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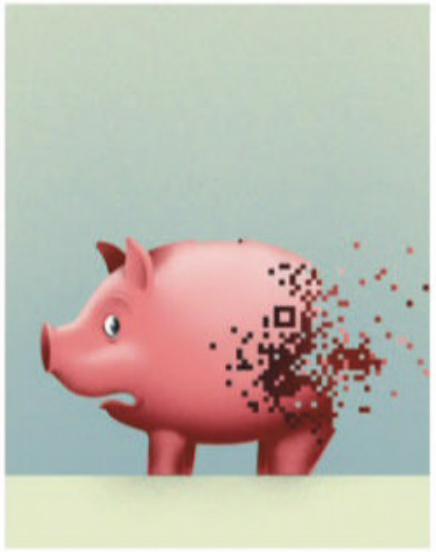

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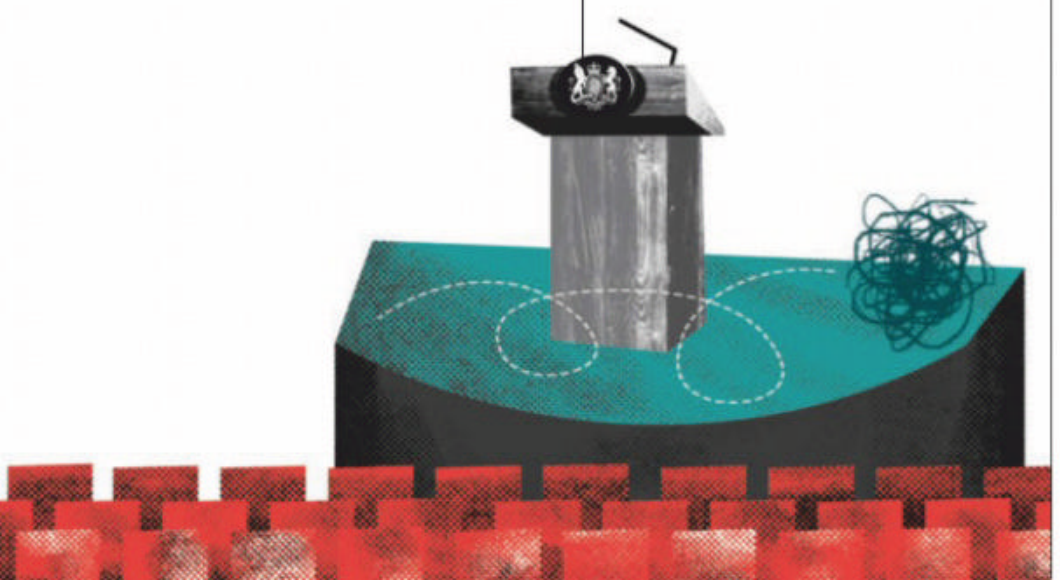

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Juan Guaidó, who is recognised as interim president of **Venezuela** by many democracies, appeared outside an air-force base in Caracas and urged the armed forces to overthrow the socialist dictatorship of Nicolás Maduro. Leopoldo López, an opposition figure kept under house arrest by the regime, appeared with Mr Guaidó after being freed by security personnel. America reiterated its support for Mr Guaidó. Backed by Russia and Cuba, Mr Maduro said he had defeated an attempted coup. Amid more protests, Mr Guaidó called for strikes to topple the government.

Unions staged a national strike in **Argentina** to protest against the austerity policies of Mauricio Macri, the president. Mr Macri's popularity has taken a dive of late, and he is up for re-election in October. Cristina Fernández de Kirchner, a spendthrift populist ex-president, could unseat him, a prospect that scares investors.

China sentenced a **Canadian** citizen to death for drug-trafficking. It is the second time this year a Canadian has received a death sentence in China. Some observers think this is in reprisal for Canada arresting the finance director of Huawei, a Chinese telecoms-equipment company.

Reports of my death…

Abu Bakr al-Baghdadi, the leader of **Islamic State**, appeared in a video for the first time since proclaiming the creation of a caliphate across parts of Iraq and Syria five years ago. (He has been heard in audio recordings since then.) In the new video Mr Baghdadi notes his group's defeat at Baghuz, its last stronghold in Syria, but vows to fight on.

The White House said it was working towards designating the **Muslim Brotherhood** as a terrorist organisation. The decision would bring sanctions on what was once the world's pre-eminent Islamist movement. Egypt's president, Abdel-Fattah al-Sisi, who toppled a Brotherhood-led government in 2013, reportedly requested the move.

The IMF said **Iran's** GDP would contract by 6% this year, caused in large part by American sanctions on Iranian oil exports. Annual inflation could reach 37%, the fund warned. The crisis is fuelling popular discontent with the government and ruling clerics.

The African Union extended a deadline imposed on coup leaders in **Sudan** to hand power to a civilian administration. The military junta was initially given 15 days. This has been extended by another 60 days.

The limits to friendship

China dropped its objection to a proposal in the UN to list Masood Azhar, the leader of a **Pakistani jihadist** group, as a terrorist. This allowed the UN to declare sanctions on Mr Azhar, including the freezing of his assets and a travel ban. His group, Jaish-e-Muhammad, claimed responsibility for a suicide-bombing that killed 40 soldiers in Indian-administered Kashmir in February. China had previously opposed such sanctions, apparently in deference to Pakistan, a close ally.

Akihito, the emperor of **Japan**, abdicated. He was succeeded by his son, Naruhito. Akihito won acclaim during his 30-year reign for apologising for Japan's misdeeds in the second world war.

The **Indonesian** government declared its intention to move its capital. Jakarta, with a population of 30m, is congested and polluted. Although a new location has not yet been chosen, Palangkaraya, a city of 260,000 in the Indonesian part of Borneo, is being considered.

Riots engulfed Honiara, the capital of the **Solomon Islands**, after parliament picked Manasseh Sogavare to serve a fourth non-consecutive term as prime minister. An opponent had secured a court order delaying the vote, but the governor-general ignored it.

Done, but not dusted

William Barr, America's attorney-general, was grilled in Congress over his handling of the publication of **the Mueller report**. Mr Barr issued a summary of the report before its full publication, but two letters emerged this week from Robert Mueller criticising that summary for its lack of context.

A gunman opened fire at a **synagogue** near San Diego, killing a woman. The 19-year-old suspect had posted an anti-Semitic diatribe online shortly beforehand. The Anti-Defamation League recorded a big increase in the harassment of, and assaults on, Jews in America last year.

Joe Biden said he would seek the Democratic nomination for president of the United States. He went to Pennsylvania, where he touted his working-class credentials and played down the kind of identity politics that his rivals espouse. The 76-year-old former vice-president is leading the polls at this early stage.

A court ruled that **Michigan's** congressional districts had been drawn by the state legislature to favour Republicans and ordered that they be redrawn in time for the 2020 election. Several courts have ruled that partisan gerrymandering can be unconstitutional.

That elusive winning line

Spain's ruling Socialist Party won the most seats in a general election, though it is still well short of a majority. Pedro Sánchez, the prime minister, may try to continue in office as head of a minority government, or cobble together a coalition. There are obstacles to reaching a deal with either Podemos or Ciudadanos, two possible partners. Vox, a nationalist party, entered parliament for the first time.

The president of **France**, Emmanuel Macron, made new promises after long talks with voters. They included tax cuts, tax exemptions for bonuses and a commitment to close the elite civil-service college, ENA. The *gilets jaunes* protesters seemed unmollified. More than 200 arrests were made in Paris during riots on May Day.

Julian Assange was sentenced by a British court to 50 weeks in prison for jumping bail in 2012, when he took refuge in the Ecuadorean embassy in London. Mr Assange still faces extradition to America, where he has been charged in relation to the leak of a trove of classified documents by WikiLeaks, which he founded.

Gavin Williamson was sacked as **Britain's** defence secretary for leaking information from a national-security meeting that had discussed allowing Huawei to build 5G networks. Theresa May, the prime minister, dismissed him after a speedy inquiry. Mr Williamson denies the allegation and complains of a "kangaroo court". The new defence secretary is Penny Mordaunt, who wrongly claimed during the Brexit campaign that as an EU member Britain would have no veto if Turkey tried to join the European Union.

Apple's latest quarterly earnings were viewed positively on balance. Revenue from the iPhone continued to slow, falling by 17% in the first three months of the year compared with the same quarter in 2018; the device accounts for an ever-smaller share of Apple's revenues. And overall sales from China, where Apple faces stiff competition, were down by a fifth. But compensating for the bad news the company's revenues from services—apps, music-streaming and the like—grew by 16%.

By contrast, **Alphabet's** earnings were interpreted negatively. Although revenues at Google's parent company grew by 17%, that was the slowest pace in three years. Booking its latest antitrust fine from the EU caused net income to plunge, to $6.7bn. The company also announced that Eric Schmidt, who was Google's boss for ten years until 2011, is to step down from the board.

"The future is private"

Stung by accusations of ethical shortcomings, **Facebook** held a conference to discuss its new "privacy-focused vision". It also rolled out a programme whereby research academics will gain access to user data. Facebook stressed that privacy was being protected, and that it had consulted privacy experts. If anyone had private doubts about its new-found devotion, it is also testing a "differential privacy" application. All this comes as Facebook negotiates with regulators about beefing up its oversight of privacy, which reportedly may mean it appoints a privacy tsar.

Uber offered an initial price range for its forthcoming IPO of between $44 and $50 a share. That is a bit lower than had been expected, and would value the ride-hailing firm at up to $92bn when it lists (it may alter the price range).

In another highly anticipated stockmarket flotation, **Beyond Meat** priced its IPO at $25 a share, the top end of its price range. The startup is totemic of the market's current taste for plant-based food companies.

Occidental appeared to have scuppered **Chevron's** deal to take over **Anadarko**, when the latter said that it now considers Occidental's offer to be superior. Occidental has valued the transaction at $57bn; its proposal includes a $10bn capital injection from Warren Buffett. Anadarko has huge shale assets in America's Permian Basin, making it an attractive partner for energy firms.

In an unprecedented show of no confidence in the management of a German company, 56% of shareholders in **Bayer** voted against a measure supporting its business conduct. Investors are peeved at the collapse of the German conglomerate's share price following costly litigation related to a glyphosate-based weedkiller made by Monsanto, which Bayer took over last year. The vote has no legal force, but it is the first time that a big German company has been censured by a majority of its shareholders.

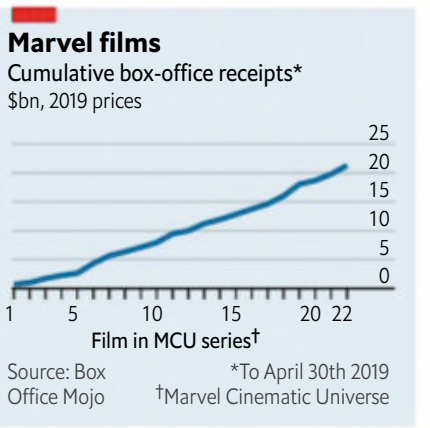
Boeing's annual general meeting was also a testy affair. Following the grounding of the 737 MAX aircraft after two fatal crashes, Dennis Muilenburg survived an attempt to split his dual role as chief executive and chairman, though 34% of shareholders voted for the proposal. Meanwhile, **American Airlines** cut its profit forecast for the year, in part because of the grounding of the 737 MAX, which has caused it to cancel hundreds of flights.

The **euro zone's** economy grew by 1.5% in the first quarter at an annual rate, a much improved showing on the last three months of 2018. That was still some way behind **America**, which chalked up a growth rate of 3.2% in the quarter.

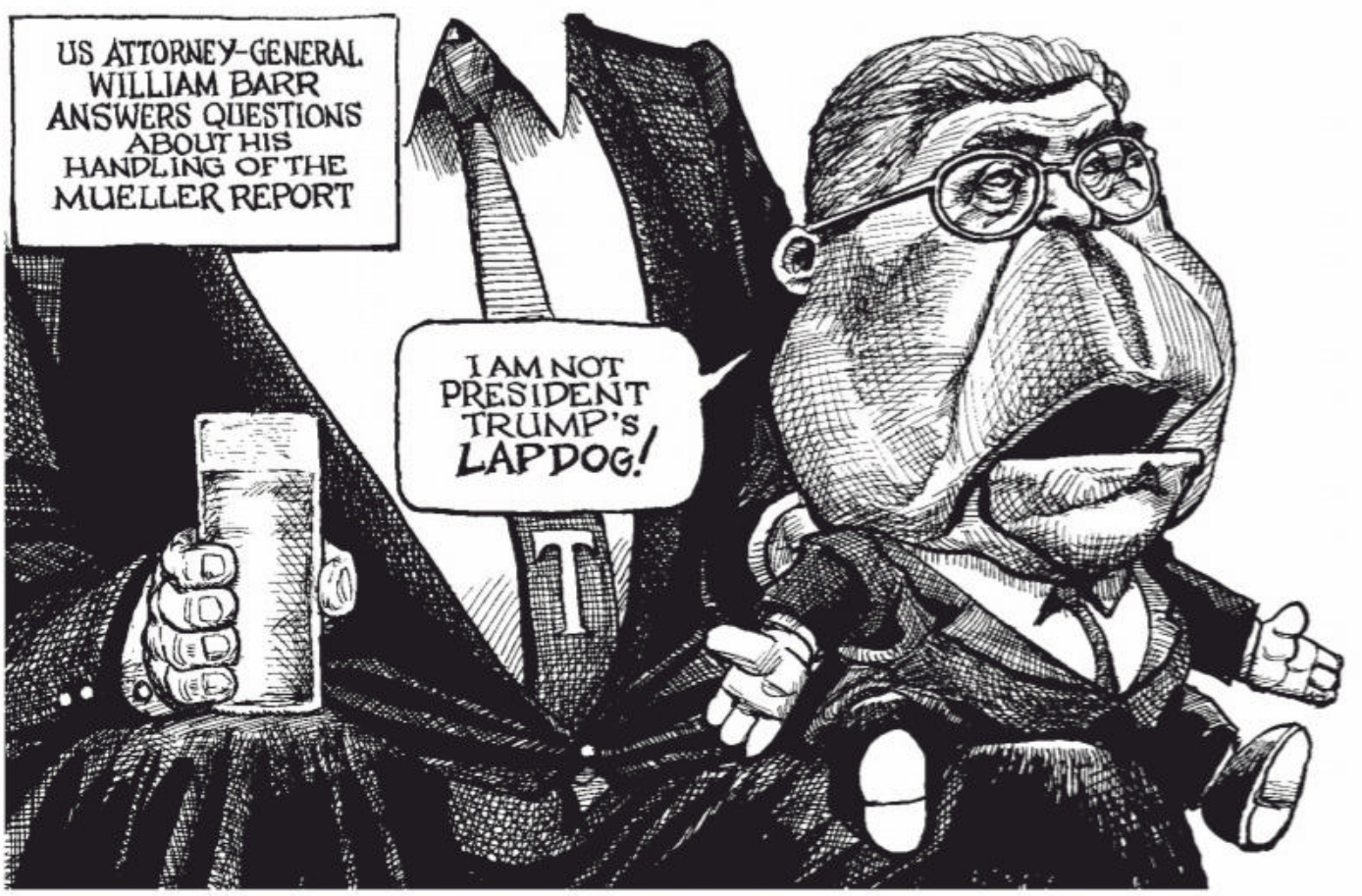
The John Bates Clark Medal, awarded annually by the American Economic Association to an economist under the age of 40, was won by **Emi Nakamura**. A professor at Berkeley, Ms Nakamura won the award in part for her "distinctive approach" to a "painstaking analysis of data".

A judge approved a new agreement between the Securities and Exchange Commission and **Elon Musk** that restricts what he can say on Twitter about Tesla. Mr Musk has fallen foul of the regulator for tweeting what it says are misleading statements. Under the new deal, Mr Musk has to seek approval from lawyers before tweeting about Tesla's finances, potential deals, production or any venture the company is considering. Mr Musk may also want to think twice before poking fun at the SEC on Twitter.

It's a marvel



"Endgame" is a fitting title to an all-dominating film franchise. The 22nd film in Marvel's Cinematic Universe took a record-breaking $357m in its opening weekend in America. Less than a week into its run, it is already the fourth-most successful in the brand. The first, "Iron Man", took a comparatively puny $680m worldwide during 2008. Including **"Avengers: Endgame"**, total revenue for the series is expected to top $22bn. With box office like that, it is not surprising that plenty more Marvel films are in the pipeline.



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Tech's raid on the banks

Digital disruption is coming to banking at last

Over the past two decades people across the world have seen digital services transform the economy and their lives. Taxis, films, novels, noodles, doctors and dog-walkers can all be summoned with a tap of a screen. Giant firms in retailing, carmaking and the media have been humbled by new competitors. Yet one industry has withstood the tumult: banking. In rich countries it is perfectly normal to queue in branches, correspond with your bank by post and deposit cheques stamped with the logo of firms founded in the 19th century.

Yet, as our special report this week explains, technology is at last shaking up banking. In Asia payment apps are a way of life for over 1bn users. In the West mobile banking is reaching critical mass—49% of Americans bank on their phones—and tech giants are muscling in. Apple unveiled a credit card with Goldman Sachs on March 25th. Facebook is proposing a payments service to let users buy tickets and settle bills (see Business section).

The implications are profound because banks are not ordinary firms. It is one thing for Blockbuster Video to be wiped out by a technological shift, but quite another if the victim is Bank of America. It is not just that banks have over $100trn of assets globally. Using the difficult trick of "maturity transformation" (turning deposits that you can demand back at any time into long-term loans) they enable savers to defer consumption and investment and borrowers to bring them forward. Banks are so vital that the economy reels when they stumble, as the crisis of 2008-09 showed.

Bankers and politicians may thus be tempted to resist technological change. But that would be wrong because its benefits—a leaner, more user-friendly and more open financial system—easily outweigh the risks.

Banking is late to the smartphone age because entrepreneurs have been put off by regulations. And, since the financial crisis, Western banks have been preoccupied with repairing their balance-sheets and old-fashioned cost-cutting. Late is better than never, however. Several new business models are emerging. In Asia payment apps are bundled with e-commerce, chat and ride-hailing services offered by firms such as Alibaba and Tencent in China and Grab in South-East Asia. These networks link to banks but are vying to control the customer relationship. In America and Europe big banks are still more or less in control and are rushing to offer digital products—JPMorgan Chase can open a deposit account in five minutes. But threats loom. Mobile-only "neobanks" that do not bear the cost of branches are nibbling at customer bases. Payments firms like PayPal work with Western banks but are expected to capture a greater share of profits. Lucrative niches like foreign exchange and asset management are being harried by new entrants.

The pace of change will accelerate. Younger people no longer stay with the same bank as their parents—15% of British 18- to 23-year-olds use a neobank. Tech firms that people trust, such as Apple and Amazon, are natural candidates to grow big financial arms. The biggest four American banks are spending a total of over $25bn a year on perfecting better customer applications and learning to mine data more cleverly. Venture-capital firms invested $37bn in upstart financial firms last year.

The benefits of technological change are likely to be vast. Costs should tumble as branches are shut, creaking mainframe systems retired and bureaucracy culled. If the world's listed banks chopped expenses by a third, the saving would be worth $80 a year for every person on Earth. In 2000 the Netherlands had more bank branches per head than America; it now has just a third as many. Rotten service will improve—it is easier to get money to a friend using a chat app than it is to ask your bank to transfer cash. The system will get better at its vital job of allocating capital. Richer data will allow banks to take risks that currently baffle underwriters. Fraud should be easier to spot. Lower costs and the democratising effect of social media will give more people better access to finance. And more firms with good ideas should be able to get loans faster, boosting growth.

Yet change also poses risks. Because the financial system is embedded in the economy, innovation tends to create turbulence. The credit card's arrival in 1950 revolutionised shopping but also sparked America's consumer-debt culture. Securitisation lubricated capital markets in the 1980s but fuelled the subprime crisis. In addition, it is unclear who will win today's battle. One dystopian scenario is that power becomes more concentrated, as a few big banks learn to exploit data as ruthlessly as social-media firms do. Imagine a crossbreed of Facebook and Wells Fargo that predicts and manipulates how customers behave and is able to use proprietary economic data to squeeze rivals.

Another dystopia involves fragmentation and destabilisation. Banks could lose depositors to untested neobanks, creating a mismatch between their assets and liabilities that could lead to a credit crunch. If bank customers transact via tech or payment platforms, banks could end up with huge balance-sheets but without a direct connection to their clients. If they thus became unprofitable, they could be broken up, with the job of financing mortgages and absorbing short-term savings left entirely to capital markets, which are volatile.

To tap the benefits of technology safely, governments should give consumers control over their data, protecting privacy and preventing firms hoarding information. Innovation-friendly regulation would help; in 2017 the industry faced a regulatory alert every nine minutes (see Finance section). And governments should keep the system's safety buffers at today's overall size (global banks hold $7trn of core capital). If new entrants are properly capitalised, central banks could extend to them the lender-of-last-resort facilities that provide shelter in a storm.

Banking's dirty secret is that it is backward, inefficient and hidebound. Banks have formidable lobbying power, however. Wary of change, customers, politicians and unions complain when branches are closed and jobs cut—witness the recent collapse of a German mega-merger that depended on both. Regulators love dealing with a few big firms. The thing is that global growth is sluggish and productivity gains are hard to come by. A smartphone revolution in finance offers one of the best ways to boost the economy and spread the benefits. ■

Venezuela

How to get rid of Maduro

An attempt to depose the dictator appears to have failed. Try again

APRIL 30TH DAWNED promisingly in Venezuela. Juan Guaidó, acknowledged as the country's interim president by many democracies and millions of Venezuelans, appeared outside an air-force base in Caracas flanked by national guardsmen to declare that the end of the dictatorship was imminent. By his side was a leader of the opposition, Leopoldo López, who had somehow been freed from house arrest. His presence, and that of the guards, suggested that Venezuela's security forces were ready at last to withdraw their support for Nicolás Maduro, who has ruled his country catastrophically and brutally for the past six years.

Thus began two days of rumour, intrigue and violence (see Americas section). As *The Economist* went to press the regime was still in charge and the generals were proclaiming their loyalty to it. Mr Maduro had appeared on television to declare that the "coup-mongering adventure" had failed. Yet this week's events reveal that his hold on power is weaker than he claims. Mr Guaidó, the United States, which supports him, and the commanders of Venezuela's security apparatus must work together to put an end to it.

That may well have been the plan. John Bolton, America's national security adviser, said on April 30th that senior regime officials, including the defence minister and the commander of the presidential guard, had agreed to dump Mr Maduro and transfer power to Mr Guaidó. Mike Pompeo, America's secretary of state, later insisted that Mr Maduro had been worried enough to have a plane waiting to spirit him to Havana but was dissuaded by his Russian allies.

How true these claims are and what went wrong is uncertain. A letter on social media attributed to the general in charge of Venezuela's intelligence service, who has abruptly left his job, gave Mr Bolton's assertion some support by saying that people close to Mr Maduro were negotiating behind his back. Some newspaper reports say that the plan was to remove him on May 2nd but that Mr Guaidó had acted early, perhaps because Mr Maduro had got wind of the plan. The plotters got cold feet.

The false start, if that's what it was, shows the way ahead. Both Mr Guaidó and the administration of Donald Trump will need to induce the top brass to switch sides by making clear that there is a role for them in a democratic Venezuela. The army gave up power in 1958 and helped usher in civilian rule. Today's opposition and soldiers could co-operate in a similar fashion. Although Mr Maduro and his closest associates need to go, Mr Guaidó should welcome less tainted leaders of the *chavista* regime into a transitional government, which would relieve the humanitarian crisis while preparing for free elections. That could yet take many months.

The Trump administration has lumped Venezuela in with Cuba and Nicaragua in a "troika of tyranny". It seems as eager to dislodge Cuba's 60-year-old communist regime as it is to get rid of Mr Maduro. To that end it recently intensified America's embargo on the island, including by letting American citizens sue European and Canadian companies that do business using Cuban assets stolen after the revolution.

American disdain for Cuba's regime is justified. Its hundreds of spies in Venezuela help keep Mr Maduro in power. But the swipes at Cuba will tighten this bond precisely when America should be trying to prise it apart. Lawsuits against European firms will frustrate concerted diplomatic action against Venezuela. In the cause of removing Mr Maduro, America should for the time being set its quarrel with Cuba to one side.

The crucial choice lies with Venezuela's army commanders. Mr Maduro's misrule offers them no future. It has crushed the economy, starved the people, strangled democracy and forced more than 3m Venezuelans into exile. The hardship is bound to worsen with new American oil sanctions this year. The generals must begin to act like patriots. They need to destroy the regime, before the regime destroys their country. ■

India's election

Agent Orange

Under Narendra Modi, the Bharatiya Janata Party poses a risk to democracy

WHEN THE Bharatiya Janata Party (BJP) won a landslide victory in India's general election in 2014, its leader, Narendra Modi, was something of a mystery. Would his government initiate an economic lift-off, as businessfolk hoped, or spark a sectarian conflagration, as secularists feared? In his five years as prime minister, Mr Modi has been neither as good for India as his cheerleaders foretold, nor as bad as his critics, including this newspaper, imagined. But today the risks still outweigh the rewards. Indians, who are in the midst of voting in a fresh election (see Asia section), would be better off with a different leader.

Mr Modi is campaigning as a strongman with the character to stand up to Pakistan for having abetted terrorism. In fact, sending warplanes to bomb India's nuclear neighbour earlier this year was not so much an act of strength as recklessness that could have ended in disaster. Mr Modi's tough-guy approach has indeed been a disaster in the disputed state of Jammu & Kashmir, where he has inflamed a separatist insurgency rather than quelling it, while at the same time alienating moderate Kashmiris by brutally repressing protests.

This impetuousness disguised as decisiveness has infected economic policymaking, too. In 2016 Mr Modi abruptly cancelled most Indian banknotes in an effort to thwart money-laun- ▸▸

dering. The plan failed, but not without causing huge disruption to farmers and small businesses. He has pushed through a nationwide sales tax and an overhaul of the bankruptcy code, two much-needed reforms. But the economy has grown only marginally faster during his tenure than it did over the previous ten years, when the Congress party was in government, despite receiving a big boost from low oil prices. Unemployment has risen, breaking promises to the contrary.

Indians hear such criticisms less often because Mr Modi has cowed the press, showering bounty on flatterers while starving, controlling and bullying critics. He himself appears only at major events. He has also suborned respected government institutions, hounding the boss of the central bank from office, for example, as well as loosing tax collectors on political opponents, packing state universities with ideologues and cocking a snook at rules meant to insulate the army from politics.

Mr Modi's biggest fault, however, is his relentless stoking of Hindu-Muslim tensions. He personally chose as chief minister of Uttar Pradesh, India's most populous state, a fiery Hindu cleric who paints the election campaign as a battle between the two faiths. Mr Modi's number two calls Muslim migrants from neighbouring Bangladesh "termites", but promises a warm welcome to Bangladeshi Hindus. One of the BJP's candidates is on trial for helping orchestrate a bombing that killed six Muslims. And Mr Modi himself has never apologised for failing to prevent the deaths of at least 1,000 people, most of them Muslims, during sectarian riots in the state of Gujarat while he was chief minister there. The closest he has come has been to express the sort of regret you might feel "if a puppy comes under the wheel" of a car.

This is not just despicable, it is dangerous. India is too combustible a place to be put into the hands of politicians who campaign with flamethrowers. As it is, vigilantes often beat up or lynch Muslims they suspect of harming cows, a holy animal for Hindus. Kashmiris studying in other parts of India have been set upon by angry nationalist mobs. And even if the BJP's Muslim-baiting does not ignite any more full-scale pogroms, it still leaves 175m Indians feeling like second-class citizens.

Congress, the BJP's only national rival, may be hidebound and corrupt, but at least it does not set Indians at one another's throats. It has come up with an impressive manifesto, with thoughtful ideas about how to help the poorest Indians. Its leader, Rahul Gandhi, although a much-derided dynast, has helped modernise the party a little, raising its profile on social media, for example. It is a worthier recipient of Indians' votes than the BJP.

With less than a tenth of the seats in parliament, Congress will not improve its showing enough to form a government on its own. If it and its regional allies do better than expected, they may just be able to cobble together a majority. But even if, as is more likely, the BJP remains in charge, it would be preferable if it were forced to govern in coalition. (The current government is technically a coalition, but since the BJP has the numbers to rule without its partners, they have little influence.) The risk is that reforms get delayed yet again—but they were not progressing quickly anyway. A degree of bickering and stasis would be a price worth paying to curb the BJP's excesses. At the very least, coalition partners might be able to bring down a truly wayward BJP government by leaving it. ■

Crisis in the Sahel

The West's forgotten war

The fight against jihadists is moving to Africa

Looking somewhat dishevelled and sometimes confused, the leader of Islamic State (IS), Abu Bakr al-Baghdadi, issued his first video message in five years on April 29th. His tone was mostly gloomy. His followers have been vanquished in battle. His "caliphate" in Iraq and Syria lost its last bit of territory in March. Yet the fanatic who popularised beheading videos also offered his followers some hope. He welcomed the recent pledges of allegiance to IS from jihadist groups in Mali and Burkina Faso, and singled out for praise Abu Walid al-Sahrawi, the leader of Islamic State in the Greater Sahara. The front line of the jihadists' war against everyone else has moved to Africa.

Last year almost 10,000 people, mostly civilians, were killed in jihadist-related violence in Africa. That is almost as many as were killed in conflict with jihadists in Iraq and Syria. The number of Western and allied troops battling jihadists in Africa may also soon surpass those fighting them elsewhere. On any given day America's armed forces have about 7,000 people deployed on the continent. France has perhaps 4,500 in the Sahel. Throw in Germany and Italy, each with almost 1,000, and allies such as Canada, Spain, Estonia and Denmark, and the number surpasses the 14,000 Americans in Afghanistan.

The conflict is spread across a broad expanse of Africa, from Somalia in the east to the Atlantic Ocean in the west. It is concentrated in some of the poorest countries on Earth, where it is fuelled by bad governance. Some of these states barely control much of their own supposed territory. Many jihadist recruits come from ethnic minorities, such as the Fulani, who see officials as alien and predatory. Many join up after being beaten or robbed by police. Global warming, meanwhile, has withered pastures, intensifying conflict over land.

These pressures are most keenly felt in the Sahel, on the southern fringe of the Sahara desert. In Mali, Burkina Faso and Niger the number of people killed by jihadists has doubled in each of the past two years, to more than 1,100 in 2018. In the Sahel as a whole, some 5,000 have been killed in the past five months. In the area around Lake Chad some 2.4m people have fled from attacks by Boko Haram, a group that straps bombs to children. The number of jihadist groups in the Sahel has multiplied, from one in 2012 to more than ten at the last count by America's defence department.

The jihadists have deftly prised open pre-existing fracture lines. The mayhem is metastasising into a broader conflict between ethnic militias, farmers and herders. In many cases jihadists have started a cycle of tit-for-tat killings by attacking vil-

lages and provoking reprisals by militias. In March a militia hacked, shot and burned over 170 Fulani men, women and children to death in central Mali, in apparent revenge for an attack on the army by jihadists. In Burkina Faso in January a militia killed about 210 people in and around Yirgou, a desert village.

Sahelian governments deserve much of the blame for all this bloodshed (see Middle East & Africa section). Several have supported ethnic militias, which they see as a cheap, arm's-length way of killing jihadists and their supporters. This tactic has backfired. The militias are so brutal and ill-disciplined that they almost certainly increase support for the jihadists. The conflict could break apart fragile states, displacing millions of people.

The jihadist African insurgency has too many deep-seated causes to be put down easily or fast. All the more reason, therefore, to get some essential things right. Governments in the Sahel should start by disarming the militias. At the same time, they could work harder to curb corruption and human-rights abuses by their armies and police forces. Since economic growth would foster stability, they should also open up to investment and improve infrastructure such as roads, ports and power.

Given the potential for African jihadism to spread attacks abroad, outsiders have an interest, too. America, under Donald Trump, revealed plans last year to reduce its forces in Africa by 10%. That is premature. Western troops will be needed in the region for years, training and supporting local forces. Military support should aim to go hand in hand with democratisation and economic reform—rather than propping up regimes whose corruption sparked unrest in the first place.

Like the cold war before it, the struggle against those who take up arms in pursuit of an imaginary Islamist Utopia will probably last for decades. And as in the struggle against communism, winning hearts and minds will be the key to victory. ■

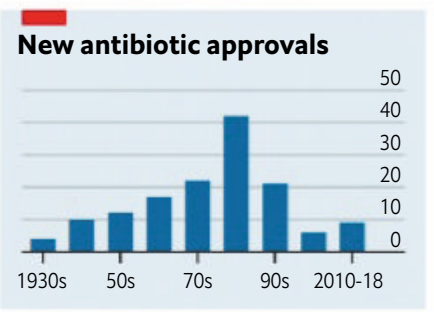
Drug resistance

Netflix and pills

A vital part of the drugs industry is broken. Take inspiration from the entertainment industry

A WORLD WITHOUT antibiotics is horrible to contemplate. They underpin much of modern medicine and are essential for patients undergoing chemotherapy for cancer, organ transplants or common surgeries such as caesarean sections. Yet the global rise of antimicrobial resistance, exemplified by the spread of *Candida auris*—the latest infection terrorising hospitals—and super-resistant gonorrhoea, is alarming. Resistance could kill 10m people a year by 2050, up from 700,000 today. This week a UN commission recommended immediate and co-ordinated action to avoid a calamity whose economic cost, the World Bank reckons, could rival that of the financial crisis of 2008-09.

That the pharmaceutical market does not always work well is hardly news. It has failed to develop many kinds of drugs, including new vaccines and treatments for diseases that mainly afflict the poor. But when it comes to antibiotics, matters are particularly bad. To prevent microbes from developing resistance to them, novel antibiotics tend to be reserved for use by doctors as a last line of defence and used for short periods. Hence volumes are meagre. That would not matter if prices were high. But unlike new drugs for cancer or rare diseases, prices of antibiotics are kept low in many countries, creating little incentive for drug companies to develop new ones. As a result, investors avoid new antibiotic firms and are fearful that they will run out of cash. The recent bankruptcy of Achaogen, a biotech firm, suggests they are right to fret (see Business section). Big drug companies have largely bowed out of the game.



Governments and charities have scrambled to stimulate activity by putting money into basic research, giving grants to drugs startups and taking equity stakes in them, but that has not been enough. Bringing a drug from the laboratory to the clinic typically takes a decade and costs around $1bn. A more extreme option would be to nationalise antibiotic production, but that would only cause private-sector innovation to shrivel even further. Instead, stimulating the development of new antibiotics requires governments to embrace two ideas.

The first is that the antibiotics business needs to offer the prospect of decent profits. Asking people to pay more for drugs at a time of public outrage over the cost of medicines, from insulin to cystic-fibrosis treatments, is hard. But there are already moves in this direction. In America Medicare is paying more for some new antibiotics. And Britain's notoriously tight-fisted drug-reimbursement agency has agreed to look at how its method for assessing value can be adjusted to incorporate the broader societal benefits of having a new antibiotic.

The second idea is to accept some unusual new ways to generate those higher profits, other than selling by the dose. Economists, including Jim O'Neill, have recommended that "market entry" prizes of $1bn or more should go to drugmakers that launch the most valuable new antibiotics. Split between G20 countries, a prize kitty even ten times as large would be affordable—and value for money.

But the most promising idea is for drugs firms to change how they charge governments and health insurers for antibiotics, by switching to a Netflix-style subscription model. Just as Netflix subscribers pay the same each month, whether they binge-watch boxsets all day or watch nothing at all, so health-care providers would pay a flat rate for access to an antibiotic, regardless of the volume. When the drug is new and being saved as a last line of defence, the drugs company still gets paid. And if the antibiotic has to be more widely used, the price does not go up. It may sound crazy, but subscriptions are already being tried in America to pay for hepatitis C drugs. Using this model for antibiotics can square the circle of incentivising drugs companies to develop a treatment that doctors will then try to use as little as possible.

This will not solve antibiotic resistance all on its own. Reducing the misuse of existing antibiotics, in medicine and agriculture, is also necessary. And more could be done to improve sanitation and processes, in hospitals and elsewhere, to minimise the risk of infection in the first place. Fixing the pricing model is not a silver bullet, then. But it is a vital part of the answer. ■

She's a fan.

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France's national symbol

Your leader about Notre Dame cathedral attributed the enormous emotional response to the fire to such factors as global tourism and a uniting love of culture ("The human spark", April 20th). All true. Yet for the French, Notre Dame is the closest physical embodiment of their deep sense of nationhood. Their concern arises directly from the sudden physical threat to this unparalleled national symbol. The response is above all a powerful and positive expression of national identity, culture and history; a contrast to the destructive "rising threat" of nationalism that you mentioned.

DAVID GRIFFITHS
Chiddingfold, Surrey

You pondered the human instinct "to care more about a building than about people". Let's do a thought experiment. Donald Trump tweets, "I am more concerned about the fire at Notre Dame than I am about 1,000 black Africans." It is easy to imagine the reaction. I'm sure *The Economist* would be first in line to condemn him with no small hint of superciliousness.

NISHU SOOD
New York

I hope that, like Quasimodo, you ultimately realise that gargoyles and statues are an inadequate substitute for true human connection. A single life is more valuable than any building.

ADAM NELSON
Oakland, California

South Africa's election

Your endorsement of the ruling African National Congress ahead of South Africa's general election was unconscionable ("South Africa's best bet", April 27th). The ANC is a criminal syndicate that will destroy South Africa if it remains in power for another decade. Your argument that a stronger mandate will help President Cyril Ramaphosa push through a reform agenda by somehow strengthening him against the crooks in his party is deeply flawed, as no mechanism exists for this.

The ANC's candidate lists prove he has already lost that battle. They are jam-packed with crooks. This is the same crowd that supported Jacob Zuma through eight motions of no confidence as he destroyed the country's institutions. South Africa is on its knees after 25 years of one-party dominance by a patronage-driven party that works only to enrich a connected elite. Our democracy urgently needs a strong alternative.

A strong showing for the liberal Democratic Alliance will make the ANC more responsive to the country's interests and prevent it, together with the socialist Economic Freedom Fighters, from achieving the majority required to change the constitution to enable expropriation without compensation. As for Mr Ramaphosa's supposed "reform agenda", there is little evidence of this other than his tepid fight against corruption. He has supported the attack on property rights and the forced investment of pension funds into chronically corrupt, bankrupt state-owned enterprises as well as the nationalisation of the central bank and of the health system. Mr Ramaphosa was tasked with fixing Eskom in 2015; today the power utility is in a death spiral and looks set to take our economy down with it.

The Economist's endorsement places it on the wrong side of history.

JOHN STEENHUISEN
Chief whip of the Democratic Alliance in the National Assembly
Cape Town

Europe's diplomatic successes

Charlemagne justifiably argues that a common European foreign policy is hard to achieve given historic differences among member states (April 20th). But don't underestimate the value of trying. Without the effort to achieve a common view, divergences would be all the greater. Failures in Libya or the Middle East should not overshadow the relative successes on China, Russia, Iran, the Sahel and Somalia. Other powers will always seek to divide EU member states in order to weaken them. So an effective voice in the world requires hanging together rather than hanging apart. It requires infinite patience and endless ingenuity with no guarantee of success; but that's diplomacy.

NICHOLAS WESTCOTT
Director
Royal African Society
London

Eton mess

The arguments you presented in favour of private education don't stack up against the evidence ("A class apart", April 13th). Studies from the OECD, UNESCO and the World Bank, among others, clearly find that private schools do not perform better than public schools. Private education also perpetuates disadvantage and exclusion. The EU has adopted a resolution stipulating that member states must not use development aid to support commercial educational establishments, because they go against the grain of the EU's principles, aligned to the UN's goal of inclusive education.

Empowered educators and robust teachers' unions make for strong education systems, according to the OECD. Teachers and their unions are part of the solution. Instead of urging governments to weaken unions, you should persuade them to work with unions to strengthen public education.

DAVID EDWARDS
General secretary
Education International
Brussels

I wish you had devoted more analysis to the American system. During the gradual move towards more "choice" in education, such as charter schools and the use of vouchers, mathematics results have declined in America when ranked with other countries or in time-series tests. The performance of high-school sophomores in the OECD's PISA studies have placed America below the mean of all countries. A measure to test college readiness for maths in 2018 revealed that 60% had failed. That is after a decade of more school choice. More research to explain this decline is needed.

BERTRAND HORWITZ
Asheville, North Carolina

You cited data showing the greater efficiency (outcome per dollar) of private education in India. Yet the reverse is the case in developed countries. As you noted, educational outcomes are about equal in private and public systems in OECD countries, even though spending per student is substantially higher in the private sector. Efficiency and equity therefore imply using the tax system to increase spending in public education, rather than encouraging private expenditure.

Moreover, public education is a means of achieving integration in societies with lots of migrants. Yet, in Australia at least, subsidies to private education have enabled recent migrant groups to segregate their children into low-fee private schools.

In a free society, parents must be able to choose private education. This does not imply the right to public subsidies.

REX DEIGHTON-SMITH
Paris

NIMBY, YIMBY, YIYBY

The acronym YIMBY, "yes in my backyard", is not quite right ("Sorry, we're full", April 20th). When you look closely at the backers of this movement for new development and housing in the crowded Bay Area, you find that the acronym is more accurately YIYBY, "yes in your backyard".

GEORGE DODDINGTON
Walnut Creek, California

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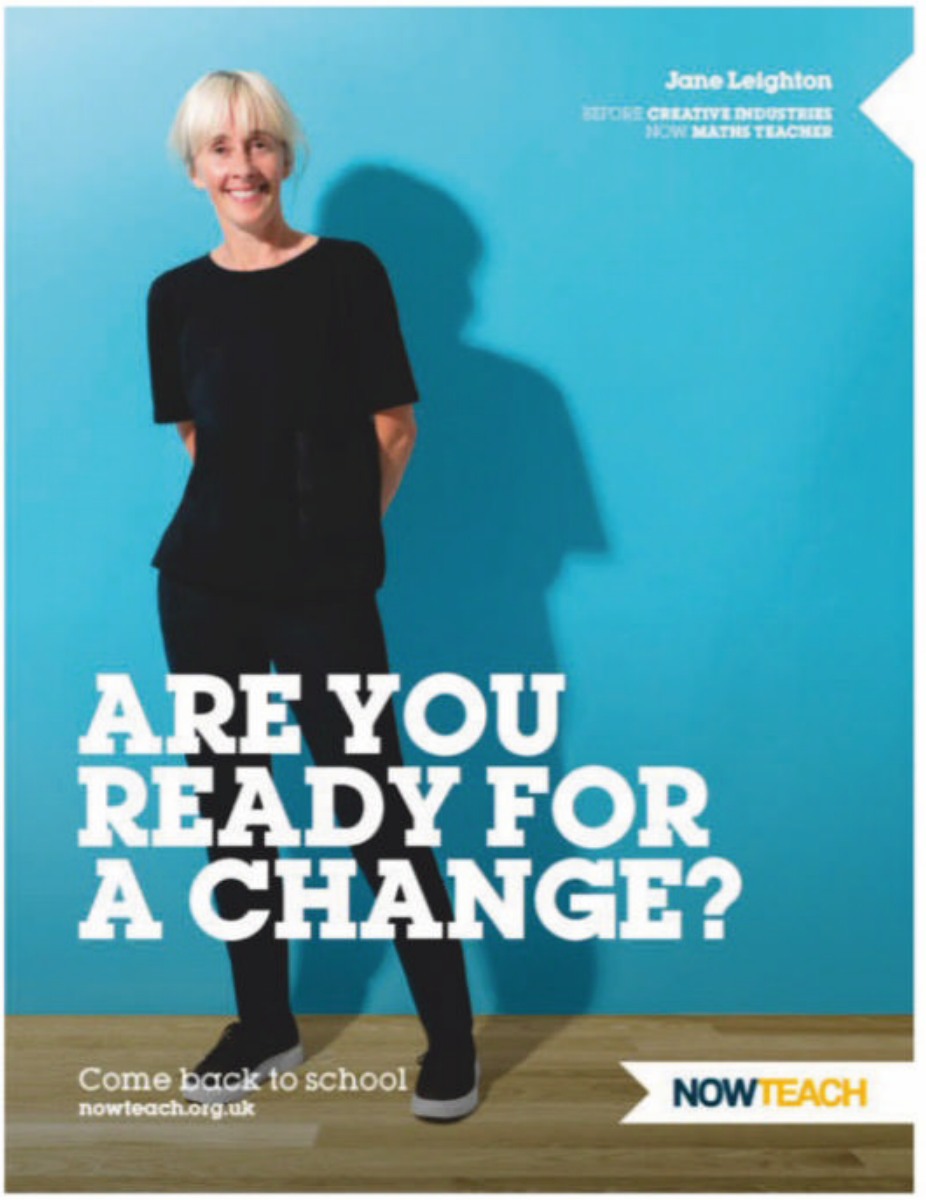


Now playing, everywhere

SAN BRUNO

Can the world's biggest video-sharing site police itself?

SUSAN WOJCICKI, the CEO of YouTube, received the first message about the massacre in New Zealand at around 8pm. Assaults on two mosques in Christchurch had begun minutes earlier. The shooter had live-streamed the killings on Facebook and the footage from the social-media site was being shared on YouTube as the killer had clearly hoped. Ms Wojcicki checked in with her team. Executives and software engineers were looking for different versions of the video so that machine-learning programs could be trained to hunt for them. Thousands of human reviewers were scouring through videos that had been automatically tagged, sorting news reports and the like from the offending footage. The world's largest video platform—owned by Google, the world's most powerful search engine—was mobilised to cleanse itself of the horrific clip.

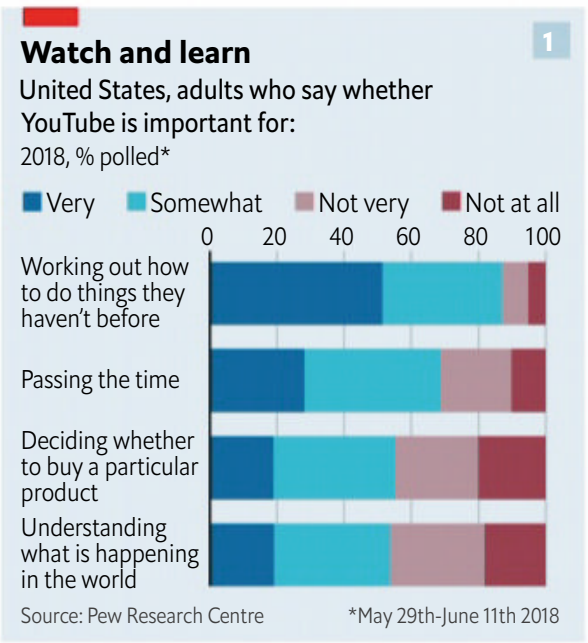
It failed. Before she went to bed at 1am Ms Wojcicki was still able to find the video (she chose not to watch it). In the morning copies of the video continued to be accessible using generic keyword searches. New versions were being uploaded more quickly than they could be identified and taken down. Finally, at 6am, Ms Wojcicki decided to remove all videos flagged as suspect, without waiting for a human review—a first for YouTube. Hours later, the site also blocked users from filtering searches by new uploads, another first. "We don't want to be the place where people are finding that," says Ms Wojcicki.

The company is not alone in its interest in policing what people upload to it. An increasing number of governments and regulators around the world think social-media firms must change their ways. Facebook takes most of the flak but YouTube's problems are particularly tricky because videos are difficult to monitor at such scale—500 hours of new ones are uploaded every minute. Children and teens consume it in their masses. And its videos are increasingly viewed as an important source of news and information as well as entertainment (see chart 1 on next page).

Ms Wojcicki is confident that she can sort out policing YouTube. "I actually think I can solve it or at least I think I can provide a blueprint about how to address these issues that no one else has figured out." Thus far such confidence is difficult to credit. But how YouTube chooses to moderate its content, and how governments compel it to do so, will affect not only the world's most popular video service. It will also help shape the acceptable contours of free speech online, and the lives of the people who produce, consume or are otherwise affected by digital content.

