finance minister and common budget. Renewed French leadership encouraged Germany to shrug off its own reservations. The pair jointly took up causes beyond Europe’s borders, including climate change and global inequality. Prompted by the geostrategic retreat of

America and Britain, Germany became a regular troop contributor to EU military operations, particularly in the African Sahel. By 2026, opinion polls showed that faith in Europe outstripped scepticism in almost every one of the 27 EU countries.

As academic papers began to appear on the “French renaissance”, analysing how a once-mighty nation could fall and rise again, Europe reaped another benefit. Other countries discouraged by decades of decline and disorder took note. Italy, which like France had once believed that politics could offer little more than the management of decline, was given fresh hope. Mr Macron’s radical centrism, a political philosophy designed to bring the left and right together to build an open society against the forces of nationalism, inspired lookalikes. The Italian version of the *En Marche!* Election Handbook became a bestseller, inspiring the victory of “In Movimento!” The upshot was a strengthened, more confident and less divergent euro zone, and a political model for curbing nationalism.

So it was a satisfied President Macron—not yet 49 years old—who sat down in front of a giant plate-glass window on Bastille Day 2026 to speak to the nation. He had decided to quit politics after his second term, and finish the novels he had sat up drafting late into the night. Thinking back, he recalled wryly how he was mocked in 2017 for talking up a French renaissance. But, then again, he was also mocked for thinking he would be elected in the first place. ■

IF DONALD TRUMP WON A SECOND TERM

Augmented reality show

WASHINGTON, DC, JULY 2021

His opponents dreamed of impeaching Donald Trump, then of defeating him. Now they are adjusting to four more years of his presidency. We assess its first six months

LOOKING back, it is easy to see clues that Donald Trump did not really want to serve a second term as president. During the chaotic three-way election of 2020 Mr Trump at times seemed a bystander, overshadowed by the brutal contest between Elizabeth Warren, the economic populist nominated by the Democratic Party, and her billionaire rival, Mark Zuckerberg, founder of Facebook and the centrist OPEN! movement. Mr Trump adopted mocking nicknames for each: “Pocohontas” for Mrs Warren (a reference to the false allegation that the senator claimed Native American heritage to secure a post as a

Harvard academic) and, for Mr Zuckerberg, “Dopey” and “Kumbaya Boy” (a scornful reference to Mr Zuckerberg’s support for liberal immigration policies and an “open platform” approach to politics based on “digital civics”). But mostly Mr Trump stood back and watched as his rivals exposed deep and ugly divisions on the centre-ground and left of American politics.

By the end of the campaign Mrs Warren and Mr Zuckerberg had fallen out over everything from globalisation and trade with China to their respective views on race-based affirmative action and visas for skilled migrants. To the candidates’ dis-

► may, their most fervent supporters traded mutual accusations of sexism, anti-Semitism and racism, with some accused of whipping up black and Hispanic hostility towards Mr Zuckerberg's Asian-American wife, Priscilla Chan.

Doubts about Mr Trump's morale hardened on the day of his second inauguration. Even loyal supporters were startled by the brooding leader who showed up at the Capitol to be sworn in, after winning with the lowest share of the popular vote in American history. His inaugural address did not help, with its unscripted, rambling discursion about the blizzard that had, he explained, scared away what would have been record crowds and obliged organisers to move the ceremony indoors. Nor could television viewers miss the strained relations between Mr Trump and his vice-president, Mike Pence. That relationship has yet to recover from the moment last summer when Mr Trump hinted he might choose a new running-mate to boost his poll numbers, sparking rumours that Jared Kushner, his son-in-law, was being readied for the role.

As pundits analyse the early months of the second Trump term, the full irony of the president's position has become clear. The image of the man who entered the White House as a crowd-thrilling outsider, vowing to "drain the swamp" in Washington and launch trade wars with China and Mexico, has undergone a 180-degree transformation. The economy is ticking along, but not because of bold domestic reforms. The biggest boosts to economic sentiment came from debt-fuelled tax cuts and from steady growth in such places as China, Mexico and Canada (the re-election campaign never tired of repeating "Keep America Great!"). Mr Trump's administration is professional, ruthlessly focused on deregulation, and secretive. The president has delegated most day-to-day decision-making to a cadre of former CEOs, Wall Street bankers and ex-lobbyists: the "robber barons", as Mrs Warren called them. Ask voters what they think of Mr Trump and the word "boring" comes up a lot.

Mr Trump's opponents once assumed that Russian election-meddling would be his downfall. After Russia investigations were bogged down by a lack of evidence admissible in court, and by a reluctance among Republicans to take down their president, Democrats concentrated their attacks on the president's populist pledges. There was the "big, beautiful wall" that he would build on the southern border, paid for by Mexico. There were the coal-mining jobs he said he would bring back to Appalachia, or the factories he would bring back to the Midwest. Then there was the health-care plan that he told voters would be cheaper, more generous and cover more



Bore-in-chief?

people than Obamacare, his predecessor's coverage scheme.

Mr Trump has kept none of these promises, but clings to power nonetheless. At his increasingly rare public rallies, he still talks about building a wall, but quickly veers into complaints about the "un-American" elites who are obstructing the project. In truth, the plan has few friends. Congress has never wanted to find the vast sums required. Construction is tied down by legal challenges from landowners whose property is needed for a barrier.

The show goes on, and on

Many of the 11m or so foreigners in the country without legal papers now live in fear, as they risk deportation in many states if they are so much as pulled over for running a stop sign. Still, nativist hardliners have given up hope of seeing Mr Trump move to expel millions of migrants. Deportation numbers have risen, but when it comes to systematically removing all those without legal status Mr Trump seems frozen with indecision, telling nonplussed aides at a recent meeting: "We have to be so tough, but always with heart."

As for Team Trump's "energy revolution", aimed at boosting domestic production of coal, oil and natural gas, that remains mired in the courts. To date it has created more work for lawyers and lobbyists than for miners. Mr Trump's appointees have slashed rules governing mine waste, water pollution and methane leaks from wellheads. But blue-collar energy jobs have not materialised in large numbers. Though production has risen in the mechanised coal fields of the Mountain West, it continues to collapse in West Virginia, Kentucky and the rest of Appalachia.

Nor has Mr Trump been able to keep his word on repealing and replacing Obamacare with something that the public deems "terrific". The ungainly half-replacement that Congress struggled to pass—branded "Trumpcare" by Democrats—has not stabilised insurance markets as promised. Mr

Trump has blamed health insurers and congressional Republicans for the mess.

Trumpcare has next to no chance of being improved by this Congress. Gridlock on Capitol Hill only worsened after the 2018 mid-term elections, when Democrats defeated more than a dozen moderate House Republicans representing suburban districts, and came unexpectedly close to taking back control of the Senate. A weakened Republican Party has been left angrier and more intransigent.

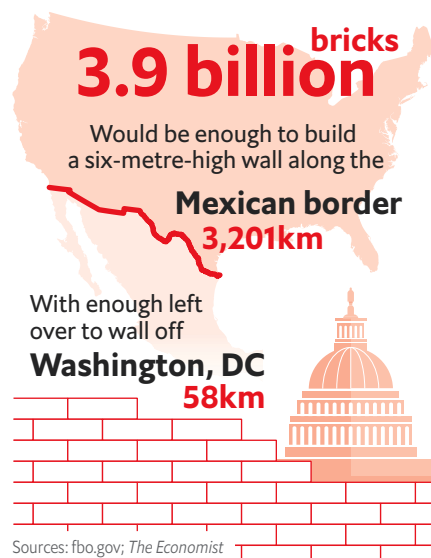
Resistance to Mr Trump has also helped drive the Democratic Party to the left. Egged on by such figures as Mrs Warren, progressive groups threatened to mount primary challenges against any Democrats who voted with the Republicans, even on such bills as Mr Trump's (more modest than expected) infrastructure plan.

With each passing month it becomes clearer that Trump opponents have won a hollow victory. They have reduced the president to sour frustration and even inertia. The latest polls show that just 23% of Americans think that Mr Trump is "in charge of events". Leaks from a demoralised White House talk of Mr Trump spending long hours watching cable television, and complaining "I didn't have to do this job" to his inner circle. Late-night TV satirists never tire of noting how the president has put on weight in office, despite frequent outings to play golf. But ironically the activism of the resistance movement has given Mr Trump a ready explanation for his broken campaign pledges.

That leaves foreign policy, an arena also marked by inertia. After a state visit to Brit- ►

WHAT IF

Donald Trump imported the Great Wall from China?



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ain, scheduled for 2017, was cancelled and a summit in Canada in 2018 was marred by protests, including a mass “mooning” by activists, Mr Trump’s enthusiasm for global statecraft was revived by a tour of China and the Philippines in 2019, notable for pageantry and police brutality in equal measure. Mr Trump has encouraged Chinese funds to invest in American infrastructure, with modest results.

No new foreign visits are planned. Russian state media have taken to mocking Mr Trump as “the old hermit king”. European leaders have largely given up on seeking personal meetings in the White House.

An early epitaph on the Trump era was offered this month by the former chief strategist at the White House, Stephen Ban-

non. The greatest mistake of his old boss’s life was running for re-election, Mr Bannon told listeners on his nightly TV talk-show. Economic nationalism needs a new champion, said Mr Bannon, concluding: “Trump tried, but the swamp drained him.”

Increasingly the language of the television industry has crept into Mr Trump’s remarks. He talks of ratings and has called the presidency “this show”. His communications team recently recruited a producer from “The Apprentice”, the reality-TV series that did so much to cement his image as a decisive tycoon. Even the biggest TV hits have a natural life. With Mr Trump seemingly trapped in a funk, few voters can remember why they commissioned a second season of this presidential show. ■

radical case for open borders”. Mexican labourers who migrate to the United States can expect to earn 150% more. Unskilled Nigerians make 1,000% more.

“Making Nigerians stay in Nigeria is as economically senseless as making farmers plant in Antarctica,” argue Mr Caplan and Mr Naik. And the non-economic benefits are hardly trivial, either. A Nigerian in the United States cannot be enslaved by the Islamists of Boko Haram.

The potential gains from open borders dwarf those of, say, completely free trade, let alone foreign aid. Yet the idea is everywhere treated as a fantasy. In most countries fewer than 10% of people favour it. In the era of Brexit and Donald Trump, it is a political non-starter. Nonetheless, it is worth asking what might happen if borders were, indeed, open.

To clarify, “open borders” means that people are free to move to find work. It does not mean “no borders” or “the abolition of the nation-state”. On the contrary, the reason why migration is so attractive is that some countries are well-run and others, abysmally so.

Workers in rich countries earn more than those in poor countries partly because they are better educated but mostly because they live in societies that have, over many years, developed institutions that foster prosperity and peace. It is very hard to transfer Canadian institutions to Cambodia, but quite straightforward for a Cambodian family to fly to Canada. The quickest way to eliminate absolute poverty would be to allow people to leave the places where it persists. Their poverty would thus become more visible to citizens of the rich world—who would see many more Liberians and Bangladeshis waiting tables and stacking shelves—but much less severe.

If borders were open, how many people would up sticks? Gallup, a pollster, estimated in 2013 that 630m people—about 13% of the world’s population—would migrate permanently if they could, and even more would move temporarily. Some 138m would settle in the United States, 42m in Britain and 29m in Saudi Arabia.

Gallup’s numbers could be an overestimate. People do not always do what they say they will. Leaving one’s homeland requires courage and resilience. Migrants must wave goodbye to familiar people, familiar customs and grandma’s cooking. Many people would rather not make that sacrifice, even for the prospect of large material rewards.

Wages are twice as high in Germany as in Greece, and under European Union rules Greeks are free to move to Germany, but only 150,000 have done so since the beginning of the economic crisis in 2010, out of a population of 11m. The weather is aw- ▶▶



IF BORDERS WERE OPEN

The \$78 trillion free lunch

Yes, it would be disruptive. But the potential gains are so vast that objectors could be bribed to let it happen

A HUNDRED-DOLLAR BILL is lying on the ground. An economist walks past it. A friend asks the economist: “Didn’t you see the money there?” The economist replies: “I thought I saw something, but I must have imagined it. If there had been \$100 on the ground, someone would have picked it up.”

If something seems too good to be true, it probably is not actually true. But occasionally it is. Michael Clemens, an economist at the Centre for Global Development, an anti-poverty think-tank in Washington, DC, argues that there are “trillion-dollar bills on the sidewalk”. One seemingly simple policy could make the world twice as

rich as it is: open borders.

Workers become far more productive when they move from a poor country to a rich one. Suddenly, they can join a labour market with ample capital, efficient firms and a predictable legal system. Those who used to scrape a living from the soil with a wooden hoe start driving tractors. Those who once made mud bricks by hand start working with cranes and mechanical diggers. Those who cut hair find richer clients who tip better.

“Labour is the world’s most valuable commodity—yet thanks to strict immigration regulation, most of it goes to waste,” argue Bryan Caplan and Vipul Naik in “A



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►ful in Frankfurt, and hardly anyone speaks Greek. Even very large disparities combined with open borders do not necessarily lead to a mass exodus. Since 1986 the citizens of Micronesia have been allowed to live and work without a visa in the United States, where income per person is roughly 20 times higher. Yet two-thirds remain in Micronesia.

Despite these caveats, it is a fair bet that open borders would lead to very large flows of people. The gap between rich and poor countries globally is much wider than the gap between the richest and less-rich countries within Europe, and most poor countries are not Pacific-island paradises. Many are violent as well as poor, or have oppressive governments.

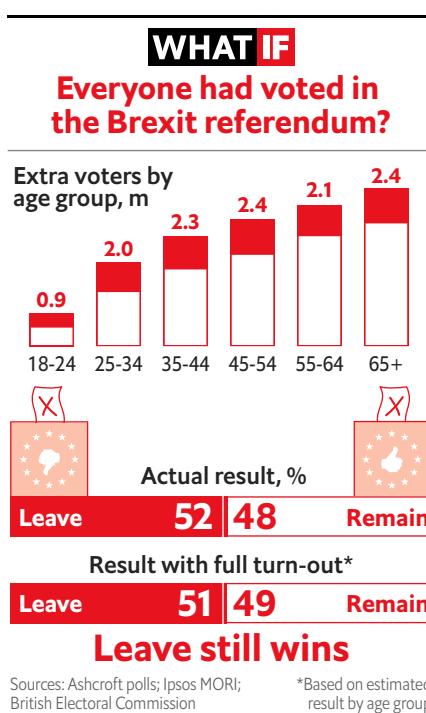
Also, migration is, in the jargon, “path-dependent”. It starts with a trickle: the first person to move from country A to country B typically arrives in a place where no one speaks his language or knows the right way to cook noodles. But the second migrant—who may be his brother or cousin—has someone to show him around. As word spreads on the diaspora grapevine that country B is a good place to live, more people set off from country A. When the 1,000th migrant arrives, he finds a whole neighbourhood of his compatriots.

So the Gallup numbers could just as well be too low. Today there are 1.4bn people in rich countries and 6bn in not-so-rich ones. It is hardly far-fetched to imagine that, over a few decades, a billion or more of those people might emigrate if there were no legal obstacle to doing so. Clearly, this would transform rich countries in unpredictable ways.

Voters in destination states typically do not mind a bit of immigration, but fret that truly open borders would lead to them being “swamped” by foreigners. This, they fear, would make life worse, and perhaps threaten the political system that made their country worth moving to in the first place. Mass migration, they worry, would bring more crime and terrorism, lower wages for locals, an impossible strain on welfare states, horrific overcrowding and traumatic cultural disruption.

Open questions

If lots of people migrated from war-torn Syria, gangster-plagued Guatemala or chaotic Congo, would they bring mayhem with them? It is an understandable fear (and one that anti-immigrant politicians play on), but there is little besides conjecture and anecdotal evidence to support it. Granted, some immigrants commit crimes, or even headline-grabbing acts of terrorism. But in America the foreign-born are only a fifth as likely to be incarcerated as the native-born. In some European countries, such as Sweden, migrants are more



likely to get into trouble than locals, but this is mostly because they are more likely to be young and male. A study of migration flows among 145 countries between 1970 and 2000 by researchers at the University of Warwick found that migration was more likely to reduce terrorism than increase it, largely because migration fosters economic growth.

Would large-scale immigration make locals worse off economically? So far, it has

Risks could be mitigated with a bit of creative thinking

not. Immigrants are more likely than the native-born to bring new ideas and start their own businesses, many of which hire locals. Overall, migrants are less likely than the native-born to be a drain on public finances, unless local laws make it impossible for them to work, as is the case for asylum-seekers in Britain. A large influx of foreign workers may slightly depress the wages of locals with similar skills. But most immigrants have different skills. Foreign doctors and engineers ease skills shortages. Unskilled migrants care for babies or the elderly, thus freeing the native-born to do more lucrative work.

Would open borders cause overcrowding? Perhaps, in popular cities like London. But most Western cities could build much higher than they do, creating more space. And mass migration would make the world as a whole less crowded, since ferti-

ty among migrants quickly plunges until it is much closer to the norm of their host country than their country of origin.

Would mass immigration change the culture and politics of rich countries? Undoubtedly. Look at the way America has changed, mostly for the better, as its population soared from 5m mainly white folks in 1800 to 320m many-hued ones today. Still, that does not prove that future waves of immigration will be benign. Newcomers from illiberal lands might bring unwelcome customs, such as political corruption or intolerance for gay people. If enough of them came, they might vote for an Islamist government, or one that raises taxes on the native-born to pamper the newcomers.

Eyes on the prize

There are certainly risks if borders are opened suddenly and without the right policies to help absorb the inflow. But nearly all these risks could be mitigated, and many of the most common objections overcome, with a bit of creative thinking.

If the worry is that immigrants will out-vote the locals and impose an uncongenial government on them, one solution would be not to let immigrants vote—for five years, ten years or even a lifetime. This may seem harsh, but it is far kinder than not letting them in. If the worry is that future migrants might not pay their way, why not charge them more for visas, or make them pay extra taxes, or restrict their access to welfare benefits? Such levies could also be used to regulate the flow of migrants, thus avoiding big, sudden surges.

This sounds horribly discriminatory, and it is. But it is better for the migrants than the status quo, in which they are excluded from rich-world labour markets unless they pay tens of thousands of dollars to people-smugglers—and even then they must work in the shadows and are subject to sudden deportation. Today, millions of migrants work in the Gulf, where they have no political rights at all. Despite this, they keep coming. No one is forcing them to.

“Open borders would make foreigners trillions of dollars richer,” observes Mr Caplan. A thoughtful voter, even if he does not care about the welfare of foreigners, “should not say...‘So what?’ Instead, he should say, ‘Trillions of dollars of wealth are on the table. How can my countrymen get a hefty piece of the action?’ Modern governments routinely use taxes and transfers to redistribute from young to old and rich to poor. Why not use the same policy tools to redistribute from foreign to native?” If a world of free movement would be \$78trn richer, should not liberals be prepared to make big political compromises to bring it about? ■

A LINE HAS BEEN DRAWN.
BETWEEN THE SAME WAY
BETWEEN ENERGY DEMAND
BETWEEN MAINSTREAM
BETWEEN THE INDUSTRIAL
BETWEEN SETTLING FOR TODAY
TODAY, A LINE HAS BEEN DRAWN.
AND THE PAST IS ON ONE SIDE

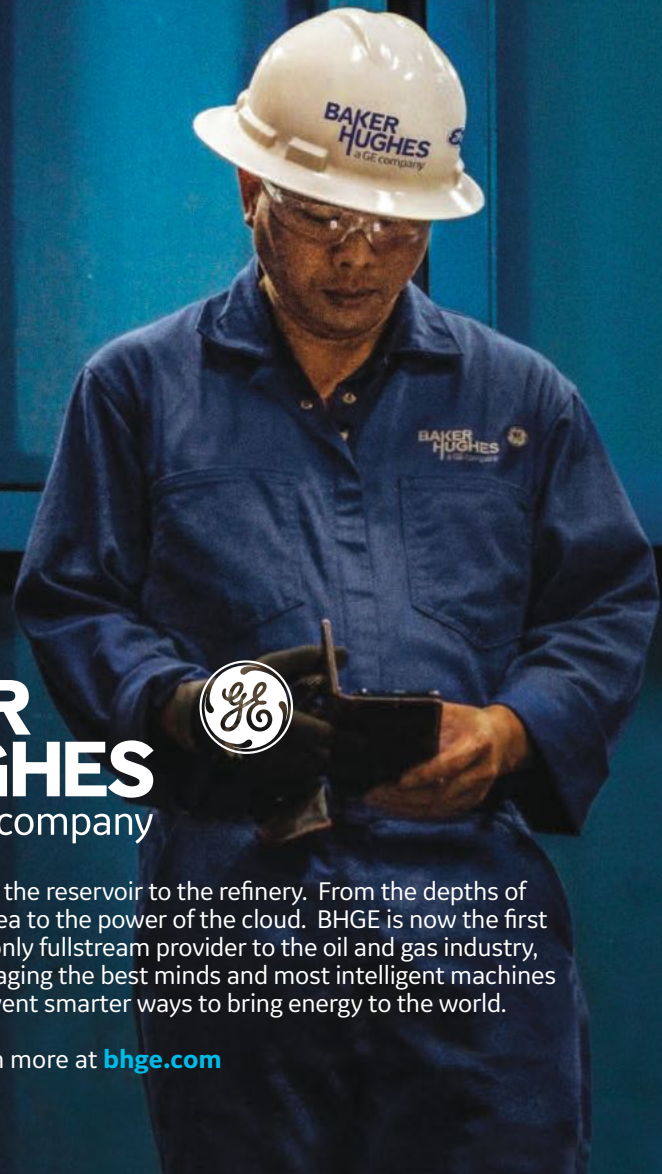
AND A NEW WAY.
AND ENERGY POTENTIAL.
AND FULLSTREAM.
AND THE DIGITAL INDUSTRIAL.
AND DEFINING TOMORROW.
AND WE'RE ON THE OTHER.

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IF BLOCKCHAINS RAN THE WORLD

The long arm of the list

The trust business is little noticed but huge. Startups deploying blockchain technology threaten to disrupt it, and much else besides

“WE LIKE lists because we don’t want to die.” What Umberto Eco, an Italian writer, said about human beings applies even more to the institutions they create. Without lists that keep track of people and things, most big organisations would collapse.

Lists range from simple checklists to complex databases, but they all have one major drawback: we must trust their keepers. Administrators hold the power. They can doctor corporate accounts, delete titles from land registries or add names to party rolls. To stop the keepers from going rogue, and catch them if they do, society has come to rely on all sorts of tools, from audits to supervisory boards. Together, list-keepers and those who watch them form one of the world’s biggest and least noticed industries, the trust business.

Now imagine a parallel universe in which lists have declared independence: they maintain themselves. This, broadly, is the promise of the “blockchain”, the system which underlies bitcoin, a digital currency, and similar “distributed-ledger” technologies. If blockchains take over, as fans are sure they will, what are the implications of the trust business migrating into the ether?

It would not be the first time a novel form of list-making changed the world. More than 500 years ago a new accounting technique, later known as double-entry book-keeping, emerged in northern Italy. It was a big step in the development of the modern company and economy. Werner Sombart, a German sociologist who died in 1941, argued that double-entry book-keeping marked the birth of capitalism. It allowed people other than the owner of a business to keep track of its finances.

If double-entry book-keeping freed accounting from the merchant’s head, the blockchain frees it from the confines of an organisation. That is probably not what Satoshi Nakamoto, the still-elusive creator of bitcoin, had in mind when he set out on his endeavour. His aim was to create a “purely peer-to-peer version of electronic cash”, as he put it in a “white paper” published in 2008. To do so, he created a new type of database, the blockchain. It provides proof of who owns what at any given moment. It contains the payment history of each bit-

coin in circulation; heavy-duty encryption makes it theoretically impossible to alter it once a transaction is registered; copies are spread around the computers, or “nodes”, that form the bitcoin network, so that anybody can check whether something is wrong. A “consensus mechanism”, a complex cryptographic process which replaces the list-keeper, turns the blockchain into an independent entity.

Clever minds quickly saw that such a set-up can be used for things other than money. Different sorts of self-sufficient lists now abound. Prominent among them is Ethereum. Like bitcoin, it boasts its own crypto-currency, called “ether”, but it also allows users to add “smart contracts”, code that encapsulates the terms of a business agreement and is executed automatically.

When Luca Pacioli, a Franciscan friar, wrote the first textbook on double-entry book-keeping in the late 15th century, he could not have foretold what the accounting technique would bring about. But today plenty of startups suggest ways that blockchains could change the world.

Everledger, for example, keeps track of valuable assets. The firm has registered the ID of more than 1m diamonds, making it easier to check whether gems were stolen or mined in war zones.

Other firms want to help keep track of people. One of the first things done for a baby could be to give the newborn an entry in a blockchain, the crypto-equivalent

of a birth certificate. This sounds Orwellian, but it does not have to be. On the contrary, if people’s identity is anchored in one or several blockchains, this would give them more control over it and their personal data. If a potential tenant, for example, wants to prove to a landlord that his income is high enough to pay the rent, he need only disclose that bit of information, instead of allowing access to his entire credit history, as is often the case today.

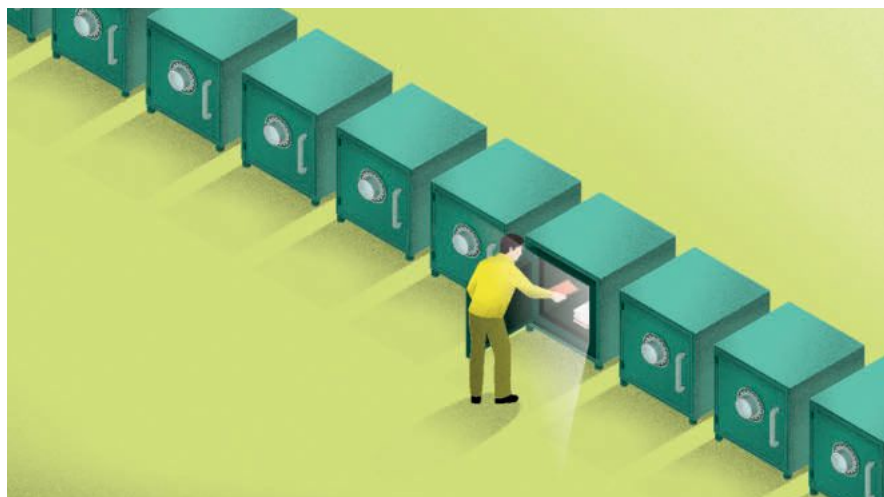
In a blockchain world, having such a “self-sovereign identity” may well be a fundamental human right. Moxie Marlinspike, an anarchist entrepreneur, and others have already called for the abolition of the “ID-slavery” imposed by current national registration systems. A slew of startups, including Evernym, Jolocom and uPort, are working on services that will allow people to register identities.

Once people are able to manage their identity, other possibilities open up, says Kevin Werbach of the University of Pennsylvania’s Wharton business school. People will be able to band together in virtual countries and set their own rules. One such already exists: BITNATION. Anyone can become a citizen by accepting its constitution. To do business in BITNATION, people have to build up reputation, for instance by trading on the platform.

Chain reaction

This is also an example of the other big function of such ledgers: they can serve as a source of truth. All kinds of information could be attached to an entry in a blockchain. In the case of a car, say, that could be where it came from, the history of repairs and even where it was driven. Taken together, these data would form the “truth” about a given vehicle.

Many people are already working on “truth services”. Researchers have proposed creating unique cryptographic identifiers, or “hashes”, of the descriptions of ▶▶



clinical trials and registering them in a blockchain, so they cannot be changed to fit desired results. Georgia, Sweden and Ukraine are testing the technology as a way of digitising parts of their land registries. And Delaware, the American state which has made a big business out of registering companies from all over the world, is gearing up to allow blockchains for corporate record-keeping.

Transactions on a blockchain could also serve as input for smart contracts. Slock.it, another startup, is developing physical locks which have a digital existence on Ethereum. When it is sent some ether, this smart rental contract opens the lock. This could enable new ways of sharing things. If somebody wanted to rent a car, say, he could simply transfer money to its smart contract and drive away.

Smart contracts promise to change the economy more than any other feature of the blockchain. They could take over most routine business processes. Some companies could be no more than a bundle of smart contracts, forming true virtual firms that live only on a blockchain. Predictably, the first attempt to create such a “decentralised autonomous organisation” ended in disaster. Named “The DAO”, the entity was set up a year ago as a sort of virtual venture-capital fund. It raised more than \$160m, but then hackers siphoned off \$60m, leading to its demise.

Yet simpler versions of such structures, called initial coin offerings (ICOs), have since taken off—and created the first bubble of the blockchain economy. In an automated form of crowdfunding, startups set up a smart contract on Ethereum and publish a “white paper”, or prospectus. Investors can then send ether to the smart contract, which automatically creates “tokens” that can be traded like shares. More than \$550m has already been invested in ICOs.

Some of these projects are scams. And many honest ones leave outsiders baffled. EcoBit aims to build a market for carbon credits. Aragon wants to use blockchain tools to manage entire organisations, complete with decentralised arbitration courts. SONM is “a decentralised fog supercomputer”: users can either buy computing power with the project’s tokens or earn them by adding their machines to the pool.

Will the centre hold?

These efforts give a taste of what will be possible, says Albert Wenger of Union Square Ventures (USV), a venture-capital firm. He thinks that such decentralised organisations could one day disrupt the tech giants. At their heart, he argues, those tech titans are gigantic centralised databases, keeping track of products and purchase histories (Amazon), users and their friends (Facebook), and web content and past

WHAT IF

Everyone’s roads were as safe as Sweden’s?

Road deaths per 100,000 people, 2013



Deaths avoided
US 25,000
China 220,000
 per year

Savings
US \$92bn
China \$110bn
 per year

Sources: iRAP; WHO

search queries (Google). “Their value derives from the fact that they control the entire database and get to decide who sees which part of it and when,” he says.

USV has invested in decentralised alternatives, such as OpenBazaar, an e-com-

Decentralised organisations could disrupt the tech giants

merce marketplace. Instead of visiting a website, users download a program that directly connects them to other people wanting to buy and sell goods and services. Others have started to build blockchain-based social networks that pay users who contribute content. Steemit is a blogging-site that allows authors to earn tokens. Synereo lets users tip individual content-providers.

In a world run by blockchains, decentralisation could be pushed even further, to include objects. Once they have their own identity and can be controlled via a blockchain, it is possible to imagine them becoming, in a way, self-determining. A few years back, Mike Hearn, a former bitcoin developer who now works for R3, a blockchain consortium, suggested the idea of self-driving cars which are also financially autonomous. Guided by smart contracts, they would stash away some of the digital money they make by ferrying people around, so as to pay for repairs or to replace themselves when repairs are no longer worthwhile. They would put themselves

in long-term parking if not enough rides are to be had—or emigrate to another city. They could issue tokens to raise funds and to allow owners to get part of their profits.

If even objects control their own destiny, what is left for governments and the nation state to do? Plenty, it turns out. Despite libertarian dreams of complete decentralisation, in many cases somebody still has to make sure that the information baked into a blockchain is actually true. In China, for example, regulators are part of a pilot project run by IBM and Walmart to make the retailer’s supply network more transparent, for instance by tracing the provenance of pork and organic food.