Press play

From its inception in 2005, YouTube has delivered a new kind of entertainment to people almost everywhere: the rest of humanity (and their pets). User-generated videos, uploadable and viewable by all, made it possible for anyone to find an audience online. Since then YouTube has become the free television service for much of the world (like Facebook and Twitter, it is blocked in China). More than 2bn people now visit the site at least once a month. It accounts for 11% of the world's bandwidth on the internet, second only to Netflix, with its much higher-resolution videos, according to Sandvine, a research firm (see chart 2). The volume of entertainment, ▸▸



education, information and dross on offer is hard to fathom. It would take 100,000 years to watch it all at a single sitting.

Every day tens of millions of fans, many of them children, tune in to watch their favourite stars, who have built huge followings on YouTube. They dispense silliness, confessional tales and practical tips. Gamers in Europe narrate virtual conquests, women in India and Saudi Arabia give make-up tips in Hindi and Arabic, teens in America share their anxieties, an elderly quilter in Missouri teaches her craft.

For YouTube and its most successful stars that has proved lucrative. The firm does not disclose its revenues, but MIDiA Research, a consultancy, estimates them at nearly $17bn in 2018, close to half of which went to content creators on the platform. The top channels for children rake in millions of dollars a year through advertising. The most famous YouTubers—personalities who have built huge followings of young fans—earn millions a year as well.

YouTube's stars hold sway over their fans. In a survey by the firm, 40% of young subscribers said that YouTubers understood them better than their friends or family, and 60% said YouTubers had changed their lives or worldview.

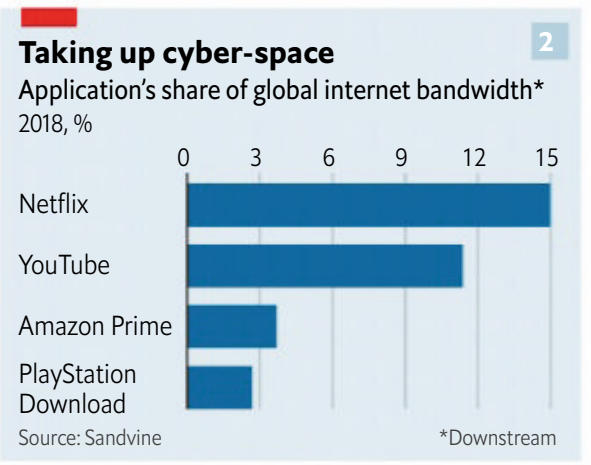
But there is a dark side to hosting over a billion hours of user-generated content online, algorithmically sorted and recommended to billions of viewers. A series of scandals suggest that YouTube is having difficulty coping with the volume and diversity of the content it is hosting, recommending and monetising. In 2017 adverts were found running alongside violent videos made by Islamic State. That prompted big brands to remove advertising for a while. The same year young boys and girls were found in videos that appeared abusive or salacious and which were recommended millions of times before offending channels were shut down.

Some of the site's most famous stars have breached the boundaries of decency. Logan Paul, famous for his lowbrow antics, posted a video at the end of 2017 of a dead body he found in a "suicide forest" in Japan. In early 2017 PewDiePie, who had 53m subscribers (then the most of any channel), was reported to have made anti-Semitic references in his videos. PewDiePie, whose real name is Felix Kjellberg, apologised; YouTube dropped him from a lucrative advertiser programme, but he was allowed to remain on the site. Later in 2017 he used a racial slur about black people and apologised again. On April 28th he posted a video asking fans to stop spreading a "Subscribe to PewDiePie" meme, which was referenced by the shooter in Christchurch. He has now amassed 95m subscribers.

Politicians at first paid only passing attention to much of this. After the presidential election in America in 2016 public ire was mostly directed at Facebook over fake news and breaches of privacy, as well as enabling hate groups. That allowed YouTube's missteps to go by without serious repercussions for the firm. "Thank God for Facebook" became a popular expression in the company's hallways.

But since last year YouTube itself has come under fire for providing an outlet for hateful figures from the alt-right and for promoting all sorts of conspiracy nuts with its recommendations, including flat Earthers and anti-vaxxers. In February paedophiles were found swapping notes in the comments section of children's videos, pointing out parts they liked. YouTube has now disabled comments on most videos that feature children. On May 1st YouTube (and Facebook) were also accused of allowing scenes of atrocities committed in Libya's civil war to circulate unchecked.

As a result, criticism of YouTube has intensified. Like Facebook and Twitter, it is accused of merely reacting when specific problems are exposed by the media or activists, but not before its algorithm has served up offending content millions of times. These scandals, say detractors like Guillaume Chaslot, a former Googler who worked on YouTube's algorithm, are the bitter fruits of the site's "manipulative design". An algorithm and user interface engineered to maximise "watch time" keeps users on the site in part by serving them progressively more extreme videos on whatever subject they happen upon—a "rabbit hole" that can lead those curious about a global tragedy into conspiracy theories or rants by white nationalists. A senior executive said in 2017 that recommendations drive 70% of the site's viewing.



The site's engagement-driven model in turn rewards those who provide more outrageous content. Users lap it up with gusto, training the algorithms to serve more of it, and so on. In April a story on Bloomberg, a news service, alleged that some executives discouraged taking into account such risks in the pursuit of a billion hours of user time a day—a goal set in 2012 which Ms Wojcicki embraced, after she became CEO in 2014, as a "north star" for the company and which it achieved in 2016. The site's engineers have tweaked the algorithm, based in part on user surveys, to account for "satisfaction" in watch time. But the goal remains the same—to keep people on the site as long as possible and maximise profits.

Ad infinitum

YouTube's immense popularity makes the question of how best to moderate social-media platforms more urgent, and also more vexing. That is partly because of the view taken in Silicon Valley, inspired by America's right to free speech guaranteed by the First Amendment, that platforms should be open to all users to express themselves freely and that acting as a censor is invidious. With that as a starting point platforms have nevertheless regulated themselves, recognising that they would otherwise face repercussions for not acting responsibly. They began by setting guidelines for what could not be posted or shared—targeted hate speech, pornography and the like—and punished violators by cutting off ads, not recommending them and, as a last resort, banning them.

As governments and regulators around the world have started to question the platforms' power and reach, and advertisers have pulled back, the firms have gradually tightened their guidelines. But by doing so they have plunged deeper into thorny debates about censorship. Last year YouTube banned certain kinds of gun-demonstration videos. In January the platform said it would no longer recommend videos that misinform users in harmful ways, like certain conspiracy theories and quack medical cures. It also banned videos of dangerous pranks, some of which have caused children to hurt themselves. On April 29th Sundar Pichai, boss of Google, declared, in an earnings announcement that disappointed investors, that "YouTube's top priority is responsibility". He said there would be more changes in the coming weeks.

Governments meanwhile are taking direct action to curb content that they deem inappropriate. On April 21st, after bombings in Sri Lanka killed 250 people, its gov-

ernment took the draconian step of temporarily banning social-media sites, including YouTube, to stop what it called "false news reports". After the Christchurch massacre, Australia passed a hastily written law requiring platforms to take down "abhorrent violence material" and to do so "expeditiously". Even in America, where social media has been largely unregulated, members of Congress are drafting measures that would give significant powers of oversight to the Federal Trade Commission and restrict how online platforms supply content to children, an area where YouTube is especially vulnerable.

Ms Wojcicki says she needs no persuading to take further action against unsavoury material. Yet YouTube does not plan to rethink the fundamental tenets that it should be open to free expression, that people around the world should have the right to upload and view content instantly (and live), and that recommendation algorithms are an appropriate way to identify and serve up content. What is needed, she says, is a thoughtful tightening of restrictions, guided by consultation with experts, that can be enforced consistently across YouTube's vast array of content, backed by the power of artificial intelligence.

Video nasties

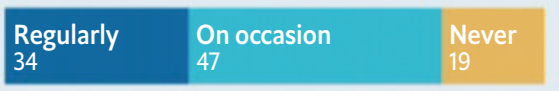
YouTube's record thus far does not inspire much confidence. Children's programming, one of the most popular sorts of content, is a case in point. Parents routinely use their iPads or smartphones as baby-sitters, putting them in front of children and letting YouTube's autoplay function recommend and play videos (see chart 3). Children are served up nursery rhymes and Disney, but sometimes also inappropriate content and infomercials.

YouTube executives say that if parents let their children watch videos unsupervised, it should be on YouTube Kids, a separate platform created in 2015. But in reality most children watch the main site and are exposed to the same "manipulative design" as their 40-year-old uncles. Some children's advocates are furious because they consider this an easy fix. They argue that the site's algorithm knows when children are using it and could be programmed to switch off autoplay and tightly curate content. When pressed on the subject, executives insist that the site is not meant for children under 13 years old without adult supervision.

YouTube has acted more decisively in other circumstances. Its crack down on terrorist-recruitment and -propaganda videos in early 2017 used machine learning and newly hired specialists. There was an obvious incentive to do it. In what became known as "Adpocalypse", big firms fled after learning that some of their ads were running with these videos, essentially monetising terrorist groups. There have been a couple of sequels to Adpocalypse, both related to children's content, and both first uncovered by outsiders. This adds to the impression that YouTube lacks a sense of urgency in identifying its problems, and responds most rapidly when advertisers are aggrieved.

Modern parenting 3

United States, parents who say they let their children* watch videos on YouTube
2018, % polled†

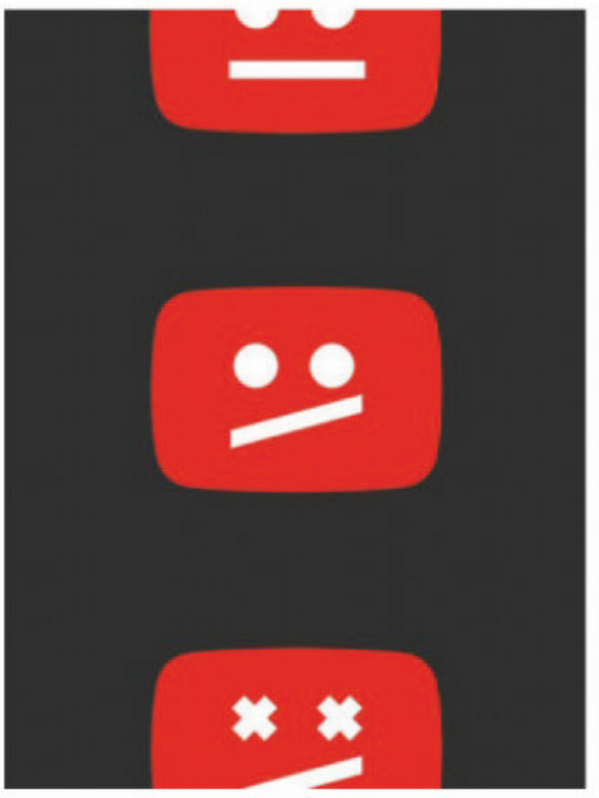


Source: Pew Research Centre

*Aged 11 or under
†May 29th-June 11th 2018

Ms Wojcicki disputes this, saying she began to recognise the increasing risks of abuse of the platform in 2016, as it became clear more people were using YouTube for news, information and commentary on current events. She says that was when she started to focus on "responsibility". In 2017, as a result of Adpocalypse, she began expanding the firm's staff and contractors focused on content issues; they now number more than 10,000, most of them content reviewers. Chris Libertelli, the global head of content policy, says that Ms Wojcicki and Neal Mohan, the chief product officer, have told him there are no "sacred cows" in deciding what content should be limited, demonetised or banned. Ms Wojcicki says that with wiser and tighter content policies, and the company's technology and resources, she and YouTube can solve the problems with toxic content.

This rhetoric will sound familiar to anyone who has heard Mark Zuckerberg, who built a reputation for cutting corners in the pursuit of global dominance, when he talks about the challenges confronting Facebook (see Business section). His apologies for Facebook's breaches of trust, and his promises to do better, have rung hollow. Jack Dorsey, boss of Twitter, has also been excoriated for doing too little to control abusive trolls and hate speech.



Ms Wojcicki, in contrast, strikes even some critics as the "good CEO" of the social-media giants, the one with a soul. She sounds utterly convincing when she talks about trying to make YouTube a force for good and seems more sincere than Mr Zuckerberg when it comes to minimising the harm her company causes. But even Mr Zuckerberg has conceded that Facebook needs more government regulation.

Everything in moderation

While the need for regulation might be clear, the details of what should be regulated, and how, are messy and controversial. Few free-speech advocates, even in Silicon Valley, are zealous enough to want to permit beheading videos from Islamic State or the live-streaming of massacres. Yet most of the questions about content moderation that YouTube wrestles with are much less clear-cut. YouTube appears to be weighing whether to ban white nationalists, for example. If it does so, should the site also ban commentators who routinely engage in more subtle conspiracy theories meant to incite hatred? Should it ban popular personalities who invite banned figures to "debate" with them as guests? Ms Wojcicki is conscious of the slippery slope platforms are on, and fears being criticised for censorship and bias.

Another important question will be how to go about enforcing restrictions. When you serve a billion hours of video a day the number of hard calls and "edge cases", those that are hard to categorise, is enormous. The tech firms hope that AI will be up to the job. History is not reassuring. AI has been trained for straightforward tasks like spotting copyright violations. But even with low error rates the volume of mistakes at scale remains immense. An AI capable of reliably deciding what counts as harassment, let alone "fake news", is a pipe dream. The big platforms already employ thousands of human moderators. They will have to hire thousands more.

Given the complexities, wise governments will proceed deliberately. They should seek data from platforms to help researchers identify potential harms to users. Regulations should acknowledge that perfection is impossible and that mistakes are inevitable. Firms must invest more in identifying harmful content when it is uploaded so that it can be kept off the platform and—when that fails—hunt for it and remove it as quickly as possible. With the great power wielded by YouTube and other social-media platforms comes a duty to ensure it is used responsibly. ■

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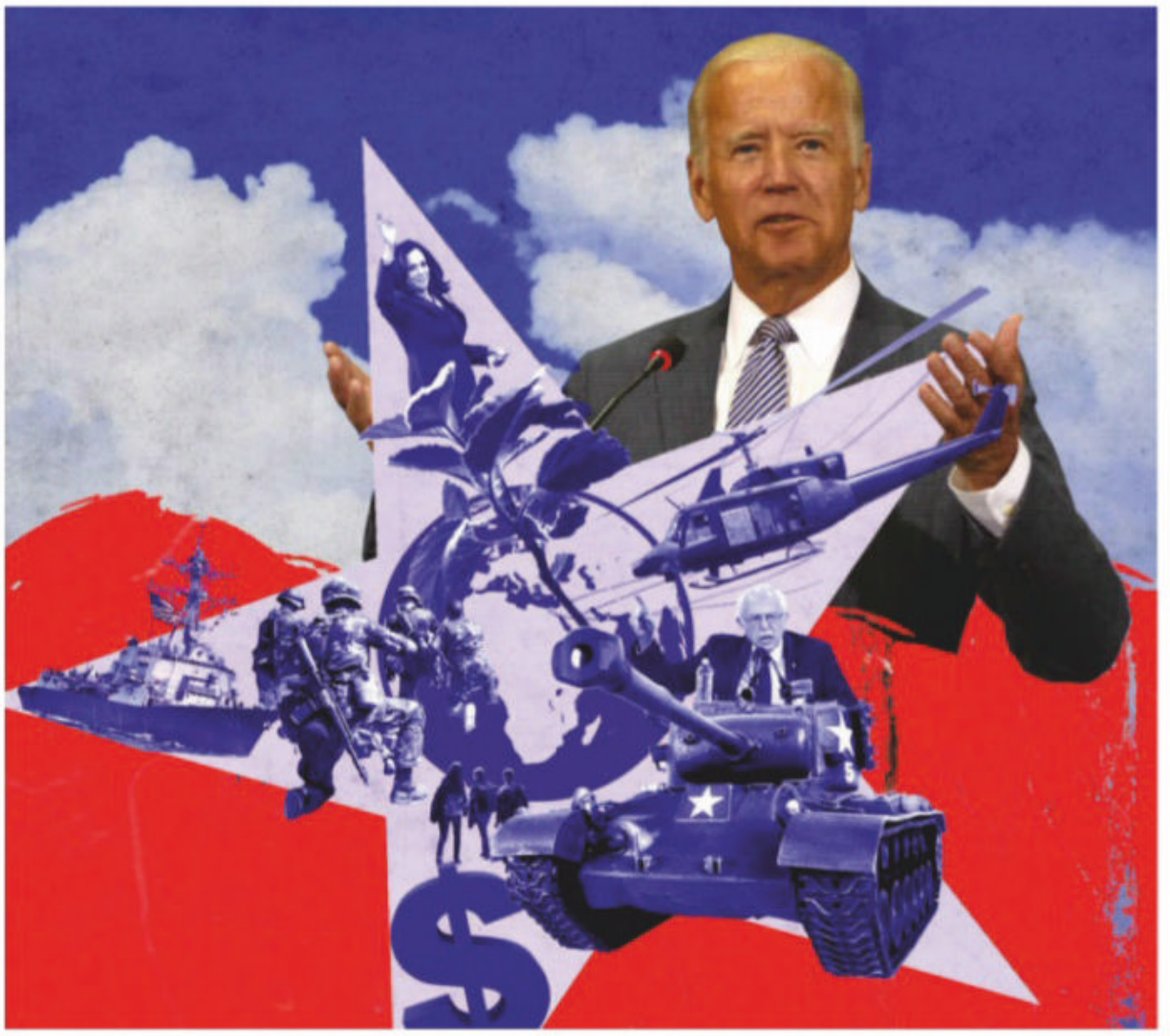

Democrats and foreign policy

There's something happening here

Many Democrats dream of getting back to business as usual in world affairs. A few have other ideas

"THIS TOO shall pass," Joe Biden told America's allies at the Munich Security Conference in February. "We will be back." The applause he received reflects a longing to return to a world order that existed before President Donald Trump starting swinging his wrecking ball. Now that Mr Biden, vice-president under Barack Obama for eight years, has entered the race to challenge Mr Trump in 2020, the contest has acquired a foreign-policy heavyweight who embodies the pre-Trump era.

But would a future Democratic administration simply turn the clock back? In the crowded field of Democratic candidates, apart from Mr Biden, only Senators Bernie Sanders and Elizabeth Warren have so far made serious forays into foreign policy. Still, those efforts, and stirrings of debate among activists, point to the potential for a future American foreign policy that could look very different not just from that of the current administration but also from the consensus that prevailed before.

On the surface the thrust of the Democrats' approach is simple: reverse much of what Mr Trump has done. Jake Sullivan, who was an adviser to Hillary Clinton's 2016 campaign, talks of a "back to basics" dimension to Democrats on foreign policy: value alliances, stress diplomacy. "Compared with domestic policy," he says, "there is less focus on new ideas."

Democrats would take America back into the Paris agreement, pressing the world for a new level of ambition in carbon-cutting. They would rejoin the nuclear deal with Iran, though some may want to set conditions for lifting sanctions. They would reassure NATO allies of their wholehearted commitment. They would not reverse Mr Trump's more confrontational approach to China—there is now bipartisan agreement on the need to stand up to the rising superpower—but would aim to work in a more collaborative way with allies.

Mr Biden's candidacy will draw attention to the foreign-policy record of the Obama administration. Mr Biden did not always agree with his boss. He pressed for a more muscular pushback against Russia (including arming the Ukrainians), favoured a tougher approach to China, opposed the surge in Afghanistan and the intervention in Libya. But broadly he supported "95% of Mr Obama's policies", says a former foreign-policy adviser. As president, Mr Biden would be internationalist, experienced and familiar.

Yet there are rumbles of revisionism. In the party's mainstream Mr Sullivan and Ben Rhodes, another senior adviser in the Obama administration, have launched National Security Action, a ginger group to attack the Trump administration's "reckless policies" but also to search for fresh alternatives. A number of voices on the left are calling for a more radical rethink.

What it is ain't exactly clear

"Defending the rules of the road is fine, but it won't mobilise anyone," believes Kate Kizer, policy director at Win Without War, an advocacy group. Post-Trump, just getting back to business as usual is not good enough, she says; some on the left want to "reconceptualise how we see security". In a paper published last month by the Centre for a New American Security, a think-tank, she argues for a new American grand strategy, driven by values rather than military muscle and involving "a reorientation of national-security spending to prioritise human needs at home and abroad."

This fits with a broad critique of American policy after the collapse of the Soviet Union: that it overreached. Well-intentioned moves to spread democracy became ▸▸

counter-productive, involving the country in "forever wars" and doing enormous collateral damage. The strategy of preserving or extending American dominance around the world is "increasingly insolvent", concludes Peter Beinart, from City University of New York, writing in the *Atlantic*.

Support for greater restraint is gaining ground, according to Stephen Wertheim, a historian who teaches at Columbia University. But can the ideas of "the restrainers", as he calls them, move from the fringe to the mainstream? Three reasons suggest this might be more than mere wishful thinking on their part.

First, there are advocates for restraint on the right as well as on the left. Take the bill passed by Congress to end America's support for the Saudi-led war in Yemen. Mr Trump has vetoed the resolution, which was energetically championed by Democrats such as Ro Khanna in the House and Mr Sanders, along with Chris Murphy, in the Senate. But it got through the Senate because it also had support from several Republicans, including the bill's libertarian-leaning co-sponsor, Mike Lee from Utah.

Second, opinion polls suggest there is fertile ground for restrainers' ideas to flourish. A survey by the Eurasia Group Foundation found a big gap between the foreign-policy experts who espouse activism and the wider population favouring restraint. Polling by the Chicago Council on Global Affairs shows that millennials, born between 1981 and 1996 and now becoming the biggest cohort of voters, take a more modest view of America's role in the world than baby-boomers, born between 1946 and 1964. Only 26% of millennials favour increasing defence spending and 44% support maintaining superior military power worldwide; among boomers the figures are 41% and 64% respectively.

The third reason for supposing that the left's foreign-policy ideas might penetrate the Democratic mainstream is that something similar has already happened in other areas, such as "Medicare for all". "We need to stop siloing domestic and foreign policy," says Matt Duss, Mr Sanders's adviser on foreign affairs.

One promising avenue for this to happen is an attack on inequality and corruption. Both in America and abroad, Mr Sanders said in a well-crafted speech on foreign policy last October, "the struggle for democracy is bound up with the struggle against kleptocracy and corruption." Mrs Warren echoed the theme in an article in *Foreign Affairs*, urging aggressive promotion of transparency around the world.

Treating corruption as a strategic matter offers rich pickings for policy. The effort could begin at home with legislation to make it harder to launder money through shell companies and cash property deals, and with beefing up instruments like the Foreign Corrupt Practices Act. America would then be in a strong position to lead a fight against kleptocracy around the world. Identifying tools that can interrupt the corrupt flows of money that empower oligarchs, princes and China's state-owned enterprises could prove popular. The issue of corruption is unifying the world more than anything else, believes Tom Malinowski, a congressman who sits on the House foreign-affairs committee. Tackling it, he says, may be "one way America gets its mojo back after Trump."

Another favourite theme of those on the left is a desire to see greater democratisation of foreign policy-making itself, a domain seen as excessively controlled by an establishment clique, and above all by the president. That means in part strengthening congressional scrutiny, something that has begun to happen with Democratic control of the House. But it also means welcoming wider participation in policy debate. Elizabeth Beavers, associate policy director for Indivisible, which cultivates anti-Trump grassroots movements, suggests that "talking about democratising foreign policy is something where Democrats have a real opportunity."

There's a man with a gun over there

Grassroots pressure is a means towards the objective of ending wars. Congress has put down a marker with its Yemen bill. Ms Beavers now has her sights on the Authorisation for Use of Military Force (AUMF), put in place after the attacks of 2001 and used by successive presidents to facilitate interventions around the world. As with Yemen, Democrats will find allies among "restrainers" on the libertarian right.

Rows among Democrats are likely, for example, over military spending: radicals want to cut it, mainstreamers are more cautious. Policy towards the Middle East, and Israel in particular, could also prove divisive. Democrats are vulnerable to accusations by Mr Trump that they are soft on defence and woolly on protecting American interests. Republicans stubbornly outscore Democrats when it comes to public trust to protect national security.

Yet some Democrats are keen to challenge the assumption that strength has to be demonstrated by spending more on defence and a willingness to use military force. "We have an opportunity as a party to close the national-security gap," insists Senator Murphy. "We have to talk about our national-security vision."

So far, most of the Democratic presidential contenders prefer to talk about their domestic vision. Yet foreign policy "will creep up on the candidates," predicts Mr Wertheim. A full-blown debate on what a post-Trump foreign policy ought to look like would be healthy. It could also prove surprising. ■

Remembering Richard Lugar

The right side

WASHINGTON, DC

World peace does not win primaries

RICHARD LUGAR was not a colourful senator. One federal bureaucrat joked that Mr Lugar "maintained that childhood capability of walking into an empty room and blending right in." "Dick was looked upon as being one smart dude," said Rex Early, who ran one of Mr Lugar's campaigns. But "would I want to go fishing with him? Probably not." Deprived of potential fishing buddies, Mr Lugar had to settle for making the world safer.

He helped override Ronald Reagan's veto of a bill imposing hefty sanctions on apartheid-era South Africa. He bucked Reagan again by publicly stating that Ferdinand Marcos owed his 1986 re-election in the Philippines to fraud. Reagan initially backed Marcos, but soon withdrew support, leading to Marcos's exile. During Mr Lugar's second stint chairing the Senate Foreign Relations Committee he had doubts about the second Iraq war.

After the collapse of the Soviet Union, he and Sam Nunn, a centrist Democratic senator, wangled some funds from Congress to dismantle weapons of mass destruction. Nunn-Lugar, as the programme is known, funded the deactivation of thousands of weapons, as well as tens of thousands of tonnes of chemical agents. That was not enough to save him from his party: in 2012 he lost a primary to a Tea-Partying Republican. Mr Lugar's legacy, said Barack Obama when awarding him the Presidential Medal of Freedom in 2013, "is the thousands of missiles and bombers and submarines and warheads that no longer threaten us."

This disarming man

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Congressional subpoenas

An oversight

WASHINGTON, DC

Congress's ability to scrutinise the White House can easily be frustrated

In 1924 a Senate committee investigating the Teapot Dome bribery scandal issued a subpoena to Mal Daugherty, a bank president and brother of Harry Daugherty, who would soon resign as attorney-general. When Mal failed to appear the Senate dispatched its deputy sergeant-at-arms to Ohio to arrest him. Daugherty challenged his arrest, arguing that the Senate had exceeded its authority. The Supreme Court disagreed. Not only can Congress compel testimony essential to "a legislative function"; "it is to be presumed" that congressional investigations are intended "to aid [Congress] in legislating," and "it is not a valid objection to such investigation that it might disclose wrongdoing or crime by a public officer."

President Donald Trump has sued two banks to stop them complying with House subpoenas (see next story), and asked a federal court to block another to an accounting firm used by the Trump Organisation. He has vowed to fight one subpoena issued to Don McGahn, a former White House counsel, and has ordered an official who oversaw White House security clearances not to comply with another. More subpoenas may soon follow. The House Ways and Means Committee wants Mr Trump's tax returns, which he has declined to turn over to them. The House Judiciary Committee may find William Barr, Mr Trump's attorney-general, to be in contempt of Congress for ignoring a subpoena demanding the unredacted Mueller report.

As that example suggests, congressional subpoenas are not all-powerful. Various presidents have fought them for different reasons. The usual levers brought to bear against private citizens who ignore subpoenas—fines and imprisonment—are harder to use against executive-branch officials. And congressional oversight, says Andrew Wright, an associate counsel to Barack Obama who is now a partner with K&L Gates, a law firm, "is a quasi-political, quasi-legal process" that usually resists quick resolution. This does not mean that Mr Trump—who has said that "we're fighting all the subpoenas" because the House Democrats issuing them "aren't, like, impartial people"—can simply ignore them, merely that this fight may have a political rather than a legal resolution.

Congress can charge people who ignore subpoenas with contempt, which requires a majority vote in a single chamber. Enforcing that charge is trickier. The days of apprehension by the sergeant-at-arms followed by detention are over; that power has not been used since 1935, when a Hoover administration official was held at the Willard hotel. Contempt of Congress has been a federal crime since 1857, but Mr Barr is unlikely to approve prosecuting either his boss or anyone who was following his boss's orders, including himself.

We have ways of making you talk

That leaves civil contempt as a possible legal avenue. Congress can ask a federal court to compel obedience to a subpoena. This can take a while. In October 2011 Eric Holder, Barack Obama's attorney-general, received a congressional subpoena. Mr Obama tried to block it by declaring executive privilege, in June 2012. A court rejected Mr Obama's blanket claim of privilege, but not until January 2016.

The current standoff may finish faster, for two reasons. First, many of the justiciability concerns that took courts time to work through during the Obama and Bush administrations have been resolved. And second, as Stephen Vladeck, a law professor at the University of Texas, explains, Mr Trump's statement of blanket refusal "suggests that case-specific objections are post-hoc rationalisations", which courts may be inclined to swiftly reject.

But legal battles still take some time to adjudicate. That may annoy Democrats but suit Mr Trump perfectly. His supporters prize his pugnacity, and he prefers table-pounding defiance to the intricacies of legal compromise. Also, political salience fades over time. He may reckon that if he loses in court, the public will have moved on to the next outrage. And congressional subpoenas expire when the current Congress does, making a successful play for time a victory, of sorts. ■

All the president's banks

Sue you

FRANKFURT

The president sues Deutsche Bank and Capital One

In one respect President Donald Trump, who at times likes to claim Swedish ancestry, is true to his German origins. Like most German family companies, his business has a *Hausbank*, a go-to bank with whom he has a long-standing relationship. But unlike those companies, he did not choose his *Hausbank* because of geographical proximity or family tradition. He did business with Deutsche Bank because no other big bank would lend him millions after several of his businesses went bankrupt in the 1990s. Germany's biggest bank was so keen to be a prominent player in New York property that it ignored multiple red flags about the financial health of Mr Trump's empire. It reportedly lent him $2bn over nearly two decades.

The once-cordial relationship between Mr Trump and Deutsche has soured. When he became a serious contender for the presidency in 2016 Deutsche stopped lending him money (he still owes the bank tens of millions). Deutsche has started to hand over financial documents related to Mr Trump's business dealings to Letitia James, New York's attorney-general, who is investigating the president. Since January the bank's lawyers have been co-operating with investigators from the Democratic-controlled House Intelligence and Financial Services committees, who are probing the president's financial affairs. After the committees served a subpoena on April 15th, the bank signalled it would share decades of financial records with them by May 6th unless a court intervened. On April 29th Mr Trump sued Deutsche (and Capital One, an American bank) in a federal court in New York to stop the banks from complying with the subpoenas.

The lawsuit asks the court to declare the committees' subpoenas invalid. It claims they were issued to "harass" Mr Trump. "No grounds exist to establish any purpose other than a political one," says the suit. Why is Mr Trump so keen to prevent records held by his primary lender from coming to light? Because Deutsche's documents include internal company memos, estimates of the value of Mr Trump's assets and parts of his personal and business-tax returns, which the Treasury Department (which oversees the IRS) has been reluctant to divulge.

Deutsche Bank says the president's lawsuit reflects a dispute between Mr Trump and congressional committees and that the bank is not accused of any wrongdoing. ▸▸

"We remain committed to providing appropriate information to all authorised investigations," says the bank. Adam Schiff, chair of the House Intelligence Committee, praised Deutsche for its assiduous co-operation with congressional investigators. The ailing lender is trying to salvage its reputation. It hopes that, by providing more transparency, it will help to end unfounded speculation that it helped to channel Russian money to Mr Trump. Deutsche also vows to "abide by a court order" regarding the congressional investigation.

The president's suit seems unlikely to succeed. Courts tend to stay away from questioning lawmakers' motives for investigations. And the executive-privilege defence that may fend off other subpoenas does not apply to things the president did in his private life before he was elected. This suggests that the two committees should get some fresh reading material before too long. ■

Conviction-review units

Case dismissed

BROOKLYN

The job of a new breed of prosecutors is to get people out of jail

BLADIMIL ARROYO was sentenced to 20 years-to-life in a New York prison for murder, attempted robbery and assault. In February this year he was let out thanks to the efforts of the local government that had put him away 18 years ago. His conviction was overturned after the Brooklyn district attorney's conviction review unit (CRU) found that he had been deprived of a fair trial, in part because not all of the detectives' notes had been shared with the defence. Mr Arroyo was the 25th person to have his conviction quashed by Brooklyn's district attorney (DA) since 2014.

That year Ken Thompson, a previous DA, expanded the unit, which until then had only investigated troublesome convictions on an ad-hoc basis. Its first task was to investigate 100 potentially wrongful convictions in cases mostly related to a particular disgraced detective. The unit, the largest in the country, has since become a model for other jurisdictions. With a budget of $1m, the team retraces steps, tracks down witnesses, including those in other states or behind bars, and sorts through mounds of evidence. Seasoned lawyers are assigned to the unit. The findings are then considered by an independent review panel made of volunteer lawyers not affiliated with the DA. Blame is not necessarily assigned, but the details of how the authorities failed the defendant are made public.

In Mr Arroyo's case, Eric Gonzalez, Brooklyn's current DA, published a 43-page report detailing all the missteps and problems. The report also spells out lessons learnt. Overturning wrongful convictions has changed the DA's office procedures and training. An exoneration "makes everyone stop and pay attention and learn lessons", says Mr Gonzalez. Most of the overturned convictions have been for murders, but burglaries and rape convictions have also been rubbed out. Mr Gonzalez says that his lawyers' "obligation as prosecutors doesn't end when we get a guilty plea or when we get a guilty verdict." Miriam Krinsky, a former prosecutor and head of Fair and Just Prosecution, a network for reform-minded district attorneys, says all this helps makes Brooklyn's CRU the gold standard.

More than 30 jurisdictions across the country have set up similar units. In fact they are becoming the norm in large urban district-attorney offices. According to the National Registry of Exonerations there were 58 exonerations in 2018 that can be attributed to CRUs. John Hollway, of the University of Pennsylvania's Quattrone Centre, says the culture has shifted from "why would you have one" to "why don't you have one?" In the past month two more states, Michigan and New Jersey, launched units. Gurbir Grewal, New Jersey's attorney-general, says the prosecutors are on board: "no one wants an innocent person behind bars." Mr Grewal has also created a statewide cold-case unit.

"We should have a criminal-justice system that promotes human dignity," says Brooklyn's Mr Gonzalez. It seems to be working: one exonerated man was so grateful to Brooklyn's CRU that he invited the team and Mr Gonzalez to his wedding. ■

Eric Gonzalez, devil's advocate

The National Rifle Association

Wayne's world

CHICAGO

Gunslingers as mudslingers

HOW SERIOUS is the mess at the National Rifle Association? Wayne LaPierre, who has led the outfit since 1991, said earlier this year that it might be forced to shut "forever" because of gun-shy banks and business owners. That might sound hyperbolic. After all, NRA propagandists routinely claim some bogeyman—communists, zombies, "violent anti-second-amendment extremists" or New York's governor—threaten NRA members and their constitutional rights. Scaremongering drums up the dues that pay its boss lavishly.

Yet this time the lobby seems most intent on self-harm. A clash of personalities is partly to blame. Its ceremonial president Oliver North (of Iran-Contra fame), said last week that a "clear crisis" besets the group. He then bungled an effort to topple Mr LaPierre. As recently as last week the NRA had gushed over Mr North as "a rock-solid purveyor of truth and defender of justice, relentless in the face of wrongful criticism." But that was before he reportedly told Mr LaPierre to quit or suffer a public letter about the organisation's leaders and financial practices. Mr LaPierre says he stared down the lieutenant-colonel, who has now been replaced as president.

That showdown took place in Indianapolis, where NRA members had flocked for their annual convention. Among the worried supporters was President Donald Trump, who tweeted that the lobby risks being destroyed if squabbling leaders fail to circle their wagons against a serious external threat. He meant a legal push by New York state (where the lobby has been registered since 1871), whose attorney-general, Letitia James, is dishing out subpoenas while asking if there was financial malpractice at the NRA. No friend of the lobby, she once called it a "terrorist" group.

At stake is whether the legal case, if it goes against the NRA, eventually leads the gun group to lose its designation as a charity and thus its tax-free status. Without those advantages the NRA, which is secretive about its finances but seems to be in ever more serious debt, could go broke. No one is sure whether it really has the 5m members it claims. Survey data suggest that the share of Americans who own guns is declining, although people who do possess them own more than they used to. But one measure of the NRA's straitened condition is that, in the mid-terms, gun-control groups outspent it in an election for the ▸▸

first time. That was quite a turnaround: the gun lobby dished up $30m to help get Mr Trump elected in 2016.

The greatest problem for the lobby may thus prove to be financial. An investigation by the *Trace*, which studies the firearms industry, and the *New Yorker* recently provided evidence of questionable practices involving NRA bosses and Ackerman McQueen, an advertising agency in Oklahoma. The firm takes a hefty $40m a year from the NRA for marketing and more, and is behind some big and costly efforts to expand its media presence, for example with a TV channel. The NRA's recent decision to sue its agency seems to have triggered Mr North's putsch against Mr LaPierre.

No wonder that opponents of the NRA sound gleeful over its mishaps. Andrew Cuomo, New York's governor, crowed that "the gig is up for the NRA because people now know the truth." As more members learn that the boss reportedly takes home $5m each year, their enthusiasm might wane. But don't write him off yet. In the 1990s Mr LaPierre made an enemy of a sitting Republican president, George H.W. Bush, and the NRA was said to be insolvent. He and the gun lobby bounced back from that. They could do so again. ■

Urban violence

Monrovia on Lake Michigan

CHICAGO

An anti-violence programme in Chicago applies lessons from war-torn Africa

"I SEE A van, suspicious as hell. I keep walking. They just pull up, get to shooting. I was just trying to get to my man's crib, four houses away. My mother say I died. I still got a bullet lodged in my liver right now. That shit was painful; worst feeling ever. I died and they brought me back."

Damien, a slender man in sports clothes and red running shoes, knows dangers lurk in some neighbourhoods. In the basement of a YMCA on Chicago's South Side, he tells of being thrown out of home when he was 14. He has since been shot, pistol-whipped and imprisoned. Several friends have been killed, including two in a span of just eight days. "I know it's time to do something different, I just want to see my daughter grow up", he says.

Another man, Devon, nods and agrees. He describes living amid, and participating in, frequent gun violence. "I been shaking. I'm shaking now," he says, a few days after a friend was killed, in December. He also recalls being present when a stray round killed a young girl. Released from prison not long before, after serving a juvenile "life" term for murder, he sheds tears and talks of his anguish over whether to seek violent revenge.

He also describes exhausting efforts to evade the rivals who hunt him. He rises at 3am, walks long and circuitous routes, avoids public transport (many targeted killings occur at bus stops), or remains locked indoors. Devon, a physically imposing man with close-cropped hair and a blue hoodie, says he is changing. "I came too far, I did too much. You want to wake up in peace, but you going to sleep with it [a gun] on you. What the fuck, two guns. You went to bed. Now you going to wake up."

We've got a 1 in 5 chance, fellas

Devon mentions behaviour today unthinkable for him a few years ago. He says he showed restraint shortly before another interview, in February, when unknown men robbed him as he cashed a cheque—"everything went too fast; there's a gun over here, gun over here." Rather than react violently, he says he use a method called "control, alt, delete" (CAD) to control his rage. "It saved my life. It probably saved theirs too." He is proud of walking away. "I'm just saving lives".

Both men talk of growing into different people. Damien, having said, "It ain't nothing to do it", after describing his readiness to shoot people before, adds, "I've been controlling myself lately". The two are among 700 participants in an 18-month, $25m experimental programme, called READI, which tries to change individuals' behaviour in the most violent districts of Chicago. It is one response—funded by Heartland Alliance, a big non-profit group, and philanthropists—to a surge in violence in 2016, when Chicago saw 762 murders. Since big, hierarchical gangs fragmented into hundreds of tiny "cliques" of hotheaded and heavily armed youngsters, the city's murder rate has been stubbornly high. The police force is unable to solve 80% of murders and 95% of all shootings.

READI might make a difference. It mixes job training with months of intense efforts to teach habits of restraint. The men are supposed to become more employable and better able to control tempers. It is also led by a figure, Eddie Bocanegra, who has credibility among participants, having himself served 14 years in prison for a gang killing.

Unusually, the scheme applies lessons from a study in Liberia, in west Africa, after years of civil war left young, homeless men involved in crime, especially in Monrovia, the capital. Researchers there recruited 999 "hard-core street youth", picking individuals deeply involved in crime. Some got grants to start a business, others a few weeks of therapy to change impulsive behaviour and teach basic skills for legal ways to make a living.

Those who got both grants and therapy turned out to be much less likely to be involved in crime a year later, says Chris Blattman, a researcher at the University of Chicago who worked in Liberia. He now helps to advise the READI programme, which began in 2017 and ends its first phase this year. As in Liberia, the programme targets the hardest cases. An algorithm developed by the city's Crime Lab trawled police data for individuals' arrest history, age, address, social networks, and for those who already know victims of violence—all indicators of who is likeliest to pull a trigger next. Mr Bocanegra says 91% of participants have been arrested before, on average 17 times each. The focus makes sense: one study found 70% of non-fatal shootings and 46% of fatal ones occur inside a network of just 6% of city residents.

READI will be judged on whether it cuts, not ends, such violence. So far the anecdotes are encouraging, but at least five of its participants have been killed, including one man on April 28th. Mr Blattman says the first measure of success will be whether more participants survive than members who are monitored in a control group in the same neighbourhoods. He and Mr Bocanegra are cautious but hopeful. Devon is already convinced, because of the robbery that did not end in murder. "CAD worked. It worked. I was happy as hell." ■

Lexington | No sex please, we're millennials

Economic change and technological progress have provided an unexpected boon to social conservatism

To underline his theory that sexuality is a construct of human discourse, the philosopher Michel Foucault noted that people talk about sex a lot. "We convince ourselves that we have never said enough on the subject," he wrote in his (four-volume) "The History of Sexuality". "It is possible that where sex is concerned, the most long-winded, the most impatient of societies is our own." After a three-hour discussion of sex and dating with 30 students at Northwestern University, on the rainy shore of Lake Michigan, your columnist felt he knew why. Few fields of human behaviour—and none more important—are so hard to explain.

Lexington's visit was spurred by the latest evidence that young people in America—as in Japan and some other rich countries—are having much less sex. The portion of Americans aged 18 to 29 who claim to have had no sex for 12 months has more than doubled in a decade—to 23% last year. That is, counter-intuitively, despite the removal of many impediments to sex. Young Americans are less religious and more relaxed about sexual orientation than they have ever been. They are also readier to experiment, in part owing to the deluge of free porn they receive on smartphones. "You have access to the entire body of porn in your rucksacks!" marvelled Alexandra Solomon, a clinical psychologist who runs Northwestern's renowned "Marriage 101" course, in a subsequent lecture.

Her comment elicited hardly any amusement. Indeed, the most striking thing about the students to Lexington—in effect, a visitor from the 1990s—was how frank and unembarrassable they seemed. They were, despite their shared interest in studying sex at an elite university, a diverse crowd: straight and gay, black and white, outgoing and reserved. About half were from religious families; a couple from migrant ones. Yet all seemed willing to discuss their sexual likes, dislikes and anxieties, including use of porn, body shyness, and the possible role of both in fuelling a millennial obsession with pubic grooming. To the extent that they represented their generation, diffidence about sex is not the problem.

The biggest reasons for the "sex recession" are probably straightforward. Married couples have more sex than singletons and Americans are marrying later. Economic duress is another dampener: it is no coincidence that the slowdown in young Americans' sex lives began during the great recession. Partly as a result of it, many of them still live with their parents. And the low esteem that poor prospects engender, as the experience of many Japanese tragically attests, can also cause mass celibacy.

The recent vigour of America's economy might make this seem less relevant—especially among high-achievers like the Northwestern students. Yet it was striking how many mentioned the 2008 recession, including their memories of the distress it caused their parents, as a reason to prioritise their careers, even to the extent of forgoing romance entirely. "We're not looking to get married any more, so what are we doing?" asked one woman.

But that still does not seem to explain the persistence of America's sex recession, or its most extreme feature: how concentrated it is among men. Since 2008 there has been almost a threefold rise in the share of men under the age of 30 who claim to be having no sex. At the same time, the portion of sexless women increased by only 8%. A range of possible explanations for the disparity has been suggested, and the students seemed to corroborate several of them. Many felt men's social skills had been especially eroded by over-reliance on technology. Overindulgence in porn meanwhile offered them an escape route from reality. Yet the most compelling answer, because it contains elements of all that and more, may be signalled by young people's increasing reluctance to date.

This is often blamed on the "hook-up culture" of college campuses. Yet casual sex and dating coexisted in the 1990s. It is also easy to exaggerate—now as then—how many people are hooking up. Half the Northwestern students said they rarely or never did. Yet they also rattled off reasons not to date which, among the men, who would traditionally take the lead in such encounters, included uncertainty about how they were even managed. Many considered the prospect of chatting someone up in a bar not merely daunting but possibly offensive. "Revealing that your intention in talking to someone is sexual? That's hairy," shuddered one man.

A wrangle for the ring

The problem seems to be a profound anxiety about what the other party to a potential coupling might want and expect. The heavy stress that all the students laid on the importance of mutually agreeing the basis of any relationship, at every stage of its development, is probably both a cause and effect of this. Dating apps, which around half the students had used, can mitigate it at best. It is likely a response to increased female empowerment, the major change in sexual politics, and therefore further exacerbated by men's dread of a #MeToo-style harassment charge. In short, young American men with rather poor interpersonal skills currently face a historically confusing mating-game, even as they worry a lot about their careers. No wonder many are opting to stick to their video games.

This is painful. But it does at least suggest that sexual relations are not so much hitting the skids in America as in flux. The forces that govern sexual behaviour are dynamic. Who could have predicted a little over a decade ago, when George W. Bush was splurging on abstinence schemes, that America would soon see a spike in celibacy fuelled by economics, technology, female empowerment and perhaps even casual sex? And that cocktail of circumstances will not last. The economy is strong. The currents in popular culture will shift. And once young Americans become more used to their more equal gender relations, they might re-embrace the degree of ambiguity and risk that romance entails. That is the hope, at least. Meanwhile, they might try putting down their phones, talking face to face a bit more, and even flirting. ■

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Venezuela

A failed uprising

CARACAS AND WASHINGTON, DC

It leaves many unanswered questions about the Trump administration's plan for regime change

On May 1st, the day after the opposition announced a final push to oust Nicolás Maduro, Venezuela's strongman was determined to show he was back in control. He used the method his regime knows best: swift, forceful repression of protests. Juan Guaidó, recognised by most Western and Latin American democracies as the country's interim president, had promised the "biggest march in Venezuelan history" to prise open the cracks in the regime. It didn't happen. When protesters approached La Carlota, an air base in eastern Caracas, they were dispersed by a rain of tear-gas canisters the moment they began aiming stones at the conscripts inside. Two people died in demonstrations and dozens were injured.

Just a day earlier the opposition had hoped that its long struggle against Mr Maduro's dictatorship was on the brink of success. But the collapse of what briefly looked like a co-ordinated uprising with military backing represents a big setback for the opposition and its backers in the Trump administration. At the same time, these events displayed Mr Maduro's weakness as well as his strength.

At dawn on April 30th Mr Guaidó had appeared outside La Carlota with a small group of national guardsmen to announce "Operation Liberty". By his side stood Leopoldo López, the country's most famous political prisoner, who had been freed from house arrest by his guards from SEBIN, the feared intelligence service. For several hours, rumours flew that the army had at last abandoned a hated regime and backed a transition to democracy. Then, one by one, General Vladimir Padrino, the defence minister, and other senior military figures posted on social media statements of loyalty to Mr Maduro and denunciations of what one called "a small coup".

In the evening of April 30th Mr Maduro at last appeared on television, flanked by the high command. He vowed to pursue all of those behind the uprising. "Sooner, rather than later, they will go to prison to pay for their treason and crimes," he said later. The general in charge of SEBIN, Christopher Figuera, was apparently sacked. Mr López and his family took refuge in the Spanish ambassador's residence, while two dozen rebel national guardsmen were reported to be in the Brazilian embassy.

Mr Maduro, who started a second term in January after winning a sham election, has plunged the country into economic misery. But despite discontent, and occasional defections of small groups of soldiers, the regime has managed to keep the loyalty of the armed forces. American officials stress the role of Cuban intelligence surveillance in quashing military dissent. That is certainly important in preventing moves by individual commanders.

But there is little doubt that the army could act as a body to dump Mr Maduro if the high command wanted. That was the supposition on which the opposition plan was based. Whether the commanders have sufficient incentives to do so is another matter. Mr Guaidó has offered them an amnesty. But some are too deeply implicated in criminal activities to qualify. To act, the armed forces need to be sure that their corporate interests will be protected. That probably means giving them a role in a transitional government of national unity, which is anathema to many hardliners in the opposition whose voices are heard in the White House.

American officials claimed that the attempted uprising followed two months of conversations between Mr Guaidó's people and senior figures in the regime. John Bolton, the national security adviser, said that the plan was that Maikel Moreno, the head of Venezuela's supreme court, which has up till now acted as a regime puppet, was to ▸▸

declare Mr Maduro's national constituent assembly illegitimate. This would have given legal cover to General Padrino and the high command to declare their obedience to the opposition-controlled national assembly, of which Mr Guaidó is the speaker. "For reasons that are still not clear, that didn't go forward," Mr Bolton said. He blamed Russian interference for dissuading Mr Maduro from fleeing to Cuba.

Another explanation comes from Venezuelan military sources cited in *El Confidencial*, a Spanish digital newspaper. It holds that this plan was due to be put into effect on May 2nd. Perhaps because they thought Mr Maduro and his Cuban spies had discovered the plot, Mr Guaidó and Mr López jumped the gun. That prompted the high command to back off. According to a former American official, that may have been in part because of the presence of Mr López, whom they especially mistrust.

It is not the first time that the opposition has seemingly overplayed its hand. Some sections of it have long believed that pressure from the streets is sufficient to overthrow Mr Maduro. It has not been. "When the opposition feels it has an advantage it always goes for the kill shot and fails," says the former American official.

General Figuera, the former intelligence chief, seemed to confirm Mr Bolton's accounts of military disloyalty. A letter written to Mr Maduro and attributed to him said: "I discovered that many people you trust are negotiating behind your back." Whether the dictator can still trust General Padrino, Mr Moreno and the others must now be open to doubt—a doubt the Americans are doing their best to inculcate. Assuming, that is, that the plot itself was not a Cuban-run intelligence operation to force the opposition's hand, as some speculate.

For now, the biggest blow is indeed to the momentum of the opposition. More than three months after Mr Guaidó proclaimed himself interim president, with the backing of the United States and over 50 other countries, the regime has not collapsed. In February Mr Guaidó's attempt to bring in humanitarian aid from Colombia, watched by the world's media, failed.

It is widely asserted in Washington that the White House officials who have led the Venezuela effort believed that the army would switch sides in a matter of days. The longer the stand-off continues, the more problematic the strategy of President Donald Trump's administration becomes.

Mr Maduro's government and that of Hugo Chávez before him have brought about Venezuela's economic collapse. But from now on, American sanctions against Venezuelan oil and finance will play a role in aggravating the country's humanitarian crisis and the exodus of migrants to neighbouring countries, a point officials in Washington are sensitive about. Unless the stand-off is resolved soon, there is a risk that any transitional government will inherit a country with the living conditions of Haiti.

What is not in doubt is the determination of the Trump administration to get rid of Mr Maduro's regime. Having joined this battle, it is one they can ill afford to lose. American diplomacy was initially deft in marshalling a broad coalition behind Mr Guaidó. Optimists think this week showed that it is only a matter of time before the regime fragments. "If Guaidó is not failing, he is winning," says William Brownfield, a former American ambassador to Venezuela. Mr Guaidó has now called for strikes. But the counter-argument is also strong: Mr Maduro showed his staying power and will now crack down.

The administration may soon face a choice: make good on Mr Trump's threats of military action, or hold its nose while Europeans and Latin Americans negotiate with the regime. On May 1st America's secretary of state, Mike Pompeo, repeated that military action is possible. Some White House officials are reported to be impatient for this, though the president himself may not be so enthusiastic. But military action in a large country with many guns in civilian hands would be highly risky. It has no support among the Latin American governments that back Mr Guaidó.

For the many who want change in Venezuela, this week was intensely frustrating. The strategy of trying to win over the military high command was the correct one. Sadly, its execution was tragicomic. ■

Education in Chile

Picking pupils

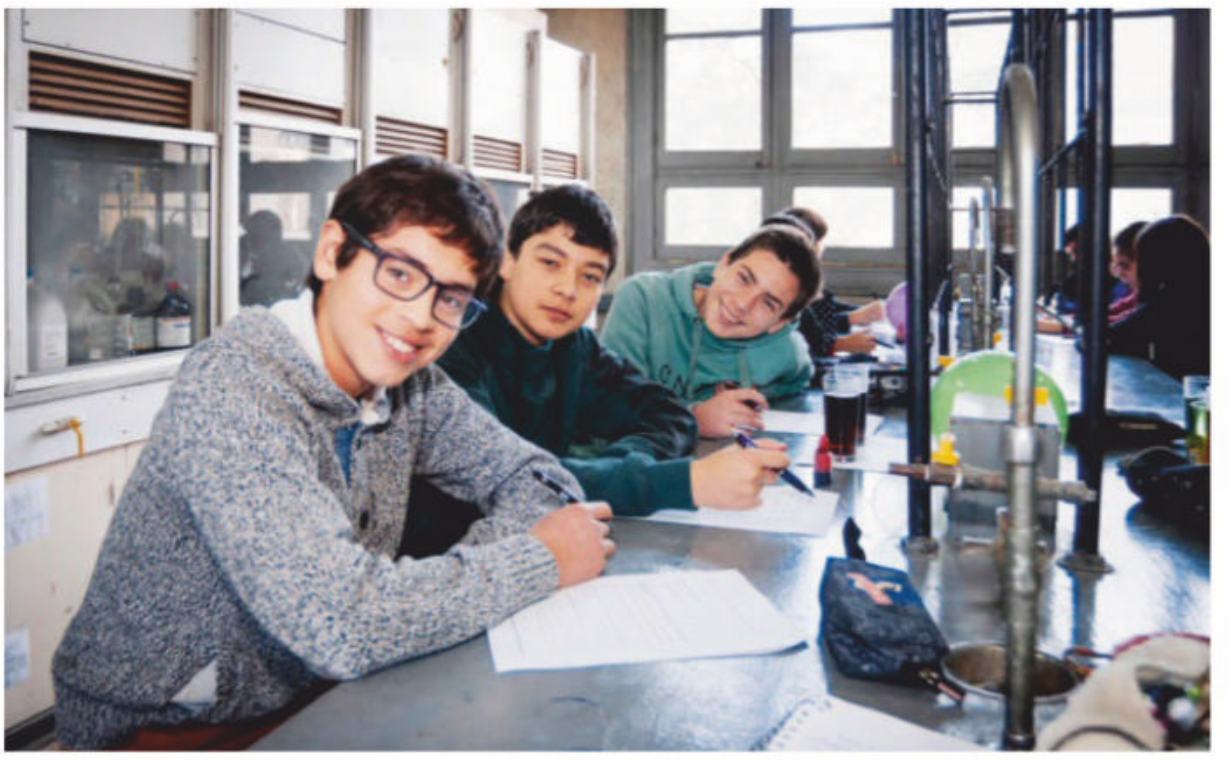
SANTIAGO

The government wants to bring back selective grammar schools

THE BUILDING is grimy, with the odd broken window pane. Despite its scruffy appearance the Instituto Nacional, an inner-city secondary school for boys, is Chile's most prestigious high school. Founded in 1813, it has educated 17 presidents and dozens of prominent artists and scientists. It helps bright children from poor families enter the best universities. Many commute long distances to get to the school in central Santiago.

Its future, and that of a score of other "emblematic" schools (especially choosy grammar schools) is under threat. Policies brought in by the country's previous president, the left-leaning Michelle Bachelet, do not allow such schools to select more than 30% of their pupils on academic merit. The rule takes effect in Santiago this year. Fernando Soto, the Instituto Nacional's rector, says its "academic excellence" will be put in doubt "if children are admitted with no interest in studying". Sylvia Eyzaguirre, an education specialist at the liberal Centre for Public Studies, says that the law "is destroying selective state schools".

Sebastián Piñera, Chile's current centre-right president, wants to avoid that. He has ▸▸



Another experiment, another explosive reaction

introduced two bills that would partially undo Ms Bachelet's reforms. The first would allow some 300 high-achieving schools, including the emblematics, to select pupils on academic merit. Of those, half would have to come from hard-up families. The measure would apply to 10% of high schools. A second bill would allow all other non-private schools to choose 30% of pupils to suit their educational programmes, which may include goals other than academic achievement. This "fair admission" policy will reward merit and hard work, the government claims.

Academic elitism is a fraught subject in Chile. The school system is stratified. Graduates of the poshest schools, like The Grange, are as visible at the top of society as are Old Etonians in Britain. Two-thirds of private-school students who sit the university entrance exam get into one of the main universities. But just a third of those from state-supported independent schools, for which parents usually pay top-up fees, make the grade. For state-school students the success rate is just a fifth. In 2016, 18% of students admitted to the two best universities—Chile and Católica—came from state schools, which have 37% of enrolment. Of these, over half came from 19 emblematic schools. Run by local governments, they have been the main non-fee-paying route to good universities

Chileans on the left have long demanded more equality in education. Among the loudest agitators were pupils at emblematic schools, which hurt the schools themselves. Months-long occupations of school buildings since 2011 caused enrolment and performance to fall. Instituto Nacional lost its place among the 20 best schools, as measured by the performance of their students in university entrance exams. In 2018 it ranked 78th.

The pupils won, but at a further cost to their schools. Ms Bachelet imposed the cap on emblematic schools' ability to select based on merit as part of her quest to make the education system more equal. (She also vowed to raise standards.) Other reforms included eliminating selection for most other schools, phasing out top-up fees at independent ones and providing more money for poor pupils and teacher training. The early signs are that the new system is increasing socio-economic diversity within schools, says Ms Eyzaguirre.

But it has taken effect slowly. And parents are keener on selection than the reformers are. According to a recent poll by Cadem, 63% of Chileans are in favour of merit-based selection; 79% prefer it to "random" selection. Most Chileans are proud of emblematic schools.

This ought to help Mr Piñera bring back some selection, but he faces a fight. His coalition lacks a majority in congress. "It's difficult to create inclusion if you keep the practices underlying segregation," says Miguel Crispi, a deputy for the left-leaning Frente Amplio alliance, who advised Ms Bachelet on her education reforms. Legislators like him will probably doom Mr Piñera's plan to reintroduce an element of selection for all schools. Some have a soft spot for emblematic schools. This gives the bill aimed at the 300 high-performing schools a fighting chance. If it works, Instituto Nacional's glory days could return. ■

Brazilian funk

100% feminista

RIO DE JANEIRO

Female MCs are changing the genre

CAROLINA DE OLIVEIRA LOURENÇO first heard the word "feminism" in 2015 from friends who were taking Brazil's college entrance exam, on which a question about it appeared. She was 22, and a rising star in the world of *carioca* funk, throbbing syncopated dance music born in the favelas of Rio de Janeiro. A year later, MC Carol, as she is known, released a song called "100% Feminista". The lyrics describe her tough childhood: "I was five but I already understood/that a woman gets hit if she doesn't make food," she rapped. It was a hit. That did not stop nasty comments on social media about her appearance. "It's not just hard to be a woman singing funk," says MC Carol, who calls herself black and fat. "It's hard to be a woman, period."

Funk, which has roots in American hip hop, is performed mostly by men. Its critics say its lyrics promote misogyny, promiscuity and crime. In 2017 20,000 Brazilians signed a petition calling on congress to declare it—along with *bailes funk*, massive dances where the music is played at earsplitting volume—a public-health violation. (The legislature refused.) A particular target is *funk proibidão* (taboo funk), in which explicit lyrics both glorify and lament violence. *Funk ostentação* (ostentation funk), which celebrates money and fame, is especially popular in São Paulo.

MC Carol's mission, and that of other feminist *funkeiras*, is not to make the style less rude but to bring to it women's viewpoints. MC (a hip-hop title derived from "master of ceremonies") Carol started out singing *putaria*, a subgenre of *proibidão* that's about sex. Some songs by women are frankly feminist. In the music video for "Não Sou Obrigada" ("I Don't Have To"), which appears on Spotify's Global Viral 50 list, MC Pocahontas chides her dopey boyfriend for bossing her around. In "Cai de Boca" ("Drop Your Mouth"), a *putaria* hit from 2018, MC Rebecca sings about men performing oral sex on women. A hair stylist and samba dancer from the favela Morro São João, she says the song is a call for sexual liberation in a world where "women are still seen as submissive".

Female funk performers and their messages bring new life to the subgenre "conscientious funk", says Andressa Oliveira of Liga do Funk, a group in São Paulo that trains artists. It draws some of its energy from opposition to Brazil's president, Jair Bolsonaro, who has aggressively conservative views on social issues. MC Rebecca, who came out as bisexual on Twitter, wrapped herself in a rainbow flag in a music video. Women are listening. ONErpm, a company that represents artists in negotiations with digital platforms, looked at data from YouTube for around 130 funk channels. It found that women are now 49.5% of the audience, up from 32% in 2014.

Female stars are giving Brazilian funk global appeal. Larissa Machado, who calls herself Anitta, started out in a church choir, made her name in Rio's funk scene and now has 37m Instagram followers, many of them abroad. The video for "Vai Malandra" (roughly, "Go Hustler"), which was filmed in a Rio favela, has been viewed 352m times on YouTube. Anitta refused to airbrush out the cellulite on her thighs, delighting women. "Vai Malandra" is the first Portuguese-language song to reach Spotify's Global Top 50 list. That brought a singing gig with Madonna.

Kamilla Fialho, whose marketing company, K2L, helped shape Anitta's early career, compares her success to that of Beyoncé and Rihanna, who are politically active and flaunt their sexual empowerment. Her company is now coaching MC Rebecca by providing English lessons, among other things. Ms Fialho is not encouraging the young *funkeira* to stay away from the subject of sex. "If you want polite music, listen to classical," she says. ■

Elections in India

Missiles maketh the man

DELHI

Nationalist fervour is likely to secure a second term for Narendra Modi

THE SCALE of an Indian general election can be hard to grasp. With close to 900m registered voters and 1m polling stations, it is as if every country in the European Union, plus America, Canada and Mexico, as well as Japan and South Korea, were all to vote together. Yet the process generally runs smoothly. The voting this time started on April 11th and is divided into seven phases, to reduce the burden on election personnel and police. The use of nearly 4m portable, battery-operated voting machines will make it possible to tally all the votes on a single day, May 23rd.

The counting may run with symphonic precision, but the rest of the proceedings are pure cacophony. With 8,000 candidates from more than 2,000 parties vying for seats in the Lok Sabha, the lower house of parliament, this is less a national election than 543 separate battles. Rules on election spending are loose and often flouted. Estimates of the cost of this year's contest are as high as $10bn. Since mid-March the Election Commission has seized some $500m of cash, gold, drugs and alcohol it suspects were intended for bribing voters.

The daunting cost of entry gives candidates with high profiles or deep pockets an advantage. Small wonder that so many are former film and sports stars, gangsters, fat cats or dynasts. The expense of contesting also inflates hopes among poor voters: in one southern state, villagers recently besieged a party office, furious that a middleman who had "sold" their votes paid them only 500 rupees ($7) out of the 2,000 he had pocketed from the candidate for each vote. High costs may also serve to raise the heat: in the past few weeks candidates have variously accused each other of theft, treason, bigotry, support for terrorism and a host of other sins.

Best guess

India, Lok Sabha election (272 seats for a majority)

	Vote share, %		Seats	
Party	2014	2019*	2014	2019*
BJP	31.0	35	282	222-232
BJP allies	7.4	6	54	41-51
Congress	19.3	23	44	74-84
Congress allies	3.7	7	15	41-51
BSP, SP†	7.6	9	5	37-47
Left	4.8	3	12	5-15
Others	26.2	17	131	88-98

Sources: Election Commission of India; Lokniti

*Projection based on a survey of 10,010 people, March 24th-31st 2019

†In alliance in 2019, but not in 2014

Along with scale and intensity, this election packs suspense. India's first-past-the-post system allows a seat to be won with well under half of the vote, provided other candidates do even less well. Five years ago the ruling Bharatiya Janata Party (BJP) converted a 31% vote share into a tidy 52% of seats, while its big rival, Congress, squeezed a paltry 8% of seats out of its 19% of votes (see chart). Wild swings are possible: at the last election, in the country's most populous state, Uttar Pradesh, had the BJP's two biggest rivals, the Bahujan Samaj Party (BSP) and the Samajwadi Party (SP) joined forces, they would have cut the BJP's seat tally there by nearly half, stripping away its majority. Chastened, the pair, which represent two different slices of the lower castes, are now in alliance.

Excepting astrologers, Indians understandably tend to be wary of political predictions. In the past three general elections, professional pollsters have fallen wide of the mark. Still, there is consensus about the broader outcomes of the contest. No one expects the stars to align so perfectly for Narendra Modi, the prime minister, as they did in 2014, when the BJP won 282 seats on its own. Everyone expects the rival Congress—the only other truly na- ▸▸

tional party—to rise from its dismal 44 seats, but still to remain a distant second. Most expect regional parties, including the BSP and SP, to take about a third of the seats.

Given the advantages he enjoys, Mr Modi is widely tipped to win. The prime minister himself is a talented and tireless campaigner, delivering relentlessly on-message blasts of boosterism mixed with searing swipes at his enemies. Another leg-up comes from having vastly more money. Some of this is unaccountable, but one measure is the value of donations via "electoral bonds". Since this vehicle for anonymous political gifts was created by the BJP in the name of "transparency" last year, some 95% of all bonds have gone to the ruling party.

Being in power also helps. As elections approached, Mr Modi's opponents have found themselves targeted by tax raids or police probes. Midway through voting the home ministry has suddenly decided to respond to a public query, dating from 2015, questioning the citizenship of Rahul Gandhi, whose family has led the Congress party for five generations and India for much of the time since independence. Meanwhile, a government programme to compensate small farmers, introduced in February, miraculously placed cash in their accounts in time for the vote. To be fair, some other parties have been just as crass: West Bengal, run by the fiercely anti-BJP Trinamool Congress, has blocked leaders from the rival party from landing helicopters on "its" turf.

Despite holding so many cards, Mr Modi had begun to look vulnerable earlier this year. Congress appeared to rise from the dead in December, toppling BJP governments in local elections in three states

Banyan Kim Jong Un's options

The North Korean dictator does not look as clever as he did a year ago

IT IS A year since a nuclear-armed Kim Jong Un set off on a diplomatic dance drawing in the leaders of China, South Korea, the United States and now Russia. The flamboyant approach has turned the family dictatorship's decades of dour reclusiveness on their head and done much for the North Korean leader's standing at home and abroad. Korea-watchers say it has increased Mr Kim's room for manoeuvre and so, by extension, his odds of survival. What a brilliant young despot. Perhaps he really will die peacefully in his bed.

Last year, on April 27th, Mr Kim met his South Korean counterpart, Moon Jae-in, at Panmunjom, the "truce village" where the armistice halting Korea's civil war had been signed 65 years earlier. Even a hardened press corps gasped at the symbolism. The two held three summits in six months, where predecessors had managed just two in decades. They promised all manner of joint co-operation. Mr Kim has also met four times with China's leader, Xi Jinping, with whom he even celebrated his birthday.

As a spectacular, nothing beat Mr Kim's summit with Donald Trump last June in Singapore. It was followed by a second meeting, in February in Hanoi. Better late to the dance than never, Vladimir Putin, Russia's president, rolled out the red carpet for Mr Kim last month.

But as full as Mr Kim's dance card has been, the only flirtation that matters is with Mr Trump. Only America presents a serious military threat, and can unlock UN sanctions imposed in response to North Korea's drive to develop nuclear bombs and long-range missiles. Yet the summit in Hanoi ended in failure. It seems Mr Kim overplayed his hand, expecting Mr Trump to be eager for a deal that would see at least some sanctions eased in exchange for an incomplete dismantling of his nuclear programme. He was taken aback to learn that the Americans knew of a secret nuclear facility that had not been part of discussions. Mr Trump walked away.

A blow for Mr Kim, and he may not be responding cannily. It is nice to be treated as an equal by Mr Putin, but it gives him little leverage with Mr Trump. Mr Putin loves to needle and upstage America, but he is not about to bail out the failed North Korean state.

Where Mr Kim has real agency is in his dealings with Mr Moon, whose efforts brought Mr Kim and Mr Trump together. Yet he is blowing it. In South Korea the anniversary of the Panmunjom summit was celebrated with international musicians and a video message from the Pope. Conspicuously absent was any North Korean representation.

Out of pique at stalled nuclear talks, North Korea is taking things out on the South. All Panmunjom talk of co-operation has gone. In a speech last month Mr Kim attacked Mr Moon, complaining about South Korean authorities "posing as a meddlesome 'mediator'" just after the South Korean president had visited the White House to urge Mr Trump to keep up the diplomacy.

It is a return to shrill North Korean form. The South is being blamed for not doing more to keep America dancing. Abusing Mr Moon is surely foolish, says Aidan Foster-Carter, a longtime Korea-watcher. Mr Moon is keen to keep rapprochement going, but is struggling to bring South Koreans along with him. They backed the detente last year. But many have since lost faith in North Korean promises, and interest in reunification. The approval ratings of hawkish conservatives have soared. In power they would make life far harder for Mr Kim.

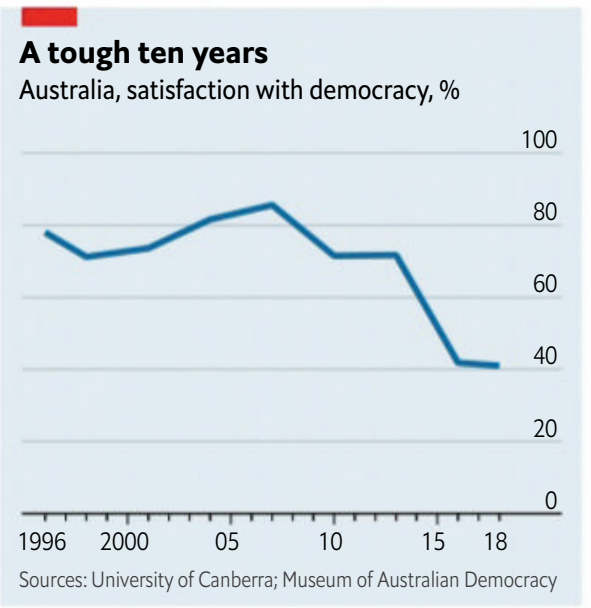
Even Mr Kim's approach towards America is questionable. He still appears to assume that Mr Trump will deal. His leverage is less his nuclear threat than Mr Trump's claim last year to have done away with it (after Mr Kim suspended his nuclear testing). A test last month of a new short-range guided missile seems calculated to remind the American president that Mr Kim has the power to embarrass him.

Is that, along with the regime's attacks on Mike Pompeo, Mr Trump's chief diplomat, wise? Even Mr Trump would struggle to seal a bad deal in the face of sceptical advisers. Meanwhile, sanctions continue to bite, despite help from Chinese and Russian sanctions-busters. Mr Kim seems minded to respond more by snarling, perhaps with more tests, than by charming. For America and its friends, it hints at a return to a lousy set of options for dealing with North Korea. But it means lousy options for the young despot too. So much for Mr Kim's supposed brilliance.

across central India. Fatigue with Mr Modi was growing, as well as anger among such important groups as farmers, small traders, minorities and the better-educated. The lapdog media grew noticeably less fawning. There was talk of opposition parties banding together under Mr Gandhi in an all-out bid to beat the BJP.

But the winds then shifted again, this time in Mr Modi's favour. On February 14th 20-year-old Adil Ahmad Dar ploughed his bomb-laden car into a convoy of paramilitary police in the disputed state of Jammu & Kashmir, killing 40 of them. The attack, claimed by a Pakistan-based terror group, spawned a surge of national emotion that crested two weeks later, when Mr Modi ordered the retaliatory bombing of an alleged terror base deep inside Pakistan.

Mr Modi has mercilessly milked nationalist sentiment, threatening to rain missiles on the enemy in a "night of killing" and scorning his opponents as wobbly-kneed defeatists. Although many Indians, especially those far from the border with Pakistan, find local issues more pressing, the unrelenting bombast has flummoxed Mr Modi's opponents. Instead of coalescing, they have drifted apart. If the BJP and its closest allies fail to win a majority, he will almost certainly be better placed than Mr Gandhi to court a clutch of regional parties to form a coalition. "If this election were about the fundamentals, Modi and the BJP would be in a pickle," says Milan Vaishnav of Carnegie, a think-tank. "But given Modi's popularity, the security dimension and the opposition's foibles, my sense is the BJP has found a way to make lemonade out of lemons." ■



Democracy in Australia

Up and at 'em

SYDNEY

A new group is harnessing public disillusionment with politics

A GROUP OF protesters gathered outside Tony Abbott's constituency office on Sydney's north shore. They wore party hats and cut a cake. It was, the activists explained, an early retirement gathering for Australia's former prime minister. He is in danger of losing his supposedly safe seat, partly because of the work of their advocacy group, GetUp!, which is campaigning to turf out several of the ruling Liberal Party's most right-wing members in the general election on May 18th. "Our parties aren't representing us," laments one of its volunteers. "They're representing themselves."

Such complaints are common in Australia, but its political system can shroud them. Compulsory voting forces even the disengaged to turn out on election day. Those who might not otherwise vote tend to back one of the two main parties, the Liberals and Labor. The voting system, which requires Australians to rank candidates in order of preference, also ends up funnelling votes to the big two. As a result, the pair continue to dominate politics—they won all but five of the 150 seats in the lower house at the last election, in 2016—even though the share of voters who pick them as their first choice is falling.

A decade of political instability has left many voters feeling disillusioned. The prime minister has changed five times in that time (but only once because of an election). Policymaking has naturally suffered. "We're going backwards on too many important issues," says one of Mr Abbott's constituents. Some of them lost patience with him in August, when the brigade of staunch conservatives he leads toppled the Liberals' popular leader, Malcolm Turnbull. The prime minister's crime had been to attempt to set legally binding targets to reduce greenhouse-gas emissions.

Political parties struggle to appeal both to rural constituencies, which clamour for mining jobs, and urban ones, which fret about climate change. Voters also worry about costly housing, insecure jobs and—a relatively new affliction for Australia—stagnant wages. There are fears that big business and foreign governments have undue sway over politicians. According to one poll, faith in democracy has fallen by more than half over the past decade. Only 41% of voters say they are satisfied with the system (see chart).

Yet many have channelled their disillusionment into activism. More than a million people have joined GetUp!, giving it almost eight times as many members as the two big parties combined. It deploys armies of orange-clad volunteers to man phones and knock on doors. Its donations have soared by more than a quarter over the past year, furnishing it with a war-chest of almost A$13m ($9m). It now has "more capacity than most political parties", says John Hewson, a former Liberal leader who advised it in its early days.

Henny Smith, GetUp!'s elections director, says it is "not interested in who gets elected" as long as the result is "sensible climate policy and a conscionable approach to refugees". But those goals put it at odds with right-wing politicians such as Mr Abbott and Peter Dutton, the pugnacious home-affairs minister who spearheaded the coup against Mr Turnbull. GetUp! is "an extreme left-wing front", asserts Eric Abetz, a conservative senator. Three investigations by the electoral commission have cleared it of any partisan associations.

Guessing the extent of GetUp!'s influence is tricky, but Mr Abbott may soon get an inkling. Warringah is doggedly conservative, and he has held the seat for a quarter of a century. But an upset would not be unprecedented: when Mr Turnbull resigned last year, an independent, Kerryn Phelps, deprived the Liberals of his seat for the first time in over a century. The party's own polling suggests that another independent, Zali Steggall, is on course to beat Mr Abbott with a huge swing of 12%. Mr Dutton holds his suburban seat in Brisbane by a far less comfortable margin, partly thanks to GetUp!'s work at the previous election. The group may need to bake more cakes. ■

Relocating Indonesia's capital

An extraordinary move

JAKARTA

The president looks to replace one unsuitable capital with another

TO EXPERIENCE THE true Jakarta, sit in a taxi for an hour, listening to the motorbikes rev and the horns honk, only to realise that you are no closer to your destination than when you set off. Indonesia's capital, home to 30m people, is in a constant state of gridlock. Meetings are routinely missed; businessfolk often call in from the back seat of a stationary vehicle. Some policemen have started a sideline selling motorcade escorts. Fumes from the sea of cars add to the smog. Public transport offers little respite: a new underground service, decades in the building, already feels jam-packed.

The traffic is the result of decades of rapid urbanisation coupled with neglect of infrastructure. It is not the city's only failing. There is no real centre, just a vast concrete sprawl where highways and flyovers corral skyscrapers. Parks are a rarity. So are pavements—and the few there are are crowded with makeshift restaurants, forcing pedestrians onto the heaving roads.

Another big problem is water. Torrential rain falls for half the year, but rivers and drainage ditches are clogged with rubbish and swimming with untreated sewage. They overflow regularly, flooding much of the city. Only a third of residents have access to municipal water, so the rest drill wells to tap groundwater. As a result, Jakarta is sinking faster than any other city in the world, even as sea levels rise. Some neighbourhoods are dropping at a rate of 25cm a year. Researchers think that almost all the city's coastal districts could be submerged in 30 years.

Small wonder, then, that the president, Joko Widodo, who is known as Jokowi, wants to move the capital. On April 29th Bambang Brodjonegoro, the planning minister, announced that the government will leave the island of Java, where Jakarta sits, although it is still considering where to go. The intention, in addition to escaping (and reducing) congestion in Jakarta, is to shrink regional inequalities. Indonesia is an archipelago of 13,000 or so islands, but Java generates about 58% of GDP.

The relocation could take ten years. It is likely to face stern resistance, not least from Indonesia's tycoons, who do not want to see the value of their Jakarta penthouses fall. Civil servants will probably object too, because the most likely new site for the capital is something of a backwater.

Palangkaraya is a city of 260,000 in the province of Central Kalimantan, part of the Indonesian portion of Borneo. Whereas Jakarta lacks greenery, Palangkaraya has it in abundance: the city is in the middle of the jungle. There is a titchy airport; the nearest seaport is a four-hour drive away, past an orangutan reserve. Much of the surrounding terrain is soft and swampy—not ideal for building skyscrapers. And when nearby peatlands burn, a toxic haze fills the air. Government officials may be sinking and choking in their new digs, too. ■

The Solomon Islands

Solomons' choice

WELLINGTON

A disputed parliamentary vote to pick a prime minister sparks riots

Politics in the Solomon Islands has a nasty habit of repeating itself. On April 24th riots broke out in the capital Honiara after MPs met to pick a prime minister, as happened 13 years ago. Outside parliament, angry youths again denounced the outcome. When their protests went unheeded, they descended on Honiara's Chinatown district and smashed up the Pacific Casino Hotel, just as they had in 2006.

This time around, the Australian-trained police force was better prepared. Black-clad riot police equipped with helmets, shields and tear-gas barred access to Chinatown, and dispersed the crowds. Rioting continued on the nights of April 24th and 25th, but it was mainly confined to attacks on shops and businesses in and around the Burns Creek squatter settlement in eastern Honiara. The police chief, Matthew Varley, who is Australian, says rioters have been assembling petrol bombs and home-made guns in preparation for future battles.

The troubles came in the wake of the Solomon Islands' tenth general election since independence in 1978. It was the first election since the departure in 2017 of the Regional Assistance Mission to Solomon Islands (RAMSI), a peacekeeping force led by Australia and New Zealand. The election was mostly trouble-free, at least until Manasseh Sogavare was about to secure a fourth term as prime minister with the support of 34 of the 50 MPs. At that point 15 MPs who supported Matthew Wale for the top job walked out of parliament in protest.

Mr Wale claims that Mr Sogavare is ineligible to stand as prime minister because the law requires a candidate for prime minister to be a member of a political party. Mr Sogavare contested the election as an independent, but assembled the Ownership, Unity and Responsibility (OUR) party quickly afterwards. Mr Wale obtained a court order to delay the prime ministerial vote, but the governor-general, who presides over the selection of the prime minister, disregarded it. He cited instead the constitution, which allows any MP, whether affiliated with a political party or not, to become prime minister.

The underlying grievance is economic as well as political. RAMSI restored law and order, but did little to encourage development or to regulate the Asian logging companies that account for most of the country's exports. A steady drift from the countryside has swollen the population of Honiara, where Chinese-owned businesses have come to dominate commerce. Many locals blame this on corruption in the granting of business licences and in the doling out of land. MPs, meanwhile, divert a disproportionate share of government spending to pork-barrel schemes in distant constituencies, leaving many young people in the city unemployed and angry. As one social-media post supporting the rioters put it: "Everyone is stealing from everyone." MPs steal from the people, the argument went, Chinese businesses steal from their customers and the rioters were responding by stealing from government and businesses, creating a balance of sorts.

To his credit, Mr Sogavare has tried to clamp down on corruption. Parliament approved an anti-corruption bill last year (after watering it down) and a police task-force has arrested senior civil servants and a minister for misappropriating public funds. Mr Varley says ten other MPs are under investigation. But even if corruption can be reduced, it will take time for the unemployed youth of Burns Creek to feel the benefit. Mr Sogavare is considering recognising China instead of Taiwan, in search of funds for development. But the advent of crowds of Chinese to build infrastructure might also enrage Burns Creek. ■

Hammering at the gates of parliament

Japan and Shinto

Through the looking glass

TOKYO

This week's imperial ceremonies highlight the religion's muddled status

On the morning of April 30th, then-emperor Akihito, decked out in a puffy brown robe, entered Kashikodokoro shrine, in the grounds of the imperial palace in Tokyo. He washed his hands, rinsed his mouth, bowed twice, clapped twice, bowed once more and then read a letter to the gods informing them of his retirement. On May 1st his son, Naruhito, was invested as emperor by receiving a jewel and a sword said to have belonged to Amaterasu, the sun goddess, from whom he is a direct descendant, according to Shinto mythology.

Shinto is a form of animism, which dates back to prehistoric times. Ancient Japanese saw divine forces all around them, and celebrated as *kami*, or gods, everything from the sun to the wind. The emperor was traditionally the high priest—although after the second world war, he was stripped of his status as a living god. There are some 80,000 Shinto shrines, all over Japan, where priests and devotees can be seen clapping and bowing like Akihito.

Some 70% of Japanese are reported to adhere to Shinto—a percentage that is declining only slowly. That may be because many see it as a cultural belief rather than a religion. People who do not consider themselves religious may still visit a shrine in search of luck or love, or to attend Shinto festivals that involve lots of food and drink. Indeed, many Buddhists and Christians visit Shinto shrines.

It helps that Shinto has no scriptures or doctrine. "It is a way of thinking, of living; it is in Japanese people's DNA," says Tsunekiyo Tanaka, the head priest at Iwashimizu Hachimangu, a shrine near Kyoto, and head of Jinja Honcho, an umbrella organisation for the religion. It is indeed a part of everyday life. Many people perform a Shinto ground-breaking ceremony to appease the *kami* before beginning construction work. Sumo matches involve Shinto rituals that take up more time than the wrestling. Marie Kondo, a Japanese tidying guru, is said to be inspired by Shinto's emphasis on process and ritual. She worked as a shrine "maiden" for five years.

Those of a new-age disposition see shrines as "power-spots" brimming with healing, love and insight. Satoru Otowa of Ise Grand shrine, Shinto's holiest place, where a mirror said to have belonged to Amaterasu is kept, says many young people come for "mental health and to feel at peace". On a spring day groups of them can

Our great Mikado, virtuous man

be seen exploring the vast grounds of the shrine, which is surrounded by trees and a river. Visitor numbers have steadily grown, to more than 8.5m people last year.

Environmentalism has helped Shinto, says Susumu Shimazono of Sophia University: "A few years ago Shinto was seen as inferior to the great world religions, like Christianity, Buddhism and Islam, where the sacred dimension is beyond nature," he says. "Now it is seen as something we should recover."

But the picture is not all rosy. The number of shrines is in slow but steady decline. Many are nestled in small rural communities that are populated mainly by old people, since the young tend to move to cities. The number of priests has dropped more drastically, from 88,192 in 1997 to 71,142 in 2017. As the shrinking and ageing of Japan's population accelerates, these problems will get worse.

Another tension is the still contentious question of Shinto's official role. After the second world war the American occupiers insisted on the separation of shrine and state, since Shinto had been a central part of Japan's war effort, in which the cult of the divine emperor served to legitimise militarism. The state stopped administering and funding shrines, leaving private organisations, most notably Jinja Honcho, to assume that role.

But Shinto is still a big part of official events such as this week's abdication and coronation. Indignant citizens have brought lawsuits claiming that the imperial rituals violate the separation of religion and state (similar complaints during the last change of emperor were dismissed by the courts). Even the new emperor's brother, who is also the next in line to the throne, has questioned whether state funds should be used for an elaborate ceremony later this year at which the new emperor's investiture will be celebrated. The emperor's sister, meanwhile, is the head priest of the Ise shrine—a job that always goes to a member of the royal family.

Some would like to restore the central role of Shinto in public life. A few priests talk fondly of reviving the idea of the emperor as a god. "It is unclear whether the Japanese view the emperor as a *kami*, a nice person or an *ojisan* [uncle]," gripes a priest who believes the first.

Mark Mullins of the University of Auckland is sympathetic to those who argue against a pedantic separation of Shinto from state affairs. "Look at America and you see the Bible and prayers coming out at every inauguration," he notes. But the association of the religion with right-wing nationalism is a cause for concern, he argues.

That is largely thanks to Jinja Honcho, which lobbies for conservative causes, for the sake "of our nation and nationhood", as Mr Tanaka puts it. That includes revising school textbooks to whitewash Japan's conduct in the second world war, allowing the armed forces greater freedom of operation despite Japan's official pacifism and resisting moves to amend a law that requires married couples to share a surname, a measure that in practice prevents married women from keeping their maiden names. (Past successes include defending the use of *gengo*, dates based on imperial reigns, in most official documents.)

Some politicians like these ideas. Jinja Honcho has many supporters in the ruling Liberal Democratic Party. Their number has grown under the current prime minister, Shinzo Abe, who is an avowed nationalist and has prayed at the Yasukuni shrine, where war criminals are enshrined as *kami*. When he began his second stint in office in 2012, Mr Mullins notes, 204 members of the Diet were in Jinja Honcho's parliamentary arm; now 294 are.

The general public is not so keen. Mr Tanaka admits that many of the firms that fund the association dislike its involvement in politics. Surveys suggest that most Japanese do not support its pet causes. Many priests seem to be similarly sceptical, even at the Ise shrine. Mr Otowa does not overtly criticise Jinja Honcho, but he does talk about how women used to have a much bigger role in Shinto. At most shrines, says Koji Suga of Kokugakuin University in Tokyo, who is also a part-time priest, the staff are not ideological: "They sweep and wait for people to come." ■

Political demonstrations

Tiananmen 1919

BEIJING

The anniversary of a momentous protest tests the party's nerves

A SHORT WALK from Tiananmen Square, young carworkers wearing company tracksuits stand with their fists in the air. They are renewing their vows to the Communist Youth League by chanting promises to "resolutely support" the Communist Party and "strictly follow" the league's regulations. When they step aside for a group photo, 40 students from a technical college take their place to make their own pledges of loyalty. A growing queue of youngsters waits nearby to do the same.

The oath-swearing spot is in the courtyard of an imposing edifice of russet brick, known as the Red Building. A century ago it belonged to Peking University, one of China's most prestigious seats of learning (now in a north-western suburb). There is a striking contrast between these professions of faith in a dictatorial party and an exhibition the same young people are taken to see inside the building. It is about the students who, 100 years ago on May 4th, set off from the Red Building and other sites around the city to join a protest at Tiananmen provoked by the shabby treatment of China by its allies after the first world war. The Treaty of Versailles had awarded a former German colony in China to Japan.

Today May 4th is officially celebrated as Youth Day. Its significance is strongly contested. The party recalls the May 4th Movement, which refers to the protest in Tiananmen as well as similar ones elsewhere in China and intellectual soul-searching around that time, as the backdrop to the party's birth two years later. Liberals remember the movement as a cry for democracy by patriots who believed that China had no hope of standing tall without adopting Western learning, including in politics. In a year packed with sensitive anniversaries—including the 30th on June 4th of the army's crushing of student protests in the same square in 1989 (an event barely known to many young people in China, owing to the assiduous efforts of censors)—the party is bent on ensuring that its version of history is the only one heard.

Both the party and dissidents agree that in 1919 the country was at its nadir. The last imperial dynasty, the Qing, weakened by decades of internal strife and foreign encroachment on Chinese territory, had collapsed in 1911. A military strongman, Yuan Shikai, had tried to reinstate the monarchy with himself as the new emperor. His death in 1916 had unleashed struggles between rival warlords. The young protesters had hoped that China's support for the allies against Germany—it had sent about 140,000 men to work as labourers on the front in Europe—would result in the return to China of colonised territory. Not only had their hopes been dashed, but, as they saw it, China's own government had been complicit in the betrayal.

But the party prefers not to delve deeply into the political aspirations of the May 4th Movement, including the view of many participants that China's weakness was in part the result of flaws in its traditional culture. China's current leader, Xi Jinping, is trying to recast the party as a champion of ancient Chinese values. The reformers of 1919 would be horrified.

There is only one aspect of the movement that officials want to dwell on, namely its links with the party's founding, says Rana Mitter of Oxford University. But public discussion even of the party's early ideals is curtailed. The party does not want to ▸▸

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be reminded that its supporters were once attracted by its promise of liberation from autocracy, not by the dictatorship it came to represent. In recent decades the party has downplayed the iconoclasm of the May 4th Movement, preferring to portray it as something far blander. A student leader tells one of the groups outside the Red Building that "the spirit of May 4th" is today found in young doctors who battle epidemics and young soldiers who rescue citizens from natural disasters.

If there is something galling about a government that brooks no dissent making heroes of long-dead protesters, no one at the Red Building is willing to admit it. China today is far more tightly controlled than it was during the early months of 1989 when the party was almost brought down by students who claimed that they, not China's geriatric leaders, were the true heirs of 1919. Those protests were fanned by excitement about the 70th anniversary of the May 4th Movement (hundreds of thousands took to the streets on that day 30 years ago—a high point of the unrest). The party frets that the proximity this year of two big anniversaries—of the demonstrations in 1919 as well as in 1989—will encourage dissidents to air their grievances.

Given the intensity of security in the capital, this is highly unlikely to happen on the streets. But the party's anxiety has some basis. Campus activism has been bubbling up in the form of #MeToo campaigning against sexual harassment and an attempt by self-described Marxists to help factory workers in southern China establish a free trade union. Police have arrested dozens of these labour activists. (Six students connected with the cause are reported to have been taken into custody on April 28th, presumably for fear that they might speak out during the centenary.) Academics are cowed, but not crushed. Lately the bravest have been speaking up for Xu Zhangrun, an academic in Beijing who was suspended earlier this year for attacking Mr Xi's authoritarianism.

The party can at least claim to have fulfilled one dream of the protesters of 1919: China is now a global power (Mr Xi will be careful to ensure that his trade agreement with America's president, Donald Trump, expected soon, does not look like surrender). But on April 30th, at a commemoration of the centenary in the Great Hall of the People next to Tiananmen, Mr Xi gave a veiled warning to dissidents. He described being unpatriotic as "disgraceful" and said that loving the country was closely entwined with loving the party and socialism. The traditional May Day public holiday was recently extended from three days to four. The party may hope to nudge Beijingers to enjoy a break outside the city and leave its history behind. The "spirit" of the centenary looks a lot like mistrust and fear. ■

Space-themed tourism

Gobi a Martian

JINCHANG

China's burgeoning space programme is becoming a money-spinner on Earth

MEALWORMS WRIGGLE on a shelf in the botanical module of Mars Base 1, a simulated Martian habitat on the edge of the Gobi desert in western China. Guo Jiayu, a guide, tells a group of wide-eyed schoolchildren that, mashed up, such larvae could be part of the diet of astronauts should they reach the red planet. Elsewhere in the complex (pictured), neon-lit corridors lead to sleeping compartments and a control centre. Through an airlock lined with spacesuits awaits a rover, ready for exploring the rocky expanse outside.

The small installation is near Jinchang, a nickel-mining city in the western province of Gansu. It was built last year at a cost of around 50m yuan ($7.5m) by Bai Fan, a garrulous British-educated entrepreneur with the backing of private investors. For now Mr Bai is mainly using the base to teach students about travel to Mars. Eventually he hopes the facility will become the centrepiece of a resort. His company has secured the right to develop 67 square kilometres of the surrounding desert—an area bigger than Manhattan. The base has already hosted a reality television show, in which six celebrities pretended to be astronauts facing life-threatening challenges.

Businesspeople across China see money-making possibilities in the country's quest for space-faring achievement. In January China became the first country to land a spacecraft on the far side of the moon. It aims to send another one to the lunar surface this year to collect samples and bring them back to Earth (the last country to do this was the Soviet Union in 1976). Next year China wants to launch the main section of a new Earth-orbiting space station and send a rover to Mars.

There is clearly much public excitement. The number of people searching online for space-related museums, attractions and tours increased by 60% in 2018, reckons Ctrip, a Chinese travel agent. In March another Mars-themed attraction—a tourist camp accommodating up to 160 people—opened on the Tibetan plateau. Publishers are producing five times as many science-fiction titles as they were in 2011, says Sixth Tone, a Chinese news site.

In the southernmost province of Hainan, officials are hoping to cash in on a space-launch site that became operational there in 2016. Previously, such facilities were built in remote areas deep inland. The new facility is much more accessible to tourists. Its launches can be watched from a nearby sandy beach. For now, however, a more popular attraction is the world's largest radio telescope, FAST, in a remote basin of another southern province, Guizhou. The instrument, which has a diameter of 500 metres, also opened in 2016. In the first half of last year alone, more than 5m visitors travelled to see it. Few of them got inside the facility itself: only 2,000 people are admitted daily. But nearby towns are littered with chintzy attractions.

Officials in Guizhou worry that the tourism boom might interfere with the telescope's function. They are scaling back development plans in the area. But the Communist Party sees benefits in all this attention to space. It is generating patriotic fervour as well as enthusiasm for space science. An excited 13-year-old touring Mars Base 1 says she hopes to visit the planet itself one day. Americans were the first people to set foot on the moon, she says. Why shouldn't the first on Mars be Chinese? ■

Take your mealworm pills and put your helmet on

Chaguan | Weak tea doesn't sell

A Chinese-American film star explains why blandly globalised fare flops in China

EVEN IF IT did not boast a character called Captain America, the superhero film "Avengers: Endgame" is a very obviously American spectacle. Beyond its swagger and expensive special effects, the Marvel comic book film series, of which this is the final instalment, celebrates flawed, individualistic superheroes. That the film just broke Chinese box-office records for its opening weekend could lead outsiders to assume that the American and Chinese film markets—the world's two largest—are converging. In fact China's film world is becoming more distinctive and self-confident.

Hollywood producers have bet fair sums of money, over the years, on the idea that American and Chinese audiences are not so very different, and will laugh, weep and cheer at the same, carefully globalised movies. China has a habit of proving them wrong. The "Avengers" series has a large but distinctive set of fans in China, who often say they love the films precisely because they identify with its misfit heroes, struggling with a harsh, judgmental world.

Over 1.7bn cinema tickets were sold in China last year, a domestic record. Most sales were driven by locally made hits in which the stories ranged from Chinese military heroics overseas ("Operation Red Sea") to a bittersweet drama about cancer ("Dying to Survive"). Though Hollywood had a respectable 2018 worldwide, revenues in China for imported films were down year on year.

Before "Avengers: Endgame", the world's most successful film this year had been a Chinese science-fiction epic, "Wandering Earth". But it owed this mainly to its popularity at home. By the end of its American cinema release less than 1% of its revenues came from the American box office. Western reviewers struggled to relate to a film that involved saving the planet, and in which the only speaking role for a non-Chinese was given to a Russian.