In some areas the blockchain may even make life easier for governments. Last year Dubai announced that it wants all government documents secured on a blockchain by 2020, a prerequisite for agencies to become completely paperless. The technology could also be used as a cheap platform to generate what poor countries lack most: more efficient government and trust in contracts. And some hope that the blockchain could make the United Nations work better by helping it keep track of all its programmes, creating transparency and reducing waste.

Another example, counter-intuitively, is money. Although the blockchain was created to replace them, central bankers have been interested in the technology from the beginning. When banks share a ledger, rather than keeping their information in separate databases, it will be simpler for regulators to observe financial flows. Several central banks are toying with the idea of issuing their own crypto-currency; the Bank of Canada and the People’s Bank of China are running tests. If digital coins were to replace cash, this would open up new possibilities for monetary policy. To increase demand in an economic crisis, for instance, the coins could be programmed to lose some of their value if they are not spent within a certain time.

Warning: blockchains ahead

The technology today is nowhere near being able to support many of these applications. Such ledgers may not be as immutable as they seem, and blockchains have yet to show that they can scale up sufficiently (the bitcoin system manages seven transactions per second, compared with thousands in a typical credit-card network). But if the history of digital technology is any guide, these barriers will be overcome.

A bigger issue is institutional resistance, as many blockchain enthusiasts are discovering the hard way. Corporate departments are not willing to give up control of their lists because it means a loss of power. ▶▶

► In many cases it is also not clear how much value blockchains actually add. Some centralised systems seem to be doing just fine. For now, conventional payment services appear more efficient than their decentralised counterparts.

Politics will also be a hurdle. The reason many champions of the technology display an almost religious excitement about blockchains is because they believe these replace messy decision-making with clean cryptographic code. But bitcoin itself shows that even simple technical ques-

tions can turn into interminable fights between potential winners and losers. Even after years of discussion, those involved in bitcoin have yet to agree on how to increase the system's capacity.

This points to the biggest question of all. Should blockchains run the world? Warning voices are starting to be heard. If distributed ledgers indeed disrupt the trust business, then a lot of administrative jobs will be lost, perhaps even more than through artificial intelligence. Some have called blockchains a libertarian conspira-

cy. Others fret about a dismantling of institutions humans have painstakingly built. "Each time we use a distributed ledger we participate in a shift of power from central authorities to non-hierarchical and peer-to-peer structures," researchers at the European Parliament wrote recently. Then there is the concern that hard, cold blockchains and contracts too smart for their own good will ossify society—or make it run amok.

As decentralised list-keeping grows stronger, the list of worries about it is sure to grow longer. ■

IF ADVISERS ACTED IN THEIR CLIENTS' BEST INTERESTS

Honest brokers

Why consumers of financial and other services may need more protection

THOSE who work in American finance have been up in arms about the idea of a "fiduciary rule" which requires them to act in the best interests of their clients, and to put clients' interests above their own. The aim is to eliminate, or at least expose, conflicts of interest, such as when advisers get paid more to recommend one product than another. To be fair to advisers, such regulations mean extra bureaucracy. Putting clients first ought anyway to be the principle underlying the provision of investment advice. Yet there is a long history of investors being recommended to buy high-charging products when cheap alternatives, such as funds that track an index, are available. What would the world be like if all those in positions of responsibility had to follow the fiduciary rule?

Investment bankers spend a lot of their time trying to persuade their corporate clients to bid for other companies. But research by KPMG shows that only a third of takeover deals in North America add value. Given those odds, a lot fewer takeovers ought to happen. The advisers have an interest in recommending a deal; they get paid whether the takeover is a success or not. A fiduciary rule might make them more cautious.

Commercial banks also treat their loyal customers with little respect. Often, they lure new customers with attractive savings rates that last for just a year, before dropping to negligible levels. It is up to the customer, not the bank, to keep track of when the higher rate expires. Too bad if you are a pensioner who depends on savings income and finds it hard to get hold of the right information. But with a fiduciary rule, banks would have to



check that their customers were always getting the best rate on offer.

The same goes for energy companies. They too lure customers for gas and electricity with attractive offers. But they do not treat their existing customers with the same care. When the special offer ends, consumers end up on a standard rate; one survey estimated that British consumers on that rate were paying £300 (\$390) a year too much for their energy.

One of the biggest scandals in British finance was "payment protection insurance", where consumers took out policies so they could cover debt repayments in case of illness or unemployment. This makes sense for mortgages, but much less for credit-card debts; in the end, the industry has paid back £27bn to consumers to reflect mis-sold policies. Perhaps a fiduciary rule would have spared the industry a scandal that dented profits for years and ruined the reputation of several banks.

Resistance to a fiduciary rule would

come from those who argue that consumers should be able to make their own judgments. But that tends to work much better for manufactured goods and food than it does for services. People can generally judge if a television shows good pictures or if they like the taste of a tin of beans. With services, it can be hard to tell the quality or even the price of what we are buying.

The service provider may require us to sign a long contract where the full cost may take years to emerge, and even then we will be unsure of the counterfactual—would we have got a better deal had we bought something else? The contract may be so complex that there is an "information asymmetry" between the seller, who devised it, and the consumer: the two are not dealing on equal terms. This suggests some extra protection is needed.

This is particularly the case when some products are sold via commission, in which the reward of the seller is incorporated into the cost of the product. In the past, this has made it appear that some financial advice is "free"—making it difficult for advisers who do not take commission to break into the market, since they have to charge an upfront fee. The rules in Britain were changed in 2013 to eliminate this distortion but products are still sold by commission elsewhere.

Many of those who work in finance have become rich looking after other people's money. It would be nice to think that their clients had done as well. But without a fiduciary rule, one is tempted to remember the story of the naive trainee being shown the yachts of his firm's partners in the harbour. "But", he asked, "where are the customers' yachts?"

IF THE STATE GOT OUT OF THE REDISTRIBUTION BUSINESS

A question of inequality

We invited Sir Angus Deaton, a Nobel prize-winning economist from Princeton, to answer a question that intrigued him: do governments reduce inequality?

IF WE were somehow to abolish its government, would America become less equal? Would Britain? The obvious answer is yes; many see the reduction of market inequality as one of the main tasks of the state in a mixed economy. And indeed, across the mostly rich economies of the OECD, post-tax incomes are more equally distributed than pre-tax incomes.

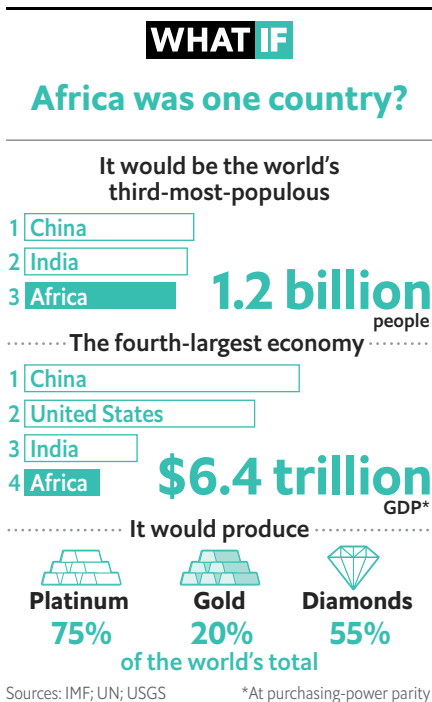
But this simple understanding is seriously incomplete—both factually, and in its view on the way governments behave.

The standard case, which all economists learn, is that competitive markets are efficient, in the precise but limited sense that in a well-functioning free market it is impossible to make anyone better off without hurting at least one other person. Nothing in this guarantees an acceptable distribution of income; one person having everything can be perfectly efficient. Markets do not care who gets what. But people do, and they expect their representatives to enact policies that promote fairness.

Governments levy progressive income taxes as well as (rather less progressive) sales or value-added taxes, and they use the proceeds to provide public goods and to finance a safety-net for those with low resources. Governments also legislate to ensure that markets are in fact competitive.

How well do governments do? The OECD estimates that, on average across its members, tax and transfer programmes reduce the Gini coefficient of income (a gauge of inequality) by a quarter. America is somewhat below the average; Britain is close to it. The US Congressional Budget Office calculates that there is about a 20% reduction in income dispersion between market and disposable income, attributable to transfers and taxes in a 3:2 ratio.

Yet not all governments behave like this. Most poor countries do not. In part, they lack the capacity to make transfers and to collect taxes, especially income taxes. More fundamentally, many governments have no interest in redistribution. Inequality between the rulers and the rest is not a bug but a feature in a deliberate strategy of exploitation and extraction. This is how colonial powers behaved, and many post-colonial leaders learned the lesson well. I am not sure what the no-government counterfactual would look like



for such countries, but these governments are creating inequality, not reducing it.

Surely this is not so in the liberal democracies of the OECD? Yet even there, it is naive to suppose that governments and politicians see their purpose as addressing the failures of free-market capitalism.

Just comparing market and disposable incomes ignores a large part of the story: the effect of government on “market” income itself. As with poor countries, we need an idea of the incentives that politicians face and how they behave in response. Public-choice theory, which focuses on these incentives, poses a major challenge to the model of an ideal state fixing a less-than-ideal market.

Behind on the rent

Different political factions care differently about outcomes like growth and unemployment, and their policies will affect the distribution of pre-tax incomes. Pre-tax income inequality in America has been higher under Republican presidents than under Democrats. Unemployment has been lower and growth higher during Democratic

administrations. This may be chance, or due to events outside the control of policy, but perhaps the facts illustrate the point.

Such mechanisms are benign compared with what happens when well-funded interest groups use the state as an ATM to enrich themselves. Such rent-seeking funnels resources upwards, from poor to rich, and blurs any distinction between poor- and rich-country governments. I pick examples from America, where there are many to choose from (rent-seeking is perhaps less developed elsewhere and takes different forms).

The United States spends 18% of GDP on health care yet has one of the lowest life expectancies of any rich country. If spending were reduced to 12% of GDP, in line with France, Germany, or Switzerland, a trillion dollars—\$8,000 for every family—could be transferred out of unproductive activities and could supplement median earnings, the stagnation of which owes much to rising health-care costs. Much of that trillion dollars goes to enrich the owners and executives of drugs companies, device manufacturers and relentlessly consolidating hospitals. This rent-seeking is supported by an army of lobbyists: there are more than twice as many lobbyists for the pharmaceutical and health-products industry than there are Congressmen. All of this works to keep prices high, to force the government to buy any drug approved by the Food and Drug Administration, and to fend off the creation of an evaluative agency like Britain’s NICE.

Perhaps the most egregious case today is America’s opioid epidemic, which in 2015 killed 16,000 people from overdoses of prescription drugs, in essence legalised heroin sold as painkillers. The producers of these drugs have made billions of dollars in profits.

Rent-seeking is hardly confined to health care, nor is it always national. Local rules and licences often keep power and money with those who already have it.

At the national level, it is hard for any member of Congress to stand for election without deep-pocketed support, so voters get to choose among candidates whose views coincide with those of wealthy interests. Empirical work shows that legislators vote for the interests of their well-off constituents, not the public at large. There is little difference here between Democrats and Republicans. The influence of the unions, which used to provide a countervailing force, has waned with their membership and with anti-union legislation.

It is possible that American democracy today has been damaged to the point where it is redistributing up, not down. The libertarian case for small(er) government should not necessarily be thought of as an argument that favours the rich. ■

IF BRITAIN BECAME "SINGAPORE-ON-THAMES"

The battle beyond Brexit

2021

After crashing out of the European Union, Britain tries an alternative economic model. The experiment is proving painful

IT IS 2021 and Britain is out of the European Union. The two-year Brexit negotiations never really got going. Following the general election of 2017 the Conservatives, though the largest party, had no majority in Parliament. They struggled to formulate a coherent plan to present to the EU. The hardline fringe of the party promised to raise hell any time there was any suggestion of compromise with Brussels. The two sides did not get close even to a transitional deal. On March 29th 2019 Britain crashed out of the club.

The immediate result was panic. British airlines were excluded from the EU's common aviation area, so they were no longer allowed to take off in one EU country and land in another. Cars, Britain's second-biggest goods export, faced a 10% tariff to enter the EU market. Exporters did not know how to navigate EU customs, prompting long delays. The pound plummeted.

With bankers moving to Frankfurt and a severe recession looming, the Conservatives drew up a blueprint to keep the post-Brexit economy competitive. The plan called for low taxes and a small state. This was a renewed push in the direction taken by George Osborne, the chancellor in 2010-16, who reduced public spending as a share of GDP from 45% to 40% while cutting taxes on companies and the rich.

The Tories dismissed the notion, touted by the tabloids, that Britain was turning into "Singapore-on-Thames". They were wary of alienating left-leaning Brexiteers who had for the first time voted Conservative in 2017. Yet the plans were radical. They started by cutting the rate of corporation

tax from 17% to 10% (a threat Britain made to its EU partners early in the Brexit negotiations). The higher rate of income tax was slashed from 40% to 25%. The government also tweaked Britain's tax-secrecy laws. Bearer shares (almost universally outlawed because they confer anonymous ownership of a company) were reintroduced, having been abolished in 2015.

At first the plan seemed to have an impact. Spotify, a music-streaming app, moved its headquarters from Stockholm to London. The weak pound made British firms targets for foreign buyers. Unilever, one of the largest companies in the FTSE 100 and the producer of Colman's mustard and Hellmann's mayonnaise, was finally taken over by Kraft Heinz, an American firm, to form UniKraft. UniKraft is now a British firm for tax purposes but the big decisions are taken in America.

Reality bites

Yet, beyond a brief uptick in GDP, all this has hardly helped the economy. It has also deprived public services of resources.

Take the economy first. Cutting corporation tax and introducing loopholes may induce big firms to switch their tax domiciles, but it does little to encourage firms to create jobs or production in Britain. Even the most optimistic calculation from the government, which finds that higher investment leads to faster growth and a higher tax take, suggests that after 20 years just half of the lost receipts could be recouped.

Overall, Britain remains far less attractive to foreign investors after Brexit than it was before. It is no longer in the EU's single

market and, with immigration rules tighter, firms have trouble finding the right staff. UniKraft has saved a bundle on its tax bill but it also moved the Colman's mustard factory from Norwich to Poland.

Personal-tax cuts have had a similarly underwhelming effect. The 15-point cut to the higher rate has benefited only a small number of people: 15% of income-tax payers, according to official estimates. These folk are richer, so are more likely to save rather than spend any extra income.

The tax cut has thus given growth only a marginal boost. It has been expensive. Estimates from the Institute for Fiscal Studies, a think-tank, suggest that each percentage-point cut in the higher rate of income tax costs the government about £1bn. The number of higher-rate taxpayers has declined as rich EU nationals quit the country.

As the tax take fell, the government had to cut spending. The tabloids cheered the raid on the budget for overseas aid and the abolition of the Department for Business, Energy and Industrial Strategy, seen as a waste of money. But all government departments needed to economise.

That proved particularly hard for the National Health Service. The austerity plan called for a decade-long cash-terms freeze in NHS spending, the biggest squeeze in its history (compared with an average real-terms increase in 1950-2010 of 4% a year). The exodus of foreign nationals also hurt; in the early 2010s one-third of doctors were immigrants.

The NHS found it hard to cope even with a fairly mild winter in 2020. Typically Britain sees around 30,000 excess deaths each winter, but that rose to 60,000.

This hit the government's popularity. Sensing their chance, a group of pro-EU MPs have formed a new party, Britain Up! It has nearly 100 MPs, defectors from Labour and the Liberal Democrats—plus a few Tories, whose defection has triggered an election. It is campaigning on a promise to hold a referendum on whether to reapply for EU membership. The rump of the Tory party insists Brexit means Brexit. The polls suggest the race is neck and neck. ■



This little piggy left the single market

IF HUMAN CLONING HAPPENED

Chips off the old block

2050

How the story of human cloning could unfold, and what it might reveal

IT HAD looked impossible, but, in the end it was surprisingly easy. So, though few knew of their creation at the time, the first human clones were born in 2020 in Taiwan. Now, as those clones celebrate their 30th C-days, it seems a good moment to review the history of cloning.

Those first clones, the brainchildren of Lao Chen, were the actual children of several of her graduate students, conceived by the technique used to create the first cloned sheep. This was to extract the nucleus of a volunteer's body cell and insert it into an enucleated human egg cell provided by a second volunteer, before re-implanting the whole package back into that volunteer's womb. This had proved impossible for people in the past, but Lao worked out how to tinker with the epigenetic programming of the transplanted nucleus (basically, a bunch of chemical switches that keep genes "on" or "off"), so that the result was a human being rather than a scrambled bundle of cells.

Lao waited until her clones' second C-days before announcing what she had done. Seven of the 11 implanted eggs had come to term and been born, and only one of the clones had subsequently died. Crucially, the rest seemed healthy; and, indeed, all are still alive and well.

Guardians of public virtue were furious that this had gone ahead in secret. Some questioned how "voluntary" the surrogate mothers' participation had been. But the existence of the "Taipei Six" ended debate about whether human cloning should be permitted at all, and began a more fruitful one about the circumstances in which it should be allowed.

Taiwan's government, basking in Lao's success, passed a law that eliminated any doubt about the legality of the process. Japan and South Korea quickly followed suit. Britain's Human Fertilisation and Embryology Authority looked into the matter, concerned mainly about the *in utero* attrition rate. Observing that stillbirth is a natural phenomenon, and that the Taipei Six appeared to be developing normally, it recommended to Parliament that human cloning be permitted in Britain. Most Western countries followed suit.

Only in America was the issue too hot to handle at the highest level. Surprisingly,

debate did not divide along the same lines as that country's long-running controversy about abortion. Though many pro-lifers opposed cloning as another interference with the God-given method of reproducing humans, some welcomed a new form of procreation. Pro-choicers split between those who saw it as degrading to women—reduced to the role of mere vessels for oth-

Cloning became an immensely fashionable idea

er people's children—and those who welcomed a further extension of reproductive choice. Congress dithered, as did the president. Eventually, California decided that reproduction should be a state not a federal matter, and legalised cloning. That decision was endorsed by the Supreme Court, leading to a patchwork of permission throughout the republic.

In those days, cloning remained expensive, restricted to the rich and enthusiastic. Inevitably, there were some excesses. A billionaire who had made his fortune from synthetic diamonds persuaded 16 of his company's models to carry clones of himself to term. Rumours from North Korea suggested an attempt to clone elite soldiers with a view to creating a perfect army. However, the technology's main users

were bereft parents who had lost a child and yearned for an identical replacement.

Generally, such couples were not disappointed—at least at first. One thing cloning has shown is that human personality is largely innate, so the young clones were usually pleasingly similar to their departed siblings. As these "resurrectionist" clones grew older, though, many developed resentments similar to those of child actors and musicians who come to think of themselves as mere agents of parental ambition.

Two further breakthroughs were needed to make cloning commonplace. One built on the creation in 2006, by a Japanese researcher, Shinya Yamanaka, of induced pluripotent stem cells derived directly from somatic body cells such as skin. These cells, now used routinely for tissue repair, have the potential to turn into any type of body cell. But, in 2026, Hiroko Oda worked out how to tweak their epigenetic switches, too, causing them to behave like newly fertilised egg cells by forming first an embryo, then a fetus and then a viable animal.

"Embryoisation", as she called this process, was deemed safe for human use five years later—by a lucky coincidence at the point where artificial wombs, too, were approved for human use.

Peak mini-me

At a stroke, these developments dispensed with the need to find volunteers either to supply eggs for nuclear transplant, or to carry the cloned embryos to term. In the 2030s cloning became an immensely fashionable idea. At the fashion's peak, around 10% of new babies in San Francisco were registered as being the result of cloning.

That, though, was the high-water mark for human cloning, for people began to discover that raising a mini-me was not the joyful experience of creating a flawless self-simulacrum that they had hoped. The ▶▶



▶ similar personalities of progenitor and offspring often amplified the problems of parenthood, rather than diminishing them. Assisted reproduction, as the apparatus of artificial wombs and their sustaining fluids became known, has remained popular among women who would rather not have their lives disrupted by pregnancy, and among male couples. But, these days, the preference is to use it to develop fetuses conceived either by conventional IVF or by GFSC (gametogenesis from somatic cells, in which sperm or egg are made from skin cells), so that both parents' genes are mixed in the child they jointly raise.

The debate has moved on. Cloning, like IVF before it, excites little comment. Most countries have passed regulations forbidding multiple cloning of the same person. And GFSC permits couples of any and all "genderalities" to have children who are their true, Darwinian heirs. It is, instead,

the question of genetic improvement that concerns the guardians of public virtue.

The Superman movement argues vociferously for the abolition of laws, mostly passed when human genetic modification was first permitted, which forbid the modification of a genome to create a being who does not inhabit human "G-space". The movement's members want to be able to create people who could not, even in principle, have come about as a combination of known, natural human genetic sequences. They believe computer modelling is now so good that the consequences of DNA changes outside G-space can be predicted, and that the risk of "inhuman" monsters can thus be obviated. No jurisdiction yet permits this. But, given the simplicity, these days, of editing DNA, it is hard to believe there is not, somewhere in the world, just such a being preparing to celebrate its own second C-day. ■

Imagine a nuclear blast occurring somewhere above eastern Nebraska. Radiating outwards, the EMP fries electronics in southern Canada and almost all of the United States save Alaska and Hawaii, both safe below the horizon. It permanently damages the grid's multimillion-dollar high-voltage transformers. Many are old (their average age is about 40). Some burst into flame, further damaging substations.

America runs on roughly 2,500 large transformers, most with unique designs. But only 500 or so can be built per year around the world. It typically takes a year or more to receive an ordered transformer, and that is when cranes work and lorries and locomotives can be fuelled up. Some transformers exceed 400 tonnes.

After the surge, telecom switches and internet routers are dead. Air-traffic control is down. Within a day, some shoppers in supermarkets turn to looting (many, unable to use credit and debit cards, cannot pay even if they wanted to). After two days, market shelves are bare. On the third day, backup diesel generators begin to sputter out. Though fuel cannot be pumped, siphoning from vehicles, authorised by martial law, keeps most prisons, police stations and hospitals running for another week.

With many troops overseas or tasked with deterring land grabs from opportunist foreign powers, there is only one American "peacekeeper" soldier for every 360 or so civilians. Pillaging accelerates. This leads many with needed skills to stay home to protect their families. Many of the rock climbers who help overwhelmed fire departments free tens of thousands from lifts begin to give up on day four despite the heart-wrenching banging that continues to echo through some elevator shafts.

Utilities can neither treat nor pump water or sewage. Raids on homes thought to have water become frequent and often bloody. Militias soon form to defend or seize control of swimming pools and other water sources. Streams and shovelled-out pits provide water in some areas, but sooner or later rain sweeps in faeces-ridden mud. Deaths from cholera and other diseases multiply.

As relief ships arrive, food, water filters and fuel are offloaded by hand amid chaos, but demand cannot be met even in port cities, much less inland. Where food can be grown without pumped irrigation, rural militias cluster into "aggie alliances" not keen to share with the hordes streaming out of cities. Some aggie alliances hole up in newly abandoned prisons, the better to defend scavenged crops and farm animals. The value of cash collapses along with faith in government.

The death rate picks up. Eventually, months later, about three quarters of the benighted area has power for at least ten ▶▶



IF AN ELECTROMAGNETIC PULSE TOOK DOWN AMERICA'S ELECTRICITY GRID

A flash in the sky

For rich countries, prolonged loss of electricity is a low-probability event. But the scale of the potential impact is mind-concentrating

ON MARCH 13th 1989 a surge of energy from the sun, from a "coronal mass ejection", had a startling impact on Canada. Within 92 seconds, the resulting geomagnetic storm took down Quebec's electricity grid for nine hours. It could have been worse. On July 23rd 2012 particles from a much larger solar ejection blew across the orbital path of Earth, missing it by days. Had it hit America, the resulting geomagnetic storm would have destroyed perhaps a quarter of high-voltage transformers, according to Storm Analysis

Consultants in Duluth, Minnesota. Future geomagnetic storms are inevitable.

And that is not the only threat to the grid. A transformer-wrecking electromagnetic pulse (EMP) would be produced by a nuclear bomb, designed to maximise its yield of gamma rays, if detonated high up, be it tethered to a big cluster of weather balloons or carried on a satellite or missile. A midrange missile tested by North Korea on April 29th 2017 exploded 71 kilometres (44 miles) up, well above the 40km or so needed to generate an EMP.

► hours a day. It would have been worse had 41 countries not dismantled transformers for reassembly in North America. (The most generous donors have to accept rolling blackouts.) Martial law ends six months after the original energy surge. Roughly 350,000 Canadians and 7m Americans have died.

A similar nightmare could happen in any rich country—grids outside America are vulnerable too. Such scenarios necessarily dip into “uncharted territory for an industrialised society”, as Thomas Popik, head of the Foundation for Resilient Societies, a think-tank in New Hampshire, puts it. But shorter blackouts suggest that things can get bad fast. Just three hours after Chile’s grid-collapsing earthquake on February 27th 2010, even relatively wealthy people began looting stuff they did not need. With electricity gone, normal rules had suddenly vanished and “out of control” emotions took over, says Roberto Machiavello, then rear-admiral and top martial-law official in Chile’s Concepción area.

Without soldiers at hospitals, Admiral Machiavello says, doctors would have stayed at home. Less than a week after Hurricane Katrina struck New Orleans in 2005, many police officers opted to protect their families rather than work. Chris Ipsen, spokesman for the Emergency Management Department of Los Angeles, estimates that, with the grid down, Angelenos would be foodless in less than ten days. In poor areas, he reckons, groups would quickly form and say, “Hey, let’s go over to the mansions in Bel Air.”

Insurance, anyone?

In the aftermath of Haiti’s earthquake in January 2010, cholera alone killed at least 10,000. Jacques Boncy, head of Haiti’s National Laboratory of Public Health, reckons that, in three months of blackout in America, faecal contamination of water would kill several million. That might be optimistic. The EMP Commission, an expert group set up by America’s Congress to study the threat, reckoned in 2008 that the first year of societal breakdown could finish off two-thirds of Americans.

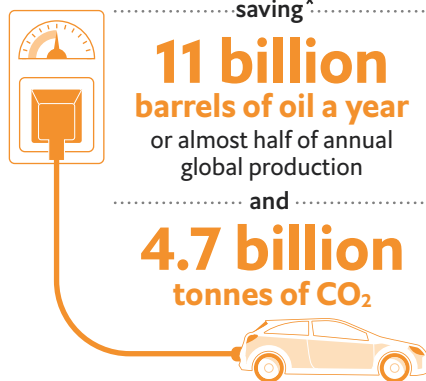
A country’s electricity grid can be knocked out in other ways. One is cyber-attack. Hackers cut power to 230,000 Ukrainians in December 2015—but only for hours. Long-term damage from cyber-assaults is unlikely, says Kenneth Geers, a security expert who studied the attack.

What about terrorism? Shooting up transformers at just nine critical substations could bring down America’s grid for months, according to an analysis performed in 2013 by the Department of Energy’s Federal Energy Regulatory Commission (FERC), says its then-chairman, Jon Wellinghoff. Others think more transform-

WHAT IF

All new cars were electric?

By 2040, electric cars would make up 90% of the world’s 2 billion cars



Sources: ACEA; AFDC; Bernstein; BP; EPA; IEA; OICA *Excludes emissions and oil used to make electric cars

ers would need to be taken out. At any rate, information on which substations are critical is secret. In 2013 gunmen knocked out 17 of 21 transformers at a substation in San Jose. It was not a critical one.

The sun probably poses a greater risk of a sustained outage than hackers or saboteurs. That is one reason the EMP Commission reconvened in January 2017. Kit that protects transformers from EMP also saves them from geomagnetic storms, though the reverse is not true. George Baker, a staffer on the commission and a former boss of EMP research at the Pentagon’s Defense Threat Reduction Agency, says that critical

IF THE UNIVERSE WAS NOT “FINE-TUNED”

A numbers game

There are some things you just do not want to mess with. The constants of nature, it seems, are among them

IF YOU give a balloon a modest electric charge—by rubbing it on your jumper, say—you can stick it to the ceiling, thereby both delighting small children and revealing a basic truth about the universe: electromagnetic forces are much stronger than gravitational ones. Despite the fact that there is a whole planet pulling down on that balloon with all the gravity that its six billion trillion tonnes can provide, your

military systems have been EMP-proofed. But other agencies, he says, have done “precious little” to safeguard civilian infrastructure. The commission will issue an updated report in September. It will be as grim as the assessment in 2008, he says.

The expense of installing surge-blockers and other EMP-proofing kit on America’s big transformers is debated. The EMP Commission’s report in 2008 reckoned \$3.95bn or less would do it. Others advance higher figures. But a complete collapse of the grid could probably be prevented by protecting several hundred critical transformers for perhaps \$1m each.

Yet not much is being done. Barack Obama ordered EMP protection for White House systems, but FERC, the utilities regulator, has not required EMP-proofing. Nor has the Department of Homeland Security (DHS) pushed for a solution or even included EMP in official planning scenarios. (The Pentagon should handle that, DHS officials say; the Pentagon notes that civilian infrastructure is the DHS’s responsibility.) As for exactly what safeguards are or are not needed, the utilities themselves are best equipped to decide, says Brandon Wales, the DHS’s head of infrastructure analysis.

But the utilities’ industry group, the North American Electric Reliability Corporation (NERC), argues that, because EMP is a matter of national security, it is the government’s job. NERC may anyway be in no rush. It took a decade to devise a vegetation-management plan after, in 2003, an Ohio power line sagged into branches and cut power to 50m north-easterners at a cost of roughly \$6bn. NERC has repeatedly and successfully lobbied Congress to prevent legislation that would require EMP-proofing. That is something America, and the world, could one day regret. ■

party trick is enough to thwart it. This disparity in the forces’ strengths, though, tells you little about why the absolute strengths are what they are. Nor, when it comes down to it, does the hard-won wisdom of the world’s physicists.

The way that the laws of nature, expressed in mathematics, describe the relationships between space, time and matter has a great formal coherence. But some as- ►►



A constant party going on

pects of this systematic and highly successful description stand alone. There are fundamental constants in physics that are apparently arbitrary—numbers that seem to exist entirely in their own right, without reference to the rest of the universe. No obvious reason seems to exist for them to be as they are; they are simply the way the world is.

One of these, called the fine-structure constant, says how strong electromagnetic forces are. Its value is $1/137$. If it were larger, balloons would stick more strongly to ceilings. If it were smaller, their weight would more easily pull them down.

Such possibilities might seem to be of no particular importance. It is obvious that the universe would be fundamentally different if either force went away: no electro-

magnetism, no molecules; no gravity, no planets. That a small change in the strength of either might matter is harder to imagine. But it would.

In the 1950s Sir Fred Hoyle, a British astrophysicist, realised that the abundance of carbon in the universe was a bit of a conundrum. Carbon, like almost all other elements, is made in stars, where fusion creates heavier elements from the nuclei of lighter ones. Nuclei all have positive electric charges, and since like charges repel each other, this means that the nuclear banging together needs to be pretty forceful. If electromagnetism were only a little stronger, then even in the hearts of stars nuclei would not be banged together hard enough to bring forth carbon. That said, if it were just a little weaker, carbon would be simply one step on the way to nuclei that were heavier still, no sooner made than consumed.