Americans flocked to "Crazy Rich Asians", a frothy romantic comedy about Chinese-Americans and Singapore's high society. Despite its supposed crossover appeal, in China it flopped.

Celina Horan, a Chinese-American actor, speaks with authority about the two film markets. Educated in Hong Kong and at the London School of Economics, she is fluent in Cantonese, English and Mandarin. Known professionally as Celina Jade and in China as Lu Jingshan, she played the female lead in "Wolf Warrior 2", released in 2017 and to date the highest-grossing Chinese film ever.

It is a revealing hit. A patriotic action adventure set in war-torn Africa, "Wolf Warrior 2" depicts a lone Chinese commando rescuing Chinese and African hostages from wicked American mercenaries. The film plays on a story often pushed by Communist propaganda officials, namely that China is a growing yet peace-loving military power that—for now—is content to lend its strength to UN peacekeeping missions and other benign tasks. A tense scene shows the hero battling tank-driving baddies on the ground, while awaiting help from a Chinese warship out at sea. Stern Chinese naval officers launch their missiles only after the UN Security Council in New York approves their use of force—a plot device that is hard to spot in Hollywood action flicks. In another scene Ms Jade's character, a Chinese-American doctor, telephones the nearest American consulate for help. She hears an answering-machine, for the Yanks have run away.

Chaguan met Ms Jade in Beijing after her return from a work trip to Los Angeles, as she prepared to visit Norway for a television travel show. Two years ago Hollywood producers sought projects that would work in both America and China, she says. That might involve adding a Chinese actress to an American blockbuster in a "decorative role". Now her American meetings are "all about China". By this she means co-productions using American know-how, but squarely aimed at Chinese audiences.

The actress would not mourn if Hollywood were to drop projects crafted to appeal to all cultures, and offend in none. She compares the approval process for such films to dipping the same tea bag in ten cups, then drinking from the last. On the Chinese side, she sees studios growing less anxious about foreign success: "Why serve the global market when there's so much demand here?"

She is unsurprised when crossover hits struggle. Whereas Ms Jade's American side related to "Crazy Rich Asians", she says her Chinese side found it over the top, and even "fantastical". Chinese audiences like to see romantic heroes showing their love in subtle ways, she says; "It might be how he serves her food."

State planners are playing a role. China opened 9,303 cinema screens last year, says IHS Markit, a consultancy. Government targets are for 80,000 screens nationwide by 2020, up from 60,000 today. Some will struggle amid an oversupply of screens and a shortage of good titles. But expansion has boosted the clout of smaller cities where audiences relish films with local themes.

The propaganda bureau is not amused

Modern China's first big American import, "The Fugitive" starring Harrison Ford, was allowed into just six cities in 1994. It prompted a spat between state film distributors that took on a nationalist edge. One distributor grumbled about "using socialist money to fatten the capitalist pig". Officials still resist Hollywood's charms. A rampant piracy problem is largely resolved. But quotas continue to limit the number of foreign films shown each year (President Donald Trump's trade negotiators are trying to improve Hollywood's market access). Foreign studios pre-emptively pander to China's censors, avoiding taboo subjects like Tibet. The Chinese version of "Bohemian Rhapsody", a biopic about Freddie Mercury, a flamboyant musician, excised most references to his sexuality.

Ms Jade says she is proud to work in today's assertive, self-confident China. Unbidden, she pays tribute to one-party rule. When tackling environmental challenges, "democracy kind of slows things down", she says. Ms Jade questions the idea that censorship makes for bad movies: "Sometimes having limitations forces people to be more creative." She is in the right place. ■

The Sahel

The new war on jihadism

BOBO-DIOULASSO AND TIMBUKTU

Despite Western help, governments in the Sahel are struggling to beat back violent extremists

NIGERIAN TROOPS huddle around their captain for a briefing. Several rest their rifle muzzles in the sandy ground, which could block and damage them. During the assault on a terrorist training camp, many forget their training, firing wildly and running off their line of advance. After capturing it, they mill about and ignore the booms of incoming artillery. Finally they are brought up short by an angry Scotsman, who shouts: "Ibrahim, you're dead!"

This less-than-successful mock attack took place near the town of Bobo-Dioulasso, in the west of Burkina Faso. It was part of an American-led training exercise earlier this year involving some 2,000 elite troops from more than 30 countries. These two-week war games are the most visible part of a big Western push to turn the tide in a bloody, forgotten war. Jihadists are sweeping across the Sahel, an arid swathe of scrubland on the southern edge of the Sahara that stretches most of the way across Africa. They are also causing mayhem in Somalia. America, Britain, France and other Western powers are trying to help local forces in at least 16 countries beat them back. It is not going well.

Since the collapse of the "caliphate" in Syria and Iraq, Islamic State (IS) has been looking for other places to raise its black flag. Africa, and especially the Sahel, is vulnerable. Governments are weak, unpopular and often have only a tenuous grip over remote parts of their territory. Abu Bakr al-Baghdadi, the leader of IS, sees an opportunity. In a video released on April 29th, to prove that he is not dead (his first such appearance in five years), the bearded zealot waxed enthusiastic about Africa. "Your brothers in Burkina Faso and Mali...we congratulate them for their joining the convoy of the caliphate," he said, according to the SITE Intelligence Group, which monitors jihadist communications.

Major General Mark Hicks, who commands America's special forces in Africa (and was in Burkina Faso for the war games) fears that IS is not the only terrorist group extending its franchise into his patch. "Al-Qaeda has taken a very serious long-term view of expanding here in the Sahel, and they're seeing real success," he says. His intelligence officers reckon that the groups they track contain about 10,500 jihadist fighters.

Most jihadists in Africa are fighting their own governments. But some attack Western targets. "If we don't fight them here we will have to fight them on the streets of Madrid or Paris," says a European intelligence officer.

One cannot generalise easily about African jihadist groups. Some are strictly local, having taken up arms to fight over farmland or against corrupt local government. Some adopt the "jihadist" label only because they happen to be Muslim. Many young men who join such groups do so because they have been robbed by officials or beaten up by police, or seen their friends humiliated in this way.

Other groups, such as al-Shabab in Somalia, are steeped in the teachings of al-Qaeda, the group behind the attacks on ▸▸

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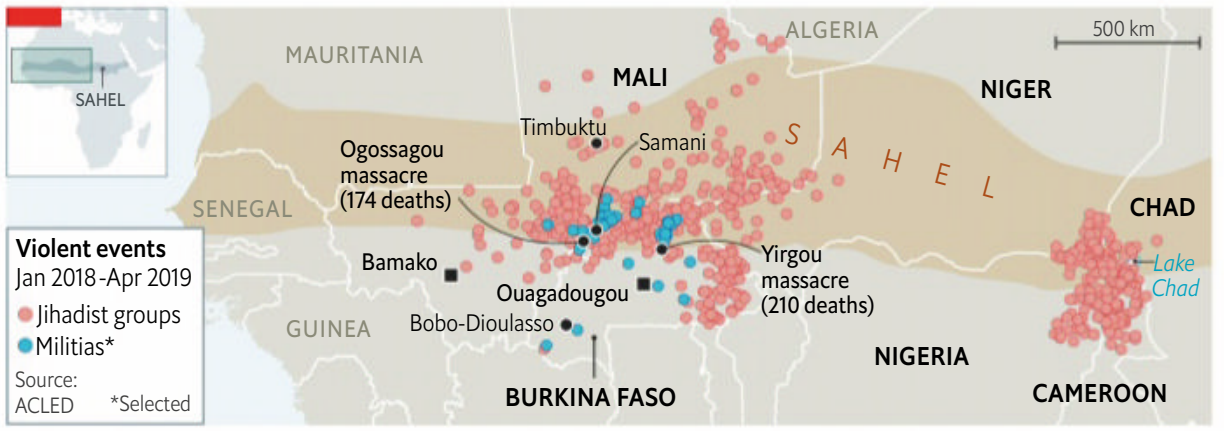


America on September 11th 2001. They tend to focus on spectacular atrocities, such as a truck bomb in 2017 in the Somali capital, Mogadishu, that killed almost 600 people. The most worrying groups are adherents of IS that seek to hold territory. An offshoot of Boko Haram, for example, is building a proto-caliphate in northern Nigeria.

Jihadist groups of all varieties are expanding their reach in the Sahel and around Lake Chad. Last year conflicts with jihadists in Africa claimed more than 9,300 lives, mostly civilian. This is almost as many as were killed in conflict with jihadists in Syria and Iraq combined. About two-fifths of those deaths were in Somalia, where al-Shabab frequently detonates car bombs in crowded streets. Many of the rest were in Nigeria, where the schoolgirl-kidnappers of Boko Haram and its odious offshoot, Islamic State West Africa Province, shoot villagers and behead nurses.

However, the area that aid workers and Western spooks worry about most is the Sahel. In Niger, Mali and Burkina Faso the number of people killed in jihad-related violence has doubled for each of the past two years, to more than 1,100 in 2018. And the violence is spreading, spilling across borders and threatening to tear apart poor, fragile states with bad rulers and swelling populations. Such places are already beset by droughts, possibly caused by global warming. Over the longer term "the Sahel is our biggest worry," says Mark Lowcock, who is in charge of emergency relief at the UN. Peter Maurer, the president of the International Committee of the Red Cross, frets that conflict and climate change are prompting huge flows of migrants out of the Sahel.

Fear of refugees is one of the main reasons why European military powers are trying to stabilise the region. France has 4,500 troops fighting jihadists there. Germany and Italy each have about 1,000 soldiers in Africa. Britain has set up two specialised infantry units dedicated to training African soldiers in Nigeria and Somalia. America, which is more concerned about terrorism than refugee flows in this part of the world, has more than 7,000 military personnel in Africa.

The majority of Western troops do not fight jihadists directly—except in Somalia, where drone-fired missiles have killed many of al-Shabab's fighters. Most are training local forces. They often have to start with the basics. In Nigeria, for instance, jihadists often sneak up and overrun army bases because the bush around them has not been cleared. Or they start shooting at them with a small force to goad the defenders into using up their ammunition firing back, leaving them helpless when the main attack begins.

Efforts to contain the spread of jihadism by training local armies or killing insurgent leaders are not obviously working. Take Mali, where in 2012 Tuareg separatists and jihadists allied to al-Qaeda swept out of the desert and conquered the north of the country using weapons looted from the arsenals of Libya's dead dictator, Muammar Qaddafi. The rebels seemed ready to march on the capital, Bamako, and the south, which contains 90% of the population and sustains most of the economy.

French troops pushed them back from the main cities. But not even their expertise and firepower could defeat the rebels, who simply melted back into the desert. There

Gangs with guns

Malicious militias

BAMAKO

States in the Sahel have let murderous self-defence groups flourish

THE FIRST sound of danger was the roar of motorbikes. Then came the gunfire as about 20 men attacked Samani, a village in central Mali, killing three people and cutting off body parts as trophies. They took the chief's 30-year-old son, "cut him in half, and took his heart out", says Amadou Barry, an elder who managed to escape to Bamako, Mali's capital.

The gunmen were from an ethnic militia, one of hundreds that have sprouted in Mali and Burkina Faso, and that have killed at least 800 people since the beginning of 2018. The militias are most active in Mali, which has battled a jihadist insurgency since 2012. Many emerged from groups of hunters, who used to stalk game with flintlock guns. Now they are armed with assault rifles and speed about on motorbikes. They say they hunt jihadists. In reality they are targeting Fulanis, a mainly Muslim minority group. Photos on social media show Fulani villages in which families have been shot, their bodies thrown down wells or cut to pieces. "We should call it what it is: ethnic cleansing," says Héni Nsaibia, from the Armed Conflict Location & Event Data Project, an NGO.

The army has made no serious attempt to disarm these militias, said Human Rights Watch, a watchdog, in December. Instead, the government has helped them. Some army units patrol with them. They have been exempted from a ban on motorbikes (supposedly the jihadists' favourite ride) in central Mali. This allows the militias to attack with ease. Emboldened by the government's inaction, militiamen hacked and burned to death more than 170 people in Ogossagou, central Mali, in March. This favouritism plays into the hands of the jihadists, who find it easiest to recruit among oppressed minorities such as the Fulani, which are also forming their own militias. Some jihadists have urged all Fulanis to join their fight.

The situation is hardly better in Burkina Faso, where thousands of men have joined groups called *Koglweogo* (guardians of the bush). They started out as vigilante groups that beat or killed alleged criminals. But many now demand money from villagers and torture those who do not pay.

Some estimate there are about 4,500 *Koglweogo* groups, most with at least 20 men, mainly from the majority Mossi ethnic group. They are being sucked into conflict with the Fulani. In January *Koglweogo* fighters massacred some 210 mostly Fulani people in Yirgou in northern Burkina Faso. Instead of arresting the attackers, the government told the victims to forgive them.

The government's shameful reaction partly reflects its weakness. But there may be a darker motive. Many members of the government are Mossi, and may think it useful to have an ethnic militia on hand before elections next year.

Yet by allowing militias to arm and multiply, governments "have created a monster", says a UN official in the Sahel. Having let this demon out of the box, they will struggle to put it back.

they have survived a seven-year-long counterinsurgency campaign. Pundits in Paris are calling call Mali "France's Afghanistan". And with good reason. The UN now has more than 16,000 peacekeepers in Mali, of whom 195 have been killed, making it the blue helmets' most dangerous mission since its start in 2013. Nonetheless, the jihadists have continued to spread south into Niger and Burkina Faso.

The government of Mali has shown little interest in trying to restore security in the northern half of the country, contenting itself with holding the gold-rich south. "They have basically ceded the territory and aren't willing to fight for it," complains a Western army officer. Worse still, the government has allowed—if not actively supported—the formation of pro-government ethnic militias that are responsible for a rapidly increasing number of attacks on civilians from minority groups (see article on previous page). A flood of weapons from the Gulf of Guinea feeds the mayhem. There are so many assault rifles in Mali that the price has fallen from $600 two years ago to $260 today, says an official.

Western governments and armies have started to focus less on Mali and Nigeria and more on Niger and Burkina Faso, hoping that these countries can act as bulwarks to halt the spread of jihadism. "We have a window of opportunity to help this country draw a line that they can hold," says Andrew Young, America's ambassador to Burkina Faso.

Unfortunately, many of the mistakes that were made in Mali are also being made in Burkina Faso. Militias are proliferating; a cycle of ethnic violence has begun.

Too little is being done to fix the underlying problems that fuel conflict, such as failing agriculture, poor governance and poverty. Local elites seldom want to end the corruption that enriches them, or allow the kind of democratic accountability that might limit their power.

Furthermore, the threat of jihadism has prompted some Western governments quietly to stop promoting democracy in Africa, just as during the cold war, when they propped up awful regimes if they were anti-communist. A similar approach seems evident now: almost any ruler who is anti-jihadist can seem a suitable ally. Earlier this year, for example, French warplanes bombed rebels in Chad to protect Idriss Déby, who has ruled since 1990. In Cameroon special forces trained by the West have been implicated in brutal abuses against opponents of Paul Biya, who has been president since 1982.

The Sahel is so unstable that foreign troops will probably be there for years. But unless local governance improves, they will not eliminate the jihadist threat. As one Western officer muses: "Are we just building sandcastles at low tide?" ■

Iran

Battle of the ayatollahs

Why Shia clerics are turning on Iran's theocracy

THE MURDER of an imam ought to provoke horror. But after a bodybuilder gunned down Mostafa Qassemi, a cleric in the western Iranian city of Hamedan, on April 27th over 100,000 people followed the killer on Instagram. Posts by his followers railed against Iran's supreme leader, Ayatollah Ali Khamenei. "One less cleric," women mutter on Tehran's underground.

Such is the anger at Iran's ruling clerics, who preside over a shrinking economy. American sanctions on oil exports have sent the currency crashing. Inflation is near 40%; wages are falling in real terms. Basics such as chicken and clothes are becoming luxuries. The IMF forecasts that GDP will contract by 6% this year. The theocrats offer no way out of the crisis. "We're approaching a turning point," says Sadegh Haghighat of Mofid University in the Shia holy city of Qom. Clerics there increasingly question the system of *velayat-e faqih*, or clerical rule.

Some clerics are distancing themselves from the regime, which corners much of Iran's wealth through its vast business empire. Esmail Azarinejad, a poor cleric, drives around neglected villages distributing children's books from the back of his old Peugeot. Others openly challenge the mullahs in charge. The following of Seyed Aghamiri, who says temporal power corrupts, grew after a clerical court defrocked him. Older sages have met with reformers. A growing number look to Iraq's holy city of Najaf, 675km away, for a different model of mosque-state relations.

For decades Najaf was Qom's poor relation. Under Saddam Hussein, Iraq's old dictator, yearly enrolment at its Shia seminaries dropped to just a few hundred, while Iran funded training for 110,000 clerics. But since the overthrow of Saddam, who was

The poster boy of Najaf

Sunni, and the return of relative calm to Iraq, Najaf's prestige among Shias has soared. Its shrine of Imam Ali, founder of the Shia sect, attracts millions of pilgrims a year. Its colleges are free of state interference, unlike those in Qom. And it is the seat of the most popular Shia cleric, Grand Ayatollah Ali al-Sistani (pictured).

Mr Sistani champions the separation of mosque and state. Clerics should advise, he says, not rule. Revered as Shiism's pre-eminent *marja*, or religious reference, Mr Sistani has influence in Qom too. Last month Ayatollah Abdollah Javadi-Amoli, a conservative stalwart in Qom, said the quality of teaching is better in Najaf. Senior Iranian clerics are moving there, including Ali Khomeini, the respected grandson of the Islamic Republic's founder. "If you're under the heavy hand of Iran's religious establishment, which tells you what to think and what to wear, it makes you look to the intellectual freedom of Najaf," says Abbas Kadhim, Mr Sistani's biographer.

In March Hassan Rouhani travelled to Najaf, becoming the first Iranian president to meet Mr Sistani. By law Mr Rouhani's allegiance should be to Mr Khamenei, but he hoped Mr Sistani's blessing would boost ▸▸

his standing in the face of pressure from hardliners. An observer said it looked as if the president was meeting the pope. "Rouhani is sending a signal that there's room in the Islamic republic for those who don't believe the rule of the [Islamic] jurist is an article of faith," says Robert Gleave of Exeter University in Britain.

If so, some in Iraq want to help him out. "*Velayat-e faqih* is a dictatorial regime," says Saleh al-Hakeem, a globe-trotting cleric from Najaf. "The clerics of Najaf should support civil society in Iran, not theocracy." Mr Sistani, himself an Iranian national, is more cautious. But after his meeting with Mr Rouhani he called for Iraqi sovereignty to be respected. Clerical casuists understood that as a criticism of Mr Khamenei's claim to be supreme leader not just of Iran, but of all Shias.

Mr Sistani is quietly projecting his influence. His representative (and son-in-law) in Qom, Jawad al-Shahristani, collects tithes from Iranian followers and funds a countrywide charitable network that includes poor houses and hospitals. Mr Sistani also supports 49,000 religious students, about 45% of Iran's total, with stipends. Short of cash, Mr Rouhani, meanwhile, has cut seminary funding by a third. "Mr Sistani's office is very powerful in Qom," says Mr Haghighat.

Mr Khamenei is responding by tightening his grip. In March he installed Ebrahim Raisi, a hardliner who lost to Mr Rouhani in the last election, as chief justice. He appointed another hardliner to head the Expediency Council, his government watchdog. Conservative ideologues get airtime on state television, where they chide clerics for losing faith in *velayat-e faqih*. The doubters have their funding cut or are demoted by the Society of Seminary Teachers of Qom, a state regulator. Some have had their offices ransacked. The worst offenders are hauled before a clerical court and held under house arrest.

Most of Qom's top clerics, each more learned than Mr Khamenei, have begun to bite their tongues or speak in riddles. But the more coercive Mr Khamenei's rule gets the more attractive Mr Sistani's teachings appear. Far from elevating clerics, say dissidents, Mr Khamenei's bullies treat them like state functionaries. "The Islamic Republic's crackdown on the clergy has reached an extent unprecedented even under the Shah," says Mohsen Kadivar, a scholar from Qom now in America.

Ayatollahs tend to live long lives, but Mr Sistani is 88 and Mr Khamenei is 80 (and said to be fighting cancer). The question their followers often ask is what comes next. For years it seemed as though clerics in Qom would determine the future of religious leadership in Najaf. Now the talk is of the clerics in Najaf shaping the future of Iran's clerical rule. ■

Eurovision

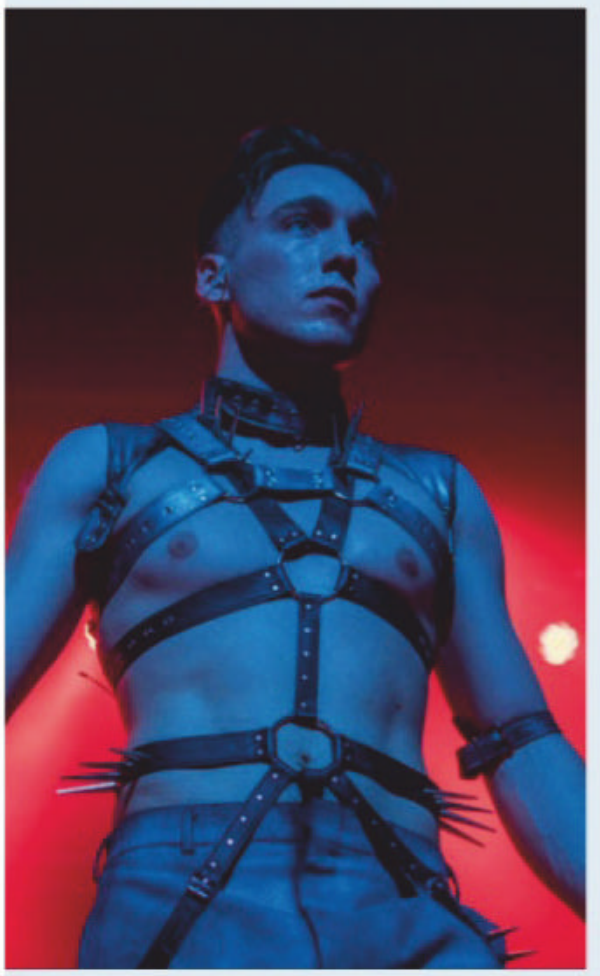
BDS meets BDSM

What happens when a kitschy song contest is held in Israel

"HATRED WILL prevail!" screams the man on stage, as two leather-clad women gyrate in cages behind him. On a pedestal above, a man in a black leotard slices the air with a staff shaped like a toilet plunger. Meet Hatari (pictured), a self-described "anti-capitalist, BDSM [bondage-discipline-sadism-masochism] techno band". They are Iceland's entry for this year's Eurovision song contest, best known for featuring cheesy ballads and launching the careers of ABBA and Céline Dion.

But Hatari are not in the spotlight for their bizarre appearance or performances. The band's members have caused a stir by threatening to use their platform to criticise this year's host, Israel, for its treatment of the Palestinians. They also challenged Binyamin Netanyahu, Israel's prime minister, to a "friendly match of traditional Icelandic trouser grip wrestling". (He appears to be ducking this intriguing challenge.)

It might seem odd for Israel to be hosting Eurovision, given that it is not in Europe. But its broadcasting authority is a member of the European Broadcasting Union (EBU), which runs the event. (For the same reason, Morocco has competed in the past.) Israel's representative, Netta Barzilai, won last year, so it gets to host this year. Hawks wanted the event to be held in the contested city of Jerusalem, which Israel calls its capital. But the state broadcasting authority and the EBU chose Tel Aviv.



Bibi's new sparring partner

The singing doesn't begin until May 14th, but the sniping started months ago. Leaders of the campaign for boycotts, divestment and sanctions against Israel, widely known as BDS, have called on artists and broadcasters to withdraw from the event. "Israel is using Eurovision to art-wash its egregious crimes against the Palestinian people," says the movement. Dozens of British celebrities, such as Peter Gabriel and Roger Waters, signed a letter in January calling on the BBC to press for Eurovision to be relocated. Other artists have since come out against a boycott.

The backdrop to all of this is an increasingly complicated relationship between Europe and Israel. Many European leaders are outspoken supporters of a Palestinian state and critical of Israeli policies in the occupied territories. Despite having a trade agreement with Israel, the EU requires that products made in Israeli settlements be labelled as such. Mr Netanyahu, for his part, talks of a "plague" of anti-Semitism in Europe. He has reached out to nationalist and far-right European politicians who are often more sympathetic to Israeli positions (though some have also used anti-Semitic rhetoric in the past).

The politicisation of Eurovision is nothing new. The victory of a bearded drag queen from Austria upset social conservatives in Belarus and Russia in 2014. Russia was also peeved about Ukraine's win in 2016 with a song about Josef Stalin's deportation of Crimean Tatars. (Russia invaded and annexed Crimea in 2014.) In 2017 Ukraine banned Russia's candidate, who had performed in Crimea; this year Ukraine's act withdrew to avoid a ban on singing in Russia.

No one has yet pulled out of this year's event over the host country. But some fear Israel will not allow in contestants who have voiced pro-Palestinian views. Hatari think they might be banned by Eurovision's organisers. The rules state that "no lyrics, speeches, gestures of a political, commercial or similar nature shall be permitted during the Eurovision Song Contest." Save them for the wrestling match.

The Economist

SPECIAL REPORT:
Banking

A bank in your pocket

Michael Spence.
Nobel Laureate in Economic Sciences.

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A bank in your pocket

Young people and their phones are shaking up banking, says Helen Joyce. That will transform the industry

"I STARTED THE business because I love milk tea myself," says Peng Yuxia. Meet the Cow, her shop in Hangzhou, 200km south-west of Shanghai, sells the cassava-based hot drink, also known as bubble tea, to passers-by—and, increasingly, to customers who pre-order on their phones. Recently she signed up to a small-business programme run by Ant Financial, China's biggest fintech firm, which has its headquarters nearby. Now customers can order in advance from within Alipay, Ant's payment app, and she has seen total numbers rise from about 50 a day to nearer 70. Payment is by scanning a QR (quick-response) code—so easy, she says, that a mother getting a pedicure next door can send a child in to order with her phone.

In another part of Hangzhou, Zeng Ping'en looks around his electric-moped shop with pride. A loan from MYbank, Ant's digital bank, helped with the cost of redecoration. Applying took just a few minutes, he says: "A click on the phone and I got my money." He can draw down and repay funds at his convenience; interest amounts to a few yuan a day—"easily affordable". Since China's long-established banks lend mostly to companies, without the MYbank loan he would have had to wheedle loans from his friends. "Electric-moped shops are getting fancier," he says. "I'd lose out to the competition if I didn't renovate."

Ant's origins lie in Alipay, set up in 2004 by Alibaba, then a newish e-commerce website, to make online payments easier. As Alibaba grew, its payment arm started to allow person-to-person transfers, and then purchases in bricks-and-mortar outlets. Alipay was spun off in 2011. Renamed Ant Financial in 2014, it is now one of the world's biggest financial firms. Its most recent funding round, last year, valued it at $150bn. Alibaba holds a 33% stake.

Together with its main rival, WeChat Pay, which sits within WeChat, the country's dominant messaging app, Alipay has transformed Chinese commerce—and everyday life. They have enabled China to leapfrog straight to mobile payments using QR codes, bypassing credit and debit cards. All manner of things can be done from within their apps, including buying tickets for flights, train journeys and films, calling a taxi, paying an electricity bill, ordering food and much more.

In the past five years Ant has expanded beyond payments and into other financial services. In 2013 it set up Yu'e Bao ("spare treasure"), a single-click, instant-access way to earn interest on excess Alipay balances by parking them in a money-market fund. By March 2018 the fund had 1.7trn yuan ($250bn) in assets, making it the world's biggest money-market offering by a wide margin.

In 2015 Ant started providing revolving consumer credit. The following year it launched MYbank, using Alipay data to set interest rates and credit limits for small-business loans. Ant Fortune, launched the same year, gives access to Yu'e Bao, now with a choice of money-market funds, and a range of wealth-management products from nearly 30 asset-management firms.

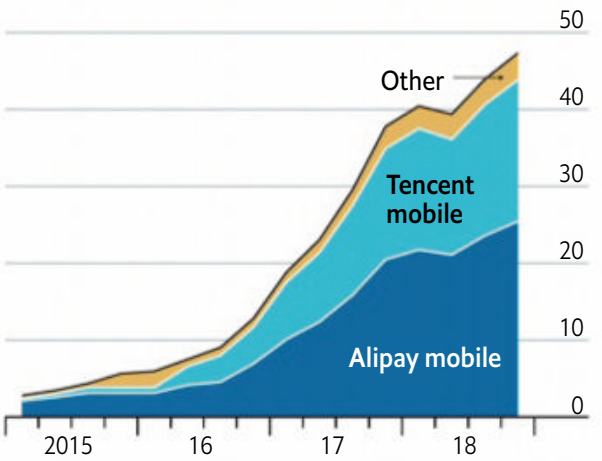
Startled by Ant's hectic growth, in the past couple of years Chi-

nese regulators have sought to slow its pace, setting daily limits on transfers within Alipay and caps on those into and out of Yu'e Bao. Regulators abroad, too, have crimped Ant's ambitions. Last year America's investment-screening committee blocked Ant's purchase of MoneyGram, a money-transfer firm, which would have given it access to 350,000 retail outlets globally—and a foothold in America, the biggest market for financial services.

The setbacks forced a rethink. At home, Ant's top brass now talk about supporting incumbents to find new customers and become technically more nimble. Its foreign plans have been slimmed down, too. It is focusing on enabling Chinese people to use Alipay abroad (now possible in 54 countries and hundreds of thousands of shops) and expanding into developing countries. Ant now has stakes in, or partnerships with, digital-payment firms in countries including Bangladesh, India, Malaysia, Mexico, the Philippines and Thailand. "We see our role as serving the unbanked and underbanked," says Leiming Chen, its general counsel.

Shop and go

China, value of mobile payments, yuan trn



Source: Analysys

Bestriding the world

Ant's giddy growth is both a cause and a consequence of big changes in Chinese life: development, urbanisation and the emergence of a vast middle class ready to spend. But it also exemplifies a broader shift in the provision of financial services. That shift goes well beyond China's borders. In hindsight, the pivotal year was 2007, when the credit crunch started and the iPhone was launched. The consequences of the crunch have preoccupied bankers everywhere for more than a decade. The smartphone, it is becoming clear, will matter at least as much for their future.

Start with the threat from Ant itself. Many bankers in developed countries fear that its plans for aggressive expansion beyond China have merely been postponed. That worries rich-world incumbents, since a hungry new arrival would mean slimmer pickings for those already at the table. And Ant's "platform" approach—offering a pick-and-mix of financial and non-financial products from other companies on its app—poses a challenge to the current (or checking) account that is the central relationship with banks of most people in rich countries. If that core were to break up, how would banks cross-sell loans, mortgages or insurance, profit from interest-rate spreads and commissions, or charge fat fees for occasional services such as foreign exchange or overdrafts?

"I understand why [banks] would be a little scared: the sheer size of our user base and the variety of services we offer," says Mr Chen. But incumbents everywhere have nothing to fear, he insists: Ant sees its role not as displacing them, but as helping them serve customers they would otherwise not be able to reach. Its expertise is in creating value from technology, not from deploying capital to support loans, he says. "The notion of us being a disrupter, or some creature that traditional financial institutions should be scared of, is misguided."

Many of those institutions are quaking nonetheless. And being disrupted by Ant is just one of their digitally induced nightmares. In another version a Western tech giant—Amazon is mentioned most often—decides to move into banking. Or a messaging or ride-hailing firm expands into financial services—like Kakao in South Korea, which owns the country's favourite chat app and now offers payments and banking; or Grab and Gojek in South-East Asia, ride-hailing services that have moved into payments, insurance and loans. Some incumbents fret that customers might decamp en masse to a mobile-only "neobank" that offers its own current account but also acts as a broker for products offered by other financial institutions, such as Monzo in Britain or N26, now in 24 countries in Europe and planning to go farther afield.

In such scenarios incumbents risk ending up as "dumb pipes", holding bloated balance-sheets and originating products such as mortgages and loans that someone else sells to consumers. If they were to lose the ability to build a brand and the transaction data needed to understand their customers and cross-sell, their wares would become interchangeable. Margins would be driven down, even as they continued having to abide by onerous banking regulations and hold balance-sheet risk.

The mobile phone allows financial products to be linked with other services in novel ways. Take Ant Financial's main rival, Tencent, the social-media and gaming giant that owns WeChat. It moved into payments in 2013. Uptake was slow until the company spied an opportunity in the tradition of giving cash gifts in red envelopes to friends and relatives during Chinese new year. In 2014 it added a digital "red envelope" feature to WeChat; 40m were sent over the holiday period. In 2015 an astonishing 500m were sent on the single busiest day.

Though Alipay hurriedly added its own red-envelope feature, the damage had been done: WeChat Pay had become a fixture on Chinese people's phones. It continues to benefit from being embedded in an app that is used by most Chinese people many times daily, and which connects them to everyone they know. Its share of mobile transactions has risen steadily and now accounts for 39% by value (though somewhat more by number, since it tends to be used for smaller transactions), against 54% for Alipay (see chart). Tencent also offers personal loans and runs an online bank, WeBank. A move deeper into financial services would further threaten Ant's position.

Innovation generation

This special report will argue that banking incumbents will need to reinvent themselves to survive the restructuring of their industry. It will also offer a way to understand the coming fight: as a co-evolution of incumbents, fintechs, neobanks and consumers, with developments in each country shaped by, among other things, the strength of existing banks, quirks of the local market and the attitude of regulators.

It will focus on Asia, where the population is young, the market for low-cost financial products is growing fast and incumbents are weak; and on places where financial regulators are seeking to boost competition by encouraging new banks, notably Britain. It will have little to say about America, where digital banking has not yet had much effect on the industry. Incumbents are sheltered by a thicket of state and federal regulations, and running a free-standing digital-only bank is nigh-impossible.

Since the evolutionary pressure comes from the mobile phone, the best way to view the fight is through the eyes of its most devoted users: the under-30s. Though people of every age are turning to mobile banking, the future of the industry is clearest to see in the hands of digital natives. A good place to start is South Korea, which is the world's most connected country—and perhaps also its most overbanked. ■

The pivotal year was 2007, when the credit crunch started and the iPhone arrived

How to make banking fun

My branch manager is a radish

New ways to tame South Korea's chaotic banking system

YU, A 25-YEAR-OLD student in Seoul, racks his brain to answer a simple question: where do you bank? At three different institutions, it turns out, with six active accounts. One bank was nominated by a grant-giving body for the payment of a scholarship, another offered perks while he was doing military service and a third was where a previous employer insisted his salary be paid. He has several other dormant accounts, and "too many cards to remember". One of them he applied for merely to get a bonus. "A saleswoman came into my office and said that if I spent 300,000 won [$300] on it, I'd get 100,000 won back." He used it just once.

In South Korea, this profusion is perfectly normal. The average adult has 5.2 bank accounts and 3.6 credit cards. Financial products are chosen not because they are a good fit, or because an institution offers fine service, but almost entirely because of personal connections. Credit cards are peddled to acquaintances by freelance agents who split their commission. Flaws in customer acquisition mean that banking in South Korea has long been a miserable experience. Mobile-banking apps are poor or non-existent. Making a payment online typically requires 40 clicks and four passwords. But the past couple of years have seen a flurry of digital entrants. Some seek to help South Koreans cope with the existing muddle; others aim to replace it with something better.

In 2015 the Financial Services Commission (FSC), South Korea's national regulator, decided that encouraging fintechs would shake up the incumbents and improve customer service, says Suh Jeong-ho of the Institute of Finance, a think-tank associated with the FSC. One of the most ambitious newcomers is Viva Republica. In December the startup became South Korea's first fintech unicorn, raising $80m in a funding round that valued it at $1.2bn.

Founded in 2013 by Lee Seung-gun, a former dentist, Viva Republica tried several other ventures before going into digital payments with Toss (the name is supposed to suggest an easy shot in a ballgame), which has since grown into a comprehensive money-management app. Users can aggregate accounts, cards and loans into a single view, with outgoings classified by category. They can sign up for financial products, with Toss earning a commission. "If you're looking for convenience, you have to use Toss," says Yu, the overbanked student. "I can see how much I've spent and even invest in foreign stocks and peer-to-peer funding."

The upstart's speedy growth testifies to the awfulness of the traditional banking experience. Toss has 11m registered users, a quarter of the South Korean population. But its ambitions go much fur- ▸▸

Kids these days

What bankers need to know about the mobile generation

IF YOU TURN 18 this year, you are younger than Amazon and Google. You turned three with Facebook's arrival, four with YouTube, five with Spotify, six with the iPhone and eight with WhatsApp. If you are at the upper end of the 18-30 age range considered in this special report, you will remember a time before mobile internet, but not a time before mobile phones. If you are anywhere in that range, you use your mobile to read, chat and play, stream music and videos, hail taxis, order food, and search for dates and jobs.

You use mobile phones to manage your money, too. Research last year by Raddon, a consultancy, found that 85% of American millennials (those born between 1981 and 1996) used mobile banking, and predicted that the share would be higher still for Gen z (born after 1996). The main reason people choose a bank is convenience, the consultancy says. For older people that means a nearby branch; for younger ones it means an excellent app.

You have cooled on cash. Half of American millennials use peer-to-peer payment services such as Venmo or Zelle at least once a week. In 2017 Bain & Company, another consultancy, asked people in 17 countries which they would miss more for a day: their phone or their wallet. Everywhere except Japan and Malaysia, the share of under-25s who would miss their phone more was above 70% (see chart).

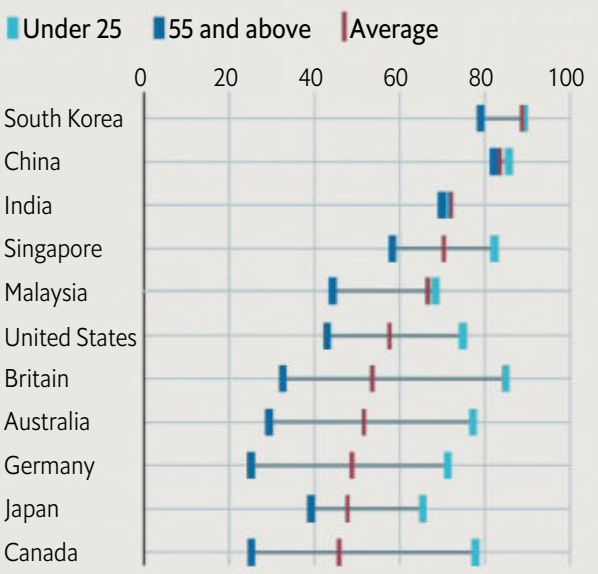
You are a demanding customer, with expectations of speedy, convenient service that have been set by Uber and Amazon Prime. You are generally willing to grant companies access to your data, but want something in return. You let Google Maps track your location to help you get where you are going; you like Netflix using your viewing habits for recommendations.

In many developed countries, tuition fees mean you have much more debt than previous generations did. Soaring property prices have made it harder for you to become a homeowner. Growing up in the aftermath of the financial crisis has left you cautious about loans. According to bankrate.com, a comparison service, just one in three American millennials has a credit or debit card, a much lower share than for previous generations at the same age. All this means banks find it hard to make money from you.

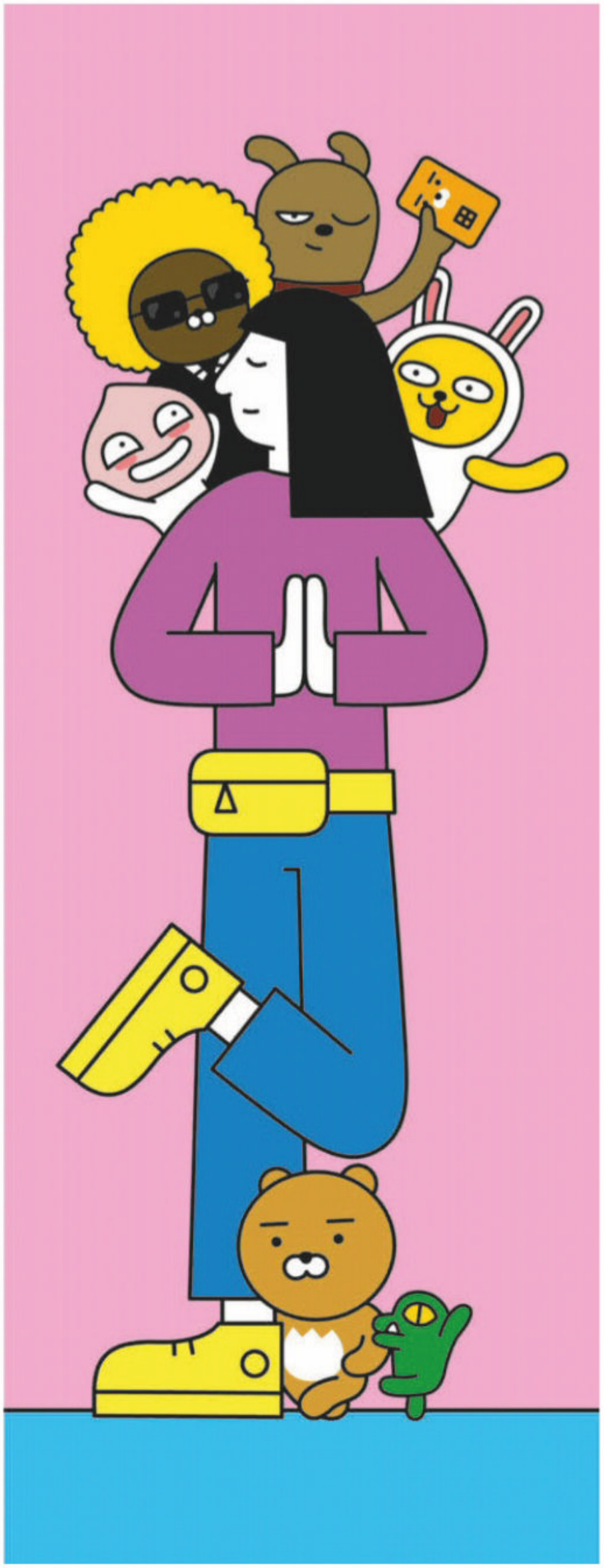
You also demand more from financial institutions than older people do, and care more about values-based investing and corporate social responsibility. The young expect an answer to the question: "Why are you in banking?", says Rick Spitler of Novantas, a financial consultancy. "They think bankers should care about helping people to become wealthier, not just about their own bottom line."

Back pocket

Retail-banking customers who would rather go without their wallet than their phone, 2017, % of total



Source: Bain & Company



ther. It is applying for a licence to set up a digital bank. The aim, declares Mr Lee, is to be the dominant South Korean "super-app" for all things financial. Banks do not see Toss as a threat, he says, but as a partner that cuts the cost of acquiring customers. In the long term, though, banks may lose out, he thinks. "We will get the [customer] engagement and they will become suppliers."

Bank Salad (banking, but healthy), from Rainist, a fintech founded in 2012, is taking a narrower approach. It has 4m users and also offers account aggregation and money management, though not payments or transfers. Its chief executive, Kim Tae-Hoon, says it aspires to be a financial-adviser version of Jarvis, the AI assistant in the superhero film "Iron Man".

Rainist's strength is its data-driven referral system, which suggests products based on users' spending patterns. According to its research, credit-card customers whom its partner institutions have acquired by other routes, such as agents who offer signing bonuses, spend an average of 600,000 won a month and stay for four months. The customers who sign up through Bank Salad spend three times as much each month and last nearly three times as long, so the card-issuers get a bargain for the commission they pay.

Salad, tossed

Both apps are shaking up South Korean banking by rationalising customer acquisition, setting new expectations for quality of service and, if Toss succeeds in becoming a bank, competing head-on. But there is another formidable challenger. Fully 94% of South Koreans use Kakao Talk, the chat app of Kakao, a social-media and mobile-gaming giant. Like WeChat, it includes a payment function, Kakao Pay, which has 28m registered users. It was used for more than 20trn won ($17.5bn) of payments in 2018.

A dominant social-media player's success in payments is of obvious interest to other fintechs. In February 2017 Ant bought nearly 40% of the fledgling Kakao Pay for $200m. For Kakao Pay, says Shin Won-keun, its chief strategy officer, the appeal of Ant as a partner was that its portfolio is similar to what Kakao Pay would like to do. For Ant, it is a chance to learn from Kakao Talk: "They wanted to see what would happen with a messenger app."

Kakao is now making a full-frontal assault on South Korea's incumbent banks. In 2017 a consortium including Kakao Corporation, the brand's parent company, won one of the country's first two licences to run a digital bank. Kakao Bank has been a runaway success: within 13 days 2m people had signed up for current accounts and it now has 8.9m clients (K-Bank, the other newcomer, lags far behind with 1m). The FSC is considering allowing non-financial firms to hold larger stakes in banks (Kakao Corporation owns just 10% of Kakao Bank, the maximum permissible) and granting two more digital licences. Toss hopes to win one of them.

Rather than present itself as solid and respectable, as banks usually do, Kakao Bank comes over as playful and fun. Its debit cards, and those of Kakao Pay, feature the Kakao Friends, eight kooky characters created as emoji for Kakao Talk. Muzi, for example, is an optimistic piece of *danmuji* (pickled yellow radish) who dresses as a rabbit; the most popular character, Ryan, is a gentle lion who refused the throne of Doong Doong island and is self-conscious about lacking a mane.

Whether South Koreans will shift to running their financial lives through their Kakao accounts is another question. After all, when you already have five accounts, adding a sixth may not be that big a deal. But the hordes who have signed up demonstrate that customer expectations are changing. Instead of picking a stolid, sober bank manager to keep watch over their money, they are choosing a brand fronted by a gentle, maneless lion. ■

Kakao is now making a full-frontal assault on South Korea's incumbent banks

Apps in South-East Asia

Grab and Gojek

In Malaysia and Indonesia, ride-hailing services are bringing banking to the masses

BOTH WERE founded by Harvard Business School graduates, from the same year. Both have apps that have been downloaded more than 100m times. Both started with ride-hailing and expanded into other logistics businesses, such as deliveries and food-ordering. The story of two South-East Asian "deca-unicorns"—fintechs valued above $10bn—is usually told in terms of their rivalry. This report is more concerned with how ride-hailing services can bring banking to the masses in a largely unbanked region.

The older is Gojek (the name comes from *ojek*, the Indonesian word for a motorcycle taxi). Founded in 2010, it expanded beyond Indonesia only in 2018. It is now also active in Vietnam and Thailand, and in January entered Singapore, its rival's current base.

Grab, founded in Malaysia in 2012, went multinational earlier. Last year it pulled ahead of Gojek when Uber called time on a price war with Grab, took a 27.5% stake in its erstwhile rival and left the region. It is now active in the same four countries as Gojek, plus Cambodia, Malaysia, Myanmar and the Philippines. Gojek's main edge in what is now a two-way fight is that it is native to Indonesia, which, at 265m, accounts for two-fifths of the region's population.