In either case, the result would be a universe radically less amenable to life. The quality and number of the bonds that carbon atoms can form with each other and with atoms of other elements provide a unique versatility when it comes to the creation of large and complex molecules; no other element comes close. Without carbon there would be no polymers with which to make either wool or rubber, no muscles with which to rub the two together, no brains to conceive of doing so—or of explaining what happens afterwards. According to the most recent studies, which take into account far more subtleties than Hoyle knew about in the 1950s, if the fine-structure constant were 4% higher, or 4% smaller, the universe would be essentially rubber-, wool- and carbon-free, and there would be no chemical basis for life.

This is far from the only example of what is sometimes called “fine tuning” in the physical universe: that is, seemingly arbitrary arrangements which turn out to be necessary for life. The rate at which the uni-

verse expands, its ratio of matter to energy and various other apparently arbitrary factors can be seen as showing signs of such fine tuning.

Some, including some scientists, take this as evidence for the role of an intelligence in the creation of the universe, or the setting of its laws. Hoyle himself had a tendency to such views, though he did not hold them in a way that fitted into any religious tradition. Others see it as a selection effect: of all the universes that there could be, only those in which observers are possible get observed. There should be no surprise to carbon-based life forms in the discovery that their universe is well supplied with carbon; what other sort of universe could they expect?

This way of thinking has become particularly pertinent as physical theory has opened up the possibility of a “multiverse”—wherein that which is observed, or will ever be observable, from Earth is but the tiniest fraction of all there is, with other universes subject to other rules in an endless panoply beyond. Seen in this light, untuned, un-lived-in universes may not be mere counterfactuals, but real and profuse. Maybe there is something that can be learned by considering them not just as thought experiments, but in the context of the rules that govern what gets created in the whole great ensemble.

Curiouser and curiouser

Perhaps the most fruitful way of thinking about fine tuning is to appreciate it as a focus for curiosity. In the 1970s there was talk of fine tuning as an explanation of why, cosmologically speaking, the universe was both smooth and flat (unlike a billiard ball, smooth but not flat, or a shingle beach, flat but not smooth). In the 1980s physicists fascinated by this conundrum came up with a theory that explained both attributes in terms of a single process, known as cosmic inflation, a theoretical path which led, in time, to the interest in multiverses. Perhaps some things which currently appear to be fine-tuned—such as the rate at which the universe’s expansion accelerates—may similarly, with enough hard thought, come to be seen as consequences of a deeper necessity in the laws of nature.

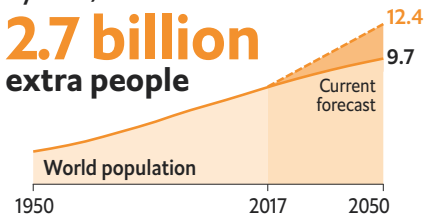
It is not clear why things which seem fine-tuned should be more likely routes to deeper insights than other aspects of reality. But perhaps they do not need to be. Perhaps a seeming quirk or coincidence that captures the imagination is enough in and of itself to provide the spur to progress. Finding, or appreciating, a way in which the universe appears fine-tuned generates the same sensations as a balloon stuck out-of-reach on the ceiling: delight, curiosity and an exquisite frustration. That is often all the path to understanding needs. ■

WHAT IF

Everyone lived to 100?

By 2050, the world would have

2.7 billion
extra people



Everyone would have

100,000
extra productive
hours in their life*



That could mean
2,500 extra weeks of work†

Sources: UN; “The 100-Year Life: Living and Working in an Age of Longevity”, by A. Scott and L. Gratton *Compared with 70-year life expectancy †Assuming work continues until 90

WEATHERING the WEATHER

FOR MILLENNIA MANKIND HAS MOANED ABOUT the WEATHER

OH GREAT

BUT WHAT IF PEOPLE COULD CONTROL THE CLIMATE!?!

OH GREAT!

FARMERS COULD ENSURE ADEQUATE RAIN...

SKIERS BOUNTIFUL SNOW... AND HOLIDAYMAKERS COPIOUS SUN

WITH PLANNED MOISTURE... BARREN LANDSCAPES WOULD BLOSSOM, BECOMING BREAD BASKETS!!

WELCOME TO THE GOBI DESERT (FORMERLY THE GOBI DESERT)

FAMINES WOULD BE AVERTED & HUNGER ABATED.

CATAclysmic STORMS & TORNADOES WOULD BE TAMED...

NOT NOW PLEASE!

RIGHT! SORRY

SAVING PRECIOUS LIVES & PROPERTY.

PLUS GLOBAL WARMING WOULD EASE

Cool! VERY COOL!

KEEPING WATER LEVELS IN CHECK!!

BUT! HOW WOULD PEOPLE CONTROL THE PEOPLE WHO CONTROL THE WEATHER ???

IN NEIGHBOURHOODS...

DIFFERENT WEATHER PREFERENCES COULD CREATE STORMY INTERACTIONS

LOCAL GOVERNMENT WOULD NEED TO INTERCEDE TO MANAGE THE CLIMATE OF DISTRUST...

TODAY'S WEATHER

COUNTRIES WOULD FIGHT OVER WEATHER PRIORITIES

WITH HEATED EXCHANGES & RISING TEMPERATURES.

PLUS TERRORISTS WOULD TRY TO WEAPONISE THE WEATHER!

I'M THE SPIN DOCTOR FROM HELL...

MAYBE WEATHER CERTAINTY IS NOT A CERTAIN BLESSING!

REGARDLESS... ONE THING IS CERTAIN...

OH GREAT

MANKIND IS FOREVER CURSED TO MOAN ABOUT THE WEATHER!!

IF THE OTTOMAN EMPIRE HAD NOT COLLAPSED

Sultans of spring

Imagine the mayhem that might have been avoided had the Ottoman Empire been saved rather than sunk. Blame, among others, Winston Churchill

WHEN a Serb gunman shot an Austrian archduke in the summer of 1914, the nations of Europe tumbled into war with all the grace of bowling pins. Austria-Hungary declared war on Serbia, whose ally Russia declared war on Austria, whose ally Germany declared war on Russia, whose allies France and Britain declared war on Germany and Austria. By early August the continent was in flames.

Much as it wobbled like the rest, however, one of those bowling pins could not make up its mind. Which way would Turkey fall? Should the fading Ottoman Empire join the Triple Entente (Britain, France and Russia) or go with the Central Powers (Germany and Austria-Hungary)?

Turkey's 500-year-old empire was shrinking. It had lost its territories in Africa, nearly all its Mediterranean islands and most of its Balkan lands as well as chunks of eastern Anatolia. It was debt-ridden, industrially backward and politically shaky.

Still, the sultan's lands straddled two continents, controlling access to the Black Sea. His Arabian territories stretched beyond the holy cities of Islam to the mountains of Yemen and the Persian Gulf, where there were rumours to lie vast caverns of the sticky black liquid soon to replace coal as the world's chief source of power.

Confident of Turkey's weakness, Brit-

ain, France and Russia could have clobbered the Ottomans and divided the spoils. Thankfully, wiser heads prevailed. At a secret conclave aboard a British dreadnought off the coast of Norway in late July, a far-sighted politician by the name of Winston Churchill, then First Lord of the Admiralty, worked with French, Russian and Turkish diplomats to forge a treaty. The Turks drove a hard bargain for, as they coyly revealed, Germany too was proffering arms and gold in exchange for an alliance.

The deal that was reached proved immensely beneficial to all concerned. From France, Turkey received generous debt relief. Russia scrapped all claims to Ottoman territory, and made a limited goodwill withdrawal from parts of Anatolia. Churchill waived further payment on two warships that British shipyards were building for Turkey. And Turkey received assurances that its vulnerable extremities would not be attacked; for an empire that for a century had been preyed upon like a carcass this was a new lease of life.

The rewards to the Triple Entente were equally big. Granted exclusive access to the Black Sea, Russia's allies could resupply the tsar's armies when they faltered at the start of the war. With no need to defend its Turkish frontier, Russia moved thousands of crack troops from the Caucasus to shore up

its front lines. Turkey signed separate agreements recognising British control of the Suez Canal, Aden and the Trucial sheikhdoms of the Persian Gulf, securing the sea lanes for Britain's massive deployment of troops from the colonies to the Western Front. Turkey's own army joined in a broad front against Austria-Hungary. Together, these Allied advantages are thought to have shortened the war by as much as a year; the Central Powers might not have sued for a truce as soon as America entered the war, but fought on instead.

Reprieved from collapse, the Ottoman Empire's government pursued radical reforms. Challenged by growing nationalist tendencies from Arab, Armenian, Greek and Kurdish subjects, Sultan Mehmed V issued a historic firman or proclamation that recognised these as individual nations united under the Ottoman sovereign.

The sultan got to keep the title of caliph, commander of the Sunni Muslim faithful, which his ancestors had acquired four centuries earlier. This proved useful when the empire had to put down a rebellion of religious fanatics in central Arabia, led by a man called Ibn Saud who gained followers by claiming he would restore Islam to a purer state. But mostly the empire was seen as a tolerant place. When Nazi persecutions drove Jews from Europe in the 1930s, many took refuge there (as they had done when expelled from Spain in 1492), particularly in the province of Jerusalem.

If only

Needless to say, none of the above happened. Quite the opposite. Turkey aligned with Germany in the first world war, and the allies did attempt to invade and divide its empire. Churchill, instead of handing over the warships that ordinary Turks had paid for by subscription, had them seized for the British navy. In 1915 he ordered a catastrophic attack on Turkey; the landing at Gallipoli cost the allies 300,000 casualties. British campaigns against Turkey in Iraq and the Levant cost another million lives.

Turkey's casualties mounted, by war's end, to 3m-5m people, nearly a quarter of the Ottoman population. This included some 1.5m Armenians, slaughtered because Turkish officials believed they might become a fifth column for a hostile Russia. And when Britain and France grabbed the Ottomans' Arab lands, their suppression of uprisings cost thousands more lives.

How much of today's mayhem in the Middle East, from civil wars to terror in the name of Islam (and of restoring the caliphate) to the emergence of sectarian dictators such as Bashar al-Assad, not to mention of such a grudge-bearing Ottoman revivalist as Recep Tayyip Erdogan, might have been avoided, if only Churchill had embraced Johnny Turk instead of sinking him? ■



Did it have to be like this?



Venezuela

The homecoming king

CARACAS

Leopoldo López is out of jail. But Venezuela is still stumbling towards dictatorship

ON JULY 5th, independence day, a pro-government mob armed with sticks, metal poles and pistols charged into Venezuela's golden-domed national assembly building and beat up parliamentarians. Some of the victims, dazed and bloodied, staggered around the legislature's gardens. Two went to hospital; with fractured skulls, it was feared. The thugs were responding to a summons by Tareck el Aissami, the country's vice-president. The assembly, under opposition control since elections in December 2015, had been hijacked by an "oligarchy", he declared; "patriots" should defend it. The national guard, responsible for the legislature's security, made little effort to stop them.

Three days later, Venezuela's thuggish regime showed its nicer face. In the dead of night Leopoldo López, the country's most prominent political prisoner, was transferred from the Ramo Verde military prison to his house, where he will remain confined. The supreme court, which obeys the government, ordered the transfer on health and procedural grounds. Although Mr López, who looks healthy, is not a free man, his move back home is a surprise. Diosdado Cabello, a pugilistic panjandrum, had vowed that he would serve his full 13-year, nine-month sentence (for supposedly inciting violence during demonstrations in 2014) in his prison "cave".

The regime's unexpected softening towards Mr López adds confusion to a situa-

tion already fraught with it. Caracas, the capital, has been convulsed by protests since the end of March, when the supreme court usurped the powers of the national assembly. (The court partially reversed its decision, but the regime continues unlawfully to disregard the legislature.) At least 95 people have died in the protests. Shortages of basic goods add to the rage. Millions of Venezuelans are malnourished and the sick are untreated. Inflation this year will be 950%, predicts S&P, a rating agency. Three-quarters of Venezuelans oppose the 18-year-old regime. A *trancazo*, in which people block streets with cars, chains or bricks, stalled traffic for ten hours in several cities on July 10th.

Signs of discontent are appearing within the regime. More than 100 soldiers have reportedly been arrested for such offences as rebellion since the protests began. Luisa Ortega Díaz, the attorney-general under whose authority Mr López was prosecuted, has become one of the regime's most dangerous critics. She has filed charges against several senior military officers, including the chief of the intelligence service and the colonel who failed to stop the marauders at the national assembly.

Ms Ortega and the opposition are at one in resisting the regime's most brazen power grab so far: a plan to convene a constituent assembly, which can rewrite the constitution and do almost anything else it wants. Elections to the new body, set up to

Also in this section

38 Bello: Brazil's painful political purge

ensure that the regime will control it, are to take place on July 30th. The opposition calls the date "zero hour" for democracy.

It is unclear whether Mr López's transfer to more comfortable quarters is a sign of the regime's weakness or, more likely, of its guile. His imprisonment had become an international cause célèbre; his wife, Lilian Tintori, had visited Donald Trump in the White House. Mr López's move was brokered by José Luis Rodríguez Zapatero, a former Spanish prime minister who has been encouraging the government and the opposition to talk to each other. Optimists hope that dialogue might lead to a restoration of the opposition's political rights and an agreement on resolving Venezuela's economic and humanitarian crises.

Home, but not free

But it may well be that the unjailing of Mr López is a diversionary tactic rather than a sign that the regime is willing to make real political concessions. Venezuela's president, Nicolás Maduro, has succeeded before in disrupting opposition initiatives with conciliatory but ultimately meaningless gestures. In October 2016, during a push by the opposition to hold a referendum to recall him from office, he agreed to negotiations brokered by the Vatican. The talks came to nothing, but they split the opposition and helped undermine the referendum campaign.

Mr Maduro could exploit Mr López's homecoming in similar fashion. Before his jailing, Mr López, an economist educated in the United States, led the *salida* ("exit") movement, a radical part of the opposition that argued for Mr Maduro's negotiated departure from power. Mr López was convicted of inciting violence that led to 43 deaths during protests in 2014; lacking evidence, one prosecutor said the incitement was "subliminal". Mr López's main rival with- ►►

▶ in the opposition is Henrique Capriles, a moderate who lost to Mr Maduro in a presidential election in 2013 and governs the state of Miranda. Although he is not in jail, the government has banned him from running again for political office for 15 years.

By sending Mr López home, Mr Maduro may hope to widen divisions within the opposition, which has no single leader. Within hours, Mr López's and Mr Capriles's parties were bickering over how long the latest *trancazos* should last. Some opposition politicians criticised Ms Tintori for thanking regime bigwigs who were in the caravan of vehicles that brought her

husband home. Her critics suspected that she had capitulated to the regime, or that Mr López had struck a deal to get out of jail. Ms Tintori denies this. "Being courteous doesn't make you less brave," she said.

Mr Maduro is also using Mr López's relocation to try to thwart an alliance between Ms Ortega and the opposition. She was entirely to blame for jailing Mr López in the first place, he declared. The president insisted that he himself had played no part (despite boasting in 2014 that he had ordered Mr López's incarceration and would do the same for "all fascists"). The supreme court is threatening to put Ms Ortega on

trial for "grave errors", although the consent of the national assembly may be required to sack her.

If Mr Maduro intends the homecoming of Mr López as a signal that he is serious about dialogue, he will have ample opportunity to prove it. He could free Mr López rather than just sending him home, along with 100 or so other political prisoners. He could scrap the constituent assembly, restore the legislature's powers and call off Ms Ortega's trial. Until this happens, only Mr López's family will have cause to celebrate. Most long-suffering Venezuelans will remain justifiably ungrateful. ■

Bello | Brazil's painful political purge

After the conviction of Lula on corruption charges, the Lava Jato investigations must continue

ALMOST three-and-a-half years after it began as a seemingly routine probe into money-laundering, Operation Lava Jato ("Car Wash") has reached a critical stage. On July 12th Sérgio Moro, a federal judge, sentenced Luiz Inácio Lula da Silva, a former president, to almost ten years in prison, ruling that he was given an apartment worth 2.2m reais (\$690,000) by a construction firm that had received padded contracts for work on an oil refinery. Congress this week began debating whether to allow a trial of the current (centre-right) president, Michel Temer, who is charged with benefiting from a bribe of \$150,000, which he denies.

With the political establishment mortally threatened, calls for the corruption probes to be reined in have mounted. Lula's lawyers say he is the innocent victim of "a politically motivated investigation". He will remain free while he appeals, but the sentencing makes it harder for him to run for president again in 2018. It will also intensify debate as to whether Lava Jato is an overdue holding to account of the powerful, or just a witch-hunt.

It has spread far beyond the cartel of construction companies that obtained unduly generous contracts from Petrobras, the state-controlled oil company, by bribing officials and politicians. A recent focus was JBS, the world's biggest meat company, whose bosses, Joesley and Wesley Batista, admitted paying bribes totalling \$185m to hundreds of politicians. It was Joesley Batista who implicated Mr Temer by secretly taping a meeting at which he invited the president into indiscretion; one of his managers gave cash to an associate of Mr Temer, the source of the bribery charge.

In all 157 people have been convicted so far. The supreme court has authorised the prosecutors to investigate scores of



members of congress. To get this far, the prosecutors have relied on techniques that are novelties in Brazil. By using "preventive detention" and plea bargaining, they have extracted confessions and evidence that have led to charges against some of the country's most prominent businessmen and politicians.

Their critics see in all this a kind of Jacobinism in which the presumption of innocence is forfeited and the objective is not so much to apply the law as to undertake a crusade to rid Brazil of its political class. They also argue that Lava Jato's never-ending probes are depriving the country of the political stability it desperately needs.

They have a point. Rodrigo Janot, the attorney-general, has been widely criticised for his plea bargain with the Batistas, which broke good practice by granting them immunity from prosecution (rather than a reduced sentence). The police have not yet been able to corroborate many accusations against politicians made in plea bargains by managers of Odebrecht, a construction company. Selective leaking of accusations destroys reputations even if innocence is later confirmed. Those who

received undeclared campaign donations—a crime, but the norm—are lumped together in the public mind with those who took huge bribes.

All that said, Lava Jato has revealed and punished widespread wrongdoing. It has ended a long-standing practice in Brazil of failing to punish white-collar crime, thereby propagating it. As Deltan Dallagnol, the lead prosecutor in Lava Jato, has written in a new book, his small team is up against the best-connected and most expensive law firms in the country. The prosecutors (and Mr Moro) have been subject to close judicial oversight, including from the supreme court.

Much of the criticism is self-interested. Now it is the right, as well as Lula's left-wing Workers' Party, that is complaining. If Mr Temer has indeed committed a crime, any stability he offers is false, or carries an unacceptable price. That is why attempts to curb the investigations, if they succeed, would be alarming. Congress has debated—but not yet approved—a bill that would punish judges and prosecutors for "abuses". This month the federal police merged its dedicated Lava Jato task force into a broader anti-corruption unit. That has raised fears that Lava Jato could be wound down. But since there are now so many more targets, it is not necessarily suspicious.

There is another reason to carry on: if the probe stopped now, Lula would be right to cry bias. Public opinion remains firmly behind Lava Jato. That is why efforts to scotch it are unlikely to succeed. Mr Temer is a skilled parliamentarian. But his support in congress is fraying. He may not be able to rally the 172 votes, of 513 in the lower house, he needs to avoid being tried. Many Brazilians see the chance of a better country emerging from the investigations. In that, they are surely right.



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How Russia sees Trump

Reading the cues

Donald Trump cribs a speech from a Russian writer he admires

IN SEPTEMBER 2013, Vladimir Putin gave an important speech near the ancient city of Novgorod, which he called “not just the geographical but the spiritual centre of Russia”. The key to the country’s progress, he said, was “spiritual, cultural and national self-determination. Without this we will not be able to withstand internal and external challenges.” Military, technological and economic strength notwithstanding, the determining factor was the nation’s “intellectual, spiritual and moral strength”, grounded in its “history, values and traditions”. He lamented the depravity of godless, rootless Western liberalism. “We can see how many of the Euro-Atlantic countries are actually rejecting their roots, including the Christian values that constitute the basis of Western civilisation.” Russia, on the other hand, was a “state civilisation reinforced by the Russian people, the Russian language, Russian culture and the Russian Orthodox church.”

Listening to Donald Trump’s speech in Warsaw (not just “the geographic heart of Europe”, Mr Trump noted, but a place where one can see “the soul of Europe”) before last week’s G20 meeting, Mr Putin must have felt a frisson of recognition. “The people of Poland, the people of America, and the people of Europe still cry out, ‘We Want God,’” Mr Trump said. The West, he asserted, is bound together by the “culture, faith and tradition that make us who we are... We can have the largest

economies and the most lethal weapons anywhere on Earth, but if we do not have strong families and strong values, then we will be weak and we will not survive.”

The parallels are not accidental. Mr Trump’s speech reflected the views of his advisers Steve Bannon and Stephen Miller, who see Mr Putin as a fellow nationalist and crusader against cosmopolitanism. The Kremlin seemed pleased. Mr Trump’s reference to Russia “destabilising” Ukraine and his comparison of the Soviet invasion of Poland to that by Nazi Germany would normally provoke fierce denunciations from Moscow, but this time the reaction was tepid. Dmitry Kiselev, Russia’s chief propagandist, dismissed the speech as a cynical effort to market American liquid natural gas and military equipment to Poland. This is an approach the Kremlin recognises and welcomes.

From Russia’s point of view, by delivering his speech in Poland, Mr Trump delineated America’s sphere of influence. Mr Putin’s decision to make a 300-mile (480km) detour on his way to Hamburg to avoid flying over Poland and the Baltic states symbolically confirmed that line. It implied that Russia makes no claim on members of NATO and the EU, but considers anything to the east its own sphere of influence, especially Ukraine. After meeting Mr Trump at the G20, Mr Putin offered Kiev a bear hug. “The interests of the Russian and Ukrainian peoples... coincide,” he

said. Ukraine, which has suffered a Russian-instigated war that has killed some 10,000 of its citizens, watched nervously as Mr Putin and Mr Trump shook hands.

Mr Putin described the American president as a *konkretny* (down-to-earth) man he could do business with, and welcomed American involvement in negotiations over Ukraine. He has always maintained that Ukraine’s revolution in 2014 was America’s doing, and that its fate should thus be discussed with America rather than Germany or France. The Kremlin has hailed Mr Trump’s presidency as the end of liberal interventionism. Yet whatever Mr Trump may have suggested, other senior officials seem to be continuing America’s long-standing policies.

Biznes as usual

Mr Trump has faced allegations of colluding with Russia since his election campaign last year. Those accusations were boosted this week by revelations of his son’s dealings with a Kremlin-connected lawyer (see page 31). But these very suspicions have made it politically impossible for him to do any far-ranging deal with Mr Putin on foreign policy. Moreover, his Russia experts are extremely knowledgeable and prudent. The most influential, Rex Tillerson, the secretary of state, gained insight into Mr Putin’s system of crony capitalism during his time as Russia director at Exxon-Mobil, an energy company. The national security adviser, H.R. McMaster, is no appeaser, and Fiona Hill, his top Russia officer, understands Mr Putin’s system well (though strangely, neither was included in Mr Trump’s meeting with Mr Putin).

Just before that meeting, the State Department announced that Kurt Volker, a former ambassador to NATO, will be America’s new representative in Ukraine. Mr Volker called on NATO to push back ►►

▶ against Russia's annexation of Crimea, and criticised the Minsk 2 agreement which Ukraine was forced to sign in 2015. He has urged America to supply lethal weapons to Ukraine, with the goal not simply of reaching a ceasefire but of restoring Ukraine's sovereignty over its territory.

Mr Tillerson affirmed the same goal in a visit to Kiev the day after the G20. The war in Ukraine, he said, was planned and launched from Moscow, and it was up to Russia to make the first step towards de-escalation. Until it does so, sanctions against Russia will remain in place. He said America wanted to break the current stalemate and would not be constrained by the Minsk agreement, widely seen as dead.

He was equally focused on pressing Ukraine to curb corruption and create an independent judiciary. Ukrainian reformers and civic activists had worried about losing America's support under Mr Trump. But Mr Tillerson said fighting corruption was crucial to reviving foreign investment, which has been absent since 2014. Bringing American business into Ukraine is also seen as a way to secure the country, by creating an implicit American guarantee.

For now, Mr Putin does not seem too worried. Unlike American officials, who believe that Ukraine can be a viable state, Mr Putin is convinced that (with a bit of Russian help) it will fail, and the country will descend into chaos. Only Ukraine can prove him wrong. ■

The G20 summit

Teutonic tremors

HAMBURG

Germany fears that Donald Trump will divide Europe

IN THE aftermath of the G20 summit on July 7th and 8th, German politicians traded blows over who was at fault for riots by anti-globalisation activists that smashed up parts of central Hamburg. But a big global event in the heart of a city with a strong anarchist tradition was always bound to prompt protests. Officials' deeper reasons for anxiety were different: Donald Trump and his attitudes towards Russia and Poland.

To some in Berlin, the president's meeting with Vladimir Putin was a "Yalta 2.0", a 21st-century equivalent of the summit in 1945 at which Americans and Russians divided Europe. Angela Merkel saw Mr Trump's "back-slapping and face-pulling" display before the Russian president (as the *Frankfurter Allgemeine Zeitung*, a daily, put it) as undermining her efforts to confront Russia over Ukraine. An internal memo by the German foreign ministry summarising



the G20 noted: "The summit went very well for Russia... As long as the US breaks rank, Russia can swim in the mainstream."

All of this plays into Mrs Merkel's fears that the multilateral order that has served her country so well is under threat. "Others were isolated—an experience that Putin visibly enjoyed," reported the memo. It also observed disconcertedly that conservative Russian think-tankers like Andrey Kortunov and Fyodor Lukyanov viewed the summit as a "rebalancing" in global relations: from the old battle between developed and developing economies to a new one between globalists and nationalists.

Still, Berlin had largely priced in a rapprochement between Messrs Trump and Putin. A more unsettling development was Mr Trump's visit to Warsaw before the G20, where the president's speech echoed the ideologies both of Mr Putin and of Poland's populist-nationalist Law and Justice government. The foreign-ministry memo described this as an "astonishing tectonic shift" in American foreign policy.

Most striking of all was Mr Trump's venue: a summit of the Three Seas Initiative. Launched by Poland and Croatia, this new central European project recalls the "Intermarium" proposed by Jozef Pilsudski, the father of the country's second republic, which lasted from 1918-39. Pilsudski dreamed of allying states on the Baltic, Black and Adriatic seas to oppose domination either by Russians or Germans. Warsaw presents its revival as a bid to improve north-south transport and energy links in the region, to complement better-developed east-west ones (see map). But Berlin suspects something more hostile.

Consider the backdrop. Germany is already concerned about China's "16+1" initiative with central and eastern European states, a series of investment projects that the Chinese expect will build influence in the region. The Germans are also putting pressure on the Polish government over its illiberal attacks on independent newspapers, judges and NGOs. And they are fend-

ing off Polish criticisms that their proposed "Nord Stream 2" gas pipeline from Russia to Germany will make Europe more dependent on Russia.

So Mr Trump could hardly have done more to aggravate German officialdom. He endorsed the Three Seas Initiative. In meetings with the Polish and Croatian presidents he guaranteed a supply of American liquefied natural gas (LNG) and backed a corridor linking LNG pipelines in the two countries. Poland opened its first terminal on the Baltic sea at Swinoujscie in 2015, and the first American cargo arrived there last month. In Warsaw, Mr Trump encouraged the rapid completion of a Croatian LNG terminal at Krk, on the Adriatic.

Though sensible, this looks to officials in Berlin like a bid to divide Europe and weaken Germany's leverage over its neighbours. They are contemplating responses. One would be a new European infrastructure fund, to test whether Poland and its allies merely want more foreign investment or whether the Three Seas Initiative is actually about geopolitical balancing.

In years past, Germans developed a vision of a cohesive EU run from Brussels, steered mostly by Germany and underwritten by American power. Now they fear a future in which strongmen in Washington, Moscow and Beijing divide Europe and push around the pieces. Germany led the G20 meeting confidently, but it feels increasingly insecure. ■

Catalan independence

Playing chicken

MADRID

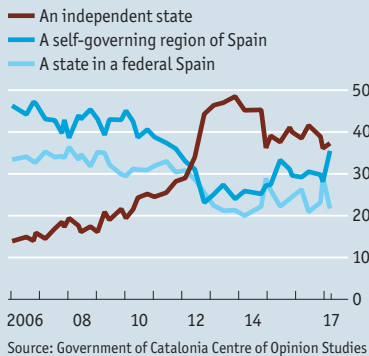
The Catalans throw down the referendum gauntlet

THE production was as dramatic as any other the National Theatre in Barcelona has seen. There, on July 4th, the president of Catalonia's government, Carles Puigdemont, announced plans to hold a unilateral referendum on independence from Spain on October 1st. The draft law he unveiled says that, whatever the turnout, if those voting in favour outnumber those against, within 48 hours the Catalan parliament will declare independence. To Mr Puigdemont's supporters, this is a national epic. To Mariano Rajoy, Spain's conservative prime minister, it is "authoritarian delirium". He is determined that it should not take place.

Mr Puigdemont's push follows five years of secessionist agitation in Catalonia, one of Spain's richest regions, whose 7.5m people are 16% of the country's total. Separatism was fuelled partly by the Constitutional Tribunal's rejection of parts of a new ▶▶

Separation anxiety

"Catalonia should be...", % of Catalans polled



▶ statute that would have granted the region more autonomy. But the main forces were nationalist politicians in Barcelona who blamed euro-crisis austerity on Madrid. In a regional election in 2015, parties campaigning for independence won, but only just: the ruling coalition got 48% of the vote but 53% of the seats in the parliament.

Mr Puigdemont invokes "the legitimate right to self-determination of a thousand-year-old nation". National and international law is against him. Spain's constitution of 1978—approved by over 90% of Catalan voters in a referendum—granted the regions great autonomy. But it affirmed "the indissoluble unity of the Spanish nation". Only the Spanish parliament can change the constitution. Catalonia's own autonomy statute, which Mr Puigdemont's law would replace, can only be amended by a two-thirds majority of its parliament. And the Council of Europe, which Mr Puigdemont consulted, said in June that any referendum must be carried out "in full compliance with the constitution".

Mr Rajoy insists that he must uphold the law. At Madrid's urging, the courts have fined and suspended from office the Catalan politicians who organised a previous, unofficial referendum in 2014 (in which just 2.3m people voted, a 37% turnout). This time the Catalan government plans to thwart legal action by rushing the referendum law through its parliament, by simple majority, in September. It claims the vote, unlike that of 2014, will be binding.

Soraya Saenz de Santamaría, Spain's deputy prime minister, responded that "24 hours will be enough" for the state to strike down the referendum law once it is passed. In this, Mr Rajoy has the support of the opposition Socialists. Even Podemos, a far-left party, says that the referendum is not binding. The Catalan government has tried but failed to get international support. Spain's European partners see Catalonia's status as a strictly internal matter.