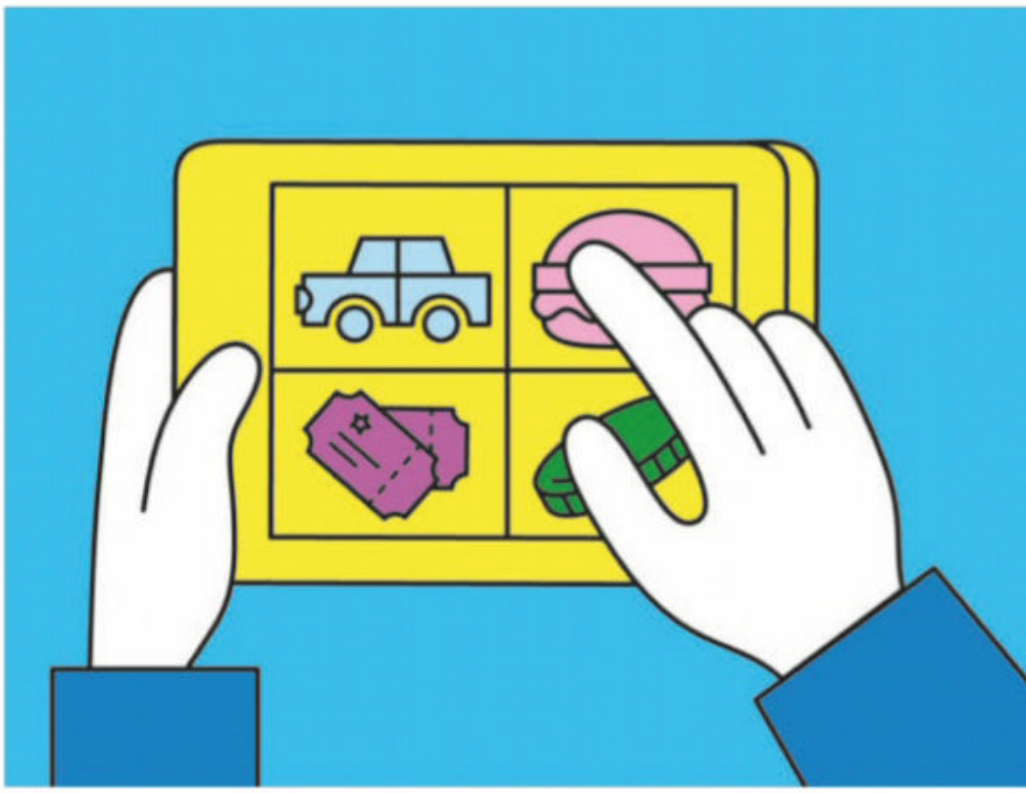
At first, the pair's apps simply put customers and drivers in touch, with payment in cash. Since 75-80% of South-East Asians are unbanked, enabling customers to go cashless required lateral thinking. Inspiration came from the way kiosks and convenience stores sell mobile-phone credit. Now drivers (who get help with opening bank accounts for themselves) act like mobile top-up stations for in-app credit. Passengers can hand over extra cash on top of their fare and ask the driver to add it to their balance in the app.

More recently, Grab and Gojek have enabled digital wallets to be topped up in cash with third parties, such as kiosks and convenience stores. And they are signing up retailers to accept QR-code-enabled payments using their apps. Each aims to be used for all sorts of purchases, not just for services offered through their apps.

The biggest obstacle for each (apart from its rival) is slow adoption by retailers. Speeding things up means persuading retailers that new ordering and payment options will increase profits. Grab says its average cashless user makes twice as many transactions as one who pays in cash, and is 30% more likely to use several of its services rather than just one. "Our pitch to a food merchant is that with Grab Food you typically see a 20-30% uplift in transactions, and with Grab Pay you see lower costs," says Reuben Lai, senior managing director of Grab Financial, the group's payment arm.

Both firms are moving into other financial services, such as small-business loans and microinsurance. They can use transaction data to credit-score, and take payments from in-app wallets, which cuts the risk of default. Grab, with its region-wide footprint, is also looking at cross-border remittances. "Our ambition is to build the ASEAN [Association of South-East Asian Nations] wallet to enable any consumer to buy anything, online or offline, and access any financial service, anytime, anywhere," says Mr Lai.

Neither wants to make loans or underwrite insurance itself. Like Ant Financial, they insist they want to work in partnership with incumbent banks. The right way to think of Gojek's payment arm, Go-Pay, says Aldi Haryopratomo, its chief executive, is as a "bridge between people who don't have access to financial services and people who want to provide them". The hardest part of his job,



he says, is convincing banks that Go-Pay is a potential partner, not a threat. "I don't want to have to work the way that they do. I don't want to have their balance-sheet. They're only in 30% of the market; there's another 70%. There's enough for all of us."

If South-East Asia's ride-hailing giants succeed in their ambitions, the region's incumbents may never develop into anything that looks like the full-coverage retail banking available in the developed world. They may hold on to better-off individuals and big businesses, while everyone else buys the products they originate on mobile platforms that combine financial and other services. Rather than unbundling the constituent parts of banking, the mobile phone may stop them being bundled in the first place. ■

Reforming the incumbents

Banker, disrupt thyself

How Singapore keeps its banks up to speed

IN 2014, AS ALIBABA was preparing to list in New York, Piyush Gupta, the chief executive of DBS, Singapore's biggest bank, was watching with growing alarm. Together with his bank's chairman, Peter Seah, he arranged a meeting with Jack Ma, Alibaba's founder, and Joseph Tsai, then its chief financial officer. "I walked away scared out of my wits that they will change our industry forever," says Mr Gupta. Many bankers, particularly in America, seemed convinced that onerous regulations would protect them from challenge, or that regulators would dampen competition for fear of destabilising the sector. To Mr Gupta that seemed complacent. "Ant shows that there's more than one way to skin the cat," he says. "They are getting the customer relationship and the data to create value, and then passing the regulated part of the activity to banks."

The meeting left him determined to disrupt his own bank before Ant, or another challenger, had a chance to do so. He considered spinning off a separate unit to lead the transformation, or outsourcing some of it to fintech firms, but decided that DBS was ▸▸

capable of rebuilding itself. "The received wisdom is that it's impossible to change culture," he says. "But I had gone back home to Delhi to visit my dad, who's in his 80s. He banked online, paid his taxes online, shopped on Amazon—so what makes us think we can't change people in their 40s and 50s sitting in a bank?"

Since then DBS has reworked much of its back-office technology, moving more than 80% of its computing power off clunky mainframes onto the cloud. It has teamed up with businesses offering a wide variety of services to its app—including, most recently, Gojek. DBS's market dominance was essential to forging these relationships, says Mr Gupta. Elsewhere in the region it has decided that acquiring new customers requires a new approach. Two years ago it launched digibank, a mobile-only bank aimed primarily at young people, in India. Last year digibank launched in Indonesia. It now has 2.9m customers in those two countries.

Acquiring a digibank customer via online promotions and ads costs around $8-10 a go, far less than the $60-70 it takes to acquire a customer offline. And without branches, running accounts is very cheap. Even so, it will take time for digibank to become profitable. "Because the cost is not huge you think you'll acquire the customers and figure out what to do with them," says Mr Gupta. For a possible model he points to DBS's digital marketplaces for cars, housing and energy contracts, which earn it commissions.

Creeps in this petty pace

United Overseas Bank (UOB), Singapore's third-biggest bank by deposits, is also creating a digital bank to support its regional expansion. TMRW (pronounced tomorrow), a mobile-only bank aimed at millennials, was launched in Thailand in March. A digital bank can be a trove of customer data. UOB has set up an "engagement lab" to use behavioural insights and artificial intelligence to study customers' banking habits and needs.

The focus on young people simplifies things, explains Dennis Khoo, who is leading the expansion, since they are already digitally minded and their financial needs are usually straightforward: payments, credit cards and savings. He draws a distinction between "digital banking"—offering services through internet and mobile, alongside other channels, such as branches and phone—and a "digital bank", like TMRW, which is available only through mobile phones. The latter is the way, he says, that banks can squeeze out costs while still offering excellent customer service.

Singapore's banks have certainly been forward-looking. But they have also been supported by a regulator that wants incumbents to be well-placed to survive the coming competition. In typically technocratic Singaporean style, the Monetary Authority of Singapore (MAS) has chivvied banks to upgrade their software, move onto the cloud and build fintech-style services in order to see off challengers before they can gain a foothold.

In 2016 MAS summoned the island's big banks and told them to create a peer-to-peer system for moving money between accounts. Any account-holder in Singapore should be able to transfer money free to anyone else with no more than a few clicks on a phone. More information fields were added to Singpass, the national digital-identity system, and a system was set up to enable people to give financial institutions direct access to their profiles. "We decided to upgrade the ability of the existing players and equip them so they can better compete in the market," says Sopnendu Mohanty, MAS's chief fintech officer. "As a public policymaker, we are working with banks to rationalise their costs, and create a level playing field for them to compete with non-regulated entities."

This approach has had the desired consequence: fintechs in Singapore have largely shifted from offering services to consumers to offering digital services to banks. Some other regulators, notably Britain's, are taking a different tack: encouraging new entrants and leaving it to the market to pick the winners. ■

Neobanks

For digital natives

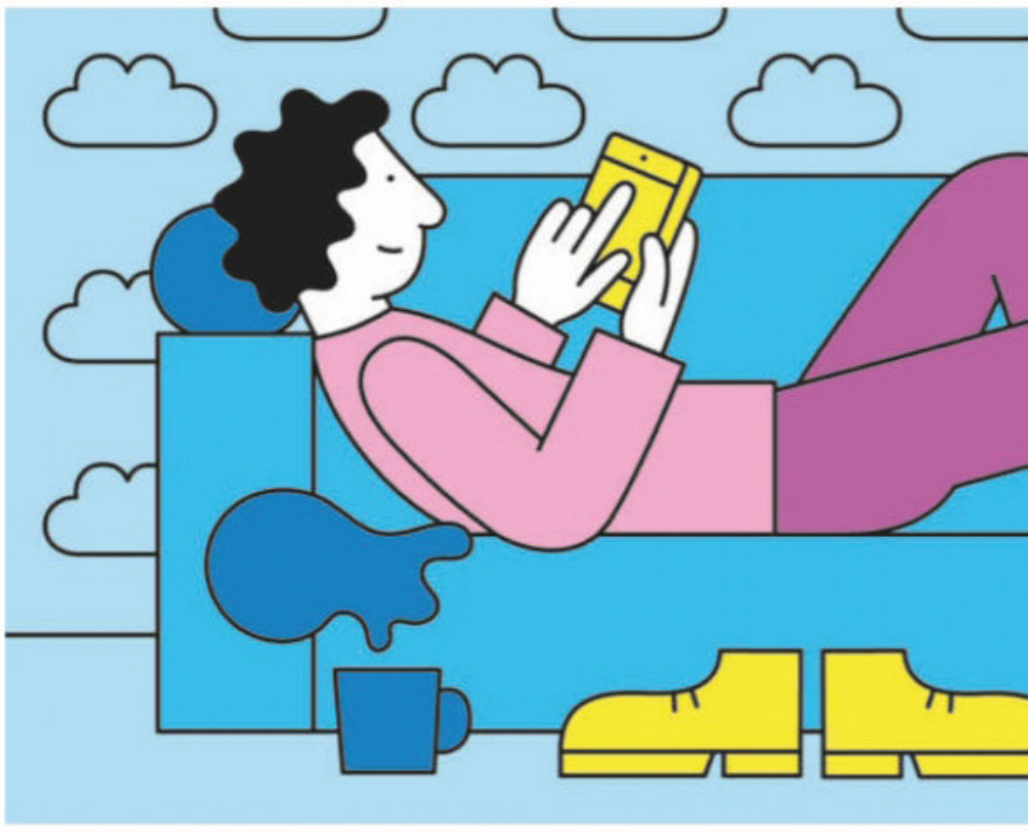
British banking goes branchless

ANNE BODEN started her career in banking in 1981. After rising through the ranks, in 2012 she became chief operating officer at Allied Irish Banks. As she helped pick up the pieces after Ireland's banks had blown up its economy, she started thinking that banking needed root-and-branch reform. And even as bankers were distracted by the aftermath of the financial crisis, the wider world was changing. "People were running their lives on mobile phones," she says. "They were living on social media and buying music on Spotify, and financial services hadn't caught up."

At the end of 2013 she resigned to travel and visit the most innovative banks she could find. But they seemed to be merely patching up their computer systems and closing branches, rather than rethinking their business models. Starting again, she concluded, was the only way to do something better. So she decided to launch a digital-only "neobank", Starling, in Britain. Since getting a banking licence in 2016 it has opened 520,000 personal accounts.

Starling is one in a flock of neobanks in Europe aiming to let digital natives bank on their mobile phones. Britain has the largest number; some 15 licences have been granted since 2005. These new banks are capturing a third of new revenue growth in Britain, says Alan McIntyre of Accenture, a consultancy. All are raising large amounts of capital and seeing customer numbers grow at a speedy clip. According to a survey by finder.com, a comparison-shopping website, 9% of British adults—and 15% of 18- to 23-year-olds—now have a neobank account.

Monzo has opened 1.6m new accounts in Britain, with 30,000 more each week. Revolut, which started by offering foreign exchange and then added an e-money licence, now has a banking licence in Lithuania and will soon have deposit protection and be able to offer credit across the euro zone. N26 (named for the num- ▸▸



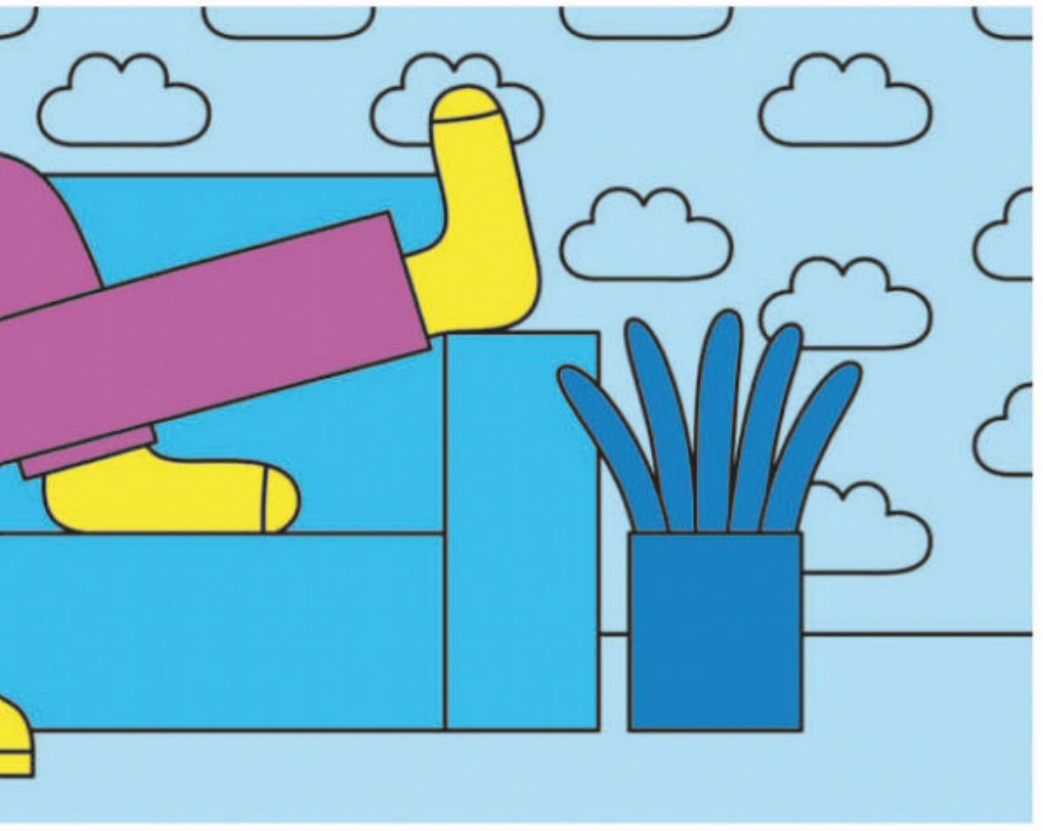
ber of cubes that make up a Rubik's cube), which launched in Austria and Germany in 2015, is now in 24 European countries. Starling is moving into "banking as a service": enabling businesses to carry out activities such as payments by handling the regulated parts.

Branches are closing and customers are becoming keener on digital financial products in many developed markets (see chart). But neobanks have flourished particularly in Britain. One reason is that high-street banks' reputations were even more thoroughly wrecked in Britain than elsewhere, not just by the financial crisis but also by the mis-selling of insurance policies in the 1990s, for which compensation of more than £34bn ($44bn) has been paid so far. Another is that the regulator, the Financial Conduct Authority (FCA), is keen on new entrants. It has a mandate not just to protect the integrity of the financial system but to promote competition. When the FCA sets policy, says Chris Woolard, its director of strategy and competition, it considers "not just the risk that bad things will happen, but the risk that good things will not".

Britain's approach to financial innovation also helps fintechs move towards bank status step by step. Its "open banking" rules were shaped partly by an investigation in 2016 into the retail-banking market that concluded more competition was needed. They include a particularly fintech-friendly interpretation of the "revised payments services directive", an EU-wide rule requiring banks to give third parties direct access to account information (with the account-holder's permission). The aim is to encourage startups that offer payment services, account aggregation and the like.

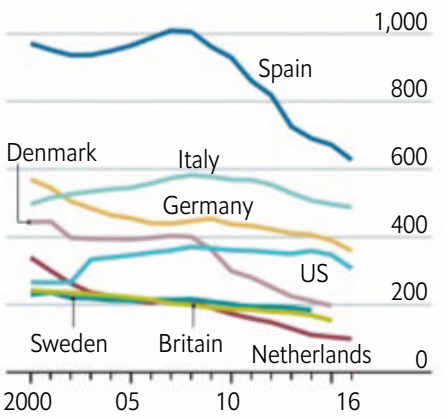
Since 2016 the FCA has run a "sandbox" for financial innovation. Twice a year around 25 firms are allowed to sign up customers for a new product or operational approach, with full disclosure and an FCA guarantee that they will not lose out if things go wrong. Firms must comply with all the usual prudential measures and checks for money-laundering, fraud and so on, but are granted permission to innovate within the spirit of the rules.

Mr Woolard draws an analogy with pharmaceutical trials, where a new medicine is tested against the standard treatment for a disease. Firms seem to value the opportunity to prove to investors that their approach works in a regulated setting, he says: applications for the sandbox exceed the number of places by a factor of three. The approach has spread: more than a dozen regulators elsewhere have set up sandboxes in the past couple of years.

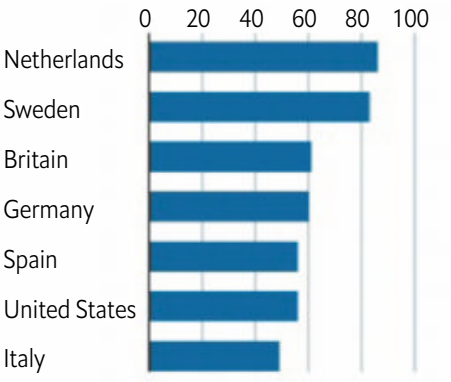


Bye bye, bank manager

Bank branches per million people



Willingness to purchase a digital product, Q4 2018, % of customers



Source: McKinsey

Neobanks have two big cost advantages: the absence of branches and their up-to-date cloud-based software. Branches and the associated staff are responsible for as much as half of a high-street bank's costs. And if it is still running on a legacy mainframe, three-quarters of its IT budget is likely to go on "keeping the lights on", says Dharmesh Mistry of Temenos, which sells cloud-native banking software. Industry insiders say that a conventional bank has to make in the region of $200-400 a year per customer to break even, and each new account adds significant marginal cost. For a neobank, even including product development, customer acquisition and so on, the equivalent figure is around $50-60, and the marginal cost of maintaining each extra account is close to zero.

Economies of scale are encouraging a sprint for global growth. Starling is moving into the euro zone, with a base in Dublin; Monzo's post-Brexit backup plan is an Irish licence, too. N26 and Revolut are both entering several countries in Asia. In Singapore, says Rishi Stocker, who is leading Revolut's expansion, the regulator seems more interested in supporting incumbents than in encouraging competitors. But the island's large foreign-born population makes it an attractive proposition for a bank with a reputation for cheap foreign exchange. Australians, with their penchant for travel, are also an appealing target. And Japan is just asking to be disrupted, says Mr Stocker. "The existing banks are ultra-expensive, and most don't have apps or even desktop applications."

N26 and Revolut are open about their plans to break into America; Starling and Monzo are less forthcoming. The country's handful of home-grown challengers, such as Simple and Moven, have been hampered by the patchwork of federal and state regulations, and rules that make it hard to operate without branches. Like the natives, the newcomers will take responsibility for customer service while partnering with local "white-label" banks—any of several dozen fully licensed banks that specialise in carrying out regulated activities such as holding deposits, handling payments and originating loans for institutions that lack a banking licence.

The main criticism of challenger banks is that customers will use them merely to ring-fence discretionary spending, with their salaries still going into a high-street bank. But that is changing. Nearly two-thirds of Monzo's active accounts have at least £500 a month coming in and a third have £1,000 a month.

More important, they are realising that even secondary accounts can be monetised in novel ways. All want to act as marketplaces, not just for financial products but for other services, too. If a payment for an adventure holiday or mobile-phone bill goes out from your N26 account, muses Valentin Stalf, one of its co-founders, you could be shown options for travel insurance or phone contracts. Monzo allows customers to put money into interest-

bearing pots held by Investec, a separate institution (Monzo's own current accounts do not pay interest). It is working on offering the best deals on utility bills, and mortgages from across the market to customers whose fixed rate is ending, says Tom Blomfield, its chief executive, rather than leaving them to default to a worse product. "Monzo wants to liberate its clients from the 'loyalty tax'," he says. "There are a lot of industries in the UK where you get one year at a good rate and then you're transferred to a rubbish one."

A balance-sheet-light business model that depends more on selling third-party products than on recycling deposits into new loans requires top-notch data analysis and frictionless service. All the neobanks spend heavily on data scientists and app developers; they roll out frequent updates and constantly tweak their recommendation algorithms. Since they have access to account data and have already checked their customers' identities, referrals to third-party suppliers could potentially be done with fingerprint or facial recognition—as simple as one-click shopping on Amazon.

For any of this to work, customers must trust their bank. This means no more sneaky charges, such as allowing a scheduled payment to put them in the red and charging a fee, rather than alerting them in advance. "The most successful thing about these new banks is that they are on the customers' side of the table," says Mr McIntyre of Accenture. "The possibility is fading of building your business model on the fact that customers make mistakes." ■

"Flanker" banks

Young at heart

Some incumbents are seeking to combine the old and new

AT THE ENTRANCE of the glass-and-chrome headquarters of Bank Leumi in Tel Aviv, look left and you will see Mani House, one of the city's oldest buildings. From a balcony peers a statue of Theodor Herzl, the Zionist leader known as the Father of Israel. The marriage of historical and modern is fitting for Israel's oldest bank, established before Israel itself, in London in 1902. For Leumi also owns Israel's youngest bank, launched in 2017.

Pepper is Israel's first bank aimed at "millennials and millennials at heart", says Rakefet Russak-Aminoach, Leumi's chief executive. It is also Israel's first mobile-only bank, the first to charge no fees or commissions and the first to allow current accounts to be opened without visiting a branch. It consists of two apps: one that resembles a Facebook feed, showing transactions, money-management tips and articles related to the account-holder's spend-

Coin of the virtual realm

Teaching children to value money they can neither touch nor see

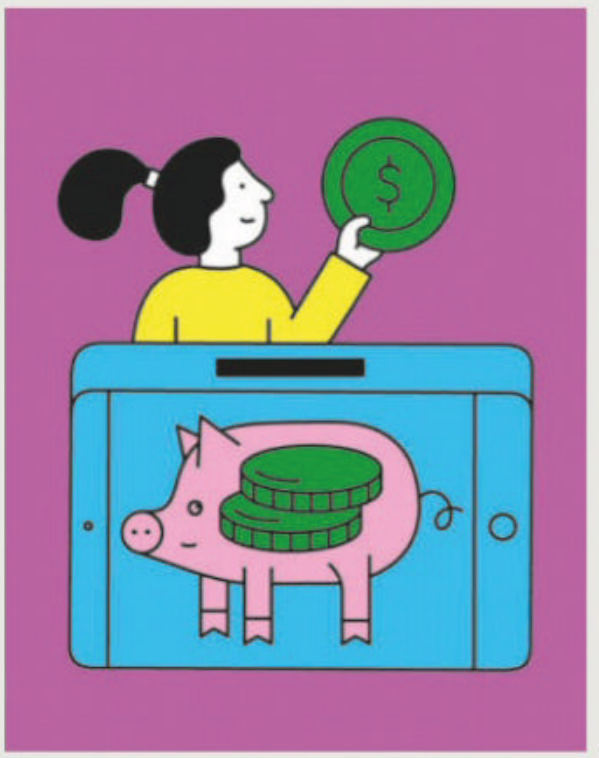
IN 2009 A GROUP of parents in Lymington, an English coastal town, started sharing worries about their children's money-management skills. Pocket money was now stashed in a building society rather than a piggy bank; household shopping was done online; the children rarely saw their parents handling cash. They were spending online, too. Money had become intangible. How, then, were children to learn its value?

The answer they came up with was GoHenry, an app now available in America as well as Britain. It is designed to help young people learn good financial habits through real-world money management. Parents sign up with their own bank accounts and pay a monthly fee of £2.99 or $3.99 for each child aged six or over. Adults and children download separate versions. At the end of last year 379,000 children had active accounts.

Parents can schedule pocket money and set chores. When those are marked as done, the child is paid the agreed amount. Parents can see what the child has bought and where. And they can choose where the card can be used: in shops, online or at ATMs.

Children get debit cards customised with their name (Henry was the first child to use one). They can put money in savings pots, view their spending and balances, and set savings targets. "They could decide to save ten dollars for a sibling's birthday in four weeks' time, or set a goal at 12 to have $2,000 to buy a car at age 18," says Dean Brauer, one of GoHenry's founders. "The app tells them how much to save each week to meet their goal."

Mr Brauer compares GoHenry to a fitness app, giving children feedback on their financial management and motivating them to spend better and save. It is just one of several money-management apps for parents and children; others include Osper, Nimbl and Pennybox. All charge subscription fees, since they lack banking licences and cannot make money by lending out deposits. They fill a gap left by banks, which do not serve such young customers or offer accounts that give parents oversight of children's spending.



A big benefit of such apps is that they inspire family conversations about money. According to research done in 2013 by academics at Cambridge University, more than half of British parents find the subject hard to discuss with their children. And yet most agree that children's attitudes to money are formed in their early years.

Some GoHenry customers are well-off parents who worry that their children will grow up financially careless and entitled, says Mr Brauer. Others have slender means but regard the subscription as an investment in their child's future. Some say that they have been in debt and want their children to avoid that mistake when they grow up; others that the app is cost-effective because their children learn to budget. Even though young people no longer touch and hold money, they can still be taught to handle it well.

ing; and a second, Pepper Pay, for money transfers. A third in development, Pepper Invest, will offer a cheap, simple interface for researching, buying and selling stocks.

Pepper has not published customer numbers, but there are "tens of thousands", says Ms Russak-Aminoach, and new ones are being added faster than at any other Israeli bank. That is despite the national regulator requiring Pepper customers also to have a bricks-and-mortar account, a condition it agreed to drop last month.

For Barak Herscowitz, one of Pepper's earliest customers, the draw was the clear terms and conditions. Traditional banks "always surprise you with things", he says, "and it's usually a bad surprise—a new charge, a new regulation, paperwork that has to be sent by fax." His salary is paid into what the regulator considers his primary account, but he transfers it to Pepper each month and uses the app for everything.

Though Pepper's developers have designed the customer interface, behind it is software bought from Temenos. That puts Pepper on a par with fintechs and free-standing neobanks, and way ahead of mobile banking from high-street names, including Leumi, which run on mainframes. These update account records only once every 24 hours, so they cannot show balances or alerts in real time, or offer instant credit.

The plan is to move Leumi over to Pepper's core software bit by bit. That will be a delicate business. According to Cognizant, a technology consultancy, a quarter of major upgrades of core banking systems fail, and a further half go well over time or budget. But since Pepper is already up and running, the risks may be lower.

"There's always this question: are you cannibalising yourself?" says Ms Russak-Aminoach. But Pepper is taking customers away from all Israel's incumbents, she points out. At 30%, the share of Pepper's customers who hold Leumi accounts is fairly close to Leumi's 25% share of the retail market. Moreover, she says, "if it's possible to do something better than what we are doing, cannibalisation is irrelevant, because if we don't do it, others will."

Leumi is an early example of a new trend: high-street banks setting up digital "flankers"—new brands that compete in the same category and territory as the original, generally in the hope of attracting a different clientele. Most have a narrow focus, such as Esme by NatWest and New10 by ABN AMRO, which offer small-business loans. But incumbent banks are increasingly thinking of following Leumi's lead and going head-to-head with themselves.

Two years ago the board of RBS, Britain's third-largest banking group, concluded that wholesale disruption in the banking industry was coming, though the timing was unclear. If it proved imminent, there would be no time for the total overhaul the bank's core systems would need to compete. As an insurance policy the bank set up Bó, a mobile-only bank that will go live later this year. If change proves slower, the new bank will help the whole group manage a smoother transition.

Even if neobanks take time to make profits, they have no trouble raising capital from investors, says Mark Bailie, Bó's chief executive. Customers are being "trained by Amazon" to expect services to be delivered smoothly and rapidly on their phones, he says. And technology is developing fast: "Fifteen years ago if you wanted a new banking system you'd have to write a very large cheque to one of the major mainframe companies." Now a mobile-only bank can be set up in 18 months for a few tens of millions.

Incumbent banks are increasingly thinking of going head-to-head with themselves

Mr Bailie doubts RBS's core computer system can be moved over to Bó's, but thinks that RBS customers might move voluntarily. "Look at social media," he says. "The young and the better-off are first, but over the next ten years everybody else catches up." ■

The future

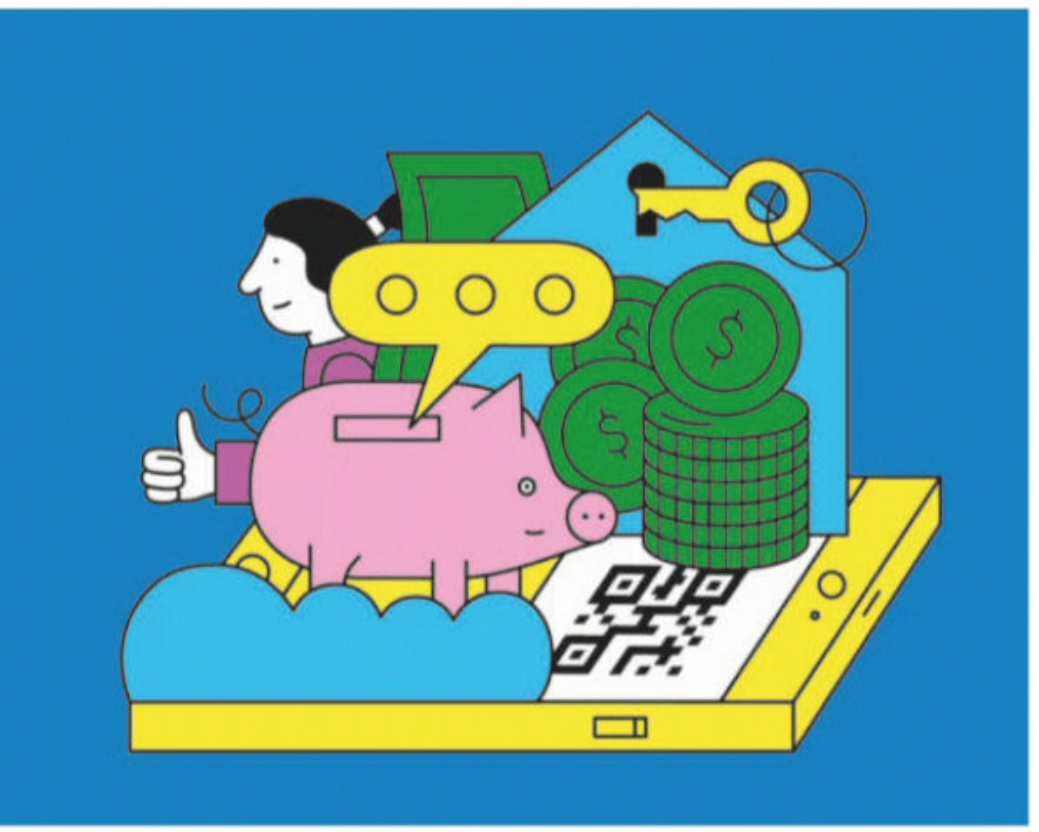
Crowning King Customer

The latest banking revolution is great news for users

TO A MATHEMATICIAN, a transformation is what happens when a geometric object is shifted in space, resized, reflected or rotated. Bankers, too, are in the business of transformation, but it is money they move, and not just through space but through time. They take short-term deposits from savers and give them out to borrowers for longer terms; pool assets to reduce risk and sell them on to investors; and—most mysteriously to outsiders—turn the credit they extend into assets that can be lent out again.

All this keeps the economy ticking. But ordinary people are sometimes neglected. The high-street banks' networks of branches and ATMs, and the government guarantees that back the money in their accounts, have kept customers coming anyway. In many countries, including Britain, banks concentrate a lot of their effort on their big corporate borrowers, says Kevin Travis of Novantas. "It's revealing that leading high-street banks are generally described as the 'big lenders'."

Switching banks is rare. According to Novantas, only 8% of American customers switch bank in a given year, even though moving state often means moving bank. In Britain, where bank licences are national, only 4% do. Low churn is often cited as evi-



dence that customers are satisfied, but it would be more accurate to say that they cannot envisage anything better, says Jason Bates of 11:FS, a British banking-technology consultancy. "People would have said they were satisfied with taxis until Uber came along. Then all of a sudden they didn't want to stand on a street corner holding their hand out in the rain."

Outside Asia, few have yet woken up to the arrival of new banking options, but there are signs that more are starting to. Britain's neobanks have managed to sign up millions of customers largely through word of mouth. McKinsey's annual digital-payments surveys used to find that banks were more trusted than tech firms. Now, Amazon is running neck-and-neck with banks. And Raddon's research into Gen z Americans finds that two-thirds expect tech firms will change the way financial services are provided.

The rise of fintechs and neobanks that act as marketplaces for other institutions' products presents incumbents in developed markets with a choice: are they willing to leave customer acquisition and service to the newcomers, or do they want to compete head-on? White-label banks, which carry out regulated financial services for other companies, show that focusing on products can work. But the margins are low. In retail banking 70% of shareholder value is typically captured by the customer-relationship and distribution channel, and just 30% by product manufacture, says Jan Bellens of EY, a consultancy.

If the incumbents want to fight, the customer relationship is theirs to lose. Most people still open a high-street account in their teens at a bank chosen by their parents, and caution may make them stay put. Regulators are often pro-incumbent, whether because they have been captured by lobby groups or because they fear big changes could cause financial instability. But banks would be unwise to depend on customer inertia and regulatory caution. If the alternatives are attractive enough, both may evaporate.

Adapting will be hard on incumbents, but customers have a lot to look forward to. The newcomers have lower costs and can therefore offer better value. As China shows, they can offer loans to people and small businesses that could not previously have been profitably served. And their arrival will push down account charges and fees for extras such as overdrafts and foreign exchange.

As Alibaba demonstrates, online retailers may not start out intending to offer financial services, but the logic of online commerce leads them in that direction. McKinsey's analysis suggests that once an online marketplace selling direct to consumers offers products in several categories and has a market share of at least 15-20% in its main category, it tends to move into payments. This, says Philip Bruno, who co-leads the consultancy's global payment practice, is not necessarily because it is seeking to increase revenues from payments or to reduce costs (though having its own payment system does allow it to avoid the "interchange" fees charged by card issuers). Rather, it allows a retailer to control the shopping experience from start to finish.

Chinese platforms show how it can be worth providing frequently used financial functions such as payments without making much from them—even, potentially, at a loss—if they act as a hook for consumer lending and advertising for related non-financial services, says Brian Ledbetter of McKinsey. This is the logic behind speculation that a Western tech giant like Amazon might team up with a bank to offer current accounts. The benefit to the retailer would be increased customer loyalty. Or accounts might be offered for a monthly fee, suggests Brett King, the author of "Bank 4.0: Banking Everywhere, Never at a Bank" and founder of Moven, one of America's handful of neobanks. Perks could include a rolling line of credit, discounts on purchases, or a rewards programme—all of which would boost the retailer's sales.

Financial services will increasingly become links in value chains that also contain non-financial services, predicts Mr King. Mortgages, for example, could sit in the "home-buying chain", offered on a platform that also displayed property listings and arranged viewings, surveys, conveyancing and home removals.

The biggest benefit for customers will come from a rethink of what banks are supposed to do. As traditionally conceived, says Ted Moynihan of Oliver Wyman, a financial consultancy, what a bank offers its retail customers is a way to store, spend and borrow money. It has not been a core part of its job to help them decide whether a purchase or loan will make them happier or wealthier. Often it will not. Research by the consultancy into credit for the American mass market shows that 30% of those who had taken out revolving credit regretted doing so; just 10% were glad they had.

The pursuit of happiness

Those loans may have been at market-beating rates. And they may have been "good", as defined by the industry—that is, repaid on time. But that is not how they look to customers who wish they had not borrowed. And it is not how a neobank or fintech firm seeking to act as a platform for third-party financial products can afford to view them, either. To convince customers that it is acting in their best interests, it must do more than sell products that are affordable, or even at the keenest rates: it must sell them what they actually need. The most formidable challenge the newcomers pose to the rich world's banking incumbents is not their lower costs or greater technological prowess. It is that their business model requires them to put customers' needs first. ■

ACKNOWLEDGMENTS A list of acknowledgments and sources is included in the online version of this special report

Spain's general election

Sánchez's new day

MADRID

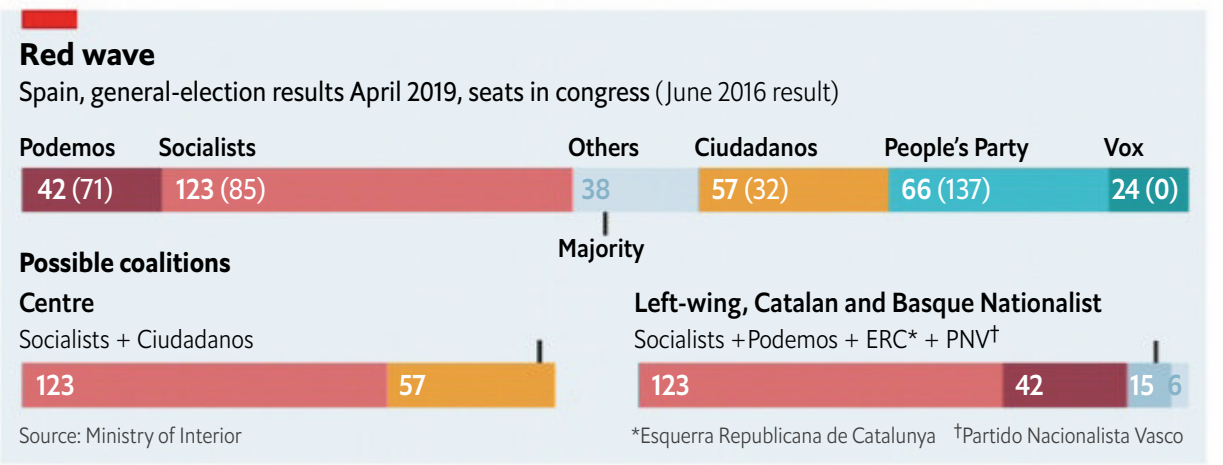
The Socialists have won the most seats, but forming a viable new government will take time and allies

CLOSE TO MIDNIGHT on April 28th, with the vote-count in the general election all but over, the scenes outside the headquarters of Spain's two main political parties said it all. "We've sent a message to Europe and the world...that you can defeat reaction [and] authoritarianism," Pedro Sánchez told a cheering crowd of several hundred activists from his Socialist party. A couple of kilometres away, barely a dozen people stood outside the offices of the conservative People's Party (PP) until workers dismantled, unused, an elaborate stage. Speaking inside to journalists, a dejected Pablo Casado, the PP's leader, admitted: "It's been a very bad result." Mr Sánchez led the Socialists to their first win (in the sense of taking the most seats, though still well short of a majority) since 2008, while the PP's very future, and certainly that of its leader, looks uncertain.

Back last May when he filed a censure motion that brought him to office and ended more than six years of PP rule under Mariano Rajoy, Mr Sánchez brushed off demands for an immediate election. With less than a quarter of the Congress, he governed for ten months through gestures—a big rise in the minimum wage, which employers say discourages job creation—and symbolic acts, such as a yet-to-be-fulfilled commitment to move the remains of General Franco, Spain's former dictator, from his grandiose memorial. But although he opted to call fresh elections after failing to pass a budget, the Socialists gained 2m more votes and 38 more seats compared with the previous ballot in 2016.

The election increased the fragmentation of what was once a two-party system. The right splintered into three, and paid a price for that in lost seats. The PP lost more than half its seats and 3.5m votes, its worst result since its foundation in 1989. Ciudadanos, a formerly liberal party that has moved to the right, came within 220,000 votes of it. The hard right, in the shape of Vox, a newish nationalist party, will be represented in Congress for the first time since 1982. But with only 24 seats and 10.3% of the vote, it fell short of forecasts.

What Mr Sánchez mocked as "the primary of the right" stamped an ill-tempered character on the campaign. Mr Casado, Ciudadanos and Vox all tried to make the election about national unity. That was threatened in 2017 when the separatist administration in Catalonia staged an unconstitutional referendum and a unilateral declaration of independence. The right castigated Mr Sánchez for having held inconclusive talks with Catalan officials. Mr Casado called him a "felon", and Albert Ri- ▸▸



vera, the leader of Ciudadanos, declared that he was "not a constitutionalist" and that Spain faced a "national emergency". Both wanted to impose direct rule in Catalonia; Vox wants to abolish Spain's regional governments altogether.

Mr Sánchez insisted he had done no deals with the separatists—their failure to support his budget triggered the election—and will never agree to an independence referendum. He said the issues were "concord" and social justice after the spending cuts following the economic slump of 2009-13. In the event, the spectre of Vox helped Mr Sánchez mobilise his voters. A high turnout of 76% on a spring day also helped the Catalan separatists, who won 22 seats, up from 17, though the big winner among them was Esquerra, the most pragmatic of the pro-independence parties.

If he wants to be able to tackle deep-seated problems, such as high youth unemployment and unsustainable pensions, Mr Sánchez will need allies to govern in the 350-seat Congress. Securing them will be complicated. "From our position on the left, we will extend our hand to all political forces [who operate] within the constitution," he said on election night. One option is to join forces with Podemos, a much-further-left outfit with 42 seats (down from 71), and make up the numbers with the moderate Basque nationalists and assorted regional parties. Pablo Iglesias, Podemos's leader, has been pressing for a formal coalition, which would be a first in Spain's current democratic period. But this would still be short of a majority. And many Socialist voters recoil at Podemos's commitment to an independence referendum in Catalonia. Businesses, too, are scared of Podemos entering government, even though Mr Iglesias has moderated his stance and is not quite the firebrand of the left he once was.

A stronger, but politically harder, option would be a coalition with Ciudadanos. This week Mr Rivera again ruled that out. Socialist activists listening to Mr Sánchez outside party headquarters chanted "Not with Rivera". But the main business organisations have urged both men to reconsider, or at least that Ciudadanos (and the PP) abstain to allow Mr Sánchez to be invested as prime minister.

For the moment, Socialist leaders say they will govern alone, seeking support as needed, where they can. Whether that remains the position will become clear only after the new Congress convenes on May 21st and after yet another election, this one on May 26th for mayors, 12 regional governments and the European Parliament.

The Spanish right faces a hard task of rebuilding. Unless the PP does much better on May 26th, Mr Casado may be forced out. He chose to turn the PP's broad church into an ideological sect, purging moderates and bringing in an inexperienced team. His attempt to echo rather than challenge Vox, whose origins lie in a breakaway from the PP, failed. The PP lost 1.6m of its voters to Vox, as well as 1.4m to Ciudadanos, according to an analysis for *El Mundo*, a newspaper. One of them was Alfonso Pérez, a bank worker. "The union of Spain is fundamental," he said as he listened to Vox's final campaign rally in Madrid.

For Mr Sánchez, who was briefly ejected as party leader in 2016-17 and was widely written off by Socialist grandees, the election was a personal triumph. The days of absolute majorities in Spain are over for the time being. But the country's prime minister has delivered rare good news for social democracy ahead of the election for the European Parliament. ■

Germany

The long goodbye

BERLIN

Germany's chancellor, Angela Merkel, is slowly leaving her party

"WE ARE FAMILY!" blared the loudspeakers, as the grandees of Germany's Christian Democratic Union (CDU), and its Bavarian sister party, the Christian Social Union (CSU), merrily marched on stage in Münster on April 27th. For once, the musical choice seemed apt. Last year a sororal row over immigration between the two conservative parties nearly tore Germany's government apart. But all was forgotten as they launched their joint campaign for the European election on May 26th. Annegret Kramp-Karrenbauer and Markus Söder, new leaders of the CDU and CSU respectively, beamed as they swapped platitudes on stage and gave their blessing to Manfred Weber, a CSU man running for the European Commission presidency. Only one family member was missing.

Going...going...

Angela Merkel's absence in Münster was no less strange for being long-trailed. It was as if the Avengers held a reunion and Captain America had a diary conflict. During the previous European election campaign, in 2014, the chancellor's face was plastered all over the CDU's posters. This time she will make just two appearances, one of them abroad. She will also skip three state elections in east Germany this autumn, to the relief of some local party barons. "The chancellor is already in early retirement," said Christian Lindner, leader of the opposition Free Democrats, this week.

Not quite. Having handed over the CDU leadership to Ms Kramp-Karrenbauer in December, Mrs Merkel evidently wants to give her protégée space to introduce herself to voters. But while her party colleagues focus on winning elections and managing the coalition with the restive Social Democrats (SPD), the chancellor has shifted her attention outward.

These days her engagements are typically devoted to shoring up multilateralism or celebrating Germany's constitution, the sorts of themes one might expect from a ceremonial president. But on foreign policy, Mrs Merkel remains vigorously hands-on. This week, along with Emmanuel Macron, she corralled eight Balkan leaders for a meeting in Berlin before jetting off on a three-day tour of the Sahel. Immediately after the European elections she will deliver the commencement speech at Harvard University. Rumours persist that she may offer to send herself to Brussels for a senior European Union post this year.

Mrs Merkel insists that she has no plans to quit the chancellery before her term expires in 2021. But Ms Kramp-Karrenbauer is being groomed for the top job, and the innovation of splitting the two posts guarantees endless speculation about the timing and manner of a handover that would probably shatter the coalition and trigger an election. This week Mrs Merkel had to deny rumours that a CDU "retreat" in early June, hastily announced by Ms Kramp-Karrenbauer, was designed to occasion a transfer of power. So far Mrs Merkel has stage-managed her exit to perfection. But there is a feeling that control is slipping away.

Despite the jitters, the smart money still says that Mrs Merkel will serve out her term. The chancellor who, as a child, once hesitated on a diving board for an hour before finally jumping, will not be rushed from office, and there is no public clamour for her to do so. As for Ms Kramp-Karrenbauer, the more German voters see of her earthy conservatism the less they seem to like it, and the CDU's poll numbers are also

Spy whales

On His Majesty's cetacean service

Norwegians suspect an inquisitive whale is working for the Kremlin

HANNIBAL USED war elephants. China's Song dynasty tried incendiary monkeys. The CIA even experimented with surgically-bugged cats. Russia, it seems, is now employing spy whales. In late April, according to NRK, Norway's national broadcaster, Norwegian fishermen in the country's far north Finnmark region began noticing a friendly beluga whale frolicking among their boats, attempting to pull straps from the hull. It wore a harness, complete with camera mounts, inscribed with the words: "Equipment of St Petersburg".

Russian researchers disclaimed all knowledge, and suggested it was the work of the Russian navy—whose Northern Fleet is headquartered at nearby Severomorsk. The militarisation of marine mammals would not be unusual.

The American navy's own programme, which began in 1960, experimented with sharks, sea turtles and birds before settling on California sea lions and bottlenose dolphins. The latters' sonar was ideally suited to hunting out buried mines or enemy divers (the navy insists the animals were never trained to kill). Dolphins served with distinction as sentries and minesweepers during the Vietnam war, in Bahrain during American skirmishing with Iran in the 1980s and in Iraq from 2003.

A CIA report from 1976 warned that the Soviet Union, spurred on by American work in the area, had built several facilities to train bottlenose dolphins. Within two years, noted the CIA, Soviet dolphins could be capable of placing "packages"—whether trackers or explosives—on ships in the open ocean.

The Crimea-based mammals were inherited by Ukraine after the collapse of the Soviet Union, though at least some were sold to Iran in 2000. Ukraine restarted the programme in 2012—only to have Russia snatch it back when it seized Crimea two years later. In 2016 the Russian defence ministry published a tender for five new dolphins. Russian media reports the following year suggested that the Murmansk Sea Biology Research Institute had looked into using beluga whales for duties in the Arctic, but found them unsuited to the icy temperatures.