With his threat of a declaration of independence, Mr Puigdemont's last throw seems to be to provoke an overreaction by Mr Rajoy and a popular rebellion in Cata-

Russia's restless youth

Rainbow Man v Bureaucrat Man

ST PETERSBURG

Youngsters grouse about their rulers

IN A forest outside St Petersburg this month, a group of young people discussed ideas for modern Russian superheroes. One group suggested "Rainbow Man", who can change sex and sexuality and crusades against "TV Man" and "Bureaucrat Man". Another proposed "Human Rights Man", who uses the constitution to battle the "Dishonest Judge". The exercise unfolded at Territory of Freedom, a camp dedicated to democratic values. Beyond playing games and grilling sausages, the 80-odd campers, mostly students, heard lectures on human rights and intellectual-property law.

The camp has been running for nine years, and the organisers, an activist group called Vesna, say interest is growing. Anti-corruption protests organised in March and June by Alexei Navalny, an opposition leader, drew masses of young people. Russia's political class has since become obsessed with "the youth".

The Kremlin frets that Vladimir Putin,

who will turn 65 ahead of next year's presidential elections, may not be down with the kids. Russia's parliament is considering banning children from un-sanctioned political actions. The authorities have also tried to reach out, though their efforts have been, as teenagers say, "awk". A meeting of officials with social-media stars featured Liza Peskova, the daughter of Mr Putin's spokesman, who lives in France and blogs about the kind of fashion that ordinary young Russians cannot afford.

Mr Navalny has had more success, opening a YouTube channel that has attracted millions of hits. "I'm not on TV," he told viewers ahead of the June protests. "All I have is this YouTube channel, and I'm proud that young people watch." Other politically charged vloggers with monikers such as Kamikadzedead draw hundreds of thousands of views, challenging state television's control. When Vladimir Putin came to power in 2000, just 2% of Russians were regular internet users. Today more than 70% are.

Vesna has also seen membership applications jump. Since it launched in 2012, an average of seven people joined each month, but this March alone some 100 signed up, says Bogdan Litvin, a co-founder. At the protests in St Petersburg on June 12th, they unveiled a giant inflatable duck (pictured), a reference to Mr Navalny's accusation that Dmitry Medvedev, the prime minister, has used ill-gotten wealth to fund an estate with a luxurious house for pet ducks. Mr Medvedev denies the claims.

Even among Russia's youth, the opposition is an embattled minority. Mr Litvin speaks of building up civil society to promote change in the distant future. "I've stopped believing that anything will change quickly," he says. In real life, there are no superheroes.



Debatable, inflatable duck

lonia. Article 155 of the constitution lets the government force regional officials to fulfil their legal obligations. Never invoked, it is portrayed in Barcelona as "tanks in the streets". Rather than Article 155, the government will probably use the courts to block the referendum less dramatically, by slapping lawsuits on those who sign or vote for unconstitutional measures.

Opinion polls show that around 40-44% of Catalans support independence, depending on how the question is framed. That is not enough to make a revolution. The march to illegality is prompting

strains in Barcelona. Mr Puigdemont this month sacked Jordi Baiget, a member of his government, for saying that a binding referendum "probably" won't happen. Mr Baiget said he was prepared to go to prison, but not to expose his family to fines.

Mr Rajoy's approach may be unimaginative, but it is effective. It is politically profitable for him in the rest of Spain, where many are fed up with what they see as Catalan whining. But it ignores Catalonia's unhappiness with Spain's current constitutional arrangements. Keeping the country together may require revisiting them. ■

Charlemagne | Acceeding expectations

The EU must show the western Balkan states that they still have a chance at getting in



SQUINT, and you can just make it out. In a quiet suburb of Belgrade, a small European Union flag flutters from the seventh floor of a concrete tower block. Almost 20 years ago, during the dark days of Slobodan Milosevic, an engineer-turned-journalist called Zoran Cvijic hung the standard from his balcony to express his hope that Serbia might one day join the club whose values he so admired. Soon afterwards NATO jets pounded Belgrade to halt Serbian atrocities in Kosovo. Gordana, Cvijic's wife, feared the flag would bring the family unwelcome attention, yet it stayed in place. Cvijic died in 2015, still optimistic that his country would eventually take its seat at the EU table.

In 2003 the Balkan countries were told that their future lay inside the EU. Yet these days the hopes of Serbia and five other aspirants—Albania, Bosnia, Kosovo, Macedonia and Montenegro—are as faded as the yellow stars on Cvijic's flag. Weary of the endless rows that pass for politics in the Balkans, and burned by what looks like the premature accession of Bulgaria and Romania in 2007, the Europeans have little appetite to expand their club further, especially as Brexit obliges them to manage its contraction. In 2014 Jean-Claude Juncker, the president of the European Commission, said there would be no enlargement during his five-year term, a pointless gesture that weakened the hands of Balkan reformers. Today, just 43% of Serbs say they want to join the EU, down from 67% in 2009. Young people are notably hostile.

What has gone wrong? Accession would force the region's corrupt elites to allow media freedom, strengthen the rule of law and liberalise their economies, thus diluting their powers of patronage. Few want to do any of these good things. And their countries lack the strong bureaucracies that could drive through change. Of the six, only Serbia and Montenegro have begun accession talks. Albania hopes to start soon, Macedonia is hamstrung by its dispute with Greece about its name, Bosnia is mired in inter-ethnic squabbling, and Kosovo is not even recognised by five EU members. "They don't believe it any more when we lie to them about accession, and we don't believe them when they lie to us that they will commit" to EU rules, says Vessela Tcherneva of the European Council on Foreign Relations, a think-tank.

In place of hope, there is insecurity and even a fear of returning to bloodshed. The past year has provided several jumpy mo-

ments, from a political crisis in Macedonia that, with help from provocateurs in the Russian media, threatened to spill into violence, to tensions between Serbia and Kosovo that terrified European diplomats at the start of the year. If the region has lately calmed down (partly owing to the efforts of American diplomats), Germany in particular fears fresh conflagrations. Federica Mogherini, the EU's foreign-policy chief, has been furiously working the Balkan diplomatic treadmill.

That means dealing with leaders like Aleksandar Vucic, who has run Serbia since 2014, first as prime minister and now president. Mr Vucic, a minister under Mr Milosevic, today paints himself as a pro-EU reformer and a credible economic manager. European officials say they have no choice but to work with him. Angela Merkel met Mr Vucic a few weeks before the presidential election in April. This infuriates liberal Serbs, who say the Europeans are indulging an authoritarian who engages in anti-democratic practices. Civil-society groups talk of an increase in mafia crime, the crushing of independent institutions and campaigns of harassment in state-controlled tabloids.

Where Europeans once pinned their hopes for transforming this region of 20m people on the accession process, today they place their trust in trade and investment. The Balkans are blighted by low growth and sky-high youth unemployment, and citizens vote with their feet. One-fifth of Macedonia's population lives abroad, and skilled Serbs are pouring into the EU. A summit in Trieste this week attended by the leaders of France, Germany and Italy sought to tackle these trends with plans for a regional common market and EU funds for infrastructure. As ever, lip-service was paid to the Balkans' "European perspective". But the EU's appetite for bringing about political change has evaporated.

Don't give up

The Balkan states are tiresome partners, beset by political bickering, crony economies and border quarrels over slivers of water or rocky mountain tops. But the EU should not give up on its dishevelled inner courtyard, if only because of the risks inaction poses. Parts of the Balkans are already established routes for human and drugs-trafficking into the EU, and weapons from the wars of the 1990s were used in the Paris terrorist attacks of 2015. Islamist extremism is popping up in parts of Bosnia and Kosovo. In this environment, the cynical games of local leaders, who often stoke crises in order to play peacemaker, could easily spin out of control.

Europeans often talk up the malign influence of external powers in the western Balkans. But the region's economic, political and cultural ties to the rest of Europe put Russia, Turkey and the like in the shade. Most leaders know they have no destiny outside the EU. That calls for a two-track approach: leaning harder on governments that tolerate lawlessness or illiberalism, and renewing the commitment to enlargement. But all this requires suspending the scepticism that has become ingrained after years of disappointment. Perhaps, if she wins re-election in September, Mrs Merkel could spend a bit of diplomatic capital on the Balkans.

At Trieste there was much talk of the Balkans at a "crossroads". In truth the region is on a never-ending roundabout of unfulfilled promises and bureaucratic wheel-spinning. Like most of her compatriots, Ms Cvijic is sceptical that Serbia will ever join the EU. She distrusts Mr Vucic's government and decries the dishonesty of Europeans who provide it with succour. But she has vowed to keep the tatty flag flying from her apartment's balcony. Her husband never gave up hope. Why should she? ■



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Northern Ireland and Brexit

The border that isn't—yet

BELFAST AND DUBLIN

Nobody favours the return of a hard border with Ireland. Yet there is no sign of any agreement over how to avoid one

THE main characteristic of the border between the Irish republic and Northern Ireland is its absence. Driving from south to north, the only detectable change on entering the United Kingdom is that road signs switch colour and Union flags flutter from lamp-posts. Ironically, the clearest evidence that you are in a different country is loud posters screaming: “No EU frontier in Ireland.”

During the Troubles of the 1960s-90s, the border was dotted with army checkpoints and watchtowers, as well as (until 1993) customs controls. The melting away of the militarised frontier into a mere line on a map was perhaps the most visible achievement of the Good Friday Agreement, the 1998 accord that largely brought an end to three decades of violence.

Yet there is a serious risk that a hard border could return. After Brexit, this will be the only land boundary between Britain and the European Union. Theresa May's government is insisting that Britain must leave the EU's single market and customs union, and it wants to impose restrictions on migration from the EU. At first blush, all these seem to imply a need for both frontier and customs controls at the Irish border. Michel Barnier, the European Commission's Brexit negotiator, declared in Brussels recently that post-Brexit trade cannot be “frictionless”.

There ought to be an effective answer to

such a gloomy prediction. Nobody, whether in Dublin, Belfast, London or Brussels, favours a hard border. Indeed, the European Council's guidelines for the Brexit negotiations call for one to be avoided through “flexible and imaginative solutions”. The issue is salient today because, thanks to deft Irish diplomacy, it is one of the first three items on the agenda; indeed, it has been elevated to the highest diplomatic level in the negotiations.

Ireland is deeply troubled by the prospect of Brexit. Although its trade has diversified over the past four decades, its neighbour is its second-biggest trading partner.



The UK exports more to Ireland than to Brazil, India, Japan and South Africa combined. A new Irish Senate report suggests that Brexit could reduce Irish GDP by 3.5%, roughly as much as the likely loss to British GDP. The Irish economy is already suffering from a post-referendum fall in sterling, which has hit Ireland's agri-food business hard. Several mushroom farmers have gone under. Big firms may cope with extra expenses, and Ireland could gain some investment after Brexit, notably in financial services, as firms leave London for Dublin. But smaller businesses with low margins fret that the return of a border will add to their costs.

If the mood in the republic is gloomy, it is glummer in the north, which voted to stay in the EU by 56% to 44%. Already the prospect of Brexit has diverted some investment south. Almac, a drug firm in Craigavon, has opened a new facility in Dundalk specifically to preserve its position in the single market. Worse still is the outlook for firms that have built cross-border supply chains (see box on next page).

The risk of a hard border is a concern not just for farmers, traders and migrants. It could also upset Northern Ireland's peace process. Jonathan Powell, who was closely involved in negotiating the Good Friday Agreement as chief of staff to Tony Blair, says that its success relied on exploiting the two countries' EU membership to park the issue of Irish or British identity. Cathy Gormley-Heenan of Ulster University echoes the point when she says: “The EU took the border out of Irish politics, but the Brexit referendum has put it back.”

The uncertainty over the border comes at a particularly tricky political moment in the province. The Northern Ireland power-sharing executive has been out of action since January, with the Democratic Union- ▶▶

ist Party and the nationalist Sinn Fein unable to agree on the terms for its resumption. The DUP is also formally propping up Mrs May's government in Westminster, which makes nationalists doubly suspicious of London. Nobody predicts that violence is about to return to Northern Ireland. But a return to a hard border would further destabilise an already fragile political situation. One peace-loving old-timer jokes that he would personally blow up any installation erected on the border.

Brexiters tend to dismiss all this as fearmongering. They point out that the common travel area (CTA) between Britain and Ireland dates back to 1922, long before the EU existed. The Good Friday Agreement was essentially a bilateral one. As for customs controls, a combination of smart technology, pre-clearance, electronics and checkpoints some way back from the border could surely handle them without the need for physical intervention at the frontier itself. Norway and Sweden manage to avoid long queues, as do Switzerland and Germany. Lee Reynolds, a Democratic Unionist who ran the province's Leave campaign last year, proposes what he calls an "e-border".

Papers, please

Yet this is too sanguine. Most people will no doubt continue to move freely across the border, but the CTA applies only to British and Irish citizens. There are said to be some 30,000 other EU citizens in the north and perhaps 200,000 in the south. Many cross the border in both directions every day. If Britain were to bring in tight controls on EU migrants, some of these people could be caught by them.

Customs is an even thornier issue. Jerome Mullen, a veteran businessman in Newry, bitterly recalls the days when his lorries were stopped and inspected by customs agents in both the north and the south, creating costly delays. Since the border disappeared in the 1990s, there have been far more crossings. A 500-km (310-mile) border with some 300 crossing points (many more than in Norway or Switzerland) and even more unofficial pathways is all but impossible to monitor. Several farms straddle the border. And this is a region with a long tradition of smuggling which continues to this day, now mostly of diesel.

Is there a solution? The Centre for Cross-Border Studies in Armagh has joined many others in proposing a special status for Northern Ireland that, in effect, keeps it in the customs union and perhaps the single market even if the rest of Britain is out. But this has been rejected by the European Parliament and is not welcomed by many in Ireland, because it would imply a border in the Irish Sea instead, disrupting trade with the British mainland, which is far bigger than trade with North-

ern Ireland. Another idea is to give firms doing cross-border business the status of "authorised economic operators", which would be a way of allowing customs duties to be collected regularly without physical inspection. But any such system would be open to abuse.

Nationalists suggest that the answer is a united Ireland, a possibility explicitly referred to by the European Council. But for now majority opinion in the north is against this. A more fanciful suggestion in a recent paper written by Ray Bassett, a former Irish diplomat, for Policy Exchange, a

London-based think-tank, is "Irexit": that Ireland should follow Britain out of the EU. Whatever Brexiters may hope for, this has no chance of being adopted in Dublin.

Mr Powell reckons that the only way to avert the reintroduction of a hard border is for Britain to stay in both the single market and the customs union. But Mrs May's government continues to rule this out. That leaves no easy solutions to the border problem. As Angela McGowan of the Confederation of British Industry in Northern Ireland concludes, there have so far been only questions, not answers. ■

Cross-border trade in Ireland

A pricier pint?

DUBLIN

Guinness is one of many businesses that could be hit by a harder border

IT MIGHT just be Ireland's most famous product. And indeed, the Guinness that is brewed at the St James's Gate brewery in Dublin is shipped to Europe and across the Atlantic. But first the stout is transported north, in tankers that have become known as "silver bullets", to be canned and bottled in east Belfast before returning to Dublin for export.

Diageo, the multinational company that owns Guinness, says that its silver bullets make some 13,000 border crossings a year. The company estimates that even a short delay of 30 minutes to an hour for customs checks would add about €100 (\$115) to the expense of each trip, costing it some €1.3m a year. If that happened, the price of Guinness might have to rise.

Guinness is not alone. The abolition of customs controls in 1993 and of security checks after the Good Friday Agreement in 1998 has led to the creation of what is in effect an all-island economy, with supply chains criss-crossing the border. Bilateral trade between Ireland and the United Kingdom is now worth over €1bn a week. Most of that trade goes over the Irish Sea, but a fair amount crosses the border with Northern Ireland, especially in the agri-food sector. The UK exports more food to Ireland than to Canada, China, Japan, Russia, Saudi Arabia and South Korea combined.

Thus, besides Guinness, it is said that the ingredients of Bailey's Irish Cream, another drink owned by Diageo, travel across the border three times before being exported in bottles. Roughly a third of the milk from cows in Northern Ireland goes south for processing, while much of Ireland's cheese goes in the opposite direction. Sheep and cows are frequently driven across the border for slaughtering. Economies of scale mean that it does not make any sense to have two processing plants on the island for most foods; that could be threatened by a hard border.

To complicate matters, food and drink have always been among the most sensitive products in the EU. Michel Barnier, the European Commission's Brexit negotiator, has said flatly that after Brexit 100% of imports of animals and animal products from Britain will be subject to border controls. If a putative free-trade deal with America were ever to come about, Britain might well allow the import of chlorine-washed chicken and genetically modified foods. Given the public's hostility to these things, nobody in Brussels could possibly risk letting them cross into the EU by the back door of the Irish border.



But is Brexit bad for you?

Bagehot | In search of power

Nobody is really in charge of Britain



THE basic question of politics is always the same: who's in charge here? Theresa May has already muddied the answer to this question once. By calling an election two years before she needed to, she turned a majority government into a minority and shattered her authority. Now she is muddying it again. By using the anniversary of her appointment as prime minister to re-launch her premiership, she is reminding everyone how little power she has.

Mrs May introduced Matthew Taylor's report on the future of work with some reflections about her first year in office. The issue at the heart of her agenda is the same as it always was, she said: recognising that the EU referendum result was not only a vote to leave the European Union but also a call to change the country. But last month's close election means that tactics must change: if Britain is to get anything done, politicians will have to work across party lines. She challenged Labour's leader, Jeremy Corbyn, to "contribute" rather than merely criticising.

Mrs May gets some points for chutzpah. Having called the election to "crush the saboteurs", in the memorable phrase of the *Daily Mail*, she now wants to make friends with them. But her re-launch proved to be a damp squib. The election result robbed Mrs May of the most important thing that any prime minister has: the benefit of the doubt. It also robbed her of the one thing that she has going for her as a politician: her air of competence. Most politicians have a group of friends they can rely on to watch their back when times get tough. Margaret Thatcher had a corps of ideological allies who would support her through thick and thin. Unclubbable and post-ideological, Mrs May is held in office only by the fact that the Conservative Party fears a leadership contest more than it fears her lacklustre leadership.

Her chances of getting things done are further diminished by the state of Number 10. Mrs May has lost not only her two chief advisers, Nick Timothy and Fiona Hill, but also the head of her policy unit, John Godfrey, and her chief press spokesperson, Katie Perrior. For the past 40 years constitutionalists have worried that Britain is turning into a presidential regime, with the prime minister sucking ever more power into Downing Street and riding roughshod over notional checks and balances. Today the country has the opposite problem: a humbled prime minister and a hol-

lowed-out Downing Street machine.

Where is the power that used to rest in the prime minister's hands? Some is going to Damian Green, her oldest, and perhaps only, friend in politics and now, in effect, deputy prime minister. Mr Green is the Maybot's human face, reaching out to fellow cabinet members and MPs. He is also reshaping her ideology. Mr Green has been a wet Tory since his student days at Oxford in the mid-1970s. His fingerprints are all over her recent speeches about working across party lines and crafting a new industrial strategy.

Some power is going to Sir Jeremy Heywood, the cabinet secretary and head of the civil service, who works just down the corridor from her. Sir Jeremy is a professional in a world of amateurs—he has worked for four successive prime ministers and is politically astute as well as coolly efficient. Remainers worried that he bent over backwards to please Mr Timothy, Mrs May's co-chief of staff, when the latter was in his pomp. Brexiters now worry that (perhaps working with Mr Green) he will do his utmost to derail their project. But it is easy to over-emphasise the influence of both Mr Green and Sir Jeremy. A weak prime minister weakens those around her, whether politicians or civil servants.

The cabinet is more powerful than it has been for years. Ministers are getting noisier in lobbying for their departments. Both Boris Johnson, the foreign secretary, and Michael Gove, the minister for the environment, have called for an end to the public-sector pay cap. Parliament is also flexing its muscles. At various points in recent decades it has looked almost as if it was being consigned to the purely ceremonial branch of British politics (when Tony Blair postponed an election in 2001, he told the *Sun* before he told Parliament). Now it is back at the centre of power. Coalitions of MPs are discovering that they can force the government to back down. One led by Labour's Stella Creasy forced the government to agree to fund abortions for women from Northern Ireland. Another is likely to ensure that after Brexit Britain is still a member of Euratom, which governs the transit of radioactive materials across the continent.

The old gods and the new

The Repeal Bill, which the government published on July 13th, will give Parliament another opportunity to reassert itself against the executive. The bill is a legislative Leviathan which turns thousands of pages of European law into British law. The government wants to use so-called Henry VIII powers to amend the bill after it has been passed, without parliamentary scrutiny. This would have been difficult even if Mrs May had won a resounding victory in the general election, because it raises profound constitutional questions about the relationship between the executive and the legislature. With a weak prime minister, it could prove impossible. MPs from across the political spectrum are planning to turn the bill into a "Christmas tree" onto which they can hang all manner of amendments, as one put it.

There is something to be said for scattered authority. The voters refused to give Mrs May a mandate in part because they didn't trust her to do the right thing with one. The divisions in British politics reflect a more profound division in the country as a whole. But divisions can become dangerously inflamed if they are not eventually resolved. And endless political manoeuvring can turn into paralysis. The biggest danger for Britain is that it will fall off a cliff at the end of the Brexit negotiations with no deal in place. The fact that nobody can really answer the who's-in-charge question makes that a real possibility. ■

Also in this section

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Free speech

Don't say a word

PHNOM PENH AND YANGON

How powerful people use criminal-defamation laws to silence their critics

IN OCTOBER 2015, a month before the election that returned Myanmar to a form of civilian rule, a Burmese writer named Maung Saungkha posted a poem on his Facebook page: "On my manhood rests a tattooed/portrait of Mr President/ My beloved found that out/After we wed/ She was gutted/Inconsolable." He was found guilty of defaming Thein Sein, then Myanmar's president, and sentenced to six months in prison. Mr Thein Sein had suffered no material damage. He served out his term in office without anyone mistaking him for a penis tattoo. But Mr Maung Saungkha believes that in the run-up to the election the government was aiming to "spread fear, curtail freedom of speech and silence activists".

Governments pursuing such goals have many options. They can press blasphemy laws into service, as those of Indonesia, Pakistan and dozens of other countries do. They can twist the media to their will. In Russia Vladimir Putin and his cronies control the main television-news stations. Or they can simply ban speech they dislike. In China and Vietnam independent bloggers are often arrested. Three Lao citizens recently received long jail terms for violating a decree forbidding online criticism of the government or ruling party.

All these approaches attract interna-

tional criticism. So some governments turn instead to defamation laws. Defamation is recognised almost everywhere as grounds for a civil claim, in which subjects of wanton and damaging falsehoods can demand financial compensation. But when defamation is a criminal offence, governments can go beyond fining critics who have caused demonstrable harm, and imprison them simply for speaking. Though several countries have recently decriminalised defamation, many more still prosecute it zealously. And even where it can no longer lead to jail, charges can stifle criticism if courts award vast damages.

To know, to utter and to argue

The American constitution's first amendment grants strong protection to speech, especially criticism and insults aimed at public figures. But in most of Asia, and much of Africa, Latin America and the Middle East, defamation is in some circumstances a crime, as it is in Canada and 23 members of the European Union. Between 2009 and 2014 at least 15 EU countries sentenced journalists to criminal penalties, including fines and jail, for insults and defamation.

Criminal-defamation laws come in many forms. Thailand prohibits even the slightest criticism of its king, who is believed to be semi-divine. Serajeddin Mir-

damadi, a journalist in Iran, is serving a six-year prison sentence for what was deemed "propaganda against the state". In Morocco three years ago a 17-year-old was sentenced to three months in jail for rap lyrics about police corruption that were deemed to "harm public morality" and "offend a state institution". Moroccans can also be imprisoned for "any offence" directed at the royal family or "inciting prejudice against territorial integrity"—a charge aimed at critics of Morocco's disputed claim of sovereignty over Western Sahara.

It takes bravery to speak out against the government in a country with such laws. In Cambodia, for instance, one way that the prime minister, Hun Sen, has held onto power since 1985 has been by using defamation laws against his opponents, most notably Sam Rainsy, one of the founders of the main opposition party. Since he fled to France in 2015 to avoid arrest in one defamation case, Mr Sam Rainsy has been convicted *in absentia* in two others, both of which attracted jail sentences.

Mr Hun Sen also targets ordinary citizens with defamation suits. Ou Virak, a political analyst, faces charges for a remark made during a radio programme. Five human-rights activists were detained for more than a year over charges stemming from leaked recordings that allegedly captured flirtatious remarks between another opposition politician and his hairdresser. A spokesman for Mr Hun Sen's party said that Mr Ou Virak had claimed the affair was concocted by the party to smear an opponent. The party filed a criminal-defamation complaint against him, demanding around 400m riel (\$100,000) in damages.

"Face-saving is really important," says Mr Ou Virak. "If you criticise the govern- ▶▶

ment, they take it personally.” He has struggled to find a lawyer: opposing a despot is not a good career move.

In civil defamation cases, plaintiffs must show they were materially harmed by someone else’s words; for example, malicious rumours spread by a business rival to destroy a company; or a criminal record invented by an ex-lover to destroy a career. The court will decide on suitable recompense. Under criminal-defamation laws, insults themselves are illegal, never mind whether they caused any harm.

In May a Burmese woman was sentenced to six months in jail for sharing Facebook posts deemed insulting to Aung San Suu Kyi, the country’s de facto leader, under a law that criminalises “defaming, disturbing [or] threatening...any person by using any Telecommunications Network”. At least 65 people have been

charged under it since Ms Suu Kyi’s government took power. Between 2013 and 2015 the army-backed government that passed the law used it just seven times. Even an accusation usually means jail, because defamation is not a bailable offence. On July 7th Myanmar’s parliament published modest amendments that would make defamation bailable and ban third-party suits. But their passage is uncertain, and activists argue that the law is so pernicious it should be revoked altogether.

Thailand’s *lèse-majesté* law is possibly the strictest criminal-defamation law anywhere. The current version states that “the King shall be enthroned in a position of revered worship and shall not be violated. No person shall expose the King to any sort of accusation or action.” Anyone who “defames, insults or threatens the king, the queen, the heir-apparent or the regent” can

be imprisoned for up to 15 years. The government, which seized power in 2014 and delayed an election planned for this year, has charged at least 77 people with *lèse-majesté*, 22 with sedition and 120 for violating an order forbidding public discussion of a proposed referendum to give it more power. Virtually all have been convicted, many in military courts.

A broadly drawn criminal-defamation law is a weapon that can be wielded, not just by the government, but by anyone thin-skinned who has enough money to hire a lawyer. In 2008 a hospital in Indonesia misdiagnosed a woman as having dengue when she actually had mumps; after an e-mail she had written to friends complaining about the misdiagnosis was circulated on social media, doctors at the hospital filed a defamation complaint against her. She was acquitted only after more than a year and two criminal trials.

In Thailand last March a mining company filed charges against four journalists for reporting on environmental harms allegedly caused by a mine it manages in Myanmar. (The case was eventually dismissed.) A journalist working for the BBC could be imprisoned for five years if he is convicted on a charge of criminal defamation filed by a Thai lawyer who was unhappy with his reporting. In 2014 a journalist in Greece was sentenced to three months in prison for criticising a school director’s political views; two years later an aggrieved Greek businessman brought charges against another journalist that resulted in a 26-month prison sentence. (It was overturned on appeal.)

Large fines for those found guilty of defamation are yet another way to chill free speech. Government officials in Singapore have sued and bankrupted critics for statements that politicians in many other places would have disputed, laughed off or simply ignored. Lee Kuan Yew, Singapore’s founder, all but admitted to using defamation suits this way. “If we had considered them serious political figures, we would not have kept them politically alive for so long,” he said in 2003 of two opposition politicians. “We could have bankrupted them earlier.”

Agnes Callamard, a former UN special rapporteur on freedom of expression, spies a welcome global trend toward decriminalising defamation. In recent years Jamaica, Kenya, Mexico and Zimbabwe have repealed their laws. India is considering doing so. But too often progress is more on paper than in reality. Cambodia has removed jail time for defamation convictions, but it remains for failure to pay court-ordered fines, which can turn an award of hefty damages into de facto imprisonment. So it remains easy for the government to mute its critics. “They had to pick on someone to make an example of,” says Mr Ou Virak. “And I said the first thing.” ■

The risks of free speech

Painted black

Critics of oppressive governments often end up defamed

ANYONE who accused a Malaysian government minister of sexual impropriety would quickly find himself in trouble. The government has charged critics and peaceful protesters with sedition, and criminalises speech deemed to be insulting or to breach “public tranquillity”. Yet Anwar Ibrahim, a charismatic former opposition leader, has spent years in prison on ridiculous trumped-up sodomy charges.

Critics of repressive governments often find themselves subjected to smears that, if they had been directed towards people within those governments, would have led to jail, the poorhouse or the morgue. A Russian who accuses a judge or policeman of being bought off, for instance, can be fined 2m roubles (\$34,981), under a provision of Russian libel law that sets extra-stiff penalties for “defaming” courts, prosecutors or police.

And yet in March a spokesman for the president, Vladimir Putin, claimed, without citing any evidence, that young Russians who participated in anti-government protests had been paid. Some of their parents were reportedly charged with “improper parenting”. That is mild by Russian standards. People who cross the Kremlin have been accused of psychological instability and locked away in mental hospitals.

China’s government often charges its critics with apparently unconnected crimes that seem intended to besmirch their reputations. Zeng Feiyang, a labour activist in Guangdong, a southern prov-

ince, was accused of embezzlement, fraud and adultery—charges his colleagues find implausible. Just before Hong Kong’s election in 2004, authorities charged an opposition politician with patronising prostitutes and sentenced him to six months detention. He later denied the charges and said he had been forced to confess.

China and North Korea have been accused of coercing and broadcasting confessions, presumably to destroy the reputations of those they accuse. Such tactics instil fear in a way that even jail sentences cannot. You can go to jail and emerge a martyr. But a family man convicted of frequenting prostitutes, or a labour activist paraded on television admitting embezzlement, is likely to lose his reputation for good.





Artificial intelligence

The algorithm kingdom

BEIJING

China's deep pool of data means it has a chance to lead in artificial intelligence

AT THE start of this year, two straws in the wind caught the attention of those who follow the development of artificial intelligence (AI) globally. First, Qi Lu, one of the bosses of Microsoft, said in January that he would not return to the world's largest software firm after recovering from a cycling accident, but instead would become chief operating officer at Baidu, China's leading search engine. Later that month, the Association for the Advancement of Artificial Intelligence postponed its annual meeting. The planned date for the event in January conflicted with the Chinese new year.

These were the latest signals that China could be a close second to America—and perhaps even ahead of it—in some areas of AI, widely considered vital to everything from digital assistants to self-driving cars. China is simply the place to be, explains Mr Lu, and Baidu the country's most important player. “We have an opportunity to lead in the future of AI,” he says.

Other evidence supports the claim. In October 2016 the White House noted in a report that China had overtaken America in the number of published journal articles on deep learning, a branch of AI. PwC, a consultancy, predicts that AI-related growth will boost global GDP by \$16trn by 2030; nearly half of that bonanza will accrue to China, it reckons. The number of AI-related patent submissions by Chinese researchers has increased by nearly 200% in recent years, although America is still

ahead in absolute numbers (see chart on next page).

To understand why China is so well placed, consider the inputs needed for AI. Of the two most basic, computing power and capital, it has an abundance. Chinese firms, from giants such as Alibaba and Tencent to startups such as CIB FinTech and UCloud, are building data centres as fast as they can. The market for cloud computing has been growing by more than 30% in recent years and will continue to do so, according to Gartner, a consultancy. In 2012-16 Chinese AI firms received \$2.6bn in funding, according to the Wuzhen Institute, a think-tank. That is less than the \$17.9bn that poured into their American peers, but the total is growing quickly.

Yet it is two other resources that truly make China a promised land for AI. One is research talent. As well as strong skills in maths, the country has a tradition in language and translation research, says Harry Shum, who leads Microsoft's AI efforts. Finding top-notch AI experts is harder in China than in America, says Wanli Min, who oversees 150 data scientists at Alibaba. But this will change over the next couple of years, he predicts, because most big universities have launched AI programmes. According to some estimates, China has more than two-fifths of the world's trained AI scientists.

The second advantage for China is data, AI's most important ingredient. In the past, software and digital products mostly

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obeyed rules laid down in code, giving an edge to those countries with the best coders. With the advent of deep-learning algorithms, such rules are increasingly based on patterns extracted from reams of data. The more data are available, the more algorithms can learn and the smarter AI offerings will be.

China's sheer size and diversity provide powerful fuel for this cycle. Just by going about their daily lives, the country's nearly 1.4bn people generate more data than almost all other nations combined. Even in the case of a rare disease, there are enough examples to teach an algorithm how to recognise it. Because typing Chinese characters is more laborious than Western ones, people also tend to use voice-recognition services more often than in the West, so firms have more voice snippets with which to improve speech offerings.

The Saudi Arabia of data

What really sets China apart is that it has more internet users than any other country: about 730m. Almost all go online from smartphones, which generate far more valuable data than desktop computers, chiefly because they contain sensors and are carried around. In the big coastal cities, for instance, cash has all but disappeared for small purchases: people settle with their devices using services such as Alipay and WeChat Pay.

Chinese do not seem to be terribly concerned about privacy, which makes collecting data easier. The country's bike-sharing services, which have taken big cities by storm, for example, not only provide cheap transport but are what is known as a “data play”. When riders hire a bicycle, some firms keep track of renters' movements using a GPS device attached to the bike.

Young Chinese appear particularly keen on AI-powered services and relaxed about use of their data. Xiaoice, an upbeat ▶▶

▶ chatbot operated by Microsoft, now has more than 100m Chinese users. Most talk to it between 11pm and 3am, often about the problems they had during the day. It is learning from interactions and becoming cleverer. Xiaoice no longer just provides encouragement and tells jokes, but has created the first collection of poems written with AI, “Sunshine Lost Its Window”, which caused a heated debate in Chinese literary circles over whether there can be such a thing as artificial poetry.

Another important source of support for AI in China is the government. The technology figures prominently in the country’s current five-year plan. Technology firms are working closely with government agencies: Baidu, for example, has been asked to lead a national laboratory for deep learning. It is unlikely that the government will burden AI firms with over-strict regulation. The country has more than 40 laws containing rules about the protection of personal data, but these are rarely enforced.

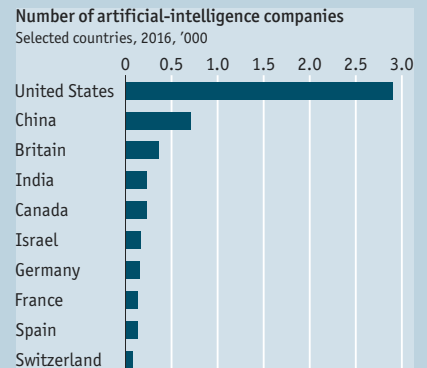
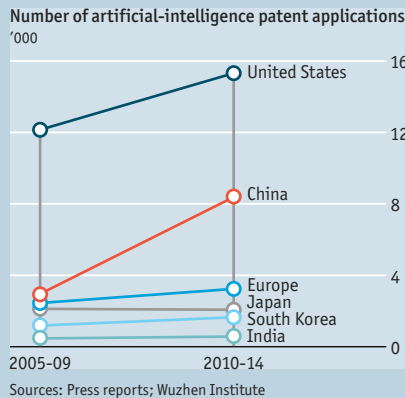
Entrepreneurs are taking advantage of China’s talent and data strengths. Many AI firms got going only a year or two ago, but plenty have been progressing more rapidly than their Western counterparts. “Chinese AI startups often iterate and execute more quickly,” explains Kai-Fu Lee, who ran Google’s subsidiary in China in the 2000s and now leads Sinovation Ventures, a venture-capital fund.

As a result, China already has a herd of AI unicorns, meaning startups valued at more than \$1bn. Toutiao, a news aggregator based in Beijing, employs machine learning to recommend articles using information such as a reader’s interests and location; it also uses AI to filter out fake information (which in China mainly means dubious health-care announcements). Another AI startup, iFlytek, has developed a voice assistant that translates Mandarin into several languages, including English and German, even if the speaker uses slang and talks over background noise. And Megvii Technology’s face-recognition software, Face++, identifies people almost instantaneously.

Skynet lives

At Megvii’s headquarters, visitors are treated to a demonstration. A video camera in the lobby does away with the need for showing ID: employees just walk in without showing their badges. Similar devices are positioned all over the office and their feeds are shown on a video wall. When a face pops up on the wall, it is immediately surrounded by a white rectangle and some text giving information about that person. In the upper right-hand corner of the screen big letters spell “Skynet”, the name of the AI system in the Terminator films that seeks to exterminate the human race. The firm already enables

Race of the machines



Alipay and Didi, a ride-hailing firm, to check the identity of new customers (their faces are compared with pictures held by the government).

Reacting to the success of such startups, China’s tech giants, too, have begun to invest heavily in AI. Baidu, Alibaba and Tencent, collectively called BAT, are working on many of the same services, including speech- and face-recognition. But they are also trying to become dominant in specific areas of AI, based on their existing strengths.

Tencent has so far kept the lowest profile; it established its AI labs only in recent months. But it is bound to develop a big presence in AI: it has more data than the other two. Its WeChat messenger service has nearly 1bn accounts and is also the platform for thousands of services, from payments and news to city guides and legal help. Tencent is also a world-beater in games with blockbusters such as League of Legends and Clash of Clans, which have more than 100m players each globally.

Alibaba is already a behemoth in e-commerce and is investing billions to become number one in cloud computing. At a conference in June in Shanghai it showed off an AI service called “ET City Brain” that uses video recognition to optimise traffic in real time. It uses footage from roadside cameras to predict the behaviour of cars and can adjust traffic lights on the spot. In its home town of Hangzhou, Alibaba claims, the system has already increased the average speed of traffic by 11%. Alibaba is also planning to beef up what it calls “ET Medical Brain”, which will offer AI-powered services to discover drugs and diagnose medical images. It has signed up a dozen hospitals to get the data it needs.

But it is Baidu whose fate is most tied to AI, in part because the technology may be its main chance to catch up with Alibaba and Tencent. It is putting most of its resources into autonomous driving: it wants to get a self-driving car onto the market by 2018 and to provide technology for fully autonomous vehicles by 2020. On July 5th

the firm announced a first version of its self-driving-car software, called Apollo, at a developer conference in Beijing.

Getting Apollo right will not only involve cars safely navigating the streets, but managing a project that is open to outsiders. Rivals such as Waymo, Google’s subsidiary, and Tesla, an electric-car firm, jealously guard their software and the data they collect. Baidu is planning not only to publish the recipe for its programs (making them “open-source”, in the jargon), but to share data. The idea is that carmakers that use Baidu’s technology will do the same, creating an open platform for data from self-driving cars—the “Android for autonomous vehicles”, in the words of Mr Lu.

Drive like a Beijinger

It remains to be seen how successful Chinese firms will be in exporting their AI products—for now, only a tiny handful are used abroad. In theory they should travel well: a self-driving car trained on China’s chaotic streets ought to have no problem navigating the more civilised traffic in Europe (in contrast, a vehicle trained in Germany may not get far beyond the first intersection in Beijing). But consumers in the West may hesitate to use self-driving cars that have been trained in a laxer safety environment that is more tolerant of accidents. Chinese municipalities are said to be falling over themselves to be testing grounds for autonomous vehicles.

There is another risk. Data are the most valuable input for AI at the moment, but their importance may yet diminish. AI firms have started to use simulated data, including those from video games. New types of algorithms may be capable of getting smart with fewer examples. “The danger is that we stop innovating in algorithms because of our advantage in data,” warns Gansha Wu, chief executive of UISEE, a Beijing startup which is developing self-driving technology. For now, though, China looks anything but complacent. In the race for pre-eminence in AI, it will run America close. ■

Norwegian Air Shuttle

The little airline that could

A low-cost carrier faces obstacles. But it could still transform long-haul flying

A DECADES-old dream of many low-cost carriers (LCCs), to break into the market for long-haul flights, has also been a long-standing nightmare for executives at full-service airlines, who earn their corn chiefly on such routes. So a series of setbacks for Norwegian, the latest LCC to try its hand at long-haul flights, has set off a round of *Schadenfreude* at established airlines across Europe. On July 13th, Norwegian revealed a disappointing set of results for the three months to June. A week earlier its chief financial officer of 15 years, Frode Foss, resigned with immediate effect, sending the share price down by 8%. Over the past year the shares have lost a third in value, as investors grow nervous.

The worries go back to Norwegian's decision to begin long-haul flights. Founded in 1993 by Bjørn Kjos, still its CEO and biggest shareholder, it took over some domestic routes in Norway from a bankrupt charter airline, Busy Bee. Then in 2002 it went into short-haul flights in Europe, becoming the continent's third-largest LCC. After a few years of decent profits, in 2012 Norwegian ordered 222 new planes that together cost several times its own value, and announced its new "no-frills" long-haul routes to America and Asia.

Investors were sceptical. Many LCCs have gone under trying to enter the long-



Freddie Laker saw it coming

haul market (see table), or had to admit defeat. The pioneer of no-frills transatlantic flights in the 1970s, Sir Freddie Laker, could not make his ventures work. Mr Kjos sees Laker as an inspiration; this spring Norwegian painted his face on one of its jets.

Yet changes in aircraft technology, consumer tastes and workers' benefits mean that the long-haul low-cost model has a better chance of working today. Andrew Charlton of Aviation Advocacy, a consultancy, notes that new, fuel-efficient aircraft, such as the Boeing 787 and 737MAX aircraft purchased by Norwegian, mean it is now possible to fly smaller numbers of passengers over long distances at relatively low cost. Passengers have grown accustomed to low-cost carriers (LCCs)—which fly more than two-fifths of all passengers within Europe each year—and are more willing than in the past to try out no-frills airlines on longer routes, too. A third factor helping low-cost long-haul travel is that airlines are less encumbered by generous labour contracts and unfunded pension costs than before. Some LCCs, such as Scoot, owned by Singapore Airlines and Jetstar, owned by Australia's Qantas, using similar tactics to Norwegian, are making a fist of low-cost long-haul flights.

In the case of Norwegian, however, investors worry that the investment it has made in its long-haul business could swamp its balance-sheet, says Ross Harvey of Davy, a stockbroking firm in Dublin. It is more highly leveraged than other European airlines—shareholders' equity accounted for 11% of its assets last year, compared with 35% for Ryanair, Europe's largest LCC, and 49% for easyJet, the second-biggest. It also has relatively low cash reserves and fairly thin profit margins.

That may make it difficult to withstand the shocks that regularly beset the aviation sector. An event such as a terror attack that

reduces passenger numbers or a sudden increase in fuel prices would hit Norwegian hard. An approaching crunch over the next year, when Norwegian has to pay for 19 new A320neo jets that it cannot currently use or lease because they have engine problems, may explain the CFO's sudden departure, says Bjorn Fehrm of Leeham Company, a consultancy: "he would not want to be around to sort this mess." In a statement Mr Kjos said it was understandable that Mr Foss would wish to concentrate on "other tasks" after 15 years at Norwegian.

If Norwegian gets into trouble, there is at least an obvious solution: a takeover by a rival with deeper pockets. Ryanair and easyJet are not interested because they do not want to complicate their business models. But Willie Walsh, the boss of IAG, a London-based group made up of several flag-carriers, seems eager to take on Mr Kjos in the low-cost long-haul market. British Airways, one IAG airline, has started to run cheap long-haul flights on the same routes as Norwegian from London's Gatwick. In March IAG launched Level, a long-haul LCC, in Barcelona, to fight off Norwegian's new long-haul hub there. The gossip among analysts is that IAG is readying itself to snap up its rival if it weakens further. If full-service airlines can't beat LCCs, the answer may be to join them. ■

Container shipping

The other handover

HONG KONG

An illustrious Hong Kong company sells to a mainland rival

STONECUTTERS ISLAND in Hong Kong used to be a favoured habitat for poisonous snakes and eye-catching birds such as the white-bellied sea eagle. Thanks to Hong Kong's rapid development, it is no longer so hospitable. Its sky is full of gantry cranes, stacking 20-foot-long shipping containers in multicoloured tessellations, like giant Lego bricks. A cluster of decorative containers, daubed in graffiti, line the perimeter of container terminal eight, which is partly operated by COSCO, a state-owned Chinese shipping giant. In bright yellow lettering, one slogan instructs passers-by to "Respect Past, Embrace Future".

Few Hong Kong companies have as much to tell about the past as Orient Overseas Container Line (OOCL), the world's seventh-biggest container shipping line. Its founder, Tung Chao-yung, owned the first Chinese-crewed steamship to travel from Shanghai to France in 1947, and went on to build a shipping empire of over 150 vessels. His eldest son and successor, Tung Chee-►

Thrust and drag

Long-haul low-cost launches and failures
Selected airlines

AirAsia X 2007

AirAsia X, a subsidiary of AirAsia and Virgin Group, starts long-haul low-cost flights. An attempt to operate flights between Asia and Europe from 2009 ended in 2012 owing to competition from highly-subsidised flag-carriers

Oasis Hong Kong Airlines 2005

An airline set up in Hong Kong to provide low-cost routes to Europe and North America from the territory. Went bankrupt in April 2008 because of high fuel prices and the global financial crisis

Zoom Airlines 2002

A Canadian airline founded to provide low-cost flights between North America and Europe. Went bankrupt in August 2008, again because of fuel prices and the financial crisis

Laker Airways 1977

Freddie Laker launched Skytrain, the first cheap transatlantic service between London and New York. In the face of predatory pricing from established rivals and an early-1980s recession the airline folded in 1982

Source: Company and press reports

hwa, survived the financial strains of the early 1980s (with the help of Chinese money) and became Hong Kong's first leader after it was handed back to China in 1997.

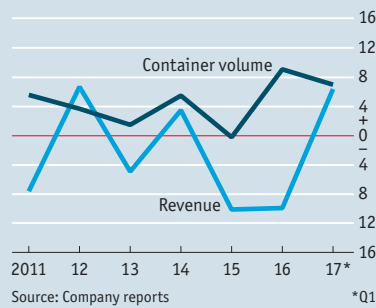
The future, however, looks uninviting. The world's shipping fleet, replenished by ever bigger vessels, has grown faster than the globalisation it serves. Reckless expansion by some firms, in an industry which overvalues market share, has hurt more prudent competitors. This has pushed OOCL into the arms of COSCO. On July 9th OOCL's owners announced its sale to COSCO for \$6.3bn, pushing their Chinese rival from fourth into third place among the world's container-shipping lines.

If the merger is approved by antitrust regulators in America and Europe, it will be the latest of a string of big consolidations, including Maersk's acquisition of Hamburg Süd, a proposed tie-up among Japan's three biggest carriers, and COSCO's earlier merger with China Shipping Container Lines. The industry may be the handmaiden of globalisation but it is congealing into regional oligopolies. When the dust settles in 2021, by when the current crop of deals will be concluded and ships under construction delivered, the top seven firms will control roughly three-quarters of all container ships, according to Drewry Maritime Financial Research, compared with 37% in 2005.

Consolidation should allow the two firms to remove any unprofitable overlap in their routes and operations. But COSCO's cost-saving plans do not include cutting people or pay, at least for two years, it has promised. OOCL's value to COSCO lies in its management talent as well as its tonnage: it is run more efficiently than many rivals. OOCL is also well attuned to global ways of doing things, as befits a company that carries more containers across the Pacific than within Asia. It now refuses to ship whales, sharks and dol-

Shipping news

Orient Overseas Container Line
% change on a year earlier



phins, and has won plaudits for reducing emissions through the use of battery power in its redevelopment of the Port of Long Beach in Los Angeles.

COSCO's offer price of HK\$78.67 (\$10.07) per share certainly seems full of respect, valuing OOCL at 40% above its book value. The premium partly reflects a nascent revival in OOCL's fortunes: revenues increased by 6.4% in the first quarter compared with a year earlier (see chart). The industry is recovering. Thanks to the demolition of many smaller ships, the global container fleet grew more slowly than traffic last year for the first time since 2011, says BIMCO, a shipping association.

But OOCL's chairman, Tung Chee-chen (the founder's second son), believes the recovery is vulnerable to a variety of dangers, including potential trade frictions and the remaining "supply overhang". Shipping firms placed few orders for new vessels in 2016, but many older orders have yet to be delivered. More new capacity will be added this year than last, according to BIMCO. Those ships were requested in expectation of a rosy global economy that never arrived. The future would be easier to embrace if it were not so hard to grasp. ■

Manufacturing technology

The Gemini makers

Millions of things, from factories to cars, will have digital twins

THE factory of the future will be a building stuffed full of robots making robots. A factory in Amberg, a small town in Bavaria, is not quite that, but it gets close. The plant is run by Siemens, a German engineering giant, and it makes industrial computer-control systems, which are essential bits of kit used in a variety of automated systems, including the factory's own production lines.

The Amberg plant is bright, airy and squeaky clean. It produces 15m units a year—a tenfold increase since opening in 1989, and without the building being expanded or any great increase in the 1,200 workers employed in three shifts. (Production is about 75% automated, as Siemens reckons some tasks are still best done by humans.) The defect rate is close to zero, as 99.9988% of units require no adjustment, a remarkable feat considering they come in more than 1,000 different varieties.

Such achievements are largely down to the factory's "digital twin". For there is another factory, a virtual version of the physical facility that resides within a computer system. This digital twin is identical in every respect and is used to design the control units, test them, simulate how to make them and program production machines. Once everything is humming along nicely, the digital twin hands over to the physical factory to begin making things for real.

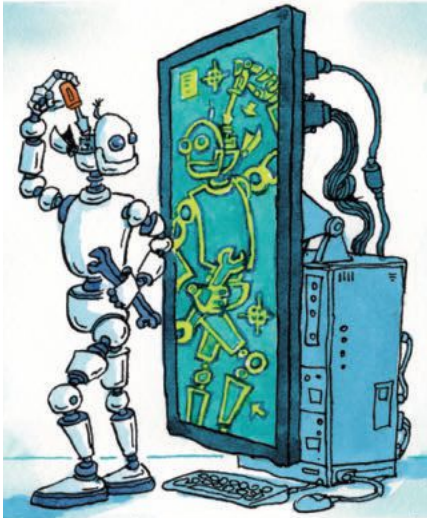
The digital twin is not a new invention. The concept of pairing traces its roots to the early days of space travel, when NASA built models to help monitor and modify spacecraft that, once launched, were beyond their physical reach. As computer power increased, these analogue models turned into digital ones.

The powerful systems that have since emerged bring together several elements—software services in computer-aided design and engineering; simulation; process control; and product life cycle management. Some digital twins are gaining artificial intelligence and virtual-reality capabilities, too. They can also help to monitor remotely and provide after-service for products that have been sold. "It is a digital twin of the entire value chain," says Jan Mrosik, the chief executive of Siemens's Digital Factory Division.

Siemens is not alone in equipping its factories with digital twins. Its American rival, GE, is doing the same. Both companies also sell their digital-twin software, along with firms such as Dassault Sys- ▶▶



Terminal value



► tèmes, a French specialist in the area. Customers come from industries ranging from aerospace and defence to automotive, consumer products, energy, heavy machinery and pharmaceuticals.

One motivation for twinning is to bring products to market faster and at a lower cost. The digital twin allows endless design iterations to be tried in the virtual world without having to stop the production line to see how they can be made, says Mr Mrosik. The twin can also model people working in a factory to improve their ergonomics. In one example, Maserati, which is part of Fiat Chrysler Automobiles (whose chairman is a director of *The Economist's* parent company), used a digital twin to put its Ghibli sports saloon into production in Grugliasco, Italy, in just 16 months instead of the typical 30 months.

The spread of digital twins could shake up supply chains. For example, suppliers could be asked to submit a digital twin of their product so that it can be tested in a manufacturer's virtual factory before an order is placed. It is already a requirement at the Amberg plant for suppliers to deliver a digital twin along with their product to help installation.

Twins will become more responsive still as products are increasingly fitted with sensors that relay data to the internet. Formula 1 cars are full of such sensors; racing teams use these data to create digital twins of their cars so that they can rapidly design, test and manufacture parts needed to make hundreds of changes in the week or two between races. GE creates digital twins of its wind turbines and jet engines to monitor their performance and carry out preventive maintenance. Data transmitted from a jet engine while planes are in the air can provide 15-30 days' advance notice of potential failures.

Even mass-produced goods that are far less complex are likely to end up having digital siblings. This would help with product tracking and verification, which is in-

Clothes retailing

The forgotten majority

NEW YORK

The fashion industry is belatedly paying attention to plus-size women

A GOOD fit is everything, stylists often counsel, but in assessing its market America's fashion business appears to have mislaid the measuring tape. A frequently-cited study done a few years ago by Plunkett Research, a market-research firm, found that 67% of American women were "plus-size", meaning size 14 or larger. That figure will not have changed much, but in 2016, only 18% of clothing sold was plus-size, according to NPD Group, another research firm.

Designers and retailers have long thought of the plus-size segment as high-risk. Predicting what these customers will buy can be difficult, as they tend to be more cautious about styles. Making larger clothes is more expensive; higher costs for fabric cannot always be passed on to consumers. In turn, plus-size women shopped less because the industry was not serving them well. "We have money but nowhere to spend it," says Kristine Thompson, who runs a blog called *Trendy Curvy* and has nearly

150,000 followers on Instagram, a social-media site.

At last, that is changing. Fast-fashion brands, including Forever 21 and a fashion line sold in partnership with Target, a giant retailer, have expanded their plus-size collections. Lane Bryant, a plus-size retailer, and Prabal Garung, a designer, have done the same. In March Nike extended its "x-sized" sportswear range.

Revenue in the plus-size category increased by 14% between 2013 and 2016, compared with growth of 7% for all apparel. Takings were \$21.3bn last year. Social media has played an important role in changing attitudes in the fashion business, says Madeline Jones, editor and co-founder of *PLUS Model Magazine*.

Nonetheless, designer brands still hold back (Walmart sells the most plus-size apparel). Some brands, such as Michael Kors, do sell plus-size ranges but do not advertise them or display them on websites. For those that are willing to take a chance, several internet startups that deliver personally styled outfits to individuals, including plus-size women, offer data to "straight-size" designers. Gwynnie Bee, Stitch Fix and Dia & Co, for example, share information with designers on preferred styles and fits. Tracy Reese, a designer known for creating Michelle Obama's dress for the Democratic National Convention in 2012, is one brand that recently enlisted Gwynnie Bee's help to create a new plus-size collection. Gwynnie Bee prompted the label to create bigger patterns and more appealing designs.

Not all plus-size shoppers are convinced. Laura Fuentes, a hairstylist from Abilene, Texas, says that many upmarket department stores still keep their plus-size clothing sections poorly organised, badly stocked and dimly lit, if they stock larger clothes at all. Yet such complaints should be taken with a pinch of salt, says Ms Thompson. "We're nowhere near where we should be but we've made progress," she says.



Hot to trot

creasingly important in food manufacturing and pharmaceutical production. Just about any product could have a unique identifier that links to production data, if not a full digital twin, reckons Thomas Körmeni, the chief executive of Kezzler, a Norwegian company that produces secure product codes using an algorithm.

The firm's codes can be scanned with a smartphone, which then connects over the

internet so that information can be exchanged with a digital twin on things like a product's location and use. A consumer in London checking the provenance of a bottle of fine wine, for example, could confirm the vintage, or be alerted to the possibility of counterfeiting if the bottle had actually been dispatched to a different country. That's something everyone can raise a glass to. ■

Schumpeter | The United States of debt

A hidden message in American companies' balance-sheets



POLITICS in America may be an arena of mutual incomprehension with few settled facts, but the debate about the health of American firms' balance-sheets is, if anything, even more bewildering. Ranged on one side are those who complain that America Inc is hoarding \$2trn of idle cash and that this acts as a powerful drag on the economy. On the other are those, including the IMF, who yell that firms are bingeing on debt, with borrowing hitting an all-time high of \$8.4trn last year. As a result firms are simultaneously accused of being timid wimps and reckless idiots.

In fact, the numbers show that they are by and large a sensible bunch (especially compared with the country's bankers and politicians). What is more, the debate over debt, as framed, misses the most intriguing thing about their balance-sheets. These have been radically reshaped to adapt to three national economic sicknesses—a financial system that companies still mistrust after the crisis; a broken tax code; and monopoly profits.

Measuring a firm's balance-sheet leverage involves a few moving parts, which may explain some of the muddle over borrowing. There is debt, cash and the profits that go to making interest payments. For the current members of the S&P 500 index, excluding financial firms, all three measures have soared in the past decade. Debt has risen by 114% and cash by 162%; gross operating profits are 51% higher. It is easy to cherry-pick from among these figures to make contradictory claims.

What matters, however, is the size of firms' net debts (debts less cash) relative to profits. Comparing these is rather like deducting the cash in your bank account from your debts and comparing the net amount to your salary. The ratio for S&P 500 members, adding up all their accounts, is a reasonable 1.5 times, slightly higher than a decade ago and lower than in Europe and Asia. Some firms are more "geared" than others. But the share of total debt owed by highly leveraged firms has been fairly stable over time. Although figures for the S&P 500 capture only big, listed firms, national-accounts data include all of them and indicate similar trends, with the net-debt ratio flat compared to 2006.

That does not necessarily please central banks in rich countries, which since the financial crisis have kept interest rates low, in part to try to persuade companies to go on investment splurges funded by cheap debt. But companies do not work in the way

that some economists would like. They invest in line with their long-term strategies, using tried-and-tested rules of thumb to gauge the attractiveness of new projects.

Even if American firms have spent a decade ignoring the Federal Reserve, they have altered their behaviour in response to the economy's three ills. First, their suspicion of the financial system means they carry a bigger buffer of cash and liquid assets. Before the collapse of Lehman Brothers in 2008 firms assumed they could always tap the money markets or borrow from banks. Now they do not entirely trust either. For every dollar of total gross profits that the present constituents of the S&P 500 earn, they carry \$1.25 of cash, compared with 72 cents a decade ago.

The second change is that firms have had to adapt to a decrepit tax code that is stuck in the 1980s, before business globalised. Companies must pay a levy if they try to bring foreign profits home, and as a result many do not bother. About half of the cash of S&P 500 firms remains offshore. Many multinationals now divide their balance-sheets according to geography. They build up cash abroad and borrow in America. Apple, for example, issues bonds at home to pay for its share buy-backs, rather than tapping the \$240bn it has stashed abroad. So though America Inc's consolidated balance-sheet, which adds up the domestic and foreign parts, is prudently leveraged, it is more complex than before.

The last change is that companies' profits have soared, which partly reflects a decline in competition in the economy and the rise of oligopolies in many industries. Firms are implicitly assuming that this is a permanent change. They have allowed their net debts to rise roughly in line with their rising profits (using these bumper earnings and borrowings to finance share buy-backs).

Established oligopolists such as AT&T and Kraft Heinz now boast both massive profits and high levels of net debt, reflecting the fact that their managers do not expect much competition. Likewise, America's airlines have increased debt as their profits have shot up. Younger monopolies such as Alphabet and Facebook have net cash positions, largely because the money has only just started pouring in. Eventually they may gear up, too.

God help America

Both arguments, that America Inc has either lost its nerve or become reckless, are wrong. But the corporate world's revamped balance-sheet does carry risks. One is that the liquidity buffer of \$2trn might be invested unwisely. Every company insists that it parks its spare money in safe banks and low-risk bonds, but this is an area where disclosure is poor, and it would be no surprise if a few corporate treasurers were making dangerous speculative bets. Another risk is that a geopolitical or financial shock could make it harder for capital to cross borders. America Inc's geographically divided balance-sheet would be harder to manage.

A final risk is that abnormally high profits could fall, making it harder to service debts. Antitrust watchdogs could get tougher with telecoms and cable-TV firms, for example, pushing earnings down. Or the labour market could tighten, pushing wages up and prompting the Fed to raise interest rates. That would squeeze companies' near-record margins and lift their interest costs.

That is clearly not what many CEOs expect. The message that is buried in balance-sheets is not that American firms are behaving stupidly in response to today's business climate. It is that they think the disappointing status quo of high profits, muffled competition, sluggish wage growth and dysfunctional political and financial systems will continue for a long time to come. ■



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100% renewable energy

At what cost?

A transition away from fossil fuels is necessary, but it will not be painless

A WIDELY read cover story on the impact of global warming in this week's *New York* magazine starts ominously: "It is, I promise, worse than you think." It goes on to predict temperatures in New York hotter than present-day Bahrain, unprecedented droughts wherever today's food is produced, the release of diseases like bubonic plague hitherto trapped under Siberian ice, and permanent economic collapse. In the face of such apocalyptic predictions, can the world take solace from those who argue that it can move, relatively quickly and painlessly, to 100% renewable energy?

At first glance, the answer to that question looks depressingly obvious. Despite falling costs, wind and solar still produce only 5.5% of the world's electricity. Hydropower is a much more significant source of renewable energy, but its costs are rising, and investment is falling. Looking more broadly at energy demand, including that for domestic heating, transport and industry, the share of wind and solar is a minuscule 1.6% (see chart). It seems impossible to eliminate fossil fuels from the energy mix in the foreseeable future.

But all energy transitions, such as that from coal to hydrocarbons in the 20th century, take many decades. It is the rate of change that guides where investments flow. That makes greens more optimistic. During the past decade, solar photovoltaics (pv) and wind energy have been on a roll as sources of electricity. Although in-

vestment dipped slightly last year, the International Energy Agency, a global forecaster, said on July 11th that for the first time the amount of renewable capacity commissioned in 2016 almost matched that for other sources of power generation, such as coal and natural gas. In some countries the two technologies—particularly solar pv in sunny places—are now cheaper than coal and gas. It is no longer uncommon for countries like Denmark and Scotland to have periods when the equivalent of all their power comes from wind.