Meanwhile, Russia and Norway are dealing with a more conventional spy scandal. On April 16th Russia jailed a Norwegian man, who had acted as a courier for Norwegian intelligence, for 14 years on charges of espionage against Russian submarines.

sagging. These are not propitious circumstances for an early handover.

Yet the current strategy carries risks, too. Mrs Merkel remains popular in Germany but her authority is waning. Ms Kramp-Karrenbauer's forays into European politics have confused partners like France. More immediately, as chancellor it will fall to Mrs Merkel to make the case for Mr Weber as commission president, as part of the horse-trading among European leaders over top EU jobs that begins after the election. But her government is rumoured to want to push for a German president of the European Central Bank instead. Should Mrs Merkel throw Mr Weber under the bus, it will be left to Ms Kramp-Karrenbauer to quell the furies in the CDU/CSU ranks.

In some respects Mrs Merkel's transformation into an apolitical chancellor simply caps a process that has defined her long career. The chancellor has always had an arm's-length relationship with the party she led for 18 years, and some in the CDU's conservative heartlands never quite took to their leader, an Ossi (easterner) with an unusual biography and relentlessly centrist instincts. It was Mrs Merkel's pleasant habit of repeatedly winning elections that helped the sceptics overcome their doubts. It now falls to Ms Kramp-Karrenbauer to prove she has the same talent. ■

Poland

Family first

WARSAW

Poland's ruling party confronts the "LGBT dictatorship"

POLAND FACES an "attack on the family", says Jaroslaw Kaczynski, chairman of the ruling Law and Justice (PiS) party. In 2015 the party swept back to power by claiming it would protect the country against refugees from the Middle East. Now Mr Kaczynski has identified a new threat: gay people. The Polish religious right has long waged war on "gender ideology", a catch-all term for feminism, gay rights and anything else that involves sex and shocks grandpa. As Poles prepare to elect their representatives to the European Parliament on May 26th, in what parties see as a rehearsal for a national parliamentary election in the autumn, PiS has reviled queerness, backed by the Catholic church.

The row began with a declaration in favour of lesbian, gay, bisexual and transgender (LGBT) rights signed by Rafal Trzaskowski, Warsaw's newly elected liberal mayor, in February. Its proposals include a shelter in Warsaw, anti-discrimination measures and more sex education in schools.

For PiS, this is an affront to children. Since coming to power in 2015, the party has championed traditional families. To encourage women to have more babies, it introduced a hefty monthly handout of 500 zloty ($130) per child. Under pressure from the church, it has considered tightening restrictions on abortion. Funding for IVF treatment has been scrapped.

The row has split Poland. The Polish Bishops' Conference calls non-heterosexual arrangements "completely alien to European civilisation". During Easter mass, the Metropolitan Archbishop of Gdansk condemned the "idol of tolerance". An "LGBT dictatorship" is approaching, warned a recent cover of *Do Rzeczy*, a right-wing weekly. Meanwhile, Poland's ombudsman has urged other cities to adopt declarations like Warsaw's.

More than half of Poles support civil partnerships. For same-sex marriage, however, the opponents still outnumber proponents, as they do for adoption by gay couples. "Hands off our children!" growled Mr Kaczynski at a PiS conference in March. With the European elections just weeks away, PiS has held on to its lead. A poll this week gives the party almost 39%, ahead of the broad opposition coalition led by the centrist Civic Platform, Mr Trzaskowski's party, which has 33%. Third, with 8%, is Wiosna (Spring), a new left-wing party that wants to legalise gay marriage. ■

Charlemagne | Public ENAmy

Why Emmanuel Macron wants to abolish France's most elite college

FIFTEEN YEARS ago this spring, students at France's elite post-graduate civil-service college were preparing to celebrate their graduation. Behind them lay the Alsatian city of Strasbourg, its beer halls, and two years of intense study at the Ecole Nationale d'Administration (ENA). Ahead stood fast-track jobs in the parquet-floored corridors of power in Paris, and the guarantee of brilliant careers. As the top-ranked graduating student stepped towards the front of the amphitheatre, however, she handed the astonished director a 20-page report, written by pupils and entitled "ENA: the urgency of reform". Among its signatories was a fellow graduating student with a shock of unkempt hair, Emmanuel Macron.

The student rebel, it seems, has turned into the presidential revolutionary. On April 25th, in response to the *gilets jaune*s (yellow jackets) protesters and their rage against the out-of-touch elite, Mr Macron announced the abolition of ENA. "Makeshift repairs", the president declared, would not do: "If you keep the same structures, habits are just too strong." It was the most controversial and spectacular of all the announcements made to mark the end of his months-long "great national debate". At a stroke, Mr Macron gave in to a populist demand, and sent both his own alma mater and a symbol of modern France to the guillotine.

All countries select a governing elite. Six of the 13 post-war American presidents attended either Harvard or Yale. Ten of the 14 post-war British prime ministers graduated from Oxford. But France takes the principle to extremes. Though its annual intake is a minute 80 postgraduate students (compared with around 2,000 undergraduates for Harvard and around 3,000 for Oxford), ENA has supplied the country with four of its eight Fifth-Republic presidents, including Mr Macron, and eight of its 22 prime ministers, including the current one, Edouard Philippe. Today *énarques*, as its graduates are known, run the French central bank, the finance ministry, the presidential office, the Republican party, the external intelligence service, the constitutional council, the state railways and a raft of top French private-sector companies.

When Charles de Gaulle founded ENA in 1945, from the ashes of Nazi occupation and the second world war, the Resistance leader explicitly sought a meritocratic antidote to the chronic cronyism of the pre-war era. In his memoirs, *le général* wrote that his ambition then was "to make rational and homogeneous the recruitment and training of the main servants of the state". ENA was to turn out an impartial, unified army of administrators, motivated by the "noble" calling of public service, in order to rebuild a powerful, stable France. It supplied the overseers of the *trente glorieuses*, or 30 post-war years of prosperity and planned industrial growth. Those who were to serve the country, said De Gaulle unapologetically, had to form "an elite in all respects".

Amid today's angry, ruthless populism, however, the very concept of an elite is denounced on the streets and roundabouts of France. Far from admired as a dedicated public servant, the *énarque* has come to embody the perceived arrogance and disconnection of the governing class, skilled at devising technocratic policies and blind to their effect on ordinary people. It was in car-dependent *France profonde,* after all, far from the bike-sharing quarters of Paris, that the government's planned raising of the carbon tax first provoked the *gilets jaunes*. The solution, one of them said, was to "get rid of the *énarques*" and put some "real people" in government instead. With their calculators and spreadsheets, graduates of ENA have replaced the silk-stockinged nobility of pre-revolutionary France as the public enemy of choice.

The reality of course is more complex, and more nuanced, than Mr Macron is letting on. The president knows full well that France will still want a top administration college, even if he closes the one with the now-damaged acronym. He also knows that the problem is not the concept of a high-flying school itself, but recruitment to and from it. Over the years, partly because applicants from bookish families better survive the marathon years of preparation required to get in, ENA has admitted fewer, not more, pupils from poorer backgrounds. In the quarter-century after 1985, the share of pupils at the school whose fathers were blue-collar workers fell from 10% to 6%. Broadening access cannot be ENA's problem alone. It also means ensuring that more school pupils from modest backgrounds apply to *classes préparatoires,* which train applicants to France's *grandes écoles*. This is the baffling parallel world of elite higher education that leads (among other things) to ENA, confuses the uninitiated, and crowns the university system.

This privileged perch also gives ENA a monopoly on jobs in France's elite "*grand corps*", a sort of top civil-service officer class, the most prestigious of which is the *inspection des finances* (which Mr Macron joined). Graduating pupils are guaranteed a spot in one or other, according to their exit ranking, rather as in Imperial China. Indeed, this turns time spent there into a race for position rather than a chance for reflection or creativity. And the school's tiny intake forges an exceptionally tight network of alumni, which fuels suspicions of caste-like behaviour by its members. *Enarques* trust, recruit and even marry each other.

ENAthing else but this

With his own satchel of diplomas, Mr Macron knows all these arguments by heart. But he is treading a perilous path. That ENA has flaws, few contest—not least its tiny size. Yet it has done its bit to help create in France a deep culture of public service. And the country itself, with its much less entrenched private-school system, is in many ways better placed than Britain or America to achieve merit-based education. Mr Macron's real challenge is to give a meaningful nod to the ambient distrust of elite institutions, while making sure that any reincarnation preserves what ENA gets right, and fixes what it gets wrong. Otherwise, its abolition will be a self-defeating populist gesture. ■

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Labour and the rich

The pips squeak again

Efforts to protect wealth should Labour take power are being stepped up

JEREMY CORBYN may have it in for tax havens, but they are not all cursing the Labour leader. Well-heeled types worried about the prospect of a Corbyn-led government have been buying property on Guernsey with a view to moving to the island, attracted by its flat 20% income-tax rate and lack of capital-gains or inheritance taxes. Demand for homes there is buoyant, and Jo Stoddart of Locate Guernsey, an investment-promotion agency, says queasiness over Mr Corbyn is one of the main reasons.

The opposition leader makes no secret of his disdain for the rich. The real divide in Britain, he said recently, is not over Brexit but "between the many, who do the work, create the wealth and pay their taxes, and the few, who set the rules, reap the rewards and dodge their taxes." The super-rich, he has warned, are "on borrowed time".

Small wonder, then, that plutocrats are seeking advisers' counsel—and increasingly taking action—to keep their incomes, mansions and pensions out of Labour's clutches. "How to Corbyn-proof your wealth", an event held in London in February by an investors' club, sold out.

Bookmakers offer odds as short as 3/1 on Mr Corbyn becoming the next prime minister. If that happened, says the chief executive of a FTSE 100 company, the rich would "take all the money offshore, wait for the economy to crash, and come back and get richer." Private-client advisers have warned of Britain's multi-millionaires moving up to £1trn ($1.3trn) out of the country. But the "mass affluent", those with liquid assets in the hundreds of thousands, also have cause to fret.

Such fears have fluctuated in line with recent political turmoil. Wealth advisers agree that clients worry more about Mr Corbyn than Brexit—though the two are linked, as some fear a disorderly Brexit precisely because it could usher in a Labour government. Iain Tait of London & Capital, who advises dozens of rich families, says anxiety about Labour has reached its highest point yet in the past couple of months. When clients of Saunderson House, a wealth manager, were asked in October about the biggest threat to their finances, the most likely answer, mentioned by 42%, was a change of government. The number would almost certainly be higher now.

The worries fall into three categories. The first concerns existing tax and pension arrangements. Labour is likely to target pension tax relief for high earners. On income tax, it has promised to reintroduce the 50% rate on earnings over £123,000 (rather than £150,000) and add a 45% rate that kicks in at £80,000. It is likely to reverse the Tories' cuts to capital-gains tax. And it is expected to tighten the inheritance-tax regime, possibly by reducing or removing allowances for those giving to discretionary trusts or handing property or gifts to relatives. To cap it all, Labour promises to levy VAT on private-school fees.

The second area is brand new taxes. Labour hopes to raise almost £5bn a year from a new financial-transactions levy. This would cream 0.2% off every transaction executed by financial firms. Some hedge funds are reportedly considering moving overseas in response. The bigger worry is the possibility of a wealth tax on assets, perhaps focused on high-value homes, to help fund social care. In 2012 John McDonnell, who has since become shadow chancellor, backed a proposal for a one-off, 20% wealth tax to help reduce government debt.

The third category—and the biggest bogeyman—is the spectre of capital controls, measures to restrict the flow of capital in and out of the country, in the event of severe economic turbulence. Labour has repeatedly denied it would consider such a measure, last seen in Britain in the late 1970s. Even Mr Corbyn's critics see it as a long shot. Nevertheless, contingency plans are being put in place. A year ago, says Mr Tait, it would have seemed "ludicrous" to be mulling measures to protect against capital controls. Yet clients raised the issue in "around half" the meetings he attended ▸▸

in the run-up to Easter. As an insurance policy, some have arranged for custody of their investment accounts (used to buy and sell securities) to be moved to the Channel Islands or Switzerland. Changing the jurisdiction in which accounts are booked is all about "asset access", not tax, says Mr Tait.

With a property-based wealth tax in mind, some rich folk are accelerating the transfer of homes to children. "They might have done this anyway when the kids were in their 20s. Now they're doing it in their teens," says one adviser, who has "dozens" of clients who have opted to speed up handovers. Some are also using up tax-free pension allowances, or vesting tax-free cash, earlier than required, for fear of such benefits evaporating under Labour.

Sunny places for gloomy people

A smaller number are considering moving offshore. Rather than emigrating now, most of these Jeremiahs are considering buying foreign residence permits to hold alongside their British passports, in order to be well placed to hop abroad if things turn nasty. Advisers say they are looking not only at obvious places like Monaco and the Channel Islands but also at EU countries that have become friendlier to rich foreigners, such as Portugal (where a "golden visa" can be bought for €500,000, or $561,000) and Italy (where income from abroad can be taxed at a flat €100,000).

Among those tempted to up sticks are resident "non-doms": foreigners who live in Britain but declare their domicile as elsewhere to avoid tax on their non-British income. The Tories took away some of their privileges in 2016, but the non-doms are still handled fairly generously for up to 15 years. The threat of a Corbyn government, though, is leading some who were wavering to go elsewhere. Another wealth adviser has Swedish and French clients who are returning home. "Sweden and France, those well-known tax havens!" he guffaws.

Were Britain's 90,000 or so non-doms to leave, many Corbynistas might say good riddance. Some Labour strategists believe the public would welcome a falling-out with the super-rich. Mr Corbyn has long accused them of dodging tax and contributing little to the economy. But non-doms paid a not-so-paltry £9.4bn in tax—equivalent to a third of the transport budget—in the year to April 2016.

Mr McDonnell's team dismisses the bleating from Belgravia as alarmist. Fears over a wealth tax are as misplaced as those concerning capital controls, aides say. Yes, income tax will rise, but to nowhere near the rates of the 1970s. Mr McDonnell may have an avowedly Marxist past, but he has been on a charm offensive in the City, assuring moneymen he has nothing up the sleeves of his branch-manager suit.

Moreover, when it comes to squeezing the rich there is less to separate the two main parties than the Tories admit. As well as turning the screws on non-doms, the Conservatives have cut high-earners' tax-free pension allowances and are mulling an inheritance-tax grab. The chancellor, Philip Hammond, has warned that taxes must rise to fund an ageing population.

Still, tone matters, and there is a difference between measured tax increases and what looks to some like anti-capitalist bloodlust. Mr Corbyn has said he is "coming for" the rich. Some of Labour's plans suggest a taste for confiscation. The party wants to nationalise several industries, including water, for which it is considering basing compensation for investors on "book" value—currently a third of the industry's market value—or even less. A plan to snatch 10% of shares in big British firms and give them to workers and the state has nauseated many business leaders. "The rich are prepared for higher taxes," says Bobby Vedral of Macro Eagle, an advisory business, "but not for expropriation."

Mr Vedral caused a ruckus in 2017 when he predicted a Britain led by Mr Corbyn would be like "Cuba without the sun". That is unfair—but ever more of the monied seem unwilling to take any chances. ■

A cabinet sacking

Leak, plugged

The defence secretary is fired for spilling secrets about Huawei

LEAKS IN WESTMINSTER are common. Leaks from meetings of the National Security Council (NSC), which include cabinet ministers, generals and an array of spooks, are not. When details of Theresa May's decision to allow Huawei, a Chinese telecoms group, to build next-generation infrastructure in Britain appeared in the *Daily Telegraph* on April 24th, an inquiry was duly launched. It took barely a week to find its man. The supposed mole? Gavin Williamson, the defence secretary.

Despite swearing his innocence ("on my children's lives"), Mr Williamson was sacked by Mrs May on May 1st. Her letter to him was brutal. There was "compelling" evidence that he had leaked details of the meeting. No other "credible" story existed. Mr Williamson has been replaced by Penny Mordaunt, previously secretary for international development, who also attended the fateful meeting but managed to keep her mouth shut. She in turn is replaced by the ambitious Rory Stewart.

Mrs May has now lost ten cabinet members in less than three years in office. Mr Williamson was liked by defence chiefs for winning more money for his department, but became a tabloid figure of fun after squeaking that Russia should "go away and shut up". As a former chief whip he gave the prime minister valuable insight into the unhappy mood of the party. Yet when the inquiry fingered him, Mrs May wasted no time. She has not revealed the evidence against him and calls the matter "closed". But opposition parties are calling for a criminal investigation; Mr Williamson himself says the police would clear him.

The subject matter of the leak was sensitive. America has for months been lobbying its allies to freeze Huawei out of their 5G telecoms networks, arguing that China could use the firm's gear for spying or sabotage. It has had only mixed success. Australia banned Huawei outright. New Zealand turned down a request from a local firm to use Huawei's gear. But Germany has pushed back, as has the European Union. Britain's decision to give Huawei a limited role makes it the most prominent refusenik. Its signals-intelligence agency, GCHQ, works hand-in-glove with its American counterpart, the National Security Agency.

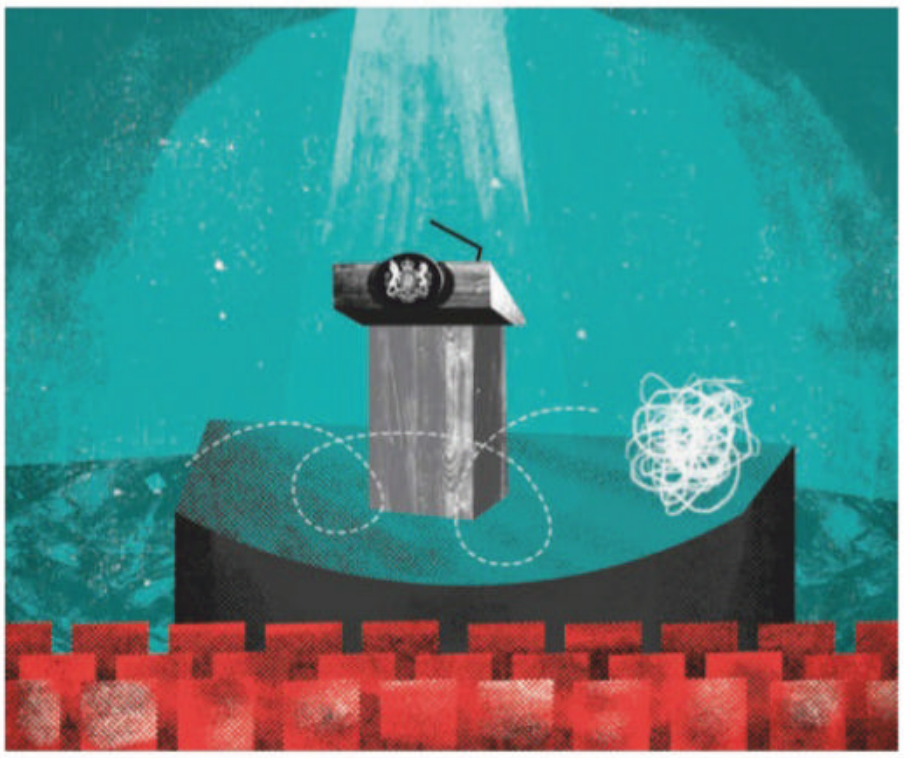
America has said it may cut back intelligence-sharing with countries that ignore its warnings. That is probably bluster: if nothing else, Britain's geographical location makes it too useful to simply abandon (many transatlantic internet cables come ashore in Britain). Instead, the Americans may hope that by keeping up the pressure they may persuade a future government to reverse the decision. The NSC was split on whether to allow Huawei in. Mrs May ignored its more hawkish members and gave the green light. But she is unlikely to be prime minister for much longer.

Several likely candidates for her job, including Ms Mordaunt, Jeremy Hunt, the foreign secretary, and Sajid Javid, the home secretary, were among those who voted no—as did Mr Williamson. Unlike the rest of this small cast, Mr Williamson now has little chance of having another say. ■

Going away but not shutting up

Bagehot | The followership problem

A lack of leadership is not Britain's only difficulty



Back in 1997 Warren Bennis, a management guru, invited this columnist, who then had the onerous job of reporting on California, to a soirée in his house on Santa Monica beach to discuss the evergreen topic of leadership. A junior guru presented a paper on how today's leaders needed all sorts of touchy-feely qualities such as empathy. Yours truly annoyed everyone by arguing that Margaret Thatcher had been a pretty good leader without knowingly engaging in empathy. Then Peter Drucker, speaking in a heavy Viennese accent and dressed in a three-piece suit, threw his own hand-grenade. "I don't know why people are so fixated on the subject of leadership," he said, or words to that effect. "What we really need to think about is followership."

It is worth remembering Drucker's words whenever people talk about Britain's crisis of leadership. There is no doubt that Theresa May and Jeremy Corbyn are singularly unimpressive figures. But Parliament also contains a fair number of people with sparkling CVs, such as Rory Stewart, or remarkable life stories, such as Angela Rayner. Regardless of their abilities, political leaders have to perform before an increasingly hostile audience which routinely questions their motives and trashes their achievements. Followers are a tougher crowd than they used to be.

Ipsos MORI's annual survey of the trustworthiness of professions repeatedly shows that people don't trust politicians. Last year they came second-to-bottom, just above advertising executives, with 19% of the public trusting them. A study of what words people associate with politicians discovered that the most common were sharply negative: contemptible, disgraceful, parasitical, sleazy, traitorous. The crisis in followership is spreading from the citizenry to the political class itself—and even into the government. The past couple of months have seen cabinet ministers voting against a three-line whip and a defence secretary sacked for leaking to the press from the National Security Council.

Walter Bagehot argued that, in order to survive, a political regime needed to gain authority from the citizenry, and then use that authority to get the work of government done. Since Bagehot's time, British politicians have employed three mechanisms to gain that authority. The first is deference, when voters support leaders they consider their social superiors. The second is class-loyalty, under which people vote for those who represent folk like themselves. The third is competence, when people vote for a candidate the same way they might hire a plumber—because they can fix a problem. Britain used to be remarkable for its ability to combine all three methods, for example putting trade unionists into the House of Lords for their services to class politics, or ennobling civil servants for their services to competent government. But today all three are in trouble. Deference has faded. Class consciousness is fuzzier than it used to be. And thanks to the Iraq war, the global financial crisis and the Brexit negotiations, voters no longer trust the established parties to provide competent government.

This collapse of legitimacy has been hastened by a widening of the gap between leaders and followers. The gap is usually explained in terms of the insulation of the elite, as politics has been taken over by a class that glides from studying PPE at Oxford to a career at Westminster without holding what most people regard as a "real" job. But it can also be explained in terms of the erosion of a civic culture that once linked Westminster to local politics. In 1963 two American academics, Gabriel Almond and Sidney Verba, argued that Britain combined a high degree of faith in political institutions with a flourishing local civic life. Since then civic life has received a succession of blows: the contraction of the trade-union movement, the centralisation of decision-making in Whitehall, and the hollowing-out of regional economies.

The loss of confidence in leaders has sent new forces surging through the body politic. One is know-it-all cynicism. A striking number of Britons are becoming like sports commentators who are ready with criticism but who couldn't kick a ball if one landed at their feet. A second—and opposite—problem is sudden, inchoate enthusiasm, such as the green Extinction Rebellion that recently paralysed much of central London. But the most dangerous of all is the combination of anger, disappointment and bloody-mindedness that political scientists label "resentment". The new Brexit Party is on course to top this month's European election because of Nigel Farage's mastery of the politics of resentment.

Rebels without a cause

It is hard to see how these forces can solve Walter Bagehot's twin problems of gaining and using authority. Know-it-alls corrode authority. Enthusiasts ignore the trade-offs that are at the heart of all serious politics. And masters of resentment like Mr Farage discover betrayal in every compromise. Britain's political parties are all suffering badly. Labour is under-performing because a band of enthusiasts have installed a second-rate purist in the top job. The Conservatives are languishing because a different band of enthusiasts have undermined a pragmatic prime minister. Change UK has failed to launch because a bunch of professional politicians cannot decide whom to make leader. And even the Brexit Party, riding high for now, has bet its future on one man and one issue.

The only way to create a bond between leaders and followers in a post-deferential and post-industrial era is to restore office-holders' reputation for competence. Mrs May tried to do this with her combination of respecting the referendum result ("Brexit means Brexit") and tackling its causes ("burning injustices"). But she merely compounded the problem, beginning the Brexit talks without a plan, bungling an election and drawing red lines that she would inevitably smudge. Perhaps a more skilful prime minister will succeed where Mrs May has so singularly failed. But Drucker's insight points to a darker possibility: that the politics of resentment will trump the politics of problem-solving for some time. ■

Food

A meaty planet

BEIJING, DAKAR AND MUMBAI

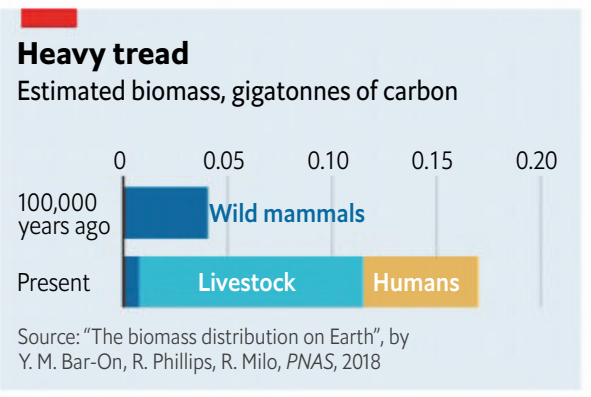
Consumption of meat and animal products is rising. That is bad for the environment—but good for many people

THINGS WERE different 28 years ago, when Zhou Xueyu and her husband moved from the coastal province of Shandong to Beijing and began selling fresh pork. The Xinfadi agricultural market where they opened their stall was then a small outpost of the capital. Only at the busiest times of year, around holidays, might the couple sell more than 100kg of meat in a day. With China's economic boom just beginning, pork was still a luxury for most people.

Ms Zhou now sells about two tonnes of meat a day. In between expert whacks of her heavy cleaver, she explains how her business has grown. She used to rely on a few suppliers in nearby provinces. Now the meat travels along China's excellent motorway network from as far away as Heilongjiang, in the far north-east, and Sichuan, in the south-west. The Xinfadi market has changed, too. It is 100 times larger than when it opened in 1988, and now lies within Beijing, which has sprawled around it.

Between 1961 and 2013 the average Chinese person went from eating 4kg of meat a year to 62kg. Half of the world's pork is eaten in the country. More liberal agricultural policies have allowed farms to produce more—in 1961 China was suffering under the awful experiment in collectivisation known as the "great leap forward". But the main reason the Chinese are eating more meat is simply that they are wealthier.

In rich countries people go vegan for January and pour oat milk over their breakfast cereal. In the world as a whole, the trend is the other way. In the decade to 2017 global meat consumption rose by an average of 1.9% a year and fresh dairy consumption by 2.1%—both about twice as fast as population growth. Almost four-fifths of all agricultural land is dedicated to feeding livestock, if you count not just pasture but also cropland used to grow animal feed. Humans have bred so many animals for food that Earth's mammalian biomass is thought to have quadrupled since the stone age (see chart).



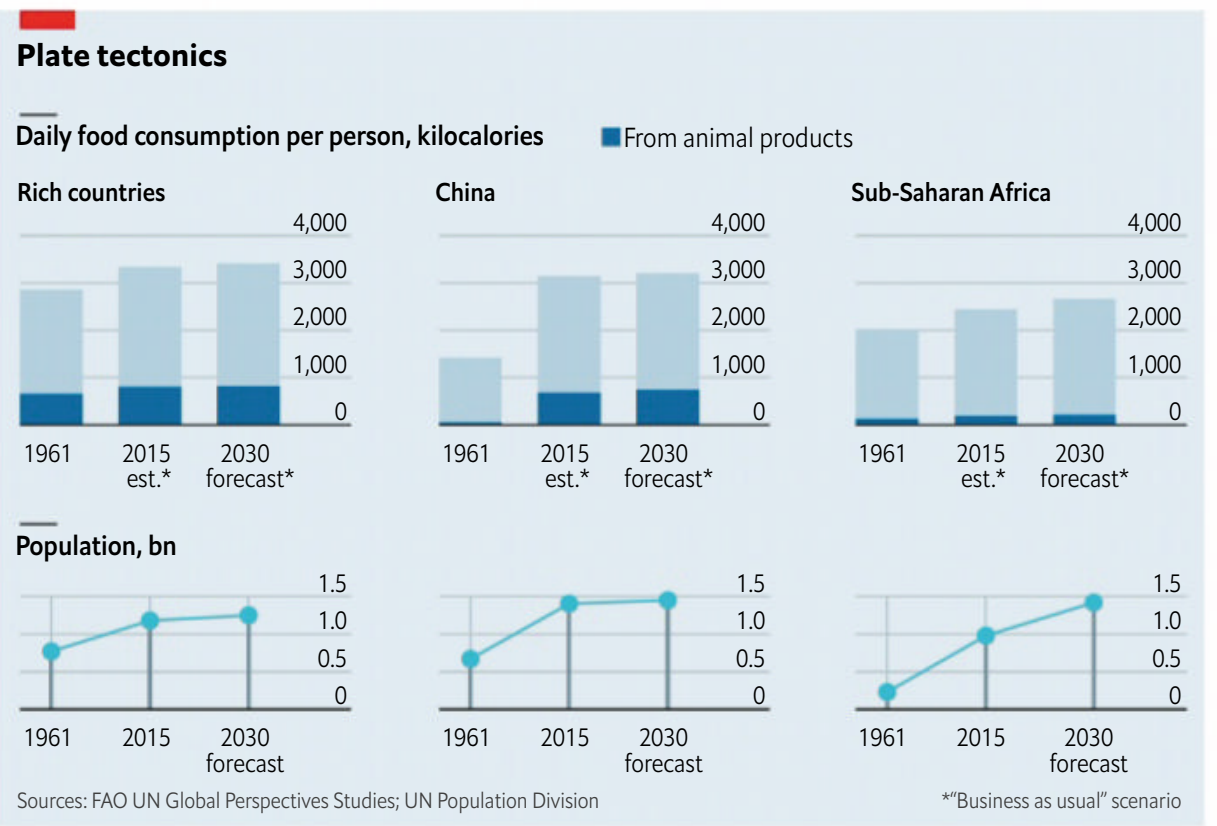
Barring a big leap forward in laboratory-grown meat, this is likely to continue. The Food and Agriculture Organisation (FAO), an agency of the UN, estimates that the global number of ruminant livestock (that is, cattle, buffalo, sheep and goats) will rise from 4.1bn to 5.8bn between 2015 and 2050 under a business-as-usual scenario. The population of chickens is expected to grow even faster. The chicken is already by far the most common bird in the world, with about 23bn alive at the moment compared with 500m house sparrows.

Meanwhile the geography of meat-eating is changing. The countries that drove the global rise in the consumption of animal products over the past few decades are not the ones that will do so in future. Tastes in meat are changing, too. In some countries people are moving from pork or mutton to beef, whereas in others beef is giving way to chicken. These shifts from meat to meat and from country to country are just as important as the overall pattern of ▸▸

growth. They are also more cheering. On a planetary scale, the rise of meat- and dairy-eating is a giant environmental problem. Locally, however, it can be a boon.

Over the past few decades no animal has bulked up faster than the Chinese pig. Annual pork production in that country has grown more than 30-fold since the early 1960s, to 55m tonnes. It is mostly to feed the legions of porkers that China imports 100m tonnes of soybeans every year—two-thirds of trade in that commodity. It is largely through eating more pork and dairy that Chinese diets have come to resemble Western ones, rich in protein and fat. And it is mostly because their diets have altered that Chinese people have changed shape. The average 12-year-old urban boy was nine centimetres taller in 2010 than in 1985, the average girl seven centimetres taller. Boys in particular have also grown fatter.

China's pork suppliers are swelling, too. Three-fifths of pigs already come from farms that produce more than 500 a year, and Wan Hongjian, vice-president of WH Group Ltd, China's largest pork producer, thinks the proportion will rise. Disease is one reason. African swine fever, a viral disease fatal to pigs though harmless to people, has swept China and has led to the culling of about 1m hogs. The virus is tough, and can be eradicated only if farms maintain excellent hygiene. Bigger producers are likely to prove better at that.



High on the hog

Yet China's pork companies are grabbing larger shares of a market that appears almost to have stopped growing. The OECD, a club of mostly rich countries, estimates that pork consumption in China has been more or less flat since 2014. It predicts growth of just under 1% a year over the next decade. If a country that eats so much of the stuff is indeed approaching peak pork, it hints at a big shift in global animal populations. Pigs will become a smaller presence on the global farm.

In 2015 animal products supplied 22% of the average Chinese person's calorie intake, according to the FAO. That is only a shade below the average in rich countries (24%). "Unlike decades ago, there are no longer large chunks of the population out there that are not yet eating meat," says Joel Haggard of the US Meat Export Federation, an industry group. And demography is beginning to prove a drag on demand. China's population will start falling in about ten years' time. The country is already ageing, which suppresses food consumption because old people eat less than young people do. UN demographers project that, between 2015 and 2050, the number of Chinese in their 20s will crash from 231m to 139m.

Besides, pork has strong competitors. "All over China there are people eating beef at McDonald's and chicken at KFC," says Mr Wan. Another fashion—hotpot restaurants where patrons cook meat in boiling pots of broth at the table—is boosting consumption of beef and lamb. Last year China overtook Brazil to become the world's second-biggest beef market after America, according to the United States Department of Agriculture. Australia exports so much beef to China that the *Global Times*, a pugnacious state-owned newspaper, has suggested crimping the trade to punish Australia for various provocations.

The shift from pork to beef in the world's most populous country is bad news for the environment. Because pigs require no pasture, and are efficient at converting feed into flesh, pork is among the greenest of meats. Cattle are usually much less efficient, although they can be farmed in different ways. And because cows are ruminants, they belch methane, a powerful greenhouse gas. A study of American farm data in 2014 estimated that, calorie for calorie, beef production requires three times as much animal feed as pork production and produces almost five times as much greenhouse gases. Other estimates suggest it uses two and a half times as much water.

Fortunately, even as the Chinese develop the taste for beef, Americans are losing it. Consumption per head peaked in 1976; around 1990 beef was overtaken by chicken as America's favourite meat. Academics at Kansas State University linked that to the rise of women's paid work. Between 1982 and 2007 a 1% increase in the female employment rate was associated with a 0.6% drop in demand for beef and a similar rise in demand for chicken. Perhaps working women think beef is more trouble to cook. Beef-eating has risen a little recently, probably because Americans are feeling wealthier. But chicken remains king.

Shifts like that are probably the most that can be expected in rich countries over the next few years. Despite eager predictions of a "second nutrition transition" to diets lower in meat and higher in grains and vegetables, Western diets are so far changing only in the details. Beef is a little less popular in some countries, but chicken is more so; people are drinking less milk but eating more cheese. The EU expects only a tiny decline in meat-eating, from 69.3kg per person to 68.7kg, between 2018 and 2030. Collectively, Europeans and Americans seem to desire neither more animal proteins nor fewer.

If the West is sated, and China is getting there, where is the growth coming from? One answer is India. Although Indians still eat astonishingly little meat—just 4kg a year—they are drinking far more milk, eating more cheese and cooking with more ghee (clarified butter) than before. In the 1970s India embarked on a top-down "white revolution" to match the green one. Dairy farmers were organised into co-operatives and encouraged to bring their milk to collection centres with refrigerated tanks. Milk production shot up from 20m tonnes in 1970 to 174m tonnes in 2018, making India the world's biggest milk producer. The OECD expects India will produce 244m tonnes of milk in 2027.

All that dairy is both a source of national pride and a problem in a country governed by Hindu nationalists. Hindus hold cows to be sacred. Through laws, hectoring and "cow protection" squads, zealots have tried to prevent all Indians from eating beef or even exporting it to other countries. When cows grow too old to produce much milk, farmers are supposed to send them to bovine retirement homes. In fact, Indian dairy farmers seem to be ditching the holy cows for water buffalo. When these stop producing milk, they are killed and their

rather stringy meat is eaten or exported. Much of it goes to Vietnam, then to China (often illegally, because of fears of foot-and-mouth disease).

But neither an Indian milk co-operative nor a large Chinese pig farm really represents the future of food. Look instead to a small, scruffy chicken farm just east of Dakar, the capital of Senegal. Some 2,000 birds squeeze into a simple concrete shed with large openings in the walls, which are covered with wire mesh. Though breezes blow through the building, the chickens' droppings emit an ammoniac reek that clings to the nostrils. A few steps outside, the ground is brown with blood. Chickens have been stuffed into a makeshift apparatus of steel cones to protect their wings, and their necks cut with a knife.

Though it looks primitive, this represents a great advance over traditional west African farming methods. The chickens in the shed hardly resemble the variegated brown birds that can be seen pecking at the ground in any number of villages. They are commercial broilers—white creatures with big appetites that grow to 2kg in weight after just 35 days. All have been vaccinated against two widespread chicken-killers—Newcastle disease and infectious bursal disease. A vet, Mamadou Diouf, checks on them regularly (and chastises the farmers for killing too close to the shed). Mr Diouf says that when he started working in the district, in 2013, many farmers refused to let him in.

Official statistics suggest that the number of chickens in Senegal has increased from 24m to 60m since 2000. As people move from villages to cities, they have less time to make traditional stews—which might involve fish, mutton or beef as well as vegetables and spices, and are delicious. Instead they eat in cafés, or buy food that they can cook quickly. By the roads into Dakar posters advertise "le poulet prêt à cuire", wrapped in plastic. Broiler farms are so productive that supermarket chickens are not just convenient but cheap.

Economic vegetarians

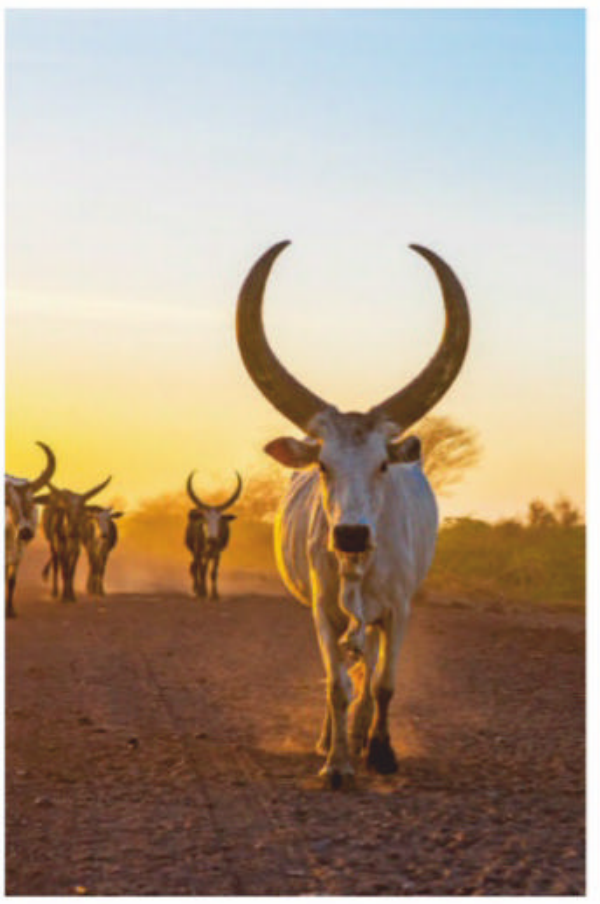
Many sub-Saharan Africans still eat almost no meat, dairy or fish. The FAO estimates that just 7% of people's dietary energy comes from animal products, one-third of the proportion in China. This is seldom the result of religious or cultural prohibitions. If animal foods were cheaper, or if people had more money, they would eat more of them. Richard Waite of the World Resources Institute, an American think-tank, points out that when Africans move to rich countries and open restaurants, they tend to write meat-heavy menus.

Yet this frugal continent is beginning to sway the global food system. The UN thinks that the population of sub-Saharan Africa will reach 2bn in the mid-2040s, up from 1.1bn today. That would lead to a huge increase in meat- and dairy-eating even if people's diets stayed the same. But they will not. The population of Kenya has grown by 58% since 2000, while the output of beef has more than doubled.

Africa already imports more meat each year than does China, and the OECD's forecasters expect imports to keep growing by more than 3% a year. But most of the continent's meat will probably be home-grown. The FAO predicts that in 2050 almost two out of every five ruminant livestock animals in the world will be African. The number of chickens in Africa is projected to quadruple, to 7bn.

This will strain the environment. Although African broilers and battery hens are more or less as productive as chickens anywhere, African cattle are the world's feeblest. Not only are they poorly fed and seldom visited by vets; in many areas they are treated more as stores of wealth than producers of food. Africa has 23% of the world's cattle but produces 10% of the world's beef and just 5% of its milk.

Lorenzo Bellù of the FAO points out that herders routinely encroach on national parks and private lands in east Africa. He finds it hard to imagine that the continent's hunger for meat will be supplied entirely by making farming more efficient. Almost certainly, much forest will be cut down. Other consequences will be global. Sub-Saharan Africans currently have tiny carbon footprints because they use so little energy—excluding South Africa, the entire continent produces about as much electricity as France. The armies of cattle, goats and sheep will raise Africans' collective contribution to global climate change, though not to near Western or Chinese levels.



The low-productivity horns of Africa

People will probably become healthier, though. Many African children are stunted (notably small for their age) partly because they do not get enough micronutrients such as Vitamin A. Iron deficiency is startlingly common. In Senegal a health survey in 2017 found that 42% of young children and 14% of women are moderately or severely anaemic. Poor nutrition stunts brains as well as bodies.

Animal products are excellent sources of essential vitamins and minerals. Studies in several developing countries have shown that giving milk to schoolchildren makes them taller. Recent research in rural western Kenya found that children who regularly ate eggs grew 5% faster than children who did not; cow's milk had a smaller effect. But meat—or, rather, animals—can be dangerous, too. In Africa chickens are often allowed to run in and out of people's homes. Their eggs and flesh seem to improve human health; their droppings do not. One study of Ghana finds that childhood anaemia is more common in chicken-owning households, perhaps because the nippers caught more diseases.

Africans' changing diets also create opportunities for local businesses. As cities grow, and as people in those cities demand more animal protein, national supply chains become bigger and more sophisticated. Animal breeders, hatcheries, vets and trucking companies multiply. People stop feeding kitchen scraps to animals and start using commercial feed. In Nigeria the amount of maize used for animal-feed shot up from 300,000 tonnes to 1.8m tonnes between 2003 and 2015.

You can see this on the outskirts of Dakar—indeed, the building is so big that you can hardly miss it. NMA Sanders, a feedmill, turned out some 140,000 tonnes of chicken feed last year, up from 122,000 the year before, according to its director of quality, Cheikh Alioune Konaté. The warehouse floor is piled high with raw ingredients: maize from Morocco, Egypt and Brazil; soya cake from Mali; fishmeal from local suppliers. The mill has created many jobs, from the labourers who fill bags with pelleted feed to the technicians who run the computer system, and managers like Mr Konaté. Lorries come and go.

It is often said that sub-Saharan Africa lacks an industrial base, and this is true. Just one car in every 85 is made in Africa, according to the International Organisation of Motor Vehicle Manufacturers. But to look only for high-tech, export-oriented industries risks overlooking the continent's increasingly sophisticated food-producers, who are responding to urban demand. Ideally, Africa would learn to fill shipping containers with clothes and gadgets. For now, there are some jobs to be had filling bellies with meat. ■

Facebook

Mark Zuckerberg's WeChat moment

MENLO PARK AND SAN JOSE

The social network's boss has a plan to overpower his opponents

IN HIS SPARE time Mark Zuckerberg likes to run. In 2016 Facebook's boss pledged to cover 365 miles (587km) that year and, ever the overachiever, completed the challenge by July. He does not practise martial arts, but his almost discomfiting poise could lead you to mistake him for a master of something like aikido. That would be appropriate, for in his professional life Mr Zuckerberg is trying to turn his opponents' energy against them.

When in early March he announced that Facebook would follow a "privacy-focused vision for social networking", complete with encrypted messages that even the firm cannot peer into, observers interpreted this as a defensive move. Some discerned a belated response to outrage over privacy abuses on the world's largest social network. Others saw the plan to knit together its instant-messaging services, chiefly Messenger and WhatsApp, as a way to make the company harder to break up, as some American politicians demand. Others still spied a ruse to escape liability for violent user content, now that Facebook would no longer be able to read any of it.

All three rationales probably played a part. Yet the firm's "privacy pivot" is perhaps better seen as an aikido-like redirection of detractors' momentum. Mr Zuckerberg's speech at his firm's annual developer conference in San Jose on April 30th suggested as much. Far from retreating, he is limbering up for a new contest—to reinvent social networking, this time around messaging. "The future is private," he declared grandiosely. Though he might not admit it in public, he seems keen to turn Facebook into a Western version of WeChat, the Chinese messaging app whose array of mobile services, from payments to filing court paperwork, has made it ubiquitous in China—even if his recent pledge to store user information only in countries that respect the rule of law is an implicit admission that he has given up on the Chinese market, where Communist minders insist that Western firms must keep all data locally.

Older. And wiser?

Facebook's core business is maturing, as its boss clearly sees. Its operating margins—42%, excluding $3bn set aside to cover an expected fine by America's Federal Trade Commission for privacy violations—remain the envy of the tech world (see charts on next page). In the latest quarter revenue grew by 26% compared with the previous year, exceeding $15bn. But user growth is slowing. In some rich countries, especially European ones, it is flat. The young prefer social media which are more "intimate" and "ephemeral", like Snapchat, which pioneered "stories", messages and pictures that disappear after 24 hours—and which Facebook aped. More than 500m users of Instagram, Messenger and WhatsApp now post stories every day.

Mr Zuckerberg expects migration from the online "town square" to a digital "living room" to continue; stories may soon outnumber posts on Facebook's newsfeed. The plan is to build it around WhatsApp, which already offers secure texting. It would let users find each other, pay digital and offline shopkeepers, or purchase a cornucopia of online services—perhaps one day using Facebook's own currency. In time, the thinking goes, it may become as indispensable to Westerners as WeChat is in China.

Some elements of the new platform already exist; WhatsApp is testing a payment service in India. Others, such as new shopping features on Instagram, were launched in San Jose. All this falls short of a full-blown business plan. But the contours of Mr Zuckerberg's vision are taking shape. The 34-year-old is proceeding more cautiously than in Facebook's early years, when he was guided by the now infamous injunction to "move fast and break things"—but no less deliberately.