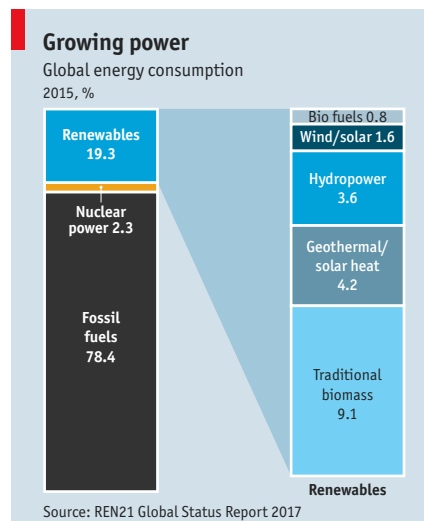
Ambitions are rising. The Senate in Cal-

ifornia, a state that is close to hitting its goal of generating one-third of its power from renewables by 2020, has proposed raising the target to 60% by 2030; Germany's goal is to become 80% renewable by 2050. But whether it is possible to produce all of a country's electricity with just wind, water and hydro is a subject of bitter debate.

In 2015 Mark Jacobson of Stanford University and others argued that electricity, transport, heating/cooling, and industry in America could be fully powered in 2050-55 by wind, water and solar, without the variability of the weather affecting users. Forswearing the use of natural gas, biofuels, nuclear power and stationary batteries, they said weather modelling, hydrogen storage and flexible demand could ensure stable supply at relatively low cost.

But in June this year Christopher Clack, founder of Vibrant Clean Energy, a firm, issued a stinging critique with fellow researchers in the *Proceedings of the National Academy of Sciences*, the journal in which Mr Jacobson et al had published their findings. They argued that a narrow focus on wind, water and solar would make tackling climate change more difficult and expensive than it needed to be, not least because it ignored existing zero-carbon technologies such as nuclear power and bioenergy. They claimed the models wrongly assumed that hydroelectricity output could continue for hours on end at many times the capacity available today, and pointed to the implausibility of replacing the current aviation system with yet-to-be-developed hydrogen-powered planes. In their view, decarbonising 80% of the electricity grid is possible at reasonable cost, provided America improves its high-voltage transmission grid. Beyond that is anyone's guess.

Others take a wider view. Amory Lovins of the Colorado-based Rocky Moun- ▶▶



tain Institute, a think-tank, shrugs off the 100% renewables dispute as a sideshow. He takes comfort from the fact that it is increasingly common for renewables sustainably to produce half a location's electricity supply. He believes that the share can be scaled up with ease, possibly to 80%. But in order to cut emissions drastically, he puts most emphasis on a tripling of energy efficiency, by designing better buildings and factories and using lighter materials, as well as by keeping some natural gas in the mix. He also sees clean-energy batteries in electric vehicles displacing oil demand, as petroleum did whale oil in

the 19th century.

Some sceptics raise concerns about the economic ramifications if renewables' penetration rises substantially. In an article this month, Michael Kelly of Cambridge University focused on the energy return on investment (EROI) of solar PV and wind turbines, meaning the ratio between the amount of energy they produce to the amount of energy invested to make them. He claimed that their EROI was substantially lower than those of fossil fuels; using renewables to generate half of the world's electricity would leave less energy free to power other types of economic activity.

Critics note that his analysis is based on studies of PV returns in Spain from more than half a decade ago. Since then solar and wind costs (a proxy for EROI) have plunged, raising their returns. What is more, other studies suggest returns from fossil-fuel-derived energy have fallen, and will decline further as they incur increased costs associated with pollution and climate change. A high share of renewables may be less efficient at powering economic growth than fossil fuels were in their 20th century heyday. But if the climate doom-sayers are to be proved wrong, a clean-energy system must be part of the solution. ■

Buttonwood | How to kill a corporate zombie

The answer may hold the key to enhancing productivity

WHAT is the best way to kill a zombie? Fans of Daryl Dixon, a character in "The Walking Dead", a television series, will know the answer: a crossbow bolt to the brain. Getting rid of corporate zombies, however, is a much more complicated process.

Ageing populations mean that the workforces in developed economies are likely to stagnate, or even shrink, in coming decades. That means almost all the burden of economic growth is likely to fall on productivity improvements. There has been a lot of focus on labour-market flexibility as the key to solving this problem, but the flexibility of the corporate sector may be just as important. Indeed, there is a growing belief that the persistence of zombie firms—companies that keep operating despite a poor financial performance—may explain the weak productivity performance of developed economies in recent years.

An inability to kill off failing companies seems to have two main effects. First, the existence of the zombies drives down the average productivity level of businesses. Second, capital and labour are wrongly allocated to such firms. That stops money and workers shifting to more efficient businesses, making it harder for the latter to compete. In a sense, therefore, the corporate zombies are eating healthy firms.

One definition of a zombie company is a business whose earnings before tax do not cover its interest expenses. The latest annual report from the Bank for International Settlements examines 14 developed countries and finds that, on this measure, the average proportion of zombies among listed companies increased from less than 6% in 2007 to 10.5% in 2015.

That analysis builds on the work of an OECD paper* published earlier this year



This will make you more productive

which found that, within industries, a higher share of capital invested in zombie firms was associated with lower investment and employment growth at healthier businesses. A new paper** from the OECD examines the link between zombie firms, capital misallocation and the design of corporate-insolvency regimes.

The idea is simple. The easier it is for companies to become insolvent, the more quickly capital can be reallocated from inefficient to efficient uses. The OECD's new paper highlights 13 key features in insolvency regimes, including personal costs to failed entrepreneurs, the rights of creditors and the ability to distinguish between honest and fraudulent bankruptcy. The authors circulated a questionnaire on these issues within 35 OECD member countries and 11 non-member states; 39 responded. It then constructed a set of indicators based on the survey responses.

Britain was the country with the best-designed insolvency regime, based on

these criteria; Estonia had the most cumbersome set-up. Sure enough, the study finds that insolvency regimes that make it easier to restructure companies, and limit the personal costs associated with entrepreneurial failure, reduce the amount of capital tied up in zombie firms. Dispatching the living dead on TV and in movies may require the maximum amount of brutality; when it comes to the corporate undead, it is best to kill with kindness.

This is an important issue. The OECD estimates that, in 2013, the share of capital sunk in zombie firms in Greece, Italy and Spain was 28%, 19% and 16%, respectively. Countries have realised the need for change; 15 of those surveyed have changed their insolvency regimes in recent years. The authors reckon a further shift towards the British model could reduce the zombie-capital share by at least nine percentage points in some countries.

There is a lot more to the productivity puzzle than just the nature of insolvency regimes; weak productivity is a big concern in Britain, for example. It seems clear that a squeeze on real wages in recent years has meant that some companies have been happy to employ more workers rather than buy productivity-enhancing machines. Robert Gordon of Northwestern University has suggested that innovations like the internet have been less transformative than previous developments such as the internal combustion engine. But the idea that the corporate sector is becoming more ossified, as seen in the decline of new business formation, deserves a lot more attention.

* "The Walking Dead? Zombie Firms and Productivity Performance in OECD countries", Working paper 1372

** "Insolvency Regimes, Zombie Firms and Capital Reallocation", Working paper 1399

Wall Street

New sheriffs in town

NEW YORK

A change in approach to financial regulation

DONALD TRUMP promised to unshackle America's financial firms from mounds of stultifying regulation and the grip of bureaucrats with little practical experience of capitalism. One way to put that pledge into practice is to appoint officials with business backgrounds and deregulatory agendas. This element of the Trump strategy was on show this week, with a presidential nomination for a critical job at the Federal Reserve and the first public address by the new head of the Securities and Exchange Commission (SEC), another financial regulator.

Buried in the voluminous pages of the Dodd-Frank act, an Obama-era law passed in response to the financial crisis, was the creation of a new supervisory job at the Fed. Thus far, this powerful post has been informally delegated to an existing Fed board member, first Daniel Tarullo and, since his departure, Jerome Powell. That is set to change. Randal Quarles was formally nominated for the job—technically a vice-chairmanship with a brief covering financial supervision—on July 11th.

Mr Quarles has held a number of jobs—as a lawyer for financial institutions at Davis Polk, a leading law firm; as a senior official in the Treasury; working on bank investments at Carlyle, a private-equity firm; and most recently, as head of Cynosure, a firm investing on behalf of wealthy families. If approved by the Senate, Mr Quarles will have his new office in a building named after Marriner Eccles, chairman of the Fed from 1934 to 1948, and a relative of his wife, Hope.

Mr Quarles is described by former asso-



An inspector Quarles

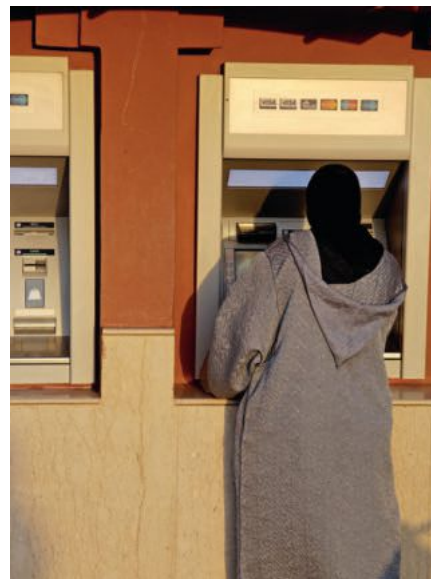
ciates as being in favour of policies administered through transparent and direct rules. If so, this would mark a shift from the Obama administration's approach to finance. It oversaw a profusion of complex, and sometimes conflicting, directives; supervisors kept banks on a tight leash through stress tests that lacked clear criteria. That created vast uncertainty for financial institutions. It also gave regulators great discretionary power (to say nothing of lucrative job opportunities helping financial institutions to navigate their way through the murk).

In what may be another sign of a changing approach, Jay Clayton, appointed chairman of the SEC in May, gave his first public speech on July 12th, to the Economic Club of New York. He heads a deeply troubled agency. A third of the new rules the agency is required to write by the Dodd-Frank act have yet to be completed. Three out of the five commission slots need to be filled; Mr Obama's last two nominations failed to win approval because of deep ideological divisions in Congress. The SEC's three missions—of investor protection; fair, orderly and efficient markets; and the facilitation of capital formation—are often seen to be at odds with one another or insufficiently understood.

Mr Clayton's speech expanded on a theme first voiced in his confirmation hearing, that a sharp decline in publicly listed companies in America over the past two decades reflects deep problems in the structure of financial markets. In turn, this causes average Americans harm by denying them the opportunity to invest in dynamic companies.

Among the causes of the decline, he said, was the cumulative impact of disclosure requirements that had gone far beyond the core concept of what is material to an investor. Some of these requirements were aimed at providing indirect benefits to "specific shareholders or other constituencies", he said, a passage seen by many as an attack on activists who use disclosure standards to push companies on social rather than business issues. Additional compliance mandates had piled on costs for listed companies that they could avoid by staying private.

The first change of the Clayton era is telling. On July 10th a new rule went into effect that raised the size threshold for companies that are allowed to file private registration statements to raise capital with the SEC, thereby delaying the exposure of sensitive information that might be of use to competitors. Companies, says one lawyer, consider the disclosure process akin to undressing in public, and thus a reason to stay private. The SEC's rule change is a small one but may be indicative of a broader change in regulatory philosophy. If the market does not work for companies, it will not work for the public. ■



Islamic banking in Africa

Saharan sharia

Africa is Islamic finance's next frontier. But barriers to entry are high

IN 2008 Ethiopia's conservative central bank experimented: it authorised interest-free banking. Interest is prohibited under sharia law, so the move was lauded as a step towards expanding financial services for the country's large and often poor Muslim minority. But momentum soon stalled. An attempt to launch a fully-fledged Islamic bank foundered. Today most of Ethiopia's big commercial banks offer a narrow range of Islamic financial products, but to few customers. Islamic finance in Ethiopia was stillborn.

Outside Africa, Islamic finance is in much healthier condition. Between 2007 and 2014, the sector tripled in size (although growth has slowed lately). Total assets are around \$1.9trn. Sub-Saharan Africa accounts for less than 2% of this, yet it should be especially fertile territory. The continent's Muslim population is 250m and growing. And according to the World Bank, as many as 350m Africans do not have a bank account.

Several countries are vying to become African hubs for Islamic finance. Kenya, with a much smaller Muslim population than Ethiopia, has three Islamic banks, as well as an Islamic insurance company. A further five conventional banks offer sharia-compliant products through dedicated Islamic "windows". In December Kenya joined the Islamic Financial Services Board, a Malaysia-based regulatory body.

It is also hoped to issue a sovereign sukuk, Islam's answer to bonds, this year or ▶▶

▶ next. This will raise funds for infrastructure (sharia requires *sukuks* to be linked to ownership of a physical asset), and help foster an Islamic capital market. Nigeria, which has one Islamic bank, plans to do the same. Senegal issued its first (oversubscribed) *sukuk* in 2014, raising \$208m. The same year South Africa raised \$500m in Africa's first international Islamic bond issue. Total issuance in Africa in 2016 was \$1.3bn, comprising issues from Senegal, Côte d'Ivoire and Togo.

Sovereign *sukuks* are one thing, a sharia-compliant industry serving the private sector quite another. In north Africa, where Muslims make up as much as 96% of the population, Islamic finance has long been held back by a fear that it means introducing sharia law through the back door.

South of the Sahara the problems are more structural, says Thorsten Beck of City University in London. Islamic banks are mostly small; in Kenya they commanded less than 2% of the market in 2015. Though business lending in Africa suffers from punishingly high interest rates, giving Islamic lenders an apparent advantage, they face the same fundamental difficulties as conventional peers. "Many projects are simply not bankable," Mr Beck notes, so few assets can easily be used as collateral. Moreover, Islamic banks' sources of funds are mainly short-term, making it hard for them to offer long-term financing.

Islamic contracts are complex, requiring especially strong oversight. Regulators don't yet know how to deal with the sector, says Khaled Al-Aboodi of the Islamic Development Bank. Despite issuing two *sukuks* Senegal has yet to introduce any specific regulations for Islamic finance. Onyango Obiero of Dubai Islamic Bank's new branch in Kenya complains that Islamic transactions still face double taxation, since they often involve the purchase and resale of an asset, taxed each time. That makes it hard to compete.

The industry's champions argue that there is pent-up demand among the continent's Muslim population. Evidence suggests that some African Muslims shy away from conventional finance for religious reasons. A World Bank study found that an African Muslim is less likely to have an account or save than a non-Muslim.

It is less clear, however, that Islamic finance is the answer. "Islamic banks don't tend to be geared towards the poor," notes Rodney Wilson of Durham University. And the very poorest, however pious, are unlikely to pay a premium for peace of mind. Technological innovations, such as mobile money, will probably do much more to reach them. Saif Malik of Standard Chartered, a bank, notes that in Malaysia, Islamic banks are competitive enough to appeal widely to non-Muslims as well. Islamic finance is, after all, still finance: it thrives when the price is right. ■

The Big Mac index

Meat reversion

The dollar has slipped over the past six months, but still looks dear

THIRTY-ONE years ago, *The Economist* created the Big Mac index as a way of gauging how different currencies stacked up against the dollar. The index is based on the theory of purchasing-power parity, the idea that in the long run, exchange rates should adjust so that the price of an identical basket of tradable goods is the same. Our basket contains one item, a Big Mac.

The latest version of the index shows, for example, that a Big Mac costs \$5.30 in America, but just ¥380 (\$3.36) in Japan. The Japanese yen is thus, by our meaty logic, 37% undervalued against the dollar.

In that, the yen is not alone. The greenback has strengthened considerably in recent years: of the 34 currencies we track in the full index, 31 are currently undervalued against the dollar. Only the Swiss franc, Norwegian krone and Swedish krona are overvalued. That said, plenty of currencies have clawed back some ground against the dollar in the past six months.

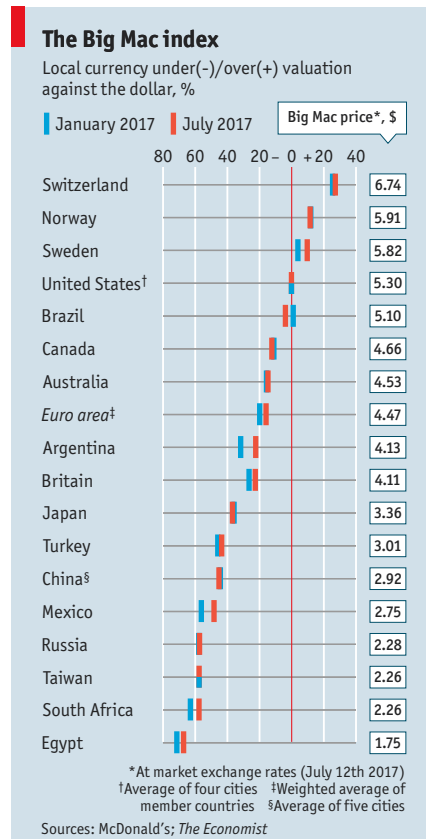
Take, for example, the Egyptian pound, which burgeronomics holds to be the most undervalued currency. In November, the

Egyptian government decided to allow its currency to float freely. By December the pound had fallen to its current value of around 18 per dollar. Inflation has soared as a consequence, averaging 30% over the past six months. Big Mac prices have increased accordingly, from 275 pounds (\$1.53) to 31.4. The net result, according to our index, is that the Egyptian pound has gone from 71% undervalued against the dollar in January to 67% today.

The euro has also gained ground in the same period. The single currency buys \$1.14 today, up from \$1.05 at the start of the year; the euro has gone from being 20% undervalued against the dollar in our index, to 16% undercooked. That reflects a mixture of politics and economics. Eurosceptic parties were beaten back at the polls in both the Netherlands and France, muting fears that populists would find success. The euro zone grew substantially faster than the American economy in the first quarter, and the European Central Bank has started to signal that its policy of extraordinary monetary stimulus will not last for ever. If Europe's recovery continues to strengthen, American tourists to the continent may end up getting less burger for their buck.

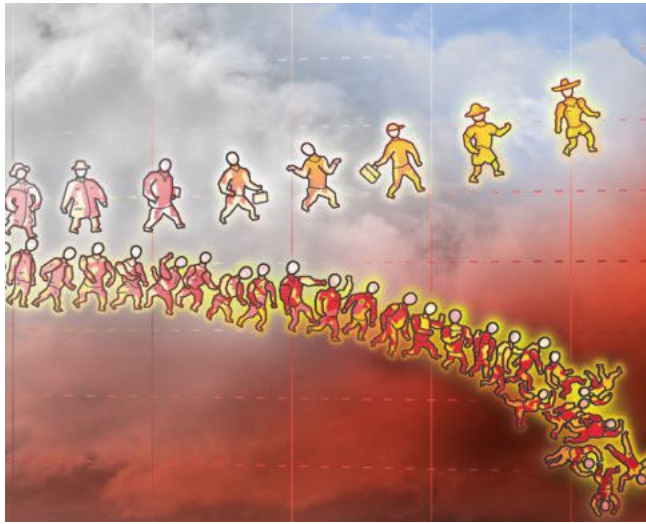
One of the best-performing currencies over the past six months has been the Mexican peso. In January, the peso had fallen to a record low of 22 to the dollar, thanks in no small part to fears of a possible trade war with Mexico's northern neighbour. But markets have become increasingly sceptical that Donald Trump will follow through on his most blood-curdling trade threats. The peso has recovered ground and hovers at around 18 per dollar. The Mexican currency is now only 48% undervalued against the greenback, compared with 56% in January.

Markets are also losing faith in Mr Trump's ability to pass domestic economic reforms. On the campaign trail, the president-to-be promised expansionary fiscal policies, including tax cuts and increased infrastructure spending. Traders believed that the Federal Reserve would be forced to increase interest rates in response. The dollar surged, reaching a 15-year high in January. Since then, the dollar has slipped by 5% on a trade-weighted basis. That not only vindicates those sceptical of Mr Trump's legislative prowess. It's also a partial vindication for believers in burgeronomics. If our index has any fact content, the dollar may have further to fall. ■



Free exchange | It's not the heat, it's the cupidity

The unequal effects of climate change mean its costs are understated



ON JULY 12, the Larsen C ice shelf in Antarctica disgorged a chunk of ice the size of Delaware, a small state on America's east coast. America's government seems unfazed by the possibility that such shifts might one day threaten Delaware itself. Its climate defiance grows not only from the power of its fossil-fuel industry and the scepticism of the Republican party, but also from a sense of insulation from the costs of global warming. This confidence is misplaced. New research indicates not only that climate change will impose heavy costs on the American economy, but also that it will exacerbate inequality.

Calculating the economic effects of climate change is no simple matter. It means working out how a given increase in global temperature affects local weather conditions; how local weather affects things like mortality and crop yields; how those changes add to or subtract from regional GDP; and how thousands of local-level changes in GDP add up nationally or globally. No sweat.

The sheer number of moving parts means that the "damage function" used in many papers, which links changes in global temperature to economic costs, is not well characterised. The authors of a new study published in *Science* aim to firm things up. Solomon Hsiang of the University of California, Berkeley, Robert Kopp of Rutgers University and their co-authors run their climate models repeatedly, for three different temperature scenarios, to see how 15 different economic variables behave in 29,000 possible future states of the world, for each of 3,143 American counties.

Using that information, they assemble probability distributions showing the costs America is likely to sustain by the end of the century. Their findings are stark. Even a modest rise in temperature impairs American economic performance. An increase in global temperature of 1.5°C is very likely to reduce annual output by the end of the century by between zero and 1.7%; a rise of 4°C would probably generate losses between 1.5% and 5.6% of GDP. These figures mask considerable variation across America. In some counties the models forecast a rise in local GDP of 10%; others face a staggering expected decline in annual output of 20%.

It is not surprising that the nationwide costs of climate change should conceal losses in some places and gains in others; that is how averages work. But the distribution of losses matters. The study shows that the pain of climate change will fall more heavily

ly on America's poorest bits than on its richest areas. Falling crop yields and labour productivity, and rising mortality and crime, are expected to be especially pronounced in America's hot southern counties, where incomes are below the national average. In richer New England and the Pacific north-west, in contrast, winters will be milder and less deadly, and agricultural yields may rise. The aggregate economic cost of climate change is reduced because the burden disproportionately falls on those with low incomes, hardly the ideal way to slash the cost of warming.

Climate change is costly in part because its effects are uncertain, impairing investments and other actions which might mitigate its harms. Thus people would be willing to pay some money to know with greater certainty what higher temperatures will mean in future. Uncertainty around economic projections is highest in the poorest counties. For some of these places the worst outcomes could mean GDP losses of 40% or more. The authors reckon that after adjusting for the uncertainty of climate change, and for its unequal effects, the economic damage caused by a global temperature rise of 3°C could be 1.5-3 times bigger than the unadjusted aggregate figures suggest.

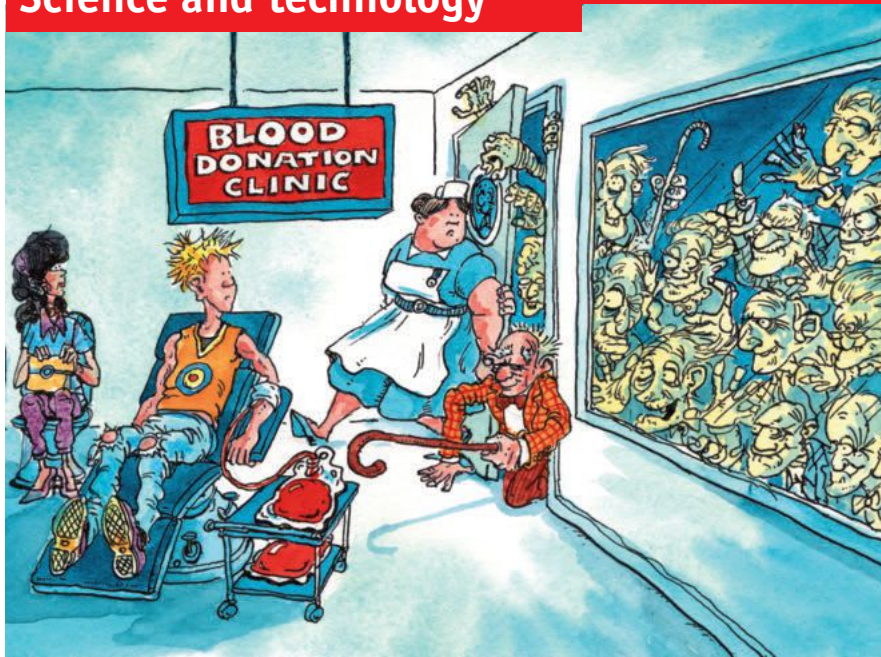
Though focused on America, the analysis also describes the world's climate problem. The costs of global climate change will again be unevenly (and uncertainly) distributed, but harm will often be smaller for richer, temperate countries. As a result the estimated economic loss from warming is almost certainly understated, because the nastiest effects are concentrated in places where incomes are lowest: and, correspondingly, where tumbling incomes have the smallest effect on global GDP.

Yet just because a county in Mississippi faces a harsher future as a result of climate change than a county in Washington does not mean Mississippians must fare worse than Washingtonians. The authors hold the distribution of America's population constant in conducting their analysis, but point out that harm could be reduced by large-scale migration. Is that a realistic possibility?

People do move as it grows hotter—but not in a uniform way. Research by Cristina Cattaneo and Giovanni Peri, for instance, shows that migration is an important element of the response to warming in middle-income countries, but that in poorer places the cost of moving locks people in place, amplifying the regressive impact of climate change. What is more, climate change might well require broad migrations from the middle latitudes to countries farther north or south, yet rich-country borders are far less porous (with respect to migrants from poorer countries, at least) than those in the developing world. Even within the large domestic territory of a country like America, mobility cannot be taken for granted; it has been falling in recent decades, even as economic fortunes have diverged and an opioid epidemic has ravaged some parts of the country while sparing others.

Ice in their veins

The rich are disproportionate contributors to the carbon emissions that power climate change. It is cruel and perverse, therefore, that the costs of warming should be disproportionately borne by the poor. And it is both insult and injury that the wealthy are more mobile in the face of climate-induced hardship, and more effective at limiting the mobility of others. The strains this injustice places on the social fabric might well lead to woes more damaging than rising temperatures themselves. ■



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Fighting ageing

Youthful spirits

Blood transfusions from young animals can revitalise old ones. Trials are now running to see if that is true for people, too

IT WAS one of the oddest experiments in the history of dentistry. In the early 1950s a researcher called Benjamin Kamrin was looking into the causes of tooth decay. To do so, he turned to that scientific stalwart, the lab rat. Specifically, he cut small patches of skin from pairs of rats and then sutured the animals together at the site of the wound. After about a week of being joined in this way, the animals' blood vessels began to merge. The result was two rats whose hearts pumped blood around a shared circulatory system. This state of affairs is called parabiosis.

Parabiosis works best on animals that are closely related genetically. By getting his rats to share blood, as well as genes, and then feeding the animals a variety of diets, Kamrin hoped to prove (which he did) that it was sugar in food, and not some inherent deficiency in individuals, that was responsible for rotting their teeth.

Other people, though, have used the technique to find more striking results. For example, mammalian bone density usually drops with age. Three years after Kamrin's work, however, a gerontologist called Clive McCay showed that linking an old rat to a young one boosted the density of the oldster's bones. In 1972 another paper reported, even more spectacularly, that elderly rats which shared blood with young ones lived four to five months longer than similarly old rats which did not.

The rats themselves, unsurprisingly, were not always keen on the procedure. Early papers describe the dangers of "parabiotic disease", in which one animal's immune system rebels against the foreign blood, and also explain how rats must be socialised carefully before being joined, to stop them biting each other to death.

"The technique itself is kind of gross and crude," admits Michael Conboy, a biologist and parabiosis researcher at the University of California, Berkeley. Perhaps for that reason, research had more or less died out by the late 1970s. These days, though, it is back in the news—for a string of recent discoveries have suggested that previous generations of researchers were on to something. The blood of young animals, it seems, may indeed be able to ameliorate at least some of the effects of ageing. And the technique is promising enough to have spawned human clinical trials.

No jokes about vampires, please

This modern interest in parabiosis dates back to 2005, when Dr Conboy (who was then at Stanford University), his wife Irina, and a group of other Stanford researchers published a paper in *Nature*. In it they described joining mice aged between two and three months with members of the same strain that were 19-26 months old. That is roughly equivalent to hooking a 20-year-old human up to a septuagenarian.

After five weeks, the Conboys and their colleagues deliberately injured the older mice's muscles. Usually, old animals heal far less effectively from such injuries than young ones do. But these mice healed almost as well as a set of young control animals. The young blood had a similar effect on liver cells, too, doubling or tripling their proliferation rate in older animals.

Since then, a torrent of papers have shown matching improvements elsewhere in the body. No one has yet replicated the finding that young blood makes superannuated mice live longer. But it can help repair damaged spinal cords. It can encourage the formation of new neurons in mouse brains. It can help rejuvenate their pancreases. The walls of mouse hearts get thicker as the animals age; young blood can reverse that process as well.

The effects work backwards, too. Old blood can impair neuron growth in young brains and decrepify youthful muscles. Intriguingly, the phenomenon even seems to operate across species. In April Tony Wyss-Coray, also at Stanford, showed that infusing old mice with blood from the umbilical cords of infant humans improved their performance on memory tests.

There have been enough results, says Janet Lord, who runs the Institute of Inflammation and Ageing at Birmingham University, in Britain, to remove any doubt that something impressive is happening. But finding out exactly what is trickier. The working theory is that chemical signals in young blood are doing something to stem cells in older animals. Stem cells are special cells kept in reserve as means to repair and regrow damaged tissue. Like every other part of the body, they wear out as an animal ages. But something in the youngsters' blood seems to restore their ability to proliferate and encourages them to repair ▶▶

▶ damage with the same vigour as those belonging to a younger animal would.

Nobody yet knows exactly what that something is, but people are looking hard. In all probability, says Dr Lord, it is not one thing at all, but dozens or hundreds of hormones, signalling proteins and the like, working together. Researchers have been comparing the chemical composition of old and young blood, searching for those chemicals that show the biggest changes in level between the two. These include oxytocin (a hormone better known for its role as a transmitter of signals between neurons); two proteins called *GDF-11* and *TGF beta-1*, both of which are already known to affect cell behaviour; and *B2M*, another protein which, among other things, affects the body's ability to absorb iron from food.

Even with a list of targets, working out what is going on is hard, says Richard Lee, a cardiologist at Brigham and Women's Hospital in Boston, Massachusetts. Blood is complicated stuff, and the tools available to analyse it are far from perfect. Dr Lee's own work is a good example. In 2014 his group suggested *GDF-11* as a possible rejuvenating factor. The following year a team at Novartis, a big pharmaceutical company, said that they were unable to replicate those results. The trouble, said the group from Novartis, was that the test used by Dr Lee's team was sensitive to proteins besides *GDF-11*, messing up the results. Dr Lee's team replied within months that, no, it was in fact the Novartis test that was flawed, because it was itself picking up extra proteins. And there, at the moment, the matter stands.

There are further possible explanations for parabiotic rejuvenation besides blood chemistry. One is that older animals may also benefit from having their blood scrubbed by young kidneys and livers, which mere blood transfusion would not offer. A paper published by the Conboys and their team in 2016, which described blood exchanges that were done in short bursts (thus eliminating the possibility of such scrubbing) reported rejuvenating effects, but ones that were not as widespread as those obtained by full-on parabiosis.

Another idea is that cells from the young animal, rather than chemicals in its blood, could be doing some of the work. By modifying the genes of a mouse so that its cells glow under ultraviolet light, researchers can track where those cells end up when the mouse in question is linked to another. They have found that only a few cells from a younger mouse take root in an older animal it is linked to. This does not quite rule the theory out, says Irina Conboy, for the number of cells may not reflect their importance. Immune-system cells, for instance, multiply rapidly when needed. And they are precisely the sorts of cells that might help an older animal.

The mechanisms by which parabiosis

operates, then, are foggy. But that has not dissuaded some companies from setting up trials to see if young blood can work its magic in people as well as rodents. Persuading patients to have themselves stitched to another person so they can share circulatory systems might be tricky. So instead of full-on parabiosis, these trials are using donated blood plasma.

Blood simples

One such firm, based in California, is called Ambrosia. It has attracted plenty of raised eyebrows for charging its participants, who must be at least 35 years old, \$8,000 to join. For that, they get an infusion of blood plasma from a donor under 25. Most clinical trials work by comparing the treatment under investigation either with another, established treatment, or with a placebo. Ambrosia's trial will not do this. Jesse Karmazin, Ambrosia's founder, says it would be hard to persuade people to pay if there were a chance they might not get the real thing. Instead, he says, patients will serve as their own controls. This will be done by comparing their blood chemistries before and after the treatment.

The unusual trial design, the charge for participation and the sheer amount of hype surrounding anti-ageing research has led some to accuse Dr Karmazin of being more interested in money than science. Not so, he says. Because blood plasma is a natural product, he says, it is not patentable. Without the prospect of a profitable new drug, no drug companies are interested in sponsoring his work. "If I could run this trial for free, I would," he says. "But the reality is I can't." Indeed, Dr Karmazin would not be drawn on how—or if—he plans to turn an eventual profit. But he argues that, with plenty of blood plasma already being collected, both for transfusion and to extract important biochemicals

such as clotting factors from it, checking to see if it might have other useful properties is only sensible. Although Ambrosia is not yet ready to publish its results, its initial findings, he says, are encouraging.

Another firm, called Alkahest, which was spun out of work done at Stanford, has had less trouble attracting money. It began its life in JLABS, a biotechnology "incubator" run by Johnson & Johnson, a big drug firm, and has secured \$50m from Grifols, a Spanish company that processes blood plasma into various products. It has commissioned a trial in which 18 people with Alzheimer's disease will be given four infusions of plasma taken from young donors, over four weeks. The main goal, says Karoly Nickolich, Alkahest's boss, is to see if the treatment is safe. That should, he says, be fairly straightforward. Blood transfusions are, after all, routine procedures. The study will also, though, check whether the blood used can reverse some of the effects of Alzheimer's, as seems to happen in mice in analogous circumstances.

Alkahest plans to present the results of its study at a conference in November. Because the trial is being run by researchers at Stanford, rather than by the firm itself, Mr Nickolich does not yet know what they are likely to show. But if the treatment is safe, he says, and if it proves effective, then the next step will be to identify and isolate the responsible compounds. Unlike blood plasma, such compounds would be patentable—particularly if they were then made synthetically. And such synthesis would be needed. As Mr Nickolich observes, even if things go well, there is simply not enough donated blood around to treat the world's 44m Alzheimer's patients with plasma extracts.

Some researchers are more wary than Mr Nickolich about the wisdom of such trials. Michael Conboy points out that transfusions are risky. "You can occasionally get immune reactions even with well-matched donors," he says. "In the worst cases you can get full-on anaphylaxis [an extreme allergic reaction that can be fatal]."

For his part, Dr Lee worries about the hype that inevitably attaches itself to "anti-ageing" treatments. "I never use terms like 'anti-ageing' or 'rejuvenation' when I talk about laboratory science," he says. "It conveys a false sense of hope." Dr Lord agrees that talk of reversing ageing is premature. But, she says, there are reasons for cautious optimism. Improving the ability of old muscles to repair themselves, for instance, might not be enough to fend off the Reaper for ever. But frailty, and the falls it causes, are a problem for the elderly. Mitigating the damage from Alzheimer's, even if it cannot be cured, would also be a boon. Rather than lengthening lifespan, says Dr Lord, it is better to think about lengthening "healthspan". That is not immortality. But it would still be quite something. ■





Sea spiders

Heartless beasts

How does an animal with no central pump circulate oxygen around its body?

THE phrase “prehistoric monster” might have been coined with sea spiders in mind. Though neither large (the biggest are hand-sized) nor threatening to people, their quintessential creepy-crawliness presses many of the buttons marked “horror” in the human psyche. And prehistoric they certainly are. Fossils show that they date from at least 500m years ago, during the Cambrian period, the dawn of the animals. True spiders, to which sea spiders (some of which have more than eight legs) are but distantly related, are known for certain only from as far back as the Carboniferous period, about 300m years ago.

One of the crucial evolutionary developments that permitted multicellular animals to come into being during, or shortly before, the Cambrian period was a circulatory system. Small creatures, consisting of one or a few cells, can absorb enough oxygen for their respiratory requirements directly from the water they inhabit. It simply diffuses into them. Larger ones, though, need a way of moving the dissolved gas into tissues too far from their body surfaces to be supplied by diffusion alone.

Most solve the problem by having a heart that pushes oxygen-rich blood around the body. However Arthur Woods, a biologist at the University of Montana, reports this week in *Current Biology* that sea spiders employ an alternative tactic.

Rather than move oxygen with their hearts, they move it with their guts.

How sea spiders organise their oxygen supply has long been a mystery. Some species have no heart at all, and even in those that do have one, it is usually too puny to seem equal to the task. The consensus, given the animals’ spindly anatomy, which brings all parts of their bodies into proximity with the water they live in, has been that diffusion directly from this water must be enough.

Dr Woods, however, wondered if there was more to it. Sea spiders have no coelum, the body cavity in which most animals keep internal organs such as their guts. Instead, sea-spider digestive systems extend all the way down inside the animals’ legs. As in other animals’ digestive systems, food is moved around this eight- (or ten- or 12-) lobed gut by peristalsis, a wavelike motion of the gut walls. Dr Woods suspected that, in an evolutionary two-for-one, this peristaltic action is also moving oxygen.

To test that idea, he collaborated with a team of scuba-diving colleagues to collect 12 species of sea spiders from places as far north as Friday Harbor, off the coast of Washington state, and as far south as McMurdo Station, in Antarctica. Though all of these species had hearts, Dr Woods was able to show that the brunt of the job of oxygen circulation in them was borne by their guts.

He did this by means of three types of experiment. The first mapped fluid movements within an animal, by injecting it with a fluorescent dye and following the dye around. The second used electrodes, inserted through an animal’s cuticle, to measure changes in oxygen concentration in various parts of its body. The third looked at how these two things, and also the pattern of peristalsis, altered when the amount of oxygen in the water an animal was kept in was raised or lowered.

The first two types of experiment showed unequivocally that sea spiders’ legs also work as gills. They provide a surface through which oxygen can diffuse into the animal, and this oxygen is then carried by peristalsis to other places. These include the abdomen, where the heart can take over the task of moving the oxygen around. The third type of experiment showed that the rate of peristalsis increases when the oxygen concentration in the water around an animal drops. This response, which is independent of the amount of food in the gut, shows that the peristaltic movement of oxygen is an adaptation, rather than just a coincidence.

The complete heartlessness of some species of sea spider is, presumably, a result of gut peristalsis taking over the oxygen-distribution job entirely, rendering that organ redundant. For horror aficionados, the idea of sea spiders lacking hearts merely adds to their ghoulish appeal. ■

Planetology

Big, bigger, biggest

More data on how different sorts of planets should be classified

A TAXONOMY of planets is emerging fast. On June 19th a group of researchers led by Andrew Howard of the California Institute of Technology divided bodies smaller than Neptune into two classes, based on both their current composition and a consequent presumption about how they formed. Now, another group of astronomers, led by Vardan Adibekyan of the Astrophysics and Space Science Institute in Porto, Portugal, have performed a similar trick on gas giants, the largest type of planet, which are represented in the solar system by Jupiter and Saturn.

The team’s work, just published in *Astronomy and Astrophysics*, suggests gas giants come in two types, with intermediate forms being rare. The smaller type have a mass up to four times that of Jupiter. The larger have between ten and 20 times Jupiter’s mass. Jupiter, chosen as a reference because it is the solar system’s largest planet, has 320 times the mass of Earth.

Using the “Extrasolar Planets Encyclopaedia”, a database of information on planets orbiting stars other than the sun, Dr Adibekyan and his colleagues found gas giants of the smaller class circling some 170 stars, and of the larger one going around 100. Crucially, a star seemed to host either one sort or the other. Stars with both were rare. This suggested to Dr Adibekyan that something about a star, or about the circumstances of its formation, affects the types of planet that condense from the nebula surrounding it.

One way stars routinely differ from each other is in the amount of metal they contain. An astronomer’s definition of a metal is different from a chemist’s. An astronomical metal is any element other than hydrogen or helium. Dr Adibekyan and his colleagues found that stars orbited by small gas giants were almost always metal-rich. Conversely, those orbited by large giants, as it were, were metal-poor. That difference in metallicity probably explains the distinction in planetary size.

At the moment, two models compete to describe how gas giants come into being. One suggests a rocky or icy core forms first, and that this core then attracts gas to form the thick atmosphere characteristic of a gas giant. The other postulates that instabilities in the youthful circumstellar nebula lead to the formation of gas clumps, which themselves act as nuclei for the accretion of yet more gas. These clumps then contract to form a giant planet. ►►

▶ One explanation of Dr Adibekyan's observations is that both hypotheses are correct, but for different types of gas giant. The circumstellar nebula of a metal-rich star will be full of elements like silicon and oxygen, which react to form quartz; carbon, which forms sooty particles all by itself; and iron and magnesium, which even chemists would recognise as metals, that either form solid grains by themselves or react with quartz to form silicates. These various solids, plus frozen water (oxygen and hydrogen), frozen ammonia (nitrogen and hydrogen) and frozen methane (carbon and hydrogen), are obvious ingredients for rocky and icy cores around which gas giants might accrete. The nebula of a metal-poor star, by contrast, would have none of these. Any gas giants would thus have to form from gas and gas alone.

This line of thinking does not directly

explain the size discrepancy, but Dr Adibekyan suspects the reason for it is that the process of core accretion would take time, during which much of the gas in a circumstellar nebula would be blown away by light and other radiation from the newly formed, and extremely active, star. By the time the core was big enough to gather a significant atmosphere, the makings of such would be sparse. That would limit the size of the eventual planet. By contrast, he suspects that a nebula might break up into gas clumps rapidly, meaning enormous planets would be easy to form.

A missing piece of the puzzle is why small and large gas giants do not co-exist around metalliferous stars, for core formation does not obviously preclude a nebula breaking up into gas clumps as well. Such mysteries are the stuff of science. As the cliché has it, more research is needed. ■

minimising the risk of nausea.

But not, however, eliminating it. For there is a second cause of cue conflict in VR: the eyes seeing movement that the body is not experiencing. And this is something rollercoasters can help solve, by providing the missing experience of movement. Match the signal from the headset to the coaster's motion and the brain's inputs from eyes and ears will also match.

That match, though, must be precise. Even a small discrepancy between the headset's image and the coaster's motion can have a drastically nauseating effect. To ensure perfect correspondence, VR firms such as Figment Productions, a British company that worked on the new Kraken ride, map the entire track using devices called inertial measurement units (IMUs) before the visuals are created.

These IMUs are sophisticated versions of the widgets that smartphones and tablet computers use to work out which way up the screen display should be. Simon Reveley, Figment's boss, says the firm chose these sensors because their ability to detect changes in movement is similar to that of a blindfolded human being—which is exactly what someone wearing an immersive headset is. IMUs are, in other words, adept at sensing alterations in motion and path, while being poor at registering speed or distance travelled.

Once the IMU map has been made, video can be created to match it. To make sure everything stays in synchrony, each of Kraken's cars is fitted with IMUs that compare its behaviour during an actual run with the map employed to make the video. Any discrepancy is used to adjust the speed of the video, in order to preserve verisimilitude.

The VR augmentation of rides is unlikely to remain limited to rollercoasters. Six Flags, one of the world's biggest amusement-park companies, is experimenting with adding VR to drop towers—devices in which the rider experiences several seconds of free-fall before being decelerated for a safe landing. Park visitors, then, should expect to don more headsets when they strap in for their favourite rides. ■

Virtual reality

Recycling rollercoasters

VR gives old rides new purpose

KRAKEN, a 17-year-old rollercoaster at SeaWorld Orlando, an amusement park in Florida, reopened in June after several months of refurbishment. That, in itself, is unusual. The normal fate of old rides is demolition and replacement by new ones offering fresh thrills. More unusual still is that Kraken, though it had not undergone any physical upgrade during its refurbishment, had customers queuing eagerly to get on it as though it were a brand new offering. Which, in a sense, it was.

SeaWorld Orlando is the latest in a string of parks to turn to virtual reality (VR) to recycle rollercoasters of days past. In the case of Kraken, the rider wears a headset that takes him on an underwater journey which matches the coaster's movements, dodging prehistoric sea creatures such as pliosaurus, careering down into an underwater canyon, and straining to escape the clutches of the terrible, tentacled monster after which the ride is named.

Building a new ride is pricey, even for a big attraction like SeaWorld. For small parks, with low budgets, it can be an existential bet. VR, though, has given parks an opportunity to breathe new life into old rides, saving money as they do so. Adding VR to a rollercoaster does, however, present challenges beyond those involved when the headset wearer is either stationary or using his own muscles to move around. Matching what is seen with the sensation of movement is crucial. Get it wrong and the result is nausea. Yet, when

executed properly, the pairing of rollercoasters and VR, two things that can both, by themselves, be nauseating experiences, actually helps reduce the risk of sickness.

One cause of VR-induced nausea is high latency—too long a delay between users moving their heads (and thus their expected view of the virtual world) and the headset's response to that movement. High latency sends confusing signals to the brain and prompts "cue conflict", the body's response to receiving mixed signals from the eyes, which provide vision, and the ears, which contain the organs that register movement and balance. In the 1990s, when VR was still in its infancy, high latency was common. As the technology has improved, though, latency has decreased,



What you see



What they see



Jane Austen, 200 years on

Fame and favourability

How a seemingly anodyne woman became a literary juggernaut

SHE has small, unexceptional features and stares blankly into space. A lace bonnet keeps her dark curls in place, save for a few neat strands that frame her face. Behind her is a large country house and an illustration of Elizabeth Bennet, her most famous creation. This is the airbrushed image of Jane Austen on the new British £10 note which will be released on July 18th, the bicentenary of her death: just one example of how she has been reshaped and reimagined on her path to becoming a global literary sensation.

Austen was born on December 16th 1775, one of eight children. She briefly attended school, but this proved too expensive for her father. So she educated herself in his library instead, and spent her teenage years scribbling gleeful tales of female drunkenness and violence. It is believed that she received a marriage proposal, yet chose the financially precarious option of remaining single, moving often. She completed six novels—two of which were published posthumously—but they brought little income. Austen died at 41, and was laid to rest in Winchester Cathedral.

Though she had demonstrated shrewd business acumen by retaining the copyright of her later novels, Austen's family began recasting her as a modest lady who wrote for pleasure, not for profit. Cassandra, her sister, redacted or destroyed many of her letters. Austen's epitaph, written by her brother James, fails to mention her

writing career, noting instead her "charity, devotion, faith and purity". Her nephew James Edward Austen-Leigh, in what is considered the first full biography, stated that her "happy Christian life" was "singularly barren" of events.

How did this apparently unremarkable woman become one of Britain's best-known writers? At first it was because she was considered to have heralded a new type of novel: a realist form derived entirely from the quotidian. John Murray, a publisher, rejected stories like Mary Shelley's "Frankenstein", but chose to issue "Emma" in 1815 on the grounds that Austen's work featured "no dark passages; no secret chambers; no wind-howlings in long galleries; no drops of blood upon a rusty dagger". But her uniqueness lay in combining that realism with a new narrative style, one which moved deftly between the narrator's voice and the characters' innermost thoughts. This "free indirect speech" allowed the reader to see, think and feel exactly as the character did while also maintaining a critical distance and the ability to move between various points of view. It was radically inventive.

In the early 20th century the suffrage movement claimed her as one of its icons, marching with her name emblazoned upon its banners as proof of women's intellectual prowess. As Devoney Looser points out in a new book, "The Making of Jane Austen" (Johns Hopkins University

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Press), some activists reimagined her as a "demure rebel", arguing that she would have sniped from the sidelines. "We cannot picture Miss Austen addressing, far less interrupting, a public meeting," Bertha Brewster, a hunger-striking suffragette wrote, "but we can very well imagine her making fun of Mr Arnold Ward's speeches." Evoking Austen not only bolstered the movement's point—she was admired across party lines and by both men and women—but also had the benefit of affirming Austen's particular gift. If women historically struggled to make their voices heard and their opinions known, Austen prevailed as a result of her undeniable skill. Readers on both sides of the debate turned to her books once more.

They did so again during the first and second world wars, as Kathryn Sutherland, a professor at Oxford University, has noted. Austen's novels were prescribed reading for shell-shocked soldiers who would not be reminded of their trauma by her gentle, seemingly insular narratives. In the dark days of the second world war Winston Churchill found it comforting to reread "Pride and Prejudice". Austen's novels were held up as offering sanctuary, a refuge from reality; in her pages readers could find a portrait of England before the fall.

But it was in the 1990s that Jane-mania reached new heights, thanks to a spate of television and film adaptations. Some—like "Metropolitan" (1990) and "Clueless" (1995)—found Austen's themes of status and wealth reflected in 20th-century America. Adaptations of "Pride and Prejudice" (pictured), "Sense and Sensibility", "Persuasion" and "Emma", all of which hit the screens between 1995 and 1996, were full-frills period pieces.

Screenwriters and directors usually chose to strip away the arch narrator—blunting much of Austen's power—and sex ►►

up the plot. Colin Firth's Mr Darcy emerging from a lake in a wet, white shirt, is nowhere to be found in Austen's writing. Audiences lapped these versions up. Andrew Davies's celebrated "Pride and Prejudice" series enjoyed more than 11m viewers in Britain every week. Nearly 4m people watched the first broadcast in America.

From Chawton to Chongqing

If Austen's work is perceived as quintessentially British, it has found resonance across the world. Bicentenary events are being hosted all over Europe. The Jane Austen Society of North America boasts more than 5,000 members; reading groups exist across Latin America.

The Jane Austen Society of Japan was established in 2006 and manga versions of "Pride and Prejudice", "Emma" and "Sense and Sensibility" were issued in 2015 and 2016. "Omangwa Pyungyeon", a 21-episode adaptation of "Pride and Prejudice" set in the South Korean justice system, had the highest ratings of its time slot when it was broadcast in 2014-15. Many critics have pointed out the debt that the heroes of Korean drama owe to Mr Darcy.

In "The Genius of Jane Austen" (Harper; William Collins), Paula Byrne writes that Austen is seen as having a particular affinity with Chinese culture, where "manners matter" as they did in Georgian England. There have been more than 50 written versions of "Pride and Prejudice" in China alone. This may be because the term "marriage market" in China is more than a turn of phrase. In Shanghai, parents of unmarried children flock to a weekly event described as "match.com meets farmers' market" where they scout for prospective in-laws. Chinese women still seek to marry property-owning men more educated than themselves. Ms Byrne notes that Ang Lee, a Taiwanese director, was considered a perfect fit for "Sense and Sensibility" (1995) because his previous films had explored "family conflicts in the context of traditional Chinese values".

It is the subcontinent, however, that has embraced her books most enthusiastically, with Austen societies established in both India and Pakistan. The Pakistani group hosts inventively named sessions for "Jovial Janeites" such as "Austentatious tea parties" and "chai and chatter". Big-screen adaptations have fused Regency drama with Bollywood verve. "Bride and Prejudice" (2004), set in Amritsar, substituted Lalita Bakshi for Elizabeth Bennet and Indian weddings for country dances. "Kandukondain Kandukondain" (2000), a Tamil romance film, and "Kumkum Bhagya" (2014), an Indian soap opera, are both based on "Sense and Sensibility"; "Aisha" (2010) is an adaptation of "Emma" set amid Delhi's upper class.

The economic and social position of women, their reputation and eligibility are

all themes that are easy to adapt to different cultural contexts, but there are specifics that resonate in Indian and Pakistani society, too, such as the importance of familial bonds, the preference given to male inheritance, the dowry system and the "marrying off" of young women by overzealous mothers and aunts. Laaleen Khan, the founder of the Pakistani branch, has noted that South Asian society has its share of "disapproving Lady Catherine de Bourghesque society aunties, rakish Wickhams and Willoughbys, pretentious Mrs Eltons and holier-than-thou Mr Collins types".

This is the key to Austen's transformation from little known spinster-scribbler to literary superstar. Western readers may no longer empathise with the urgency that surrounds marriage or the idea that a relationship can be stopped in its tracks by monetary circumstance. But everyone has encountered a flirty, shallow Isabella Thorpe or a suave but seedy Henry Crawford. Two hundred years on, Austen's sniping observations of human vanity and folly still hit the mark. ■

Business technology

A new way to work

Machine, Platform, Crowd: Harnessing our Digital Future. By Andrew McAfee and Erik Brynjolfsson. *W.W. Norton*; 402 pages; \$28.95 and £22.99

IN 2014 Andrew McAfee and Erik Brynjolfsson of the Massachusetts Institute of Technology published "The Second Machine Age". The book was a balanced portrait of how new digital technologies were poised to improve society, even as they increased unemployment and depressed wages. In their latest work, "Machine, Platform, Crowd", the authors seek to explain the business implications behind these developments.

Mr McAfee and Mr Brynjolfsson believe that the latest phase of computers and the internet have created three shifts in how work happens. The first is artificial intelligence (AI): a move from man to machine. In the past people worked with computers and, at the same time, were augmented by them: what the authors call the "standard partnership". But that model is breaking down as computers improve and take more control.

You need only look at self-driving cars, online language translation and Amazon's prototype cashierless shops to see that something big is happening. Digital technologies used to be applied to information—first numbers and text, and, later, music and video. Now, the digital tech-

nologies are invading the physical world.

For instance, designing a "heat exchanger", a part in appliances like refrigerators, means balancing many different specifications and constraints. Humans settle for one that works well enough because to find the optimal one is too hard. But new "generative design" means AI-infused software can run zillions of tiny permutations to find the best possible design—one that a human might not come up with. And with 3D printing, those designs might be shared, modified and manufactured anywhere.

The second is a shift from products to platforms. Many people encounter evidence of this every day. The largest cab service owns no vehicles (Uber), the biggest hotelier has no property (Airbnb), the most comprehensive retailer holds no inventory (Alibaba) and the most valuable "media" company creates some content but not much (Facebook). There are more than 2.2m apps in Apple's store, almost none of which the company developed itself.

Platforms are a way for companies to create marketplaces that allow both sides of the transaction to flourish—while the firm, as gatekeeper, enjoys a tidy revenue stream. This is hard to pull off. The platform must ensure that standards are high, and also attract different sets of participants (like drivers or app developers on one side and customers on the other). But platforms are very valuable when they work, since they scale beautifully in a digital setting. The meatiest part of the book is the treatment of platform economics, replete with demand-curve charts.

The third shift is from the core to the crowd. The core refers to centralised institutions, like central banks or the "Encyclopedia Britannica"; the crowd refers to the decentralised, self-organising participants, be it bitcoin nodes that manage the virtual currency or contributors to Wikipedia. ►►



▶ When transaction costs are high, companies do things internally, as Ronald Coase, an economist, once noted. Yet as digital technologies lower the cost of interacting, more things can be done by informal groups. This leads to greater experimentation and innovation. “The core is often mismatched for the kinds of challenges and opportunities it faces, while the crowd, because it’s so big, almost never is,” the authors write.

Pedants will quibble that the book is built on individual themes that others have looked at more deeply. Some readers will be aghast that chapters end with bullet-point summaries and questions, evoking the worst of unctuous business tomes. But tolerate this. For an astute romp through important digital trends, “Machine, Platform, Crowd” is hard to beat. ■

Swimming

Call of the wild

Swell: A Waterbiography. By Jenny Landreth. *Bloomsbury*; 336 pages; \$24 and £16.99

I Found My Tribe. By Ruth Fitzmaurice. *Chatto & Windus*; 197 pages; £14.99. To be published in America by *Bloomsbury* in March 2018; \$25

TREADING water, sinking like a stone or riding the wave: there is something about water that makes it a good metaphor for life. That may be one reason why so many find solace in swimming when life’s seas get rough, and it goes some way towards explaining why “waterbiographies” and “swimoirs”, in which people tackle icy lakes, race in rivers and overcome oceans while reflecting on their lives, have recently become so popular.

These books reflect a trend, particularly strong in Britain, where swimming in pools is declining, but more and more folk are opting for open water. “Wild swimming” seems to be especially popular among women. Jenny Landreth writes about swimming for the *Guardian* and recently published a guide to the best dipping spots in London. Her new book, “Swell”, interweaves her own story with a history of female pioneers, “swimming suffragettes” who accomplished remarkable feats and paved the way for future generations.

“Looking at the amount of restrictions and myths and baggage” of the past, she writes, it “is amazing...that we have ever got in the water at all.” Ms Landreth calls out the old wives’ tales with their misogynistic undercurrents: mermaids were be-

Fiction from Indonesia

Riding high

Vengeance Is Mine, All Others Pay Cash.

By Eka Kurniawan. Translated by Annie Tucker. *Pushkin Press*; 209 pages; £12.99. To be published in America by *New Directions* in August; \$15.95

EKA KURNIAWAN’S hugely inventive fiction is a potent blend of grounded realism and flighty fantasy. It has led some to describe him as Indonesia’s finest writer since Pramoedya Ananta Toer, who died in 2006. “Beauty Is a Wound”, his first novel, charted both the rebirth of an Indonesian prostitute and the upheavals of her country’s 20th-century history, while his second, “Man Tiger”, related the tragic past and inner fury of a youngster possessed by a supernatural white tigress.

“Vengeance Is Mine, All Others Pay Cash”, his third novel, sees the author reining in the surrealism to deliver a pulpy, visceral tale of sex, violence and comeuppance. Ajo Kawir, a Javanese teenager, witnesses the brutal rape of a local madwoman by two policemen, and from that moment on is rendered impotent. He vents his frustration by picking fights with strangers, and when his anger intensifies and his reputation spreads he is given the task of hunting down and killing a thug called the Tiger.

The novel’s drama unfolds in a series of short vignettes, each of which comes packed with larger-than-life characters, lurid thoughts and graphic deeds. Ajo Kawir scraps with, then falls for, a beautiful female bodyguard named Iteung. He talks to his “hibernating” penis (or “Bird”), communing with it, berating it or willing it to life. And after a spell in prison he finds a sidekick and a mysterious new girl, as well as a tougher nemesis in the

believed to be evil temptresses calling sailors to a watery grave; in medieval times women were deemed witches if they could float, let alone swim.

Notions of modesty restricted women in the Victorian era. But they still swam. The “bathing machine”, a “glorified garden shed on wheels”, was rolled down to the seashore so women would not be seen in swimwear. In 1892 “The Gentlewoman’s Book of Sport” described a woman swimming in a corset, heavy dress, boots, hat, gloves and carrying an umbrella.

Eventually, swimming became freer. Mixed bathing was permitted on British beaches in 1901. Women won the right to swim in public pools, learned to swim



Master of the macabre

form of the Beetle. In and around all this Mr Kurniawan serves up Peeping Toms and rival lovers, street fights and road rage, messy bodily functions and grievous bodily harm—an ear is severed, bones are broken, eyeballs are gouged.

“Vengeance Is Mine” is clearly not for the faint-hearted. However, Mr Kurniawan offsets the carnage and lightens the mood with skew-whiff logic and humour that ranges from slapstick to ribald to pitch-black. At other key intervals he utilises the mayhem to expose and examine more serious concerns such as corruption and injustice. There is the occasional priapic silliness and the title is unwieldy if not awful. Still, it is hard not to be caught up by the book’s bold ideas and rambunctious energy.

properly, created appropriate swimwear and, in time, even competed against men. The first woman to cross the English channel was Gertrude Ederle in 1926. She beat the record by almost two hours and her father rewarded her with a red sports car.

For Ms Landreth the right to swim is intimately bound up with the fight for equality, not just in gender but also in class. She is at her best writing about swimmers past, and has done a thorough job of interviewing other swimmers. It takes a more poetic approach, though, to get to the heart of the matter. That something is in abundance in a lyrical and moving memoir from a new debut author, Ruth Fitzmaurice. “I Found My Tribe” is an account of Ms Fitzmaurice’s ▶▶

▶ life when she found herself nursing her husband who had been diagnosed with motor neurone disease, at the same time as bringing up five young children. She describes days that became a dance of carers and nurses, the distance that grew between her and her husband—each trapped in their own worlds—and the depression that came over her.

What saves Ms Fitzmaurice is the “tragic wives’ swimming club”, which was formed with a few friends whose experiences had made them “sorely alive to the

beauty and sadness of this life”. Reclaiming lore of old, she sees them as “mermaid goddesses” who take moonlit swims and use the cold to come back to life. Their birth scars and broken veins “bask in the moonlight” and they “dive deep with hammering hearts”, leaping and mainlining “right into the pulse of nature”. Ms Fitzmaurice puts the passion into Ms Landreth’s points about why women swim: “Like the rolling of the waves, the thrill of the dive, the rush of the cold...this is as free as we can all possibly be.” ■

Düsseldorf) was one of the star attractions, priced at €300,000 (\$335,000). Ms Sherman, Mr Gursky and Richard Prince alone account for 25% of turnover in the photography market, according to Artprice, a market-watcher.

Gallerists at Photo London were keen to tell the stories behind many works, whether technical or personal. In one set of snapshots, the human figure covered by crushed bits of Christmas ornaments turned out to be the former partner of Timo Kloeppel, the artist. Another series, by Catherine Yass, features “sandwiches” of a negative and positive of the same scene, a Jewish community centre in North London that was demolished. Ms Yass left the film attached to walls and demolition equipment as the work went on, then recovered it from the scene, the damage having become an intrinsic part of the work, as can be seen in “Decommissioned #12 (JCC)”, pictured left.

To be sure, those looking for traditionally crafted prints from black-and-white film can find them. Across from Ms Yass’s work were several pictures by Robert Mapplethorpe, who made his name combining technical perfection and classical composition with sexual imagery that shocked America in the 1970s and 1980s. His beautiful portrait of Ken Moody, one of an edition of ten, was on sale for £25,000 (\$31,650), about five times the price of one of Ms Yass’s pieces.