That is just as well, for "platform shifts" are tricky. Microsoft did not see smartphones coming and Facebook itself almost missed the rise of mobile apps. To succeed, it must clear a number of hurdles. The first is technical. Facebook wants an Instagram user to be able to send a note directly to a friend on WhatsApp. Creating a common phone book for these services, with a com- ▸▸

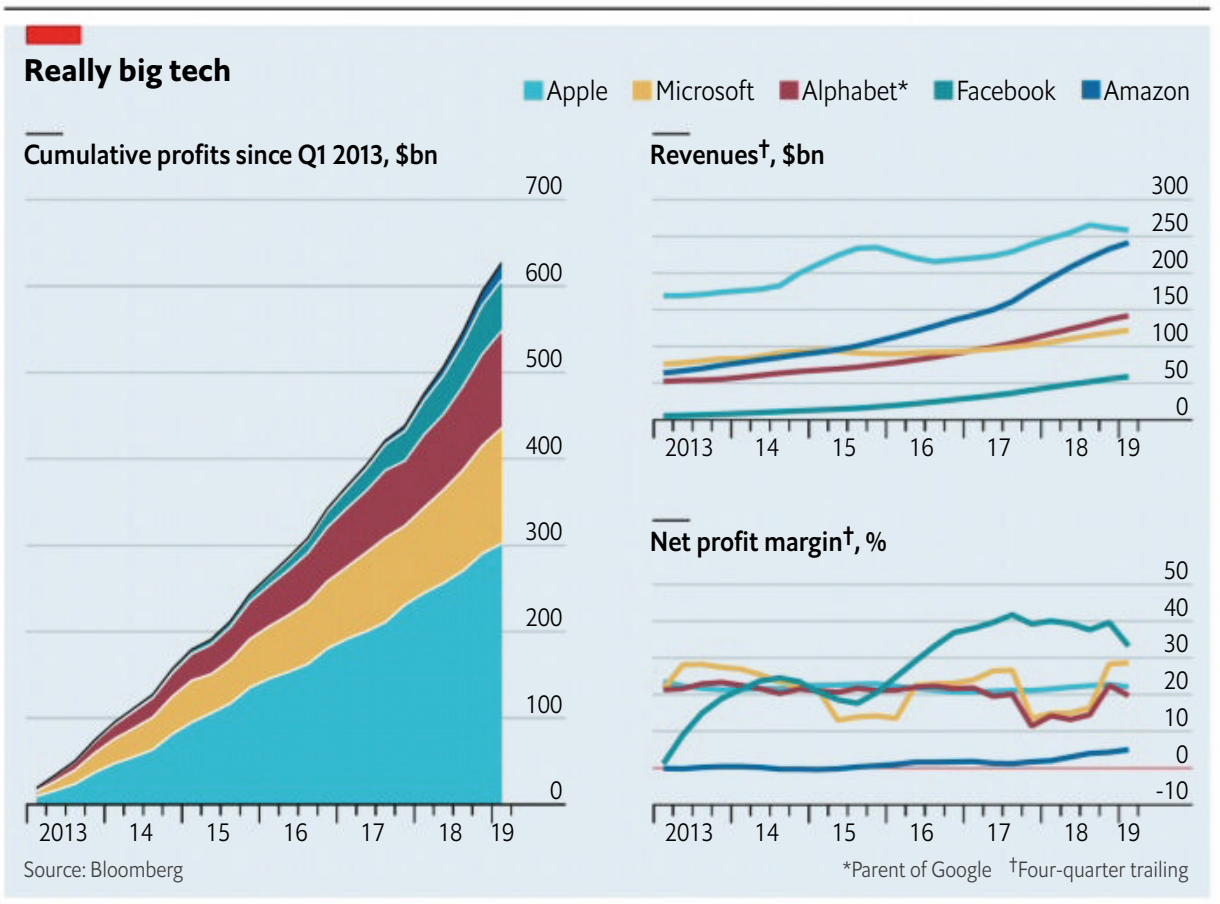
bined total of 2.7bn users and different source codes, presents a knotty problem for programmers. Chris Cox, one of Mr Zuckerberg's top lieutenants, is rumoured to have left the company in March because he did not think it could be done (this week Mr Cox attributed his departure to "artistic differences" with his boss).

The second challenge is economic. WeChat could become the platform of choice on smartphones because China had no dominant app stores. Facebook must contend with incumbents such as Apple and Google. Since you can't sell microtargeted adverts against encrypted messages your algorithms cannot see, the new platform will need a fresh way to make money. For all its ubiquity, WeChat is no cash cow (Tencent, its owner, makes most of its revenue from online games). Maintaining Facebook's fat margins would require new revenue sources, such as charging businesses to contact users or taking a cut of any purchases, as credit-card issuers do.

Lastly, there are the entwined issues of privacy and competition. Mr Zuckerberg accepts that a lot of people dismiss Facebook's sincerity here—his recent article in the *Washington Post*, imploring governments to regulate social media, notwithstanding. It will continue to collect plenty of data. Integrating these, and the underlying apps, could in turn enable Facebook to convert its dominance in public social networking into power over private messaging. This reminds seasoned competition regulators of Microsoft's attempts to bundle its operating system with a web browser in the mid-1990s in a bid to control cyberspace. With the internet's rise, the stakes today are bigger: no country wants one firm to become society's de facto operating system.

Since its services cost nothing, Facebook says, it is not gouging users. It could argue that a single dominant social network is easier to police than lots of smaller ones and has greater financial and technical capacity to keep users safe from harmful content. And it would be a bulwark against WeChat, which might otherwise become a force outside China—bringing the Chinese surveillance state with it.

Indeed, Mr Zuckerberg's *Washington Post* article looks like a bid to broker a 21st-century version of the Kingsbury Commitment of 1913, when AT&T, then America's telephone monopoly, accepted government oversight and agreed to spin off some of its businesses in exchange for not being nationalised or broken up. The difference is that, unlike AT&T, Facebook's reach extends beyond America and spans a growing range of industries, from advertising to finance. It must grapple with politicians, regulators and rivals. If enough opponents gang up at once, even the most gifted aikido master may struggle to fend them off. ■



Never mind the buzz

The big American tech firms continue to flirt with market valuations of $1trn, but their first-quarter earnings show that the outlook is mixed. Facebook shrugged off regulatory crackdowns but its margins dipped. Sales of Apple's iPhones fell again, highlighting the need for new revenue sources. Alphabet, Google's parent, shed 7.5% of its value after it reported slowing ad sales. Amazon's (comparatively puny) profits doubled but sales growth slowed. Microsoft showed it is no tech has-been; it briefly joined the $1trn club.

Deutschland AG

Cracks in the DAX

BERLIN

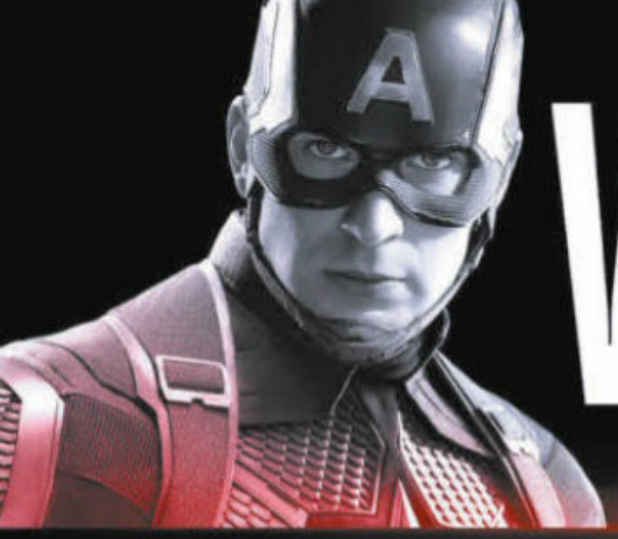
Why so many big German corporate names are in trouble

IT HAS NEVER happened to a chief executive of a company in the DAX index of Germany's 30 largest listed firms. On April 26th 56% of shareholders in Bayer, a chemicals conglomerate, censured Werner Baumann and his management team. Most German bosses can count on nine in ten shareholders to back them in non-binding confidence votes. In 2015 a rebellion by a minority, of 39%, of Deutsche Bank's owners, who censured Anshu Jain and Jürgen Fitschen, led both co-chief executives to announce their resignation.

Bayer shareholders have reason to be mutinous. Its share price has plunged by 40% since its takeover last June of Monsanto. It is now worth less than the $63bn it paid for the American seed-and-chemicals giant. Critics accuse Mr Baumann of infecting a healthy firm with underestimated legal risks related to Roundup, Monsanto's blockbuster weedkiller.

In August an American court awarded $289m to Dewayne Johnson, a terminally ill cancer patient who had been exposed to Roundup over many years. In March it lost a similar case when a court in California awarded $81m to a cancer victim. It is fending off more than 13,000 lawsuits alleging (despite earlier scientific evidence to the contrary) that Roundup causes tumours. The next verdict is expected later this month. There are murmurs that activist investors, including Elliott, an American hedge fund which owns a stake in the company, want to amputate Bayer's agriculture business from its healthier drugs one.

Bayer is not the only German blue-chip company that has stumbled after an American misadventure. Volkswagen, Europe's biggest carmaker, has so far paid $30bn in fines and compensation in America after it was caught fitting "defeat devices" in up to 11m cars worldwide to fool emissions tests. It is now trying to reinvent itself as Europe's leading maker of electric vehicles. Deutsche Bank's existential troubles date back to its acquisition in 1999 of Bankers Trust, an American investment bank, which served as the launching pad for its ill-fated foray into international investment banking. Daimler, which makes Mercedes cars, has yet to recover after losing €40bn ($45bn) in its short-lived takeover in 1998 of Chrysler. ThyssenKrupp, a steelmaker, burned through €8bn with two factories in North and South America and is now splitting its historic steelmaking unit, ▸▸



WE ALL HAVE THE POWER

Pearl, childhood cancer survivor; and Arnold, leukemia survivor.

TO STAND UP TO CANCER

Lori, breast cancer survivor.

MARVEL STUDIOS'

AVENGERS: ENDGAME, MASTERCARD, AND STAND UP TO CANCER

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ONE OF THE BIGGEST VILLAINS OF ALL: CANCER.

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STAND UP TO CANCER FUNDS GROUNDBREAKING RESEARCH IN PURSUIT OF ITS MISSION TO MAKE EVERY PERSON DIAGNOSED WITH CANCER A LONG-TERM SURVIVOR.

Pictured: Heroes from Marvel Studios' *Avengers: Endgame*.
Survivor photos by Kevin Lynch.

STAND UP TO CANCER

mastercard

AVENGERS ENDGAME ONLY IN THEATERS

to be merged with the European steelmaking business of Tata, an Indian conglomerate, from its lucrative lifts business.

Optimists point to the rude health of DAX stalwarts like SAP (software), Allianz (insurance), Munich Re (reinsurance), Siemens (engineering) or BASF (chemicals)—solid companies with sound balance-sheets busily preparing for the digital age. Even Volkswagen appears largely to have put "Dieselgate" behind it. Cornelius Baur, the German boss of McKinsey, a consultancy, puts some of German firms' mishaps to chief executives' poor communication strategy. Americans talk up sexy topics such as technology when they pitch their company's achievements. By contrast, Mr Baur observes, Germans tend to pontificate about regulation and taxes.

Perhaps. But even DAX companies that have avoided self-inflicted wounds from unfamiliar American-style corporate aggression face challenges. Most depend on exports. They are affected by the slowdown of the Chinese economy, tariff wars and the uncertainty over Brexit. Last year the operating income of DAX firms fell by 6.5%. Although the index is up since January, in line with other stockmarkets, this year may be no less tough for some of them. Carmakers and energy firms plan to send many workers into early retirement.

Whether Bayer's boss joins them will depend on how company's legal troubles in America unfold. The sum awarded to Mr Johnson was subsequently reduced; Bayer is appealing. On April 30th credit-raters at Moody's said that Bayer could absorb litigation costs of up to €5bn. But they warned that payouts of €20bn or more could push the company's rating uncomfortably close to junk. ■

Bartleby Struggling with style

Modern dress codes are easier for men than for women

SUMMER'S ARRIVAL in the northern hemisphere brings with it a dilemma that plagues every office worker. What does a casual dress code mean in practice? The happy medium between looking like Kim Kardashian or Hagrid the giant is hard to pin down.

Goldman Sachs has just implemented a "flexible dress code" although the executive memo noted gnomically that "casual dress is not appropriate every day". Besuited corporate clients might not take kindly to investment-banking advice offered by someone wearing a tank top and ripped jeans.

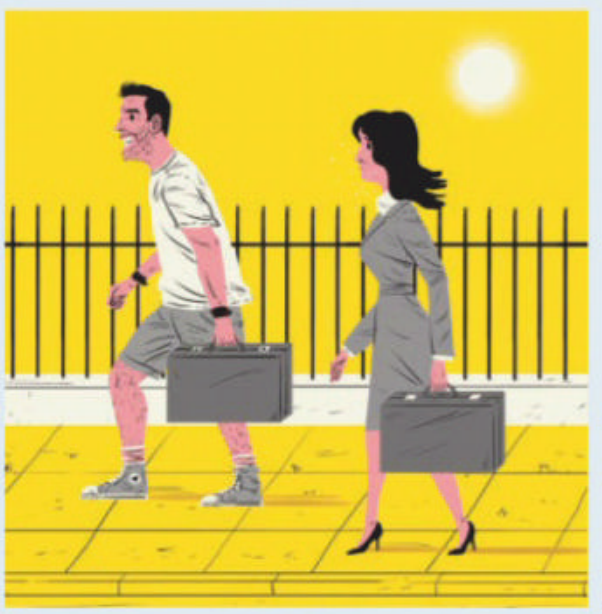
It makes sense that banking would be one of the last bastions to fall to the advance of casual workwear. You want the people who look after your money to appear sober and respectable. For similar reasons, bank headquarters have deliberately been built in a grandiose style to emphasise the institution's financial solidity and historical roots. Depositors might hesitate about handing over their savings to people working under a railway arch.

For men, the move to casual dress seems entirely positive. Few people will mourn the demise of the tie, a functionally useless garment that constricted male necks for a century. The tie's origins date back to the 17th century, when mercenaries hired by Louis XIII of France wore a form of cravat. The modern version of the tie emerged in the 1920s and was popularised by Britain's Edward VIII who, when not flirting with the Nazis, developed the Windsor knot. It became standard office wear for the next six decades. In the 1990s ties started to go out of fashion because technology titans and hedge-fund managers refused to wear them—and were rich enough to ignore social convention. Once, when Mark Zuckerberg, the founder of Facebook, was to meet a venture capitalist, he turned up wearing his pyjamas.

The jacket, by contrast, is a much more useful garment, replete with pockets to house wallets, spectacle cases and travel passes (or, these days, mobile phones). So the default work garb for men, when meeting clients, is jacket, open-necked shirt and dark trousers (denim excluded).

On days without meetings, men can slob out in T-shirts (though not too garish) and jeans, and no one will think the worse of them. Arriving in shorts or without socks is another matter entirely. But dressing in the morning is quick and easy. Steve Jobs was famous for wearing the same outfit—black polo neck, jeans and trainers—every day.

But what works well for men does not translate as easily to women. Karl Stefanovic, an Australian television presenter, wore the same blue suit every day for a year and no one noticed. By contrast, his female co-presenters received constant remarks on their appearance. Even the Duchess of Cambridge, Kate Middleton, gets snarky comments when she wears the same clothes twice.



Women's workwear seems to have become less formal over time. A survey by Euromonitor found that sales of women's suits fell by 77% in America between 2007 and 2016. But many women worry that they will be judged as unprofessional (unlike their male colleagues) if their clothes are deemed to be too scruffy, or too revealing. It can also be hard choosing clothes that are suitable for both indoors and out. Air-conditioning systems in offices are often designed to suit the male metabolic rate, which can cope with colder temperatures than the female body. The result may be that women have to bring an extra layer to wear in the building.

As for formal meetings, while men have abandoned the tie, many women feel obliged to wear high heels. These give some women a sense of empowerment and femininity (not to mention extra height). But in health terms, heels can seem like the Western equivalent of the ancient Chinese practice of foot-binding: bad for women's feet, ankles and backs and designed to limit their mobility. Britain's Parliament held a debate after a woman was sent home from her job as a receptionist for refusing to wear high heels (it was inconclusive).

Companies understandably want workers who deal with the public to look respectable. Workers shouldn't wear clothes that wouldn't be appropriate if visiting a prudish grandmother or a child's teacher. And yet no one should be expected to turn up at the office as if dressed for a wedding. The most important item to bring to work is a dose of sartorial common sense.

Economist.com/blogs/bartleby

Carmaking

Track mentality

POISSY

PSA Group's boss has revived its fortunes. He isn't done

CARLOS TAVARES likes to move quickly. The boss of PSA, maker of Peugeots and Citroëns, has a passion for motor racing and speed pervades his day-to-day activities, too. The intense Portuguese arrives abruptly for meetings and departs so swiftly that it takes a few seconds to realise that he has gone. His reputation as the most talented boss now running a car company is also built on speed—his rapid and remarkable turnaround of two struggling firms, first PSA itself and then Opel, acquired from General Motors (GM) in 2017. Steering his mass-market firm towards the future of carmaking will not be easy.

The permanent frown clouding Mr Tavares's brow is a testament to the tough jobs he has pulled off. First, after taking the wheel of PSA in 2014 after years of heavy losses, he rescued it from bankruptcy. To near-universal surprise, he restored the firm to the black in a year. Revenues and profits have since grown handsomely; profit margins now rival those of German premium carmakers.

As Maxime Picat, PSA's director of operation in Europe, drily observes, seeking profits first and volumes afterwards has "not always been the case" in an industry that has prioritised sales and market share. PSA sought to sell fewer cars at a bigger mark-up. It axed niche models that made little money and slashed costs by limiting the bewildering array of combinations of engines, body styles and the like.

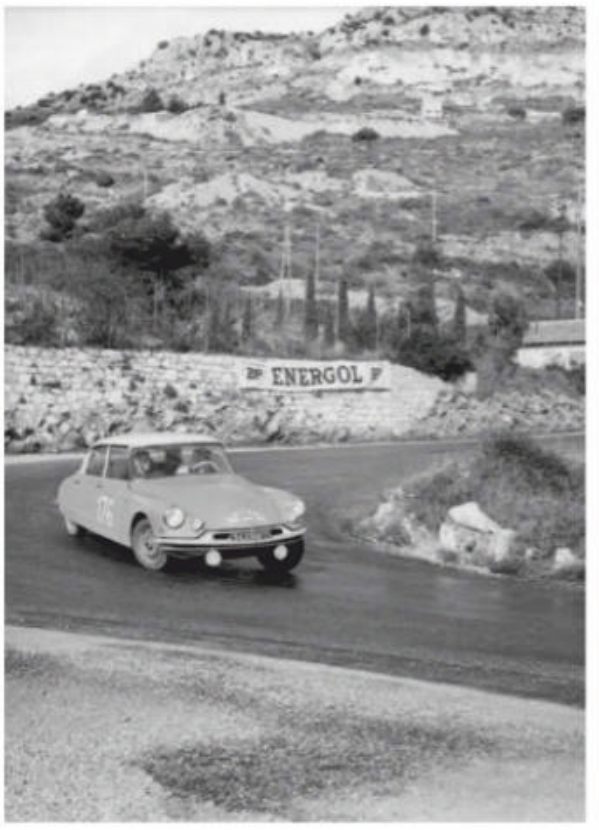
When PSA was criticised for lacking the heft to make big investments in electric vehicles and self-driving cars, Mr Tavares paid GM €1.3bn ($1.4bn) for its struggling European arm. This added around 1m vehicles a year to the 2.8m the rest of the group built in 2018, making it Europe's second-biggest carmaker behind Volkswagen. He applied his tactics again, this time to a company which had suffered two decades of losses totalling around $20bn under American ownership. In 2018 Opel reported an operating profit of over €860m.

The resurrection of two struggling car giants has propelled PSA's share price by 14% over the past year. Steering the combined firm through the next series of bends will take a different set of skills, however. Car sales in Europe, where PSA generates 80% of revenues, are less brisk than in the past. Markets such as India and Russia, which Mr Tavares is eyeing, are trickier to negotiate. PSA has struggled in China, where carmakers have done well in recent years. Making humdrum Opels (sold as Vauxhalls in Britain) desirable will require heavy spending. Placid unions, which recognised PSA's difficulties, may become less so as its health improves.

A plan to return to America has also met with scepticism. PSA's brands are largely forgotten there—the last one, Peugeot, departed 28 years ago. Rather than spending heavily on marketing, building a factory and losing money "like hell", Mr Picat says, PSA will start with car-sharing services to reintroduce the marques gradually as part of a ten-year project that will "make money at every step". This seems to be one place where Mr Tavares is content to go slowly.

Further down the road, he worries about the added costs of electrification to meet EU emissions targets. The American car-sharing venture will offer some experience in mobility services, but PSA lags behind many rivals in autonomous vehicles. All this will require heavy spending.

Greater scale would help. Mr Tavares is on the lookout for deals. A tie-up with GM or Fiat Chrysler Automobiles (whose chairman, John Elkann, sits on the board of *The Economist*'s parent company) has been rumoured. So has a takeover of struggling Jaguar Land Rover from its Indian owners. Some industry-watchers think consolidation is imminent—and virtually all believe it is necessary to share the costs of developing electric vehicles, self-driving cars and mobility services. Since the death last year of Sergio Marchionne, Fiat Chrysler's legendary boss, and the legal travails in Japan of Carlos Ghosn, ejected from his leadership roles in the Renault-Nissan-Mitsubishi alliance, many observers see Mr Tavares as the only car boss with the skill to cut big and difficult deals. ■



Cornering the market

Drugmaking

A tough sell

Why producers of new antibiotics are ailing

GETTING HOLD of penicillin in 1943 was a lottery in America. The "miracle drug" had been discovered 15 years earlier but production capacity was limited, and most went to the war effort. What remained was rationed, and a single injection cost at least $40 (about $600 in today's prices). By 1949 better manufacturing methods allowed the price to fall to 20 cents. The use of penicillin exploded.

Antibiotics subsequently became a staple of modern medicine. Massive volumes offset low margins. No longer. Finding new molecules is getting harder, which means higher development costs. At the same time, growing awareness that overuse accelerates development of bacterial resistance to the drugs has led to "antibiotics stewardship", the practice of using the newest antibiotics only for infections untreatable with older ones. Volumes, in other words, are often disappointing. With returns from antibiotics down, big pharmaceutical companies have abandoned them for more lucrative drugs. GlaxoSmithKline, Pfizer and Merck are the only three doing clinical research in the field.

Small biotechnology firms tried to pick up the slack. In the past ten years, as the world began to panic about the rise of resistant superbugs, governments and charities provided early-stage financing. Like big pharma, though, the biotech startups have struggled to make money from antibiotics. An American one, Achaogen, filed for bankruptcy on April 15th; plazomicin, a novel antibiotic it began selling in 2018, sold barely any doses in the first eight months. Melinta, another antibiotics start-up, is restructuring. Share prices of similar firms have plunged, in some cases below their liquidation value.

The demise of Achaogen has been blamed on the peculiar features of the antibiotics market, rather than the poor business decisions of its managers. The low number of cases that are suitable for potential treatment with novel antibiotics makes it hard to recruit enough patients for clinical trials. Take carbapenem-resistant *Enterobacteriaceae* (or CRE for short), which Achaogen went after. These bacteria kill half of those whose bloodstream they infect. But CREs cause only a tiny fraction of bacterial infections in American hospitals.

Firms get around this by having their new antibiotics approved for more common ailments treatable with existing ▸▸

drugs, such as urinary-tract infections. At the same time, they publish results from small observational trials of the new drugs showing good recovery rates for hospital patients with CRE infections—counting on doctors to prescribe the medicines off-label for CRE. In the case of Achaogen, a small study showed that plazomicin was indeed safer and more effective for CRE than colistin, a highly toxic antibiotic of last resort from the 1950s. Yet plazomicin did not make a dent in colistin use. A CRE antibiotic by Melinta that has been on the market for over a year is not selling well, either.

That could be because few doctors know about the new treatments. The firms which sell them lack the marketing dollars that big pharma firms shower on new drugs, says Alan Carr, an analyst at Needham, an asset manager in New York. It takes time for new antibiotics to make it into clinical guidelines, such as those of the Infectious Diseases Society of America, which are updated infrequently.

American hospitals, meanwhile, avoid new antibiotics because they end up footing the bill, which can run to several thousand dollars per patient. Federal programmes like Medicare, which provides health care for the elderly, often pay hospitals for antibiotics as part of bundled payments for hospitalisation, not as reimbursement for a particular treatment, as in the case of cancer. Aleks Engel of Novo Holdings, another asset manager, cites this model as a perennial gripe among fellow investors in antibiotics.

Antibiotics which fall flat in the first few years can eventually become profitable, notes Bibhash Mukhopadhyay of New Enterprise Associates, an American venture-capital firm. Until tests pinpoint the specific bug causing an infection (which may take days), doctors try several common antibiotics that usually work for the microbial culprit they suspect. For example, when a first-line antibiotic stops working for most cases of pneumonia caused by bacteria that grow in hospital patients' breathing tubes, the third-line antibiotic starts selling briskly.

Many investors are too impatient to wait that long. Lacking other products on the market to turn a profit, firms like Achaogen struggle to raise capital to cover their costs. Higher prices might help, but the debate in America is about how to lower the cost of drugs, not raise it. Even if new antibiotics were paid for separately, many investors think that patients for drugs like plazomicin are too few to make these drugs commercially viable in the near term.

Making them profitable for firms will take ingenuity. This week a UN commission mused about granting large cash prizes for companies that create such drugs, or paying them a subscription that guarantees fixed revenues regardless of use. Given the X Prize and Netflix, these are at least familiar to venture capitalists. ■

Chinese business

The billion-yuan bet

SHANGHAI

A wager offers a vignette of changing corporate China

IN 2013 BUSINESS folk gathered in Beijing to honour Chinese "Economic Figures of the Year" were treated to an unexpected twist. One of the winners, Lei Jun, ventured that in five years the sales of Xiaomi, the smartphone-maker he founded in 2010, would surpass those of Gree, a manufacturer of air-conditioners with government roots. To make things interesting Dong Mingzhu, an entrepreneur and Gree's chairwoman with whom Mr Lei had shared an award, bet him 1bn yuan ($148m today) that her company's turnover would stay ahead. Mr Lei accepted. Since March 19th, when Xiaomi posted revenues of 175bn yuan in 2018, corporate China has awaited the figure from Gree. On April 28th the verdict was in: it made 200bn yuan. Mr Lei was out of the money.

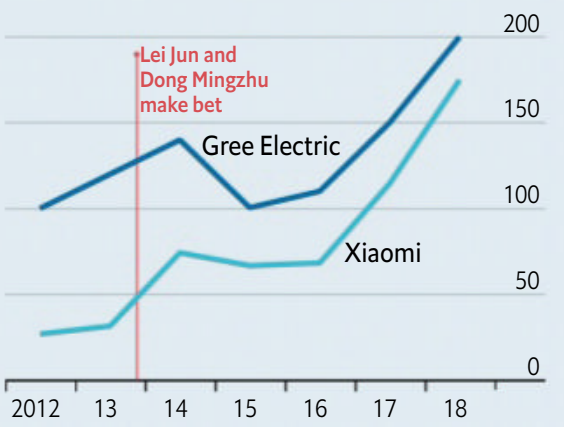
The bet looked bold for Mr Lei in 2013. Xiaomi was then making a quarter of Gree's 120bn yuan in annual sales. The "Apple of the East", as it was dubbed, represented a new sort of Chinese company: market-driven and spunky, not state-led and stodgy; online instead of bricks and mortar; relying on digital technology rather than mechanical engineering. By mid-2018 Xiaomi's revenue neared 90% of Gree's (see chart). When the firm floated on the Hong Kong stock exchange last July it was valued at $54bn. It has become the fourth-most-valuable Chinese brand, according to Brandz, a consultancy; Gree is 29th. Ms Dong herself suggested that the wager was meaningless given how different Gree and Xiaomi were.

In reality, the companies are not that dissimilar—and growing less so as China's economy modernises. Both have boomed thanks to swelling Chinese disposable incomes. The fiercely independent Ms Dong has repeated publicly that her firm must fight for customers just as private ones like Xiaomi do. In April Gree's largest shareholder, a regulator overseeing state-owned enterprises, said it would sell most of its 18% stake. To build an ecosystem of devices controlled by his mobile phones, Mr Lei relies on closeness to China's manufacturing heartland, Gree's home.

They face similar challenges, too. The competition in their core markets is stiff. Xiaomi's margins from low-cost phones are wafer-thin. Gree has lost share of Chinese air-con sales to rivals such as Haier and Midea, which are introducing more high-tech models. Xiaomi and Gree have both taken a punt on changing their original business models. Gree is selling more online. Xiaomi is opening more physical stores. To keep up with rapidly changing consumer tastes, Gree has moved into smart home appliances, as well as low-emission vehicles and chip design—areas in which Xiaomi now does business, too. Ms Dong now makes smartphones, and Mr Lei has a line of air-conditioners. Whether or not he makes good on it—gambling is outlawed on the mainland—the bet highlights the changing face of China Inc.

Chinese poker

Revenues, yuan bn



Sources: Company reports; press reports

Schumpeter | How to rev up Unilever

A new boss confronts an old question

In a compound in Shanghai two rising stars in the marketing world used to share a beer together. One was Alan Jope, who in January became the boss of Unilever, a 130-year-old Anglo-Dutch consumer-goods firm famous for its Knorr stock cubes and Dove soaps. The other was Miguel Patricio, the incoming chief executive of Kraft Heinz, the macaroni-to-ketchup deal machine that in 2017 choked in an attempt to swallow Unilever.

He may run a firm that is worth $175bn, but Mr Jope seems the sort of bloke with whom it would be easy to have a pint. The 55-year-old Scot is refreshingly down-to-earth. He wears jeans and trainers, but no tie. He has good tales to tell. His first job was driving a butcher's van. His hobby is joining friends on an intermittent mission to circumnavigate the globe on a BMW 750 motorcycle—and he has bones, broken in the Gobi desert, to prove it. He is also loyal to former drinking buddies, such as Mr Patricio. There is, he has said, "no *Schadenfreude*" about the troubles at Kraft Heinz following its calamitous results in February.

In temperament, Mr Jope could not be more different from his predecessor, Paul Polman, a self-confessed "Calvinist Dutch" whose messianic belief in long-term sustainability gave him a haughty air. Unlike Mr Polman, who was famously dismissive of shareholders, Mr Jope has been listening to them. Among the most radical ideas out there is a perennial one: that he should take Unilever on the business equivalent of an off-road trip, abandoning the slow-growing food business and focusing exclusively on more exciting areas such as beauty and home products.

Mr Jope should resist the urge. There are other ways to rev up Unilever's engine.

Most consumer-goods behemoths are in the midst of soul-searching. For much of the post-war era, the mass marketing of strong brands to ever-wealthier Westerners was the epitome of a stable business. According to McKinsey, a consultancy, for 45 years to 2010 few industries could top the returns to shareholders of the slow-moving business of selling fast-moving consumer products.

In the past decade, though, firms like Procter & Gamble, Nestlé and Kraft Heinz have increasingly resembled overweight cyclists in a bike lane. They have looked sluggish next to smaller, more agile competitors. Social-media-obsessed millennials have shaken their understanding of consumer tastes. In the developed world, the toughest business is food and beverages, especially easily replicable items like dressings, spreads and builders' tea. Hence the pressure on Unilever to ditch the food business entirely.

Unilever is already on a diet. Food and refreshments have shrunk from more than half of sales when Mr Polman took over in 2009 to 36% (it shed its 90-year-old spreads business last year). Home and personal care, including soaps, deodorants and laundry liquids, are up. This was not just a case of breathing new life into old brands like Dove. Unilever has made 29 acquisitions since 2015, mostly in the personal-care division formerly headed by Mr Jope, including upmarket beauty products like Dermalogica and subscription services like Dollar Shave Club. Known inside Unilever as "speedboats", they are meant to bring more oomph to the mothership yet remain separate from it.

Analysts and some investors tout the merits of potentially seismic deals to enhance the focus. Martin Deboo of Jefferies, a brokerage, has long argued that Unilever should sell the rest of its food business and buy Colgate-Palmolive, a potentially $62bn mouthful of toothpaste and other home and personal-care businesses. Andrew Wood of Bernstein, a research firm, says Mr Jope should attempt to buy Reckitt Benckiser's smaller, $20bn hygiene-and-home business, shedding more food brands in the process.

But there are three reasons why Mr Jope ought to avoid game-changing transactions. The first is Unilever's lack of experience in handling big acquisitions. Most of the recent ones cost less than €1bn ($1.1bn). Unilever's biggest splurge was the disastrous $24bn acquisition of Bestfoods in 2000, after which it wasted 15 years selling off unloved brands. Tastes are changing so fast that any big purchase could end up a dud.

The second reason is that Unilever's emerging-market ambitions are well served by having a food arm. Some 58% of sales come from developing countries. Fast-growing markets such as Bangladesh could provide as much growth in dollar terms as a region like Europe. Short of formal shops, such places rely on sprawling distribution networks that work best combining food, beauty and home products. People there have a growing appetite for nutritional items. That helps explain Unilever's recent €3.3bn purchase of Horlicks, a malt drink popular in India, from GlaxoSmithKline.

Third, food can be made more valuable. Mr Wood notes that Nespresso allows Nestlé to charge ten times more per cup of coffee than Nescafé Gold Blend. Other competitors are pushing teas and ice creams up market. Unilever has acquired a few trendy food companies such as the Vegetarian Butcher. Moreover, the line between food, beauty and health is blurring; brace for more nutraceuticals, such as dietary supplements, cosmeceuticals, such as acne deep cleanse, and nutricosmetics, to make hair thicker.

Off the soap box

Ugly neologisms aside, such a bundle of salubrious brands would dovetail with Unilever's trademark pursuit of environmental and social responsibility that Mr Jope is keen to preserve. He would be wise to do so. Though shareholders in Britain turned against Mr Polman when he tried to end Unilever's dual listing in London and Amsterdam, few want the firm to jettison the sense of purpose that he brought, if only because it helps win customers and keep staff committed. Mr Jope may be less preachy than his predecessor, more pragmatic and, possibly, more profit-oriented. He should resist Evel Knievel-ish leaps into the unknown. Otherwise he may have more than broken bones to reminisce about over a lager. ■

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Big Compliance

Rise of the No Men

Those in charge of minimising banks' regulatory woes have never been more in demand

COMPLIANCE OFFICERS are the killjoys of finance. To bankers and traders keen to let rip, they are the po-faced types who frown at any transaction that might breach this rule or contravene that regulation. A recent episode of "Billions", a television drama about Wall Street, captured the rainmakers' frustration: so fed up is "Dollar" Bill Stern with having his wings clipped by Ari Spyros that the veteran trader rams the side of the compliance chief's Porsche when he pulls out of the car park of their hedge fund, Axe Capital.

But pity not finance's in-house policemen, for they have had a golden decade since the crisis. While swathes of banking have laboured under cutbacks and stiff capital requirements, their headcount and clout have grown. Banks fined for aiding corruption, money-laundering and sanctions-busting have beefed up their compliance, risk, legal and internal-audit teams. Compliance officers will never be the rock stars of finance, but they have moved from drums to rhythm guitar. And though some banks hint at having reached "Peak Compliance", staffing and investment are likely to remain well above pre-crisis levels.

Combating financial crime is central to compliance. Enforcement has tightened since America passed the Patriot Act, which targeted money flowing to terrorists and other bad actors, after the September 11th attacks. Regulators have fined financial firms at least $28.4bn for money-laundering and sanctions violations since 2008; BNP Paribas alone paid up $8.9bn for sanctions shenanigans. Aiding tax evaders has cost banks at least another $9.5bn. There is more to come: Scandinavian banks embroiled in scandals involving laundered Russian money, including Danske Bank and Swedbank, are bracing for penalties.

Compliance is also about keeping on top of a plethora of regulations, covering everything from capital and corporate governance to disclosure and diversity. Compliance teams even have to fret about seemingly innocent diversions like "office pools"—sweepstakes on sports events—in case they fall foul of gambling laws. Thomson Reuters, which tracks regulatory alerts, reckons that 56,321 were issued by 900 bodies in 2017. "You have to build an industrial-scale operation just to digest all the regulatory changes," says Colin Bell, HSBC's chief compliance officer (CCO).

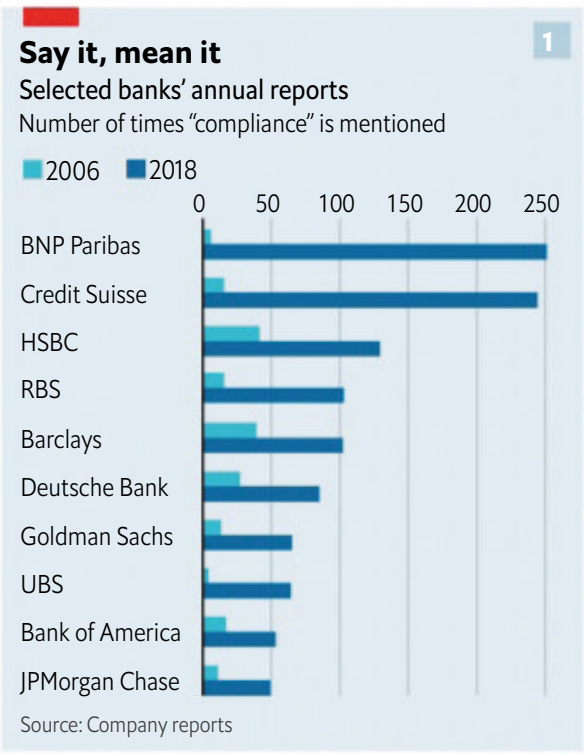
Keen to show that compliance is a priority, banks highlight it much more in filings than they used to (see chart 1 on next page). Though disclosure is patchy and banks define compliance and related functions in varying ways, they seem to have backed up talk with action. Disclosures, such as they are, suggest that it accounts for 10% or more of the workforce at large banks, up from perhaps half that in the mid-2000s.

At the end of 2018, some 30,000 (or 15%) of the 204,000 employees of Citigroup, an American bank, worked in compliance, risk and other control functions—enough to fill more than two-thirds of the seats at Citi Field, the New York Mets' baseball stadium. At the end of 2008 it was just over 4% of employees. JPMorgan Chase could just about fill it with the 43,000 it claims to employ in "fortress controls" (a category that is probably broader).

HSBC, which was fined $1.9bn in 2012 for banking Mexican drug money and other lapses, has around 5,000 employees in anti-money-laundering (AML) compliance. ▸▸

Standard Chartered, which has coughed up $1.8bn for breaches of sanctions, has 3,500. Both banks spend $500m a year on AML alone—for Standard Chartered, the equivalent of a fifth of its pre-tax profit for 2018. British banks' annual AML spend is £5bn ($6.5bn), according to the Financial Conduct Authority. Since BNP Paribas was hit with its mega-fine in 2014, it has nearly doubled staffing in compliance and other control functions, to almost 13,000. Growing demand for AML sleuths has been a boon for those who certify them, too. The Association of Certified Anti-Money-Laundering Specialists, based in Miami, has seen worldwide membership grow from 5,600 to 70,000 since 2007.

Banks caught up in dirty-money scandals are not only rushing to hire, but advertising the fact to soothe markets. Danske Bank has said it will hire 600 new compliance staff this year; it has already quadrupled the number since 2015, to 1,200. ABN AMRO, under scrutiny because an operation that it used to own may have been connected with the Troika Laundromat, a Russian money-washing scheme, has revealed details of its investment in AML (including a tripling of staff engaged in "client due diligence"). Banks are also throwing money at staff training—and policing it. Gone are the days when traders could get interns to take their computer-based compliance tests for them while they popped out for a pint. Such ruses are now a sacking offence.



The bankers who like to say No

Compliance is gaining not just investment, but clout. In the past it was often buried in the legal or risk department, and CCOs reported to chief risk officers or general counsels. Now they are more likely to have a direct line to the top: for instance, HSBC's Mr Bell reports directly to the chief executive. The role now involves much more than ensuring the firm is within the law: liaising with the board, ensuring investors and regulators have the information they need, and helping shape the bank's risk culture. "It has become a much more influential position," says Mark Jackson of Heidrick & Struggles, a recruitment firm.

After the financial crisis, the compliance jobs market became one of the hottest in finance. CCOs earn far less than banks' rainmakers, but the best-paid can expect basic annual salaries of over $1m. (Compliance also weighs heavily in pay for top dogs: at HSBC, "risk and compliance" is the biggest element the board considers when assessing the CEO, weighted at 25%. Profit counts for 20% and revenue growth 10%.)

Consequently, compliance is attracting more big names than it used to. Jennifer Calvery, HSBC's head of financial-crime threat mitigation, was previously head of FinCEN, America's AML regulator, a role that strikes fear into bankers' hearts the world over. Recruiters say talented lawyers who would previously have shunned compliance roles are now more interested.

So too are banks' profit generators. In recent years BNP Paribas has encouraged employees to move between the business side and compliance to "disseminate the compliance and conduct culture", says Nathalie Hartmann, its compliance chief—and previously head of portfolio management. Under BNP's post-fine compliance framework, "conduct and control officers" wander trading floors and sales desks, spotting wayward behaviour earlier than would previously have been possible.

Banks such as BNP and HSBC, which are now several years into compliance-boosting efforts, have entered a "stabilisation" phase, says a consultant. Having started by throwing people at the problem, they are now seeking to increase efficiency and lower costs. Some, including UBS, have even suggested it may be time to pare back after the boom. Spending on compliance at HSBC peaked in 2017, says Mr Bell. "As in any cycle of transformation, there is a settling-in phase, when you can, for instance, do without some of those who did the initial training or initiated technology projects that are now up and running."

Some financial firms are outsourcing compliance functions or specific projects. Compliance Risk Concepts, an American firm that does such work, has seen demand grow by over 30% a year, says Mitch Avnet, its managing partner. And in America, which strengthened controls earlier than Europe did, the market for jobs in compliance has eased a bit. Jack Kelly of Compliance Search Group, a recruiter, attributes this partly to regulatory forbearance: not so much actual deregulation (the Trump administration has cut less red tape than promised) as "winks and nods" from regulators to signal they will enforce rules less stringently. John Gilmore of Barker-Gilmore, another recruiter, says that though the market remains strong, "we're no longer seeing amazing bidding wars for well-qualified compliance officers where there would be two other offers on the table and you couldn't be sure the guy would start until he actually walked through the door."

Now, the biggest question for bank controllers is how many humans they can replace with bots without compromising compliance. HSBC is looking at the possibility of using big data to assign a financial-crime-risk score to each customer. Banks are going into partnership with some of the hundreds of "regtechs" that have sprouted in recent years: startups with names like RegBot and Arachnys that promote cutting-edge compliance. According to HTF, a market-research firm, global regtech market revenue was $1.4bn in 2018 and is forecast to reach $6.4bn by 2025.

The most mature part is AML screening, which is dominated by bigger firms such as Refinitiv and Dow Jones that help banks and companies vet clients and potential trading partners for money-laundering, sanctions and terrorist-finance risks. It continues to grow at quite a clip. Sales increased 18% in 2018, reckons Burton-Taylor, another research firm. Some big hitters are backing the robot revolution. "Over time, AI will…dramatically improve [AML processes] as well as other complex compliance requirements," wrote Jamie Dimon, the chief executive of JPMorgan Chase, in his latest letter to shareholders.

For now, though, many banks struggle to choose between the myriad products hustling for attention, says Stacey English of Thomson Reuters. "AI carries risks we don't understand," says a large bank's compliance chief. Regulators will need convincing, too. In December a group of American regulators urged banks to use "innovative approaches", including AI, to enhance money-laundering compliance. But banks remain nervous that they will be penalised if techno-experiments fail.

The idea of compliance algorithms replacing warm-blooded sleuths is fanciful,

say experts. Sujata Dasgupta, the head of financial-crimes compliance at Tata Consultancy Services, sees compliance staff moving into "higher-quality investigations", with bots used for "more rule-based, repetitive screening tasks".

Moreover, bankers expect no let-up in either financial-crime enforcement or new regulation. America's increased use of sanctions as a foreign-policy tool under Donald Trump means banks must be more vigilant than ever (see chart 2 on previous page). Demand is growing for people who can help banks negotiate new data-protection and privacy rules, such as the EU's GDPR. Tougher enforcement is increasing compliance risks, too. Britain, for instance, has increased personal liability for senior executives at financial firms.

Also rewarding more vigorous compliance is the growing tendency of regulators, including America's Department of Justice, to offer big cuts to penalties for firms that self-report violations in financial-crime and corruption cases. Hardly surprising, then, that a global study of risk and compliance officers at 800 financial firms in 2018 found that 43% expected their team to grow in the next 12 months, with only 5% expecting a reduction. If the Russian laundromat scandal claims more victims, another hiring spree may be round the corner.

A picture of Eliot Spitzer hangs on the wall of Mr Kelly's compliance-recruitment firm. As New York's attorney-general from 1999 to 2006, Mr Spitzer (later brought down by another type of scandal himself) was a scourge of Wall Street, tilting at banks for various alleged transgressions and sparking an earlier compliance hiring spree. "He's one of my heroes," chuckles Mr Kelly, "and scandals are my friend." ■

Buttonwood Trench fever

The eternal quest to find companies that have a lasting competitive edge

In 1965 Warren Buffett acquired Berkshire Hathaway, a textile company based in New England, for his investment partnership. When he began buying the stock, in 1962, Berkshire had working capital worth $16 a share; the shares sold for $8. So Mr Buffett was getting the rest of the firm's assets for less than nothing. This was the sort of "value investing" that had made Mr Buffett and his partners a tidy pile over the preceding decade.

Berkshire would become a wildly successful investment vehicle. On May 4th, 40,000 of its shareholders gather for its annual general meeting in Omaha, Nebraska, for a dose of Mr Buffett's folksy wisdom. It continues to make a wide range of financial investments: witness this week's offer to buy $10bn of debt-like securities and warrants in Occidental, an oil firm that is negotiating a merger.

Yet he came to regret buying Berkshire stock. The return on investment was paltry, because the firm had no unique edge or products. Textiles are commodities. No one ever asked his tailor for a Hathaway suit lining.

In its way, Berkshire provided a valuable lesson. Mr Buffett's strategy shifted. Instead of "buying fair companies at wonderful prices", he would buy "wonderful companies at fair prices". To make the grade, a firm must have a lucrative position in the marketplace. But it needs more. To be a truly great investment, the company should also have a "moat".

This is Mr Buffett's shorthand for a company with a lasting competitive edge—the philosopher's stone of business strategists and stockpickers. Its profits are secure because other companies cannot easily replicate what it does. A niche of this kind acts like a moat around a castle, keeping rival firms out. It is super-wonderful if the castle is run by a knight who spends his riches on widening the moat, rather than blowing it all on banquets or natty coats of arms. But the moat is the main thing.

Looking back, Mr Buffett has invested in firms with two sorts of moat. The first type operates in a market that has room for just one profitable firm. In the 1970s Mr Buffett's monopoly of choice was citywide newspapers, which had a lock on advertising. BNSF, America's largest freight railway, which Berkshire has owned outright since 2009, is a more recent example. The moat's contours are not as clear for the second type. The firm has competitors. But it has a bond with its customers based on a reputation for products of a consistently high quality. So strong is the firm's brand that consumers are slow to switch allegiance, even when prices are raised.

Mr Buffett's first big bet on a consumer franchise of this kind was American Express, on which Berkshire staked a quarter of its capital in 1964. Amex had an enviable position in charge cards. Over the years, other franchise stocks were snapped up:

See's Candies, a maker of fancy chocolates; Gillette (now part of P&G); Wells Fargo; and latterly Apple. The apex of this strategy was the frenzied acquisition of shares in Coca Cola in the late 1980s. Mr Buffett saw that its profits were about to accelerate as it conquered new markets.

With hindsight, Coke, Gillette and the rest look like sure-fire winners. That Berkshire made losing bets on firms with apparently unbreachable moats shows the difficulty of foresight. An example was Tesco, a British grocery chain. It was the leading firm in an oligopoly—a classic Buffett play. But after it issued several profit warnings, Berkshire sold at a hefty loss in 2014. Other moats are springing leaks. The marriage of Heinz and Kraft, two food-manufacturing giants, brokered by Berkshire and 3G, a private-equity firm, is in trouble. New brands built on social media and online sales are challenging the established order.

"Moats are lame," teased Elon Musk, a tech entrepreneur, last year. What gives firms a competitive edge, he said, is the pace of innovation. In fact, investors' enthusiasm for tech firms such as Amazon, Facebook and Google has been because they appear to have deep moats. (Mr Buffett has admitted he has no insights on tech.) In any event, it is wrong to think that innovation is a guarantee of profits. Firms that come up with ideas often see rivals reap the benefit.

It is hard enough to find a firm with a moat; it is much harder not to overpay for its stock. Many of the signature purchases of Mr Buffett's career, such as Amex and Wells Fargo, were at knockdown prices. The strategy (buy stocks with moats) sounds simple; but it is not easy. Carrying it out takes skill, nerve and discipline. If it were easy, everybody could do it.

Turkey's central bank

The cost of concision

ISTANBUL

How a few missing words hurt Turkey's turnaround

A CENTRAL BANK'S words have power. Three of them ("whatever it takes") calmed the euro area's debt panic in 2012. Another few (the Federal Reserve mulling a "step down in our pace of purchases") started the taper tantrum that upset emerging markets in 2013.

What is left unsaid can also be powerful. After its interest-rate meeting on April 25th, Turkey's central bank failed to repeat eight words that had been included in each of its seven previous statements: "if needed, further monetary tightening will be delivered". The omission cast doubt on its commitment to fight inflation, which was almost 20% in the year to March. In response, the lira fell by more than 1% against the dollar. It has fallen by 11% this year.