Michael Benson, the founder of Photo London, says that he wants his newish fair—this was its third year—to stretch the definition of “what photography can be”. The work on display was certainly proof that it can be a lot more than silver-gelatin prints of modern masters. One photographer shone lights directly onto negatives, for a pattern of coloured ovals and circles; another made drawings with a device that tracked his eye movements. When asked if this was still photography, a gallerist insisted to your correspondent that anything could be photography: “You’re photography!” Jacob Pabst of Artnet, another market-watcher, sees a trend to “process-oriented” work: unusual techniques, including young photographers working in old film techniques. He sees this as a backlash against the overuse of digital manipulation. Other photographers elaborately stage pictures to look manipulated, without actually using software.

Mr Benson is not hung up on definitions. He calls the photography market “quiet”, compared with the frothy one for other artworks which enjoys astronomical secondary-market prices. Photography collectors may make a nice profit if they hold a work for a few years and sell at the right moment, but mostly they tend to buy things they find beautiful or interesting, simply to keep and look at them. In today’s art market, that seems almost quaint. ■

Photography

Picture perfect

The photography market is about not just names, but stories and techniques too

IN A world awash with photos from 2bn smartphones, a picture may still tell a thousand words. But is it still worth a thousand pounds? The market for photography has changed dramatically in the digital era—especially for photojournalists, commercial photographers, studio photographers and the like. But the market for fine-art photography is still going strong.

The most expensive photograph ever sold was not by a photographer, nor was the photograph taken by the artist. “The New Jeff Koons (1980)” is a primary-school photograph of the artist sitting with a box of crayons, mounted as a black-and-white, 40-x-30-inch (102-x-76cm) transparency on a lightbox and sold in 2013 for \$9.4m. This is atypical for photography, where prices are lower and volumes are higher than in other contemporary art. The average photograph sells for \$10,000 at auction, against \$60,000 for a painting.

“The New Jeff Koons” is a unique work. Most fine-art photographs, though, are printed in signed limited editions, normally of between eight and 15 photos. For works made from negatives, the photographers or their estates keep tight control to ensure that no new prints can be made, which would amount to defrauding the original buyers. As the edition begins to sell out, prices rise. With limited-edition prints from digital photography, photographers usually promise to destroy the files. Some collectors will not touch digital, but others are perfectly happy to collect it, and prices are not generally lower than recent work produced on film.

Limited editions (which have artificial scarcity, rather than inherent scarcity as with painting) make a market in which a photograph by a superstar, shot in perhaps one-sixtieth of a second, can sell for millions. “Untitled #96” by Cindy Sherman, a



Windows on a world

self-portrait of the artist lying on a tiled floor dressed in an orange gingham top and clutching a newspaper clipping, sold for \$3.9m in 2011, a record until Andreas Gursky broke it later that year with “Rhein II”, which went for \$4.3m.

What makes a superstar photographer? With Ms Sherman, it was a turning of the lens on herself in so many arresting guises that she became synonymous with post-modern deconstruction of the image-saturated world. With Mr Gursky, it is the confident use of a large-format camera (the negatives are big, at 8 x 10 inches) to create wall-sized photos like “Rhein II”—a portrait of the river, bank, pavement and sky in six simple layers—that can compete with the best of the Abstract Expressionists for power. At Photo London, a fair held in May and an up-and-coming rival to the bigger Paris Photo, Mr Gursky’s photo of a nearly featureless carpet (in the Kunsthalle in



National Investment and Infrastructure Fund Limited

Mumbai/Delhi - India

BACKGROUND

The Government of India (GOI) has created the National Investment and Infrastructure Fund (NIIIF, the Fund) to catalyze large-scale capital into the infrastructure sector in India. GOI as anchor investor has committed approximately USD 3 billion equivalent to NIIIF, which is in the process of raising an additional USD 3 billion from Indian and international institutional investors. The USD 6 billion Fund is managed by a team operating at arms-length from GOI. The Fund will invest long-term, patient capital directly in infrastructure companies and through fund managers and seek to generate returns in line with those sought by commercial investors in the infrastructure sector in India.

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Economic data

% change on year ago

	Gross domestic product			Industrial production	Consumer prices		Unemployment rate, %	Current-account balance		Budget balance % of GDP	Interest rates, %	Currency units, per \$	
	latest	qtr* 2017 [†]	2017 [†]		latest	latest		2017 [†]	latest 12 months, \$bn			% of GDP 2017 [†]	% of GDP 2017 [†]
United States	+2.1 Q1	+1.4	+2.2	+2.2 May	+1.9 May	+2.0	4.4 Jun	-449.3 Q1	-2.6	-3.5	2.37	-	-
China	+6.9 Q1	+5.3	+6.7	+6.5 May	+1.5 Jun	+2.0	4.0 Q1 [§]	+169.5 Q1	+1.6	-4.1	3.53 ^{§§}	6.79	6.69
Japan	+1.3 Q1	+1.0	+1.3	+6.8 May	+0.4 May	+0.6	3.1 May	+188.6 May	+3.6	-5.1	0.09	113	105
Britain	+2.0 Q1	+0.8	+1.6	-0.3 May	+2.9 May	+2.7	4.5 Apr ^{††}	-99.8 Q1	-3.1	-3.6	1.30	0.78	0.76
Canada	+2.3 Q1	+3.7	+2.3	+5.7 Apr	+1.3 May	+1.8	6.5 Jun	-48.4 Q1	-2.6	-2.4	1.88	1.28	1.30
Euro area	+1.9 Q1	+2.3	+1.9	+4.0 May	+1.3 Jun	+1.6	9.3 May	+391.1 Apr	+3.1	-1.4	0.58	0.88	0.90
Austria	+2.3 Q1	+5.7	+1.8	+3.3 Apr	+1.9 May	+2.0	5.4 May	+6.4 Q1	+2.3	-1.1	0.79	0.88	0.90
Belgium	+1.6 Q1	+2.6	+1.6	+2.2 Apr	+1.6 Jun	+2.2	7.6 Mar	-4.2 Mar	+0.3	-2.3	0.90	0.88	0.90
France	+1.1 Q1	+1.9	+1.5	+3.2 May	+0.7 Jun	+1.2	9.6 May	-22.4 May	-1.2	-3.1	0.92	0.88	0.90
Germany	+1.7 Q1	+2.4	+1.8	+4.9 May	+1.6 Jun	+1.7	3.9 May [†]	+272.4 May	+8.0	+0.5	0.58	0.88	0.90
Greece	+0.8 Q1	+1.8	+1.0	+5.4 May	+1.0 Jun	+1.3	21.7 Apr	-0.8 Apr	-1.2	-1.3	5.43	0.88	0.90
Italy	+1.2 Q1	+1.8	+1.1	+2.8 May	+1.2 Jun	+1.4	11.3 May	+48.6 Apr	+2.1	-2.3	2.25	0.88	0.90
Netherlands	+3.2 Q1	+1.7	+2.2	+3.8 May	+1.1 Jun	+1.2	6.1 May	+68.4 Q1	+9.4	+0.7	0.76	0.88	0.90
Spain	+3.0 Q1	+3.3	+2.9	+4.6 May	+1.5 Jun	+2.0	17.7 May	+21.1 Apr	+1.8	-3.3	1.78	0.88	0.90
Czech Republic	+4.0 Q1	+6.3	+3.0	+8.1 May	+2.3 Jun	+2.3	3.0 May [†]	+1.4 Q1	+0.9	-0.5	0.99	22.9	24.4
Denmark	+3.6 Q1	+2.5	+1.6	+6.2 May	+0.6 Jun	+1.2	4.3 May	+26.1 May	+7.7	-0.6	0.69	6.51	6.72
Norway	+2.6 Q1	+0.9	+1.8	-1.4 May	+1.9 Jun	+2.4	4.6 Apr ^{††}	+22.4 Q1	+5.5	+4.1	1.70	8.29	8.43
Poland	+4.4 Q1	+4.5	+3.6	+9.1 May	+1.5 Jun	+2.0	7.4 May [§]	-0.5 Apr	-0.8	-2.8	3.33	3.71	3.99
Russia	+0.5 Q1	na	+1.4	+5.7 May	+4.4 Jun	+4.2	5.2 May [§]	+33.6 Q2	+2.2	-2.2	8.13	60.1	64.0
Sweden	+2.2 Q1	+1.7	+2.6	+8.0 May	+1.7 May	+1.6	7.2 May [§]	+22.0 Q1	+4.8	+0.3	0.68	8.42	8.52
Switzerland	+1.1 Q1	+1.1	+1.4	-1.3 Q1	+0.2 Jun	+0.5	3.2 Jun	+73.6 Q1	+9.9	+0.2	0.04	0.96	0.99
Turkey	+5.0 Q1	na	+3.4	+4.1 May	+10.9 Jun	+10.2	11.7 Mar [§]	-33.2 Apr	-4.4	-2.4	10.77	3.58	2.89
Australia	+1.7 Q1	+1.1	+2.4	-0.8 Q1	+2.1 Q1	+2.2	5.5 May	-25.0 Q1	-1.6	-1.8	2.67	1.30	1.31
Hong Kong	+4.3 Q1	+2.9	+3.0	+0.2 Q1	+2.0 May	+1.6	3.2 May ^{††}	+14.8 Q1	+6.6	+1.5	1.62	7.81	7.76
India	+6.1 Q1	+7.2	+7.1	+1.7 May	+1.5 Jun	+4.2	5.0 2015	-15.2 Q1	-1.2	-3.2	6.46	64.6	67.2
Indonesia	+5.0 Q1	na	+5.2	+4.0 May	+4.4 Jun	+4.3	5.3 Q1 [§]	-14.6 Q1	-1.7	-2.2	6.77	13,370	13,120
Malaysia	+5.6 Q1	na	+5.2	+4.6 May	+3.9 May	+4.0	3.4 Apr [§]	+6.6 Q1	+1.4	-3.0	3.98	4.29	3.98
Pakistan	+5.7 2017**	na	+5.7	+9.8 Apr	+3.9 Jun	+4.8	5.9 2015	-9.2 Q1	-3.6	-4.5	8.93 ^{†††}	105	105
Philippines	+6.4 Q1	+4.5	+6.5	+5.8 May	+2.7 Jun	+3.0	5.7 Q2 [§]	-0.4 Mar	+0.4	-2.8	5.02	50.6	47.3
Singapore	+2.7 Q1	-1.3	+2.9	+5.0 May	+1.4 May	+1.3	2.2 Q1	+59.0 Q1	+19.1	-1.0	2.16	1.38	1.35
South Korea	+3.0 Q1	+4.3	+2.6	+0.1 May	+1.9 Jun	+1.9	3.8 Jun [§]	+88.3 May	+6.0	+0.9	2.27	1,145	1,148
Taiwan	+2.6 Q1	+3.8	+2.4	+0.8 May	+1.0 Jun	+0.5	3.8 May	+69.1 Q1	+12.8	-0.9	1.08	30.5	32.2
Thailand	+3.3 Q1	+5.2	+3.4	+1.4 May	nil Jun	+0.7	1.3 May [§]	+45.1 Q1	+11.5	-2.3	2.36	34.0	35.1
Argentina	+0.3 Q1	+4.3	+2.5	-2.5 Oct	+24.0 May [†]	+24.2	9.2 Q1 [§]	-16.8 Q1	-2.8	-5.9	na	17.0	14.6
Brazil	-0.4 Q1	+4.3	+0.6	+3.9 May	+3.0 Jun	+3.8	13.3 May [§]	-18.1 May	-1.0	-7.8	9.64	3.23	3.28
Chile	+0.1 Q1	+0.7	+1.5	+0.1 May	+1.7 Jun	+2.8	7.0 May ^{§††}	-5.0 Q1	-1.4	-2.7	4.09	663	657
Colombia	+1.1 Q1	-0.9	+2.0	-6.8 Apr	+4.0 Jun	+4.1	9.4 May [§]	-11.9 Q1	-3.6	-3.2	6.81	3,052	2,915
Mexico	+2.8 Q1	+2.7	+2.0	+1.0 May	+6.3 Jun	+5.4	3.5 May	-22.0 Q1	-2.2	-1.9	6.79	17.8	18.3
Venezuela	-8.8 Q4~	+6.2	-7.0	na	na	+591	7.3 Apr [§]	-17.8 Q3~	-0.6	-19.6	11.02	10.2	9.99
Egypt	+4.3 Q1	na	+3.5	+25.1 May	+29.8 Jun	+22.5	12.0 Q1 [§]	-18.0 Q1	-5.8	-10.8	na	17.9	8.88
Israel	+3.9 Q1	+1.2	+3.7	+4.2 Apr	+0.8 May	+1.0	4.5 May	+11.7 Q1	+3.9	-2.5	2.04	3.54	3.88
Saudi Arabia	+1.7 2016	na	-0.5	na	-0.7 May	+2.2	5.6 2016	-1.0 Q1	+1.3	-7.4	3.68	3.75	3.75
South Africa	+1.0 Q1	-0.7	+0.7	-1.9 May	+5.4 May	+5.5	27.7 Q1 [§]	-7.9 Q1	-3.2	-3.2	8.77	13.3	14.3

Source: Haver Analytics. *% change on previous quarter, annual rate. [†]The Economist poll or Economist Intelligence Unit estimate/forecast. [§]Not seasonally adjusted. ^{††}New series. ~2014 **Year ending June. ^{†††}Latest 3 months. ^{††††}3-month moving average. ^{§§§}5-year yield. ^{†††††}Dollar-denominated bonds.

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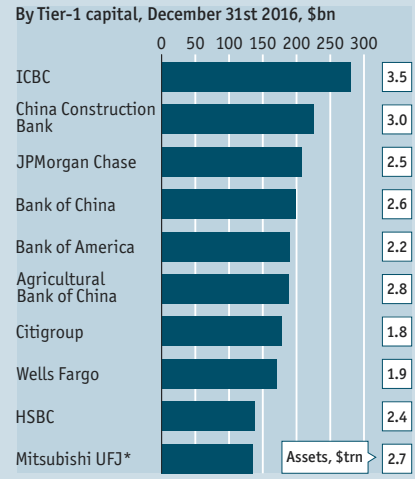
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Markets

	Index Jul 12th	% change on		
		one week	in local currency terms	in \$ terms
United States (DJIA)	21,532.1	+0.3	+9.0	+9.0
China (SSEA)	3,348.8	-0.3	+3.1	+5.5
Japan (Nikkei 225)	20,098.4	+0.1	+5.1	+8.5
Britain (FTSE 100)	7,416.9	+0.7	+3.8	+8.3
Canada (S&P TSX)	15,144.0	-0.1	-0.9	+3.6
Euro area (FTSE Euro 100)	1,203.4	+1.0	+8.2	+17.2
Euro area (EURO STOXX 50)	3,515.2	+1.1	+6.8	+15.7
Austria (ATX)	3,171.8	+0.9	+21.1	+31.1
Belgium (Bel 20)	3,867.5	+0.7	+7.2	+16.1
France (CAC 40)	5,222.1	+0.8	+7.4	+16.3
Germany (DAX)*	12,626.6	+1.4	+10.0	+19.1
Greece (Athex Comp)	843.2	+0.2	+31.0	+41.8
Italy (FTSE/MIB)	21,432.6	+2.4	+11.4	+20.6
Netherlands (AEX)	516.6	+1.0	+6.9	+15.8
Spain (Madrid SE)	1,063.2	+0.3	+12.7	+22.0
Czech Republic (PX)	999.2	+1.3	+8.4	+21.5
Denmark (OMXC B)	908.0	+0.6	+13.7	+23.1
Hungary (BUX)	35,872.5	+1.6	+12.1	+22.2
Norway (OSEAX)	784.1	+2.1	+2.5	+6.5
Poland (WIG)	61,601.7	+1.1	+19.0	+34.0
Russia (RTS, \$ terms)	1,025.7	+1.8	-11.0	-11.0
Sweden (OMXS30)	1,650.6	+1.4	+8.8	+17.4
Switzerland (SMI)	9,015.6	+0.7	+9.7	+15.6
Turkey (BIST)	103,809.8	+3.0	+32.9	+30.7
Australia (All Ord.)	5,717.7	-1.4	nil	+6.4
Hong Kong (Hang Seng)	26,043.6	+2.0	+18.4	+17.5
India (BSE)	31,804.8	+1.8	+19.4	+25.6
Indonesia (JSX)	5,819.1	-0.1	+9.9	+10.7
Malaysia (KLSE)	1,757.2	-0.6	+7.0	+11.8
Pakistan (KSE)	43,792.2	-3.6	-8.4	-9.1
Singapore (STI)	3,208.9	-1.2	+11.4	+16.8
South Korea (KOSPI)	2,391.8	+0.1	+18.0	+24.5
Taiwan (TWI)	10,420.7	+0.2	+12.6	+19.1
Thailand (SET)	1,574.9	nil	+2.1	+7.4
Argentina (MERV)	22,262.6	-0.7	+31.6	+22.7
Brazil (BVSP)	64,835.6	+2.7	+7.7	+8.3
Chile (IGPA)	24,734.3	+2.0	+19.3	+20.4
Colombia (IGBC)	11,121.7	+0.9	+10.0	+8.2
Mexico (IPC)	50,824.4	+1.0	+11.4	+28.9
Venezuela (IBC)	124,511.8	+0.7	+292.7	na
Egypt (EGX 30)	13,690.3	+2.7	+10.9	+12.4
Israel (TA-100)	1,302.5	+0.7	+2.0	+10.9
Saudi Arabia (Tadawul)	7,306.6	+0.6	+0.9	+1.0
South Africa (JSE AS)	52,906.0	+0.8	+4.4	+7.6

World's biggest banks

At the end of 2016, and for the fifth year running, Industrial and Commercial Bank of China (ICBC) was the world's biggest bank as measured by tier-1 capital (mostly retained earnings and common stock), according to the *Banker*. Chinese and American banks again dominate the top ten: in the only change from last year's ranking, Bank of America reclaimed the fifth place it lost to Agricultural Bank of China in 2015. China's banking market remains the world's biggest by assets and tier-1 capital; last year it further strengthened its lead over America. Growth in both countries, however, was driven by second-tier banks; China's big-four lenders may be reaching their size limit.



Source: The Banker *March 31st 2017

Other markets

	Index Jul 12th	% change on		
		one week	in local currency terms	in \$ terms
United States (S&P 500)	2,443.3	+0.4	+9.1	+9.1
United States (NAScomp)	6,261.2	+1.8	+16.3	+16.3
China (SSEB, \$ terms)	327.8	-0.5	-4.1	-4.1
Japan (Topix)	1,619.3	nil	+6.6	+10.0
Europe (FTSEurofirst 300)	1,514.6	+0.6	+6.0	+14.8
World, dev'd (MSCI)	1,915.7	-0.2	+9.4	+9.4
Emerging markets (MSCI)	1,018.2	+0.8	+18.1	+18.1
World, all (MSCI)	465.3	-0.1	+10.3	+10.3
World bonds (Citigroup)	915.6	-0.3	+3.6	+3.6
EMBI+ (JPMorgan)	815.6	-0.1	+5.6	+5.6
Hedge funds (HFRX)	1,236.29	+0.1	+2.7	+2.7
Volatility, US (VIX)	10.5	+11.1	+14.0 (levels)	
CDSs, Eur (iTRAXX)†	55.3	nil	-23.4	-17.0
CDSs, N Am (CDX)†	60.2	-1.7	-11.2	-11.2
Carbon trading (EU ETS) €	5.3	+5.6	-19.1	-12.5

Sources: IHS Markit; Thomson Reuters. *Total return index. †Credit-default-swap spreads, basis points. ‡Jul 10th.

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The Economist commodity-price index

	2005=100		% change on	
	Jul 4th	Jul 11th*	one month	one year
Dollar Index				
All items	144.6	145.1	+2.8	+3.9
Food	157.3	159.0	+3.5	-2.3
Industrials				
All	131.3	130.6	+2.1	+13.1
Nfat	130.2	130.6	-0.5	+6.2
Metals	131.8	130.6	+3.2	+16.3
Sterling Index				
All items	203.4	205.5	+1.9	+6.7
Euro Index				
All items	158.4	158.0	+0.9	+6.2
Gold				
\$ per oz	1223.2	1210.7	-4.2	-9.8
West Texas Intermediate				
\$ per barrel	47.1	45.0	-3.1	-3.8

Sources: Bloomberg; CME Group; Cotlook; Darmann & Curl; FT; ICCO; ICO; ISO; Live Rice Index; LME; NZ Wool Services; Thompson Lloyd & Ewart; Thomson Reuters; Urner Barry; WSJ. *Provisional †Non-food agricultural.

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Burning bright

Heathcote Williams, poet of the counter-culture, died on July 1st, aged 75

NO ONE knew quite how the accident happened: how at some point in the 1970s Heathcote Williams set himself alight on the doorstep of his lover, Jean Shrimpton, an icon of the age, and ended up in Charing Cross hospital. It had evidently started as a conjuring trick; he loved magic, because it gave the illusion of breaking rules. But it was unclear whether he had been eating fire, or breathing it.

Breathing it, of course. Words flamed out of him all the time, seeming to make electricity flow through his wild red hair. Poetry was nothing if it was not an incandescent roar. Its role was not to tranquillise. He could write with gentle lyricism if he chose, especially when following in his most famous book, “Whale Nation”, endangered creatures through the sea:

From space the planet is the territory not of humans, but of the whale...
somersaulting like angels or birds...
Naked, with skin like oiled silk, smooth as glass...
no drag, no turbulence, a velvet energy...

But the beauty ended with the winches, spades and slicers of a factory ship, in a slick of oil and blood.

To shock and expose was his job. Poetry had to unsettle, subvert, with luck destroy, whatever stopped human beings thinking

freely and acting justly, as he understood justice: consumerism, militarism, modern psychiatry, ossified institutions, brain-numbing new technologies. His “investigative poems”, often long-studied and footnoted, were meant to stop the ravaging of the natural world, not just by Japanese whalers and African ivory-poachers but also by tweedy, trigger-happy, slave-trade profiting, jewel-encrusted British royals.

In water, in the air

Right to the end, starting in the *International Times* and *Oz* and then in pamphlets from his Open Head Press, he scorched everything and everyone he hated, from Boris Johnson (“a face that needs to be punched”) to Donald Trump, whose name “suggests...the passing of wind”. He stood in the radical tradition of red-haired Blake, transcending old worlds to build new ones, and wild-haired Shelley, whose youthful rebel-trail through Eton (nearly expelled) and Oxford (defiantly leaving without a degree) he had followed almost exactly. He was Prospero and Ariel, sorcery, mischief and danger, all in one.

Poetry being fire, it had to be part of the body language of the poet. It must be spoken and performed, his mellifluous voice lulling among the wonders in order to underline, more starkly, the horrors. He want-

ed to move, like the whale, in a sonar world that still contained the pulses of fifty-million-year-old sagas of continuous whale-mind: “elegant cetacean music...lyrical litanies on the bio-radio...rumours of ancestors, memories of loss, memories of ideal love...”

The closest he could come to this was perhaps the state of anarchy in which he lived in the late 1970s, in his Free Independent Republic of Frestonia in Notting Hill, where buildings were squatted and food and beds shared in a ferment of ideas. He wrote his words on walls then, spontaneous swift thoughts: “Housing is a right, freedom is a career.” “Words don’t mean anything today.” Or he shouted them, to make them part of the air the authorities and the people had to breathe.

He went on doing this on stage, television and film, appropriately playing both Prospero and a mad psychiatrist: an increasingly dishevelled figure with accusing eyes, modelling himself on largely unknown orators of the London streets. The list of poets who had most influenced him, he told *Gonzo Today*, included Paul Potts the People’s Poet, a homeless pamphleteer; and the men who stood on milk crates in Hyde Park, the subjects of his first book, “The Speakers”, chief among them Bill MacGuinness, who once tried to break into Buckingham Palace to ask for a glass of water, and who said: “When anyone is going to take your mind, make it a blank.”

This was a theme that tormented him: the taking of minds by media or machines. Living, burning poetry already seemed trampled when it was plucked from the air and written down, forced into rhymes and sonnet forms; his was demotic and free-flowing. It was further betrayed by being printed, posted, stored and sold. He would rather give it away, and had to be forced by his publisher to do a single book tour. Commerce would not sully him.

Fame made him run away; celebrity, despite the Shrimpton blip, appalled him. Two plays, “The Local Stigmatic” (written at Harold Pinter’s urging) and “AC/DC”, dealt violently with the modern envy of stars. But “AC/DC” also took on the destruction of minds by machines. Its schizophrenic hero/victim, Perowne, believed he had been programmed to receive TV shows directly, his “instinctual patterns” stolen and replaced; he ended, after a brisk trepanning, admitting cosmic forces his brain could not absorb. In human terms he had indeed become a blank. And this was also happening every day, as Mr Williams wrote in “Autogeddon”: each car journey, “the TV of travel”, sucking people’s neural waves into thought-free “double-glazed mulch”. The answer? Slash the tyres, put sugar in the tank, block the exhaust...

When he died, there were plenty of poets left. But no fire-breathers. ■

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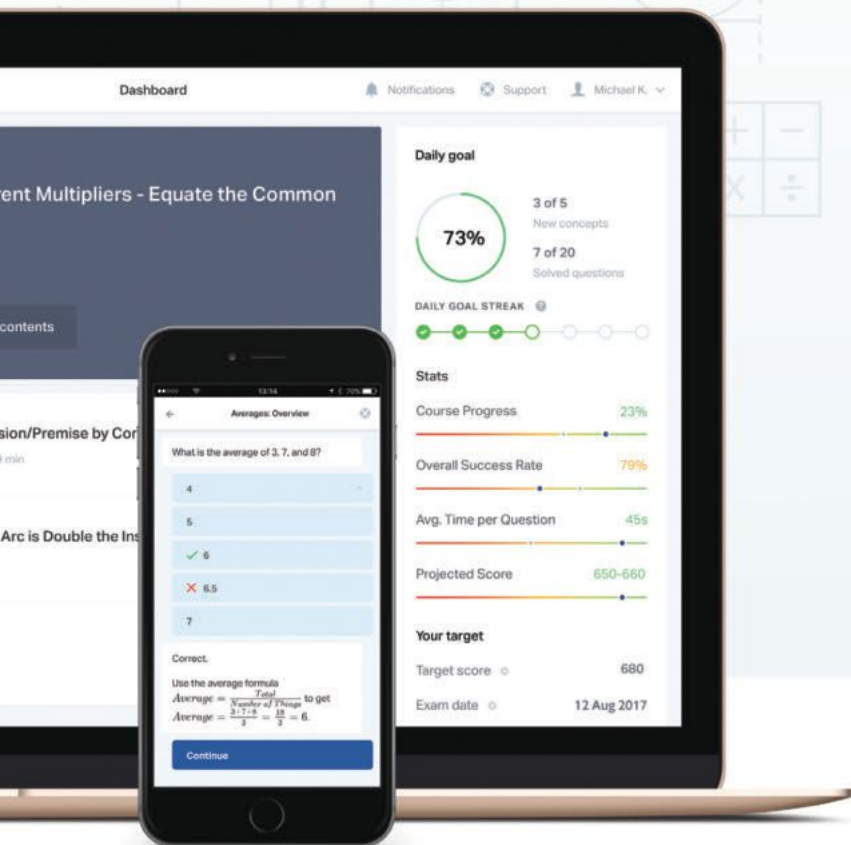
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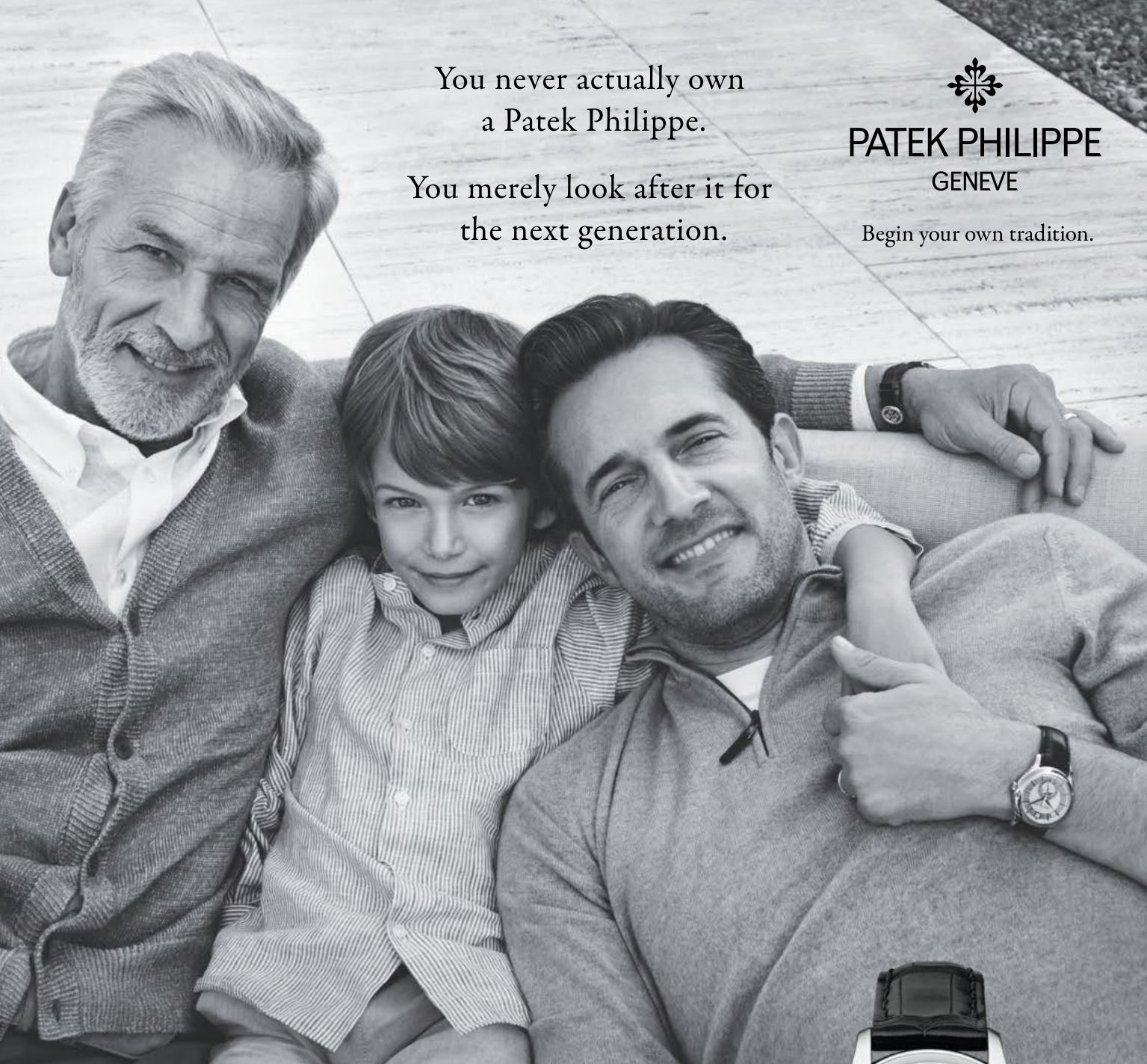
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