The mishap was an uncomfortable reminder of last summer's currency turmoil, when the central bank (browbeaten by Recep Tayyip Erdogan, Turkey's president) failed to raise interest rates swiftly enough to prevent a collapse in the currency. But the parallels should not obscure what has changed in the interim. Turkey's economy is better balanced now than it was then.

In September the central bank reasserted itself, increasing interest rates to 24%, where they have stayed since. The combination of tighter money and a cheaper currency curbed import spending and encouraged exports. As a result, Turkey's current-account deficit has narrowed far more swiftly than even the government had envisaged. Although its import bill is hardly the only claim on its foreign earnings (its banks and firms must also service heavy external debts), the lira was relatively stable from December to February.

Local elections in March were supposed to bring a similar stability to politics, concluding a maddening cycle in which Turks marched to the polls seven times in five years. Instead, the weeks before and since have done the opposite, unsettling both Turkey's politics and the markets.

Mr Erdogan's party, which lost in most of the country's big cities, has so far refused to accept its narrow defeat in the Istanbul mayoral contest. Citing alleged irregularities, it has asked for a new vote. That would trigger yet more political turmoil, which could bring protesters onto the streets and send foreign capital running for the exit. Investors distinguish clearly between countries that do and do not have free and peaceful elections, says Ibrahim Turhan, a former chair of the Istanbul stock exchange. "No one would like to see Turkey in the second group."

In the month before the elections, Mr Erdogan encouraged state banks to increase the amount they lent at cheap rates. Banks also came under pressure to lower lira deposit rates, making other currencies more attractive by comparison. Turkish residents now hold over half of their deposits in dollars and other hard currencies.

None of this has helped the lira. On March 21st the central bank revealed it had burned through $6.3bn (over 18%) of its net reserves in a fortnight, presumably in an undeclared effort to prop up the lira. After the news spooked investors, the government squeezed the offshore lira market, making it harder for foreign speculators to borrow the currency in order to sell it.

But the squeeze also posed a problem for Turkey's banks, points out Brad Setser of the Council on Foreign Relations, an American think-tank, because they depend on lira funding in the overseas market. To ease their discomfort, the authorities made it easier for banks to swap their dollars for lira from the central bank. That had the effect of temporarily bolstering the central bank's dollar reserves, until the currencies are swapped back again. As the financial markets cottoned on to what was happening, investors began to distrust the central bank's weekly reserves figures.

Was it trying to mislead investors? Probably not. As required by IMF standards, it duly reported the swaps in its monthly reserves statement, which is published with a 30-day lag. And in a press conference on April 30th, it explained the source of its sudden dollar infusion.

But although it clarified why its reserves had abruptly gone up, it did not reveal why they had suddenly gone down in the weeks before. Judging by the financial markets' reaction, the conference did little to bolster investors' faith in the lira. The words of central banks can be powerful. But although they choose what to say, markets decide what to hear. ■

America's economy

False alarm

WASHINGTON, DC

Recent fears of a downturn suddenly look overblown

INVESTORS STARTED the year brooding about the risk of an American recession. Torsten Slok of Deutsche Bank, Germany's biggest lender, says clients around the globe were worried. Financial indicators were flashing red, the stockmarket was weak and yields on low-grade corporate debt had jumped. The Federal Reserve's decision to raise interest rates in December had been unsurprising, but unwelcome.

At the end of the year a model from economists at JPMorgan Chase had put the chances of a recession within 12 months, based on the S&P 500 index and corporate-credit spreads, at 65%. But the mood has now improved. By April 29th JPMorgan's model was putting the chances of a recession at just 15%.

"It's eye-popping how quickly the narrative has changed," says Mr Slok. One reason for the improvement in sentiment is the Fed's evolving monetary-policy stance. In January it turned more doveish, abandoning its plans to raise rates in 2019. "We don't see any evidence at all of overheating," said Jerome Powell, the chairman of the Federal Reserve, on May 1st after announcing that the Fed would maintain its patient stance. He also repeated his view that the data do not warrant higher rates.

Investors have been delighted by the Fed's pause. But the timing and extent of their change of mood suggests that is not the full story. One possibility is that their previous gloom may have been overblown. "The market collapse in December was driven by the calendar," says Catherine Mann of Citigroup, a bank, as investors repositioned for tax purposes. The "inverted yield curve"—that is, yields on long-term bonds below those on short-term ones, historically a sign that a recession is on the way—has been ringing alarm bells recently. But Ms Mann doubts its continued predictive power after a long period in which central-bank intervention depressed interest rates.

The real economy had also shown some signs of an approaching downturn, however. Business confidence had soured and the housing market, so often a leading indicator of economic trouble, had sagged. At the start of 2019 came more bad news, as a lengthy partial federal-government shutdown depressed both output and consumer sentiment. The economy had been expected to cool a little anyway, as the impetus from the Trump administration's fiscal stimulus faded. The fear that a soft ▸▸

landing might turn into a hard one did not seem far-fetched.

Jesse Edgerton, an economist at JPMorgan Chase, says there are still reasons to be cautious, notably weak business confidence. But more recent data have looked rosier. Sentiment among consumers has rebounded. Jobs growth in March recovered from a hiccup in February (April's figures are due on May 3rd, after *The Economist* went to press). And although GDP growth of 3.2% in the first quarter hid some softening components, recent trends suggest that they will bounce back.

Investors in the stockmarket seem to have forgotten the whole scare, and to believe that the economy will grow fast enough to produce profits but not so fast that the Fed will have to intervene. Investors in government debt seem warier. They are still betting that the Fed will cut interest rates at least once by the end of the year.

For now, the Fed has decided to sit tight. Since the stockmarket wobbles late last year, a different difficulty has become much more obvious. Inflation, which the Fed had expected to hover around 2%, fell to just 1.6% in March, based on a measure that excludes (volatile) food and energy prices. On May 1st Mr Powell said that he saw good reasons to expect it to be "transitory". But that is not the behaviour expected of an economy that is humming along nicely. It is a better problem for the Fed to face than an imminent recession—but it is a problem, all the same. ■

Cryptocurrencies

Tether tantrum

The plot thickens in cryptoland

DAYS AFTER allegations of misuse of customer money against Tether rocked the cryptocurrency world, the shock wave has temporarily subsided. The four-year-old currency, which fell to 97 cents last week, has returned to parity with the American dollar. And after a 10% fall, to $4,953, the price of a single Bitcoin, its best-known peer, has steadied at around $5,400. But cryptocurrency-watchers remain wary. Beneath the surface, trouble may be brewing.

Doubts had long swirled about the bona fides of Tether, which has more than $2.8bn-worth in circulation, and Bitfinex, the exchange it is traded on. On April 25th New York's attorney-general, Letitia James, accused both of a cover-up intended to hide a loss of $850m in client and corporate funds. That hit the value of other cryptocurrencies because of Tether's unique status. Cryptocurrencies stem from libertarian attempts to create a currency resistant to central control. Many exchanges thus struggle to get hold of dollars, because banks, which must comply with fraud and money-laundering rules, do not want their custom. For them Tether, which is pegged one-to-one to the greenback, acts as a dollar substitute. Traders use it for transfers between one cryptocurrency and another.

For years Tether said that every coin it issues is backed by a real dollar in a real bank account. Yet it provided no audit of these holdings. Ms James's allegations suggest that at least some of them exist, but can be misused without customers knowing. Because Bitfinex was having trouble getting accounts at banks, by 2018 it had entrusted over $1bn to a Panamanian firm that would serve as an intermediary to pay traders—"without any written contract or assurance", the attorney-general says. When it was unable to access $850m held by the Panamanian entity, Bitfinex is alleged to have sought to plug the hole by tapping $900m of Tether's reserves (Tether and Bitfinex share the same managers and owners). Ms James reckons the cash was then used to meet clients' withdrawal demands. Bitfinex has issued a statement saying that the attorney-general's court filings "were written in bad faith and are riddled with false assertions".

Tether's bounceback since the accusations became public is because of its centrality to the cryptocurrency ecosystem. It is not the only "stablecoin", as cryptocurrencies designed to hold a steady price are called. But it is vastly dominant among them, representing 96% of daily trading volumes in that category. Some 80% of Bitcoin trades ostensibly involving dollars are in fact executed using Tether, which acts as an intermediate staging post. "It supplies all the liquidity in the Bitcoin trading markets," says David Gerard, a cryptocurrency sceptic. "So everyone has a vested interest in keeping it going."

But other signs suggest something is amiss. Bitcoin currently trades at a price on Bitfinex ($5,638 a coin on May 2nd) that is roughly 6% higher than on other exchanges. This may be because investors trading on Bitfinex are anxiously converting their Tethers into Bitcoin—thereby buoying Bitcoin's price on that exchange—in order to escape the platform. So far Tether's market capitalisation has not fallen significantly since Ms James's announcement, but rival stablecoins have recorded some inflows (over $40m each for Paxos Standard and USD Coin, two of the largest). Both remain minnows compared with Tether: USD Coin has a market capitalisation of $297m. But Eric Turner of Messari, a data-provider that tracks cryptocurrencies, expects traders to drift away from Tether as more exchanges start to list alternatives, which tend to be more transparent.

Murky exchanges could suffer a harder fate. Unnerved by a lengthening string of scandals, regulators are starting to clamp down. The Securities and Exchange Commission, an American watchdog, brought nine enforcement actions last year alone. "Bitcoin itself is a software program. It cannot be shut down," says Bitfinex'ed, a vocal online Tether critic who declines to disclose his real name. "But exchanges can." ■

Foreign-exchange trading

Voice over

Banks beware: currency trading is entering the modern age

THE FOREIGN-EXCHANGE (FX) market is as opaque and old-fashioned as it is enormous. Most of its $5trn of daily trading happens "over-the-counter" (OTC), in deals negotiated between banks and private customers, rather than on exchanges. Many orders are still placed by phone. Gauging the market's size and structure usually means relying on outdated surveys. The most comprehensive review, by the Bank for International Settlements, is conducted only once every three years.

Yet modernity is arriving—in fits and starts. Last month it emerged that Deutsche Börse, Europe's third-largest stock exchange, was close to buying FXall, an electronic FX-trading platform, for a reported $3.5bn. If it happens the deal could end up being one of the largest in Deutsche Börse's history. It hints at a shake-up in a sector ▸▸

that has long been deemed antediluvian.

The FX market serves not only investors, but corporations and governments seeking to protect trade or bonds against currency swings. FX contracts can be "spot" (for immediate delivery), "forward" (for delivery at a later date) or "swap" (when currency is exchanged back at maturity). Buyers go through dealers (mostly banks), which source liquidity. Specific needs, such as matching cash-flow dates, are more easily met using OTC trades, which can be tailored, than over exchanges.

That is not about to change. Rather, Deutsche Börse is betting that buyers will abandon "voice" orders, placed via single banks, in favour of digital platforms that pool prices from multiple dealers. The trend is already boosting e-trading in spot FX. Volumes have doubled over the last decade—FXall's share of this electronic activity has reached 40%.

Longer-dated FX-derivatives contracts, such as forwards, have withstood the shift: the longer the maturities, the fewer the transactions, and the harder it is to connect enough users simultaneously in order to get e-trading to work. Yet here too, change is afoot. Tighter regulation is increasing costs, which asset managers are seeking to offset elsewhere. European regulators also require them to be able to demonstrate that they are trading at the best possible price. By connecting buyers with multiple dealers in an instant, e-trading achieves both, as well as leaving a clear audit trail. And long-dated contracts are becoming more common, which boosts liquidity.

As FX goes digital, the ranks of dealers will be thinned. At the spot end, the trend has opened the door to "principal" trading firms, which buy and sell on their own account using algorithms. It has also fuelled competition among banks, slashing margins and pushing many towards the exit. That is leaving the bulk of deals to a handful of big banks, often in partnership with principal trading firms. Maturities beyond a week have been little affected so far, but consolidation is "creeping up the curve", says Joanna Nader of RBC Capital Markets.

The rise of centralised clearing is also helping to level the playing field. Only 3% of FX derivatives trades currently go through clearing houses, which absorb the risk one party defaults. Clearing is set to become more attractive for traders, in part because regulators are requiring higher collateral to be held on some uncleared FX deals. E-trading already makes it easier for users to find nonbank dealers. By removing counterparty risk, clearing will weaken the advantage that banks with big balance-sheets enjoy over the newer trading firms.

As trading costs fall, FX buyers will cheer. So will Deutsche Börse, which owns Eurex, a clearing house that will soon launch FX products. ■

The John Bates Clark medal

A microeconomist's macroeconomist

Emi Nakamura puts the macroeconomy under the microscope

THE YEAR 2007, when Emi Nakamura earned her PhD, was a strange one for her chosen discipline of macroeconomics. It marked a turning point between complacent consensus and humiliating division. Pre-crisis macroeconomics had such strong faith in the stabilising power of monetary policy that it neglected the dangers of financial shocks and the merits of fiscal stimulus. Like joining the cavalry in 1914, it was presumably a bad time to be entering the profession.

Not a bit of it. "I think it was a good time," says Ms Nakamura, who now works at the University of California, Berkeley, and this week won the John Bates Clark medal for the best economist aged under 40 in America. "Macroeconomics", she points out, "is a countercyclical field."

Yes, financial shocks of the sort that caused the Great Recession were understudied, but the consequences were Keynesian, she says. And the need for a response turned theoretical curiosities (such as the liquidity trap that can stymie monetary policy) into major policy dilemmas.

For students of economic ups and downs, the crisis also met a crying need: for a new data point, a new down-and-up to examine. The lack of data had made macroeconomics unfashionable. Its practitioners crunched the same quarterly, national numbers, which failed to illuminate ever more refined theories of how the economy worked. Microeconomists were having all the fun, plundering new sources of evidence and reinventing old techniques for divining cause and consequence. They were also snaffling most of the medals. Of the 17 Clark winners between 1995 and 2018, only two or three showed much interest in booms and busts.

Nakamura, sans microscope

Inspired by microeconomists, Ms Nakamura and Jon Steinsson, her frequent co-author, set about enlarging the macro data repertoire. They extended some series and unpacked others. To study price inertia, for example, they dismantled the consumer-price index into its constituent parts: thousands of prices, stretching back to the Great Inflation of the 1970s. (They used a retrofitted scanner to glean older prices from microfilms that were not allowed to leave the Bureau of Labour Statistics building.) They confirmed that, outside of sales, prices were indeed slow to change, contrary to blackboard theories. They discovered, surprisingly, that periods of high inflation did not scramble price signals by driving prices too far out of synch with one another.

To study fiscal stimulus, they divided America (one unit of analysis) into its constituent states (50). That enabled them to measure the impact of extra Pentagon spending (a source of fiscal stimulus unrelated to economic misfortune) on states with a large defence industry, relative to those without. And to illuminate monetary policy, they turned from the usual yearly or quarterly data to finer slices of time, examining the impact of unexpected Federal Reserve actions and utterances in the minutes after they reach the markets.

Lately, Ms Nakamura has looked at "jobless" recoveries. She argues that jobs have grown more slowly in recent upswings because women's participation in the labour force is no longer converging quickly with men's. In earlier decades, firms took advantage of the recovery to snap up women. Hiring was swift, as employment caught up with women's accelerating desire to enter the workforce. In more recent upturns, hiring was more tepid, as employment caught up with a stagnant trend.

Not all professions are the same, of course. In economics, if not in the American economy, the scope for female convergence remains vast. Forty-one people have won the Clark medal. Just four, including Ms Nakamura, have been women. ■

Free exchange | Neonatal economics

A dismal scientist offers advice to new parents

For new parents, it is a terrifying moment. The hospital doors close behind them, leaving them with a new and helpless human being. The baby's survival into adulthood seems impossible. What if it will not eat? What if it is allergic to water? What if an owl carries it off? Probably, few parents wish at that moment for the help of an economist. But "Cribsheet", a new book by Emily Oster of Brown University, shows that in the hectic haze of parenthood an economist's perspective can prove surprisingly clarifying.

Ms Oster's academic work relates to health and health policy. A recent paper, for example, studied how food-purchasing decisions change in response to being diagnosed with diabetes. Five years ago she published a book on pregnancy, drawing on her training as an economist and her own experience (her husband, Jesse Shapiro, with whom she has two children, is also an economist at Brown). "Cribsheet" tackles the next step in the journey from childfree person to parent. Deciding whether to have a child in the first place fairly obviously involves economic calculations, from the impact on the parents' earning potential to the resources that must be set aside to pay for nappies, child care and university. The decisions that come in a torrent after the birth, in contrast, such as whether to breastfeed or how to manage sleeping arrangements, might not seem so amenable to such thinking. But Ms Oster's new book shows that they are.

Parents generally try to maximise the welfare, present and future, of their children (and, secondarily, themselves) subject to constraints of money and time. That requires choices. Economics can help a parent judge these trade-offs. Good choices begin with good information. Before deciding whether breastfeeding is worth the time, trouble and physical toll, it helps to know the benefits compared with feeding with formula. Parents do as most people do when making a hard call: turn to experts, friends, family and the internet. But different sources provide wildly different answers—and often with an extraordinary intensity of belief. As Ms Oster notes, internet mums frequently write as though ignoring their advice is tantamount to abandoning a child to wolves.

The help she provides begins with sorting through published research and determining what is worth heeding. This involves more than identifying outright disinformation, of the sort published by anti-vaccination groups. The conclusions of serious research also need to be treated with care. Unless studies are well-designed, the results can be influenced by confounding factors. The purported benefits of breastfeeding, such as conferring a higher IQ on the child, can reflect the fact that women who are richer and better educated, and have higher IQs, are more likely to breastfeed. More reliable research attempts to take account of these factors. Whenever possible—and breastfeeding is a case where participants would almost certainly refuse to co-operate—researchers arrange randomised controlled trials, randomly dividing participants into "control" and "treatment" groups, only one of which engages in the behaviour under study, the better to isolate its effects.

Even when a study is well designed, it can require statistical sophistication to understand the size of any effect and the significance of the result. Non-economists may find "Cribsheet" interesting as a guide to understanding research findings, though harried parents may focus more on its concrete guidance. There is plenty of this. Breastfeeding, it turns out, provides short-term health benefits to babies (notably by making diarrhoea less common) and reduces the mother's risk of developing breast cancer. But there is no hard evidence that breastfed babies enjoy long-term health or cognitive benefits compared with bottlefed ones.

Still, given the potential benefits, why not do it? Economic analyses include not only what is gained by a choice, but what is forgone. For example, putting an infant to sleep beside a parent in bed rather than alone in a cot is associated with a higher risk of sudden infant death. If there are no exacerbating factors (such as a mother who smokes or drinks), that increased risk is tiny: 22 deaths in 100,000, rather than eight. But why risk it? The answer may be that it is worth it. Sleeping side by side can make breastfeeding easier. More importantly, for some parents it is the only way to settle the baby (and hence to get some sleep themselves).

Prolonged sleep deprivation is horrible and makes it harder to be a good parent—or to function. Some mummy bloggers may find it unconscionable that a mother would expose her child to extra risks in order to treat herself to a few hours of sleep. Ms Oster suggests that, if well-informed parents make that choice, then it is reasonable: a welfare-enhancing balancing of benefits and costs.

A mother's place is in the wrong

Economic reasoning can feel bloodless. But the calculations in Ms Oster's book seem more human than "Mummy war" moralising, in their recognition that parental time and energy are finite. She reckons it is helpful to think about work-life balance in bluntly economic terms: "What is the optimal configuration of adult work hours for your household?" In the past, male economists like Gary Becker used such logic to argue that women should "specialise" in homemaking. But Ms Oster points out that the benefits to a household of more income (often a necessity) should not be ignored—and neither should a mother's preferences. Although research suggests that policies allowing a parent to stay at home in an infant's first months do benefit children, staying at home for two years rather than one does not meaningfully alter a child's prospects. Women who need or want to return to work should not be kept from doing so by guilt or others' expectations, she writes.

Parenting can be fraught. "Cribsheet" aims to help parents do better. And in capturing how they struggle when beset by dubious information and emotional pressure from peers, it also holds lessons for economists. Welfare-maximising decisions are hard to make, and sometimes people need a little help. ■

18+

WHAT IS AVAXHOME?

AVAXHOME-

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Protect your downloadings from Big brother
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18 years of seamless operation and our users' satisfaction

All languages
Brand new content
One site

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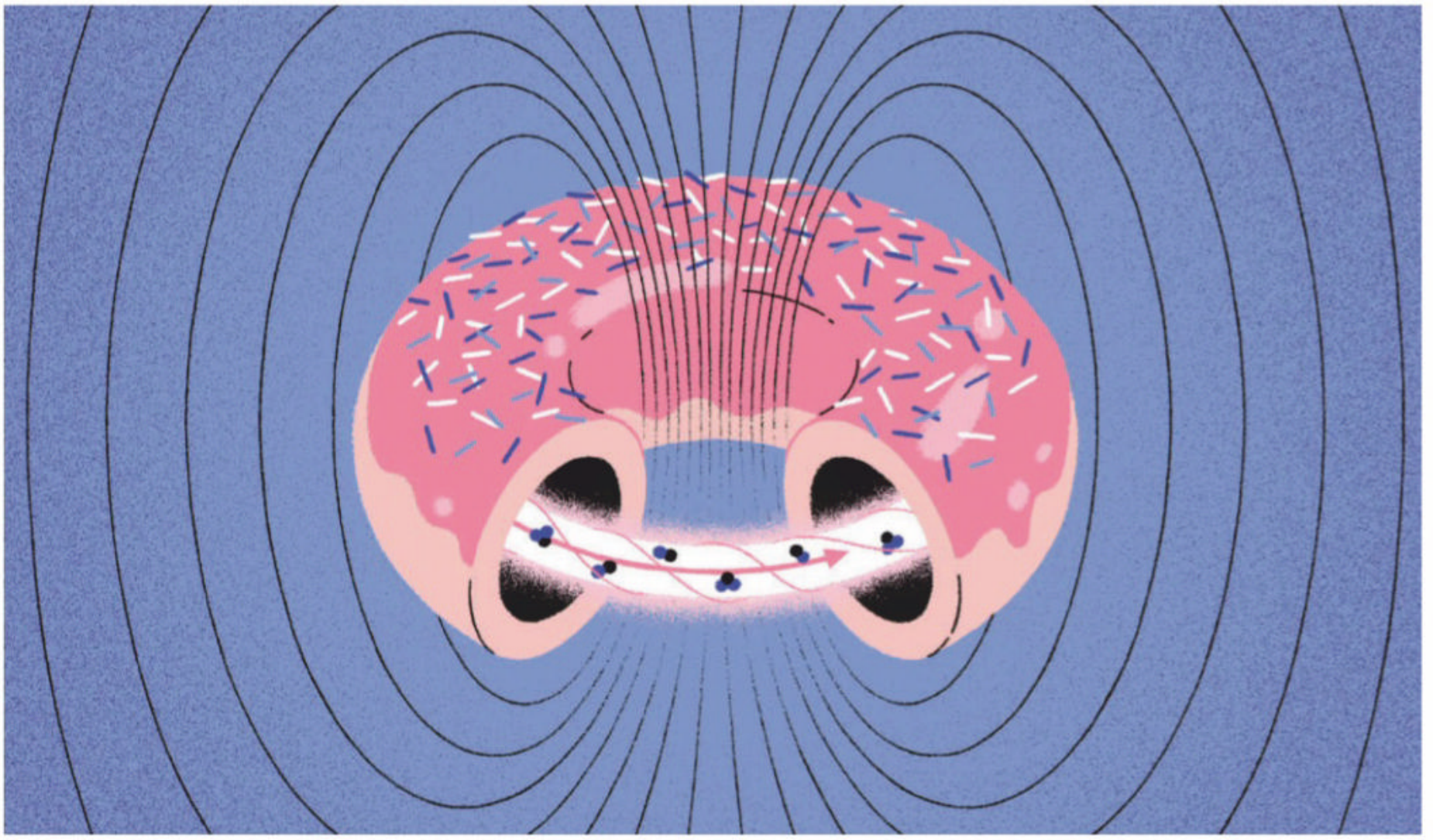


Fusion power

Doughnuts, apples, smoke rings and shrimps

After decades spent within the purview of governments, fusion energy is attracting private-sector interest

IN 1920 Arthur Eddington, an English astrophysicist, gave a lecture to the British Association for the Advancement of Science on the internal structure of stars. In it, he hypothesised that what makes the sun shine—then a matter of much debate—was some sort of nuclear reaction. "This reservoir", he said, "can scarcely be other than the subatomic energy which, it is known, exists abundantly in all matter; we sometimes dream that man will one day learn how to release it and use it for his service. The store is well nigh inexhaustible, if only it could be tapped."

Eddington speculated that the energy in question was released by the nuclei of hydrogen atoms fusing to form the nuclei of helium atoms. He knew that a helium nucleus weighs slightly less than four hydrogen nuclei and he suspected that the difference, converted into energy according to the then-recently discovered formula, $E=mc^2$, would be enough to power the sun. He was right about this. He was also right about people's dreams of exploiting it. They began looking shortly after Eddington's speculations were confirmed, and they still dream of it today—for the fuel needed is abundant, and the process of generation carbon-free.

In one important aspect, though, the dream of human-controlled nuclear fusion has changed in recent years. From Zeta, the first, fumbling attempt to build a fusion reactor, at Harwell in southern England, in the 1950s, to Iter, the latest over-budget, over-deadline behemoth in the south of France (see following story), fusion has been the province of governments. Not any more. Now there is commercial interest. Firms in North America and Europe are designing and planning to build what they hope will be profitable fusion reactors. Their projects have different approaches and different amounts of money behind them. But they all have one thing in common, a desire to bury the old joke that commercial fusion power is 30 years away—and always will be.

→ Also in this section

73 Iter: fusion's biggest reactor

In light of the work of Eddington and his successors fusion power on Earth is often described as mimicking the process which powers the sun. That is not quite true. Solar fusion builds up helium nuclei, which are composed of two protons and two neutrons, one particle at a time out of individual protons, the nuclei of hydrogen atoms—with the surplus positive electric charges being spirited away by particles of antimatter called positrons. The average period required to complete this reaction is about a billion years.

Fortunately, there is a short cut. This is to employ hydrogen atoms pre-loaded with neutrons—either one (deuterium) or two (tritium). One in every 6,000 hydrogen atoms on Earth is actually deuterium, meaning the substance can be extracted from water. Tritium, which is radioactive, is much rarer and has to be synthesised. But the process is easy and the raw material, lithium, abundant.

Deuterium and tritium react together far more readily than do naked protons—and no positrons are involved. The result is helium and a spare neutron. All you need do to create a fusion reactor, therefore, is design and build a device that can contain a mixture of deuterium and tritium at the temperatures and densities required for long enough for the reaction to yield more energy than is put into promoting it. In any given machine these parameters of tem- ▸▸

perature, density and time can be traded off against each other. Their optimal mix in a given set of circumstances is known as the Lawson criterion, after John Lawson, who was associated with Zeta.

These days most attempts to achieve the Lawson criterion are made using machines called tokamaks, which were devised in the 1950s by Andrei Sakharov, a Soviet physicist who later became famous as a human-rights campaigner. And it is the tokamak route that several of the commercial fusion-power wannabes are travelling along. One such is Commonwealth Fusion Systems (CFS), a spin-out from the plasma physics laboratory of the Massachusetts Institute of Technology, in Cambridge, Massachusetts. Another is Tokamak Energy, a spin-out from the UK Atomic Energy Authority's research laboratory at Culham—Harwell's successor.

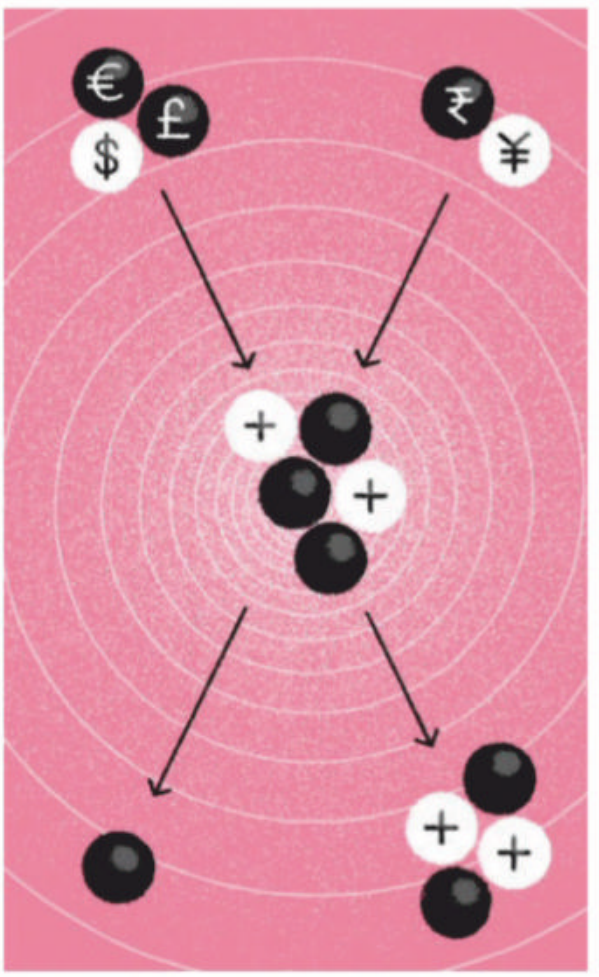
The Lawson and the profits

A conventional tokamak is a hollow torus, reminiscent of a doughnut or a bagel, with superconducting electromagnets wound around it. This torus contains the fuel, which is a plasma (a gas in which the electrons and atomic nuclei have been separated) that is composed of deuterium and tritium. The magnets serve both to heat the plasma and to confine it—thus maintaining its density and keeping it away from the torus wall, for if it touches the wall it instantly cools down.

Tokamaks are normally large machines. Iter's torus, for example, will have a volume of 830 cubic metres. The CFS reactor's torus, though, will have about a sixty-fifth of the volume of Iter's. It can get away with such a small volume because it has more powerful magnets that squeeze the plasma more tightly. As a bonus, these magnets become superconducting at relatively high temperatures, so can be cooled using liquid nitrogen, which is cheap, rather than liquid helium, which is expensive.

Tokamak Energy's researchers have also been using nitrogen-cooled superconductors for their magnets. The firm has, however, eschewed the conventional shape of a tokamak in favour of something that, while still having a hole in the middle, more resembles a cored apple. Theory suggests plasma in such "spherical" toruses will remain more stable, and thus be easier to handle, than that in the doughnut-shaped variety. Also in contradistinction to CFS, Tokamak Energy has already built a series of working prototypes. The latest, ST40, has reached a plasma temperature of 15m°C. The company's target is to reach 100m°C within the next few years. That is two-thirds of the way to the 150m°C a tokamak needs to achieve the Lawson criterion.

Tokamaks are not, however, the only reactors in town. In Vancouver, Canada, a firm called General Fusion is working on



one that uses a phenomenon called field-reversed configuration (FRC). In this the confining magnetism is generated by the movement of the electrically charged particles in the plasma itself, as that plasma spins in a vortex similar to a smoke ring.

In General Fusion's machine the spinning plasma is, after it has been fired into a spherical reaction chamber, compressed rapidly by the simultaneous release of hundreds of pistons attached to the chamber's exterior. These induce a shock wave that compresses the deuterium-tritium fuel, increasing its density a thousandfold and pushing its temperature up from 5m°C to 150m°C. Improving these two parameters of the Lawson calculation means that the brevity of the third, time, no longer matters. That, at least, is the theory. Christofer Mowry, General Fusion's boss, hopes to demonstrate the truth of it by building an experimental plant within five years.

Another firm using the FRC approach is TAE Technologies, of Foothill Ranch, California. TAE's latest device, unveiled in July 2017, is a 25-metre-long machine named Norman, after Norman Rostoker, a plasma physicist at the University of California, Irvine, who was the company's founder and who died in 2014.

Norman is a cylindrical reactor. Plasma injectors at each end of the cylinder fire FRCs simultaneously towards each other at around 1m kilometres a second. When the vortices meet, they merge into a cigar-shaped cloud three metres long and around half a metre wide that is kept spinning, and thus hot and stable, by beams of deuterium atoms fired into it from outside.

So far, Norman has produced vortices with temperatures of 3.5m°C that last around ten milliseconds, rather than the microseconds of a conventional FRC. TAE hopes, by the end of this year, to have increased that temperature to around 30m°C, and tripled the plasma's lifetime. All of which is clever. But what makes the firm's approach special is that it plans to eschew deuterium and tritium in favour of normal hydrogen (the nucleus of which is a lone proton) and boron. Instead of a helium nucleus and a neutron, this reaction produces three helium nuclei. Indeed, TAE was originally known as Tri Alpha Energy because, in the field of nuclear physics, naked helium nuclei are called alpha particles.

The absence of neutrons is crucial. When deuterium-tritium fusion takes place in a tokamak about 80% of the energy released is carried away by the neutrons. In a practical power station this kinetic energy would be collected by absorbing the neutrons in a suitable material, thus releasing the energy of motion as heat. That heat would be used to raise steam and drive a turbine. If the absorbing material chosen were lithium, this arrangement would have the bonus of generating new tritium to feed back into the reaction.

The downside of such an approach is that the rest of the reactor will absorb neutrons as well, making the whole thing radioactive (though nothing like as radioactive as a conventional fission reactor) and ultimately damaging its structure. Also, each step in the process loses energy. The proton-boron method offers a more elegant way to generate electricity because alpha particles are positively charged, and can thus induce a current directly in an external conductor. No heating is involved and the alpha particles never escape to cause damage elsewhere.

There is, of course, a catch. Proton-boron fusion requires temperatures of billions of degrees. That is an order of magnitude hotter than anything achieved so far in a fusion experiment. And although such plasma temperatures have been produced in laboratories in other circumstances, how TAE will do it with the equipment they are using is unclear.

The mighty shrimp

TAE is radical in its choice of fuel. But other forms of fusion radicalism are possible, too. And, in the actual design of its reactor, the most radical of the lot is probably the path being pursued by First Light Fusion— ▸▸

Correction On April 20th ("Time to see the blight") we wrote that "America's National Science Foundation rejects grant requests that include the words 'climate change', applicants say, because the administration and its allies have decided it does not exist." We are happy to make it clear that, regardless of applicants' opinions, the NSF does accept such requests and has made 14 awards this year to proposals with "climate change" in the title.

spun out of Oxford University. Though First Light's process aims to extract energy from a conventional mixture of deuterium and tritium, the technology it plans to use to do so was inspired by a shrimp.

Pistol shrimps are marine crustaceans that are among the loudest animals on the planet. Their noise is generated by a specialised claw half as long as the creature's body, and is used to stun prey. When the claw snaps shut, the rapid change in pressure this creates produces vapour-filled voids called cavitation bubbles in the surrounding water. When these bubbles collapse the shock waves produce a sound as powerful as the noise made by a Saturn V rocket taking off. This is enough to kill small fish—which the shrimps then eat.

Pistol shrimps were the subject of the doctorate awarded by Oxford to Nicholas Hawker, First Light's founder. Armed with the results of his study, Dr Hawker wondered if he could scale up the shrimp's technique to create plasmas that would meet the Lawson criterion.

The core of First Light's reactor design is a device in which one half of a pistol shrimp's claw is replaced by a projectile made from a small disc of aluminium or copper. This is fired, at around 30km a second, at the replacement for the other half of the claw, a 10mm-sided cube that contains a cavity filled with fuel. The projectile's impact creates shock waves, and thus cavitation bubbles, in the fuel. As those bubbles collapse the deuterium and tritium within them will, calculations suggest, be forced into a small enough space for long enough to fuse. Whether those calculations are correct will be tested later this year.

Put your money where your mouth is

There is, then, no shortage of ideas about how a practical fusion reactor might be built. But any investor also faces the question of how long it will take to get a new idea to work. In the field of fusion, the most crucial milestone on that road is probably the achievement of gain. This is the point when more energy comes out of a fusing plasma than went into creating it.

Everyone talks a good story about this. CFS wants to achieve gain by 2025. So does Tokamak Energy. TAE's next device, Copernicus, will, the firm says, not only achieve gain, but will also be a power-station demonstrator. Indeed, TAE aspires to supply fusion-based electricity to the grid by 2030. Which is also the year that Tokamak Energy says it will start generating grid-scale electricity—from power plants with a capacity of the order of 100MW. First Light Fusion predicts that reactors using its technology will be in place some time in the 2030s.

All this optimism should be viewed cautiously, especially from companies that need to raise capital for future experiments. Capital is, however, being raised. TAE has rustled up $600m in private funding so far. General Fusion has raised over $100m, Tokamak Energy £50m ($65m) and First Light, which is still at the earliest stages of progress, £25m.

Challenges no doubt lie ahead. As Stephen Dean, of Fusion Power Associates, a foundation that follows the field, observes, "the history of fusion doesn't give you a lot of confidence that there won't be a problem. You know we've been at it for 50 years and there's always been a problem." Nevertheless, he also says that he knows of no showstoppers for any of the private companies. "They're all based on good physics. They're all good people that are doing these programmes." And the prize is enormous. If even one of the fusion startups succeeds, the world's electricity supply will be guaranteed—and carbon free—for ever. ■

How governments do fusion

Power politics

An internationally funded reactor may supply fusion energy as early as 2045

PROVENCE, IN south-east France, is known for its pleasant weather, ratatouille and thickly wooded mountainsides. But it is also the site of what will be, if and when finished, one of the most complicated machines ever built. Iter (originally, "International Thermonuclear Experimental Reactor", but now rebranded as Latin, thus meaning "journey", "path" or "method") will be a giant fusion reactor of a type called a tokamak. It will have over 1m components. Its main vessel will weigh more than 23,000 tonnes—three times the Eiffel tower. And it will cost at least $20bn.

For the optimistic, Iter is an example of how people from around the world (35 countries are involved) can collaborate to achieve a lofty long-term ambition. For cynics, it is a boondoggle plagued by delays (it began in 2007 and was supposed to begin experiments in 2016, but this will not now happen until 2025), questionable management and ballooning costs (double the original estimate).

It may, however, have emerged from its long, dark teatime of the soul. Bernard Bigot, a physicist who used to run France's Atomic Energy Commission, and who has been director-general of the project since 2015, has shaken things up. The site at the Cadarache nuclear facility near St-Paul-lez-Durance is now busy with cranes and concrete-pouring lorries (see picture), and Dr Bigot says Iter is 60% of the way to the 2025 startup goal.

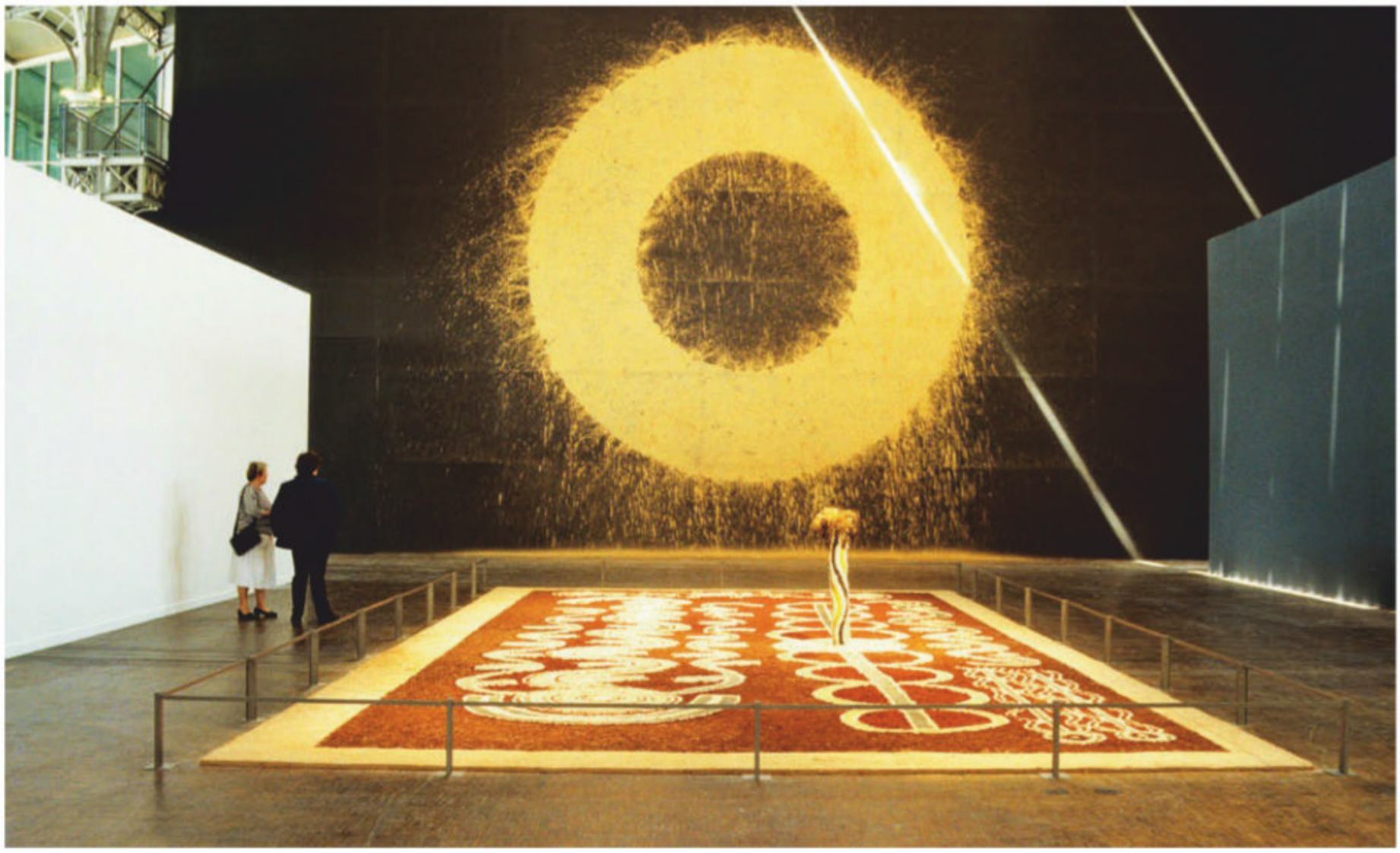
Baking the world's biggest bagel

Those first experiments, whenever they actually happen, will study the physics of deuterium-tritium plasmas in the reactor—these two isotopes of hydrogen being the front-running candidates as the fuel mixture for nuclear fusion. Only after a decade of such work will fusion experiments proper begin. The aim is to return at least ten times as much energy from nuclear reactions as is used to heat the plasma up in the first place. By 2045, Dr Bigot hopes, engineers will be able to start designing power stations based on Iter's results.

Faced with competition from firms that reckon they can build commercial fusion reactors well before then (see previous story) Dr Bigot says he is energised by these rivals, but has no concern about Iter becoming an also-ran. He says Iter will be true to its retrofitted name by being the one that shows the world the path to grid-scale fusion electricity.

That, he says, is because it will work on problems that most of the private companies will not. It will, for example, develop new materials to withstand the extreme temperatures of the plasma. And it will develop and test ways to make tritium efficiently and safely on site at a power plant—for tritium, unlike deuterium, is radioactive and exists only transiently in nature.

That Iter is based in France, the home of *grands projets*, has a certain appropriateness. Iter has grand scale and grand objectives. France is also, though, a country for whose soul *dirigisme* and *laissez-faire* are in constant struggle. Iter is *dirigisme par excellence*. But this is a battle that *laissez-faire* might win.



Art history

A brave new world

PARIS

Thirty years ago a show in Paris set out to redraw the map of contemporary art

AT THE END of the Grande Halle de la Villette, a former abattoir built by Emperor Napoleon III in the north-east of Paris, lay "Yam Dreaming" (pictured above), a work by six men from Yuendumu, a community of Aboriginal artists in central Australia. A teeming rectangular floor installation, it was ten metres long and made from earth, ochre, paint and crushed herbs. On the wall behind it was "Red Earth Circle" by Richard Long, a British artist, which used mud scooped from the River Avon, near his birthplace. The circles and spirals on the floor and Mr Long's shape clearly shared a connection; you could see it in how people stood and stared from one to the other. Perhaps the adjacent works pointed in the same direction; perhaps they were aspects of the same idea.

Such questions delighted Jean-Hubert Martin, the curator who had brought the two pieces together. They were just the sort of responses he wanted to "Magiciens de la Terre" ("Magicians of the Earth"), a groundbreaking show he put on in Paris in 1989. The exhibition was in some ways a flop. In others it was a harbinger, or catalyst, of the way the art world would change with globalisation in the next three decades—changes evident at the Venice Biennale, contemporary art's premier showcase, which begins on May 11th and where work by artists from 90 countries will be shown. As Frances Morris, now director of Tate Modern in London, wryly remarks: "It was the most famous exhibition nobody saw."

Born in Alsace in 1944, Mr Martin grew up at a time when the notion that great art meant Western art was a given—at least in the West. Then, aged 21, a history-of-art student and a hippy, he headed overland to India in a Citroen 2CV and found himself wondering why, despite centuries of exposure to, and appropriation from, other cultures, the art world still paid attention to only European and American work.

That puzzlement came to a head in 1984. Having become director of Kunsthalle Bern in Switzerland, Mr Martin travelled to New York to see the latest show at the Museum of Modern Art (MOMA), which focused on the moment European and American artists saw art from sub-Saharan Africa for the first time. African masks, their makers unknown, sat beside proto-Cubist pieces by Picasso—not as creations in their own right but as illustrations meant to demonstrate how a "real" artist absorbed such influences. Mr Martin resolved to do better.

Partly as a reaction to the MOMA show, he came up with the idea of "Magiciens de la Terre". It would present the work of 100 living artists, half from the West and half from the rest of the world. They would meet on equal terms, and thus, he hoped, reveal a universal spirit of creativity. He pitched the idea to the directors of Documenta, a monumental contemporary-art exhibition that has been put on in the German city of Kassel every five years since 1955. They turned it down. It was the first in a long series of rejections from people he approached for money, a venue or both.

When he finally got lucky it was partly through the misfortune of others. After he moved from Bern to Paris to be director of the Pompidou Centre, also known as the ▸▸

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Beaubourg, the Biennale de Paris was suspended, making its venue at La Villette available. Canal Plus, a French broadcaster, joined as a sponsor. Mr Martin was thus able to stage the show across the two venues, part of it downtown at the Beaubourg, part of it out at La Villette. It opened 30 years ago this month. The timing was auspicious. The cold war and its proxy struggles were ending, while the bicentenary of the French revolution provided a context of equality and fraternity—and of a world turned upside down.

The artists, many of whom had never exhibited outside their own country, were presented with no explanation of how they fitted into either group—Westerners or the rest—how famous they were, what prizes they had won or which art school, if any, they had attended. Besides telling visitors the artists' names and countries of origin, the exhibition offered no comment, comparison or context: all that was left to the viewers. Film, collages and installations were mixed up with masks, earthworks and embroidery, as well as the more conventional art forms, sculpture and painting. Two lines of brightly coloured giant funerary statues (pictured right), by Sunday Jack Akpan from Nigeria, formed a guard of honour next to a wall of pink quartz cubes which Marina Abramovic, a Serbian performance artist, had placed at the height of her head, her heart, her sex.

Some of Mr Martin's peers were scathing, he recalls. Kasper König, founding director of Skulptur Projekte Münster and one of the great curators of his generation, brushed the show aside as "UNESCO art"—pro forma internationalism driven by insipid politics. Few institutions were moved to acquire any of the non-Western pieces. The professionals' lack of interest was matched by the public's. When the show closed on August 14th fewer than 300,000 people had seen it, piddling by the Pompidou's normal standards. The catalogue was never translated from French.

Now that catalogue is prized: a copy will cost you €420 ($470) on eBay. The show it commemorates is remembered as one that reshaped the art world—and which remains controversial a generation later. These days, the two words most often used to describe "Magiciens de la Terre" are "important" and "troubling".

Its influence can be observed wherever you see contemporary art from beyond America, Europe and Japan—which means, now, wherever you see contemporary art. Take the fact that contemporary-art biennales flicker on and off around the planet like fireflies on a summer night, fed by dealers and collectors in places where such people were not known before. Or consider that a Congolese sculptor first seen outside his homeland at "Magiciens", the late Bodys Isek Kingelez, was recently the subject of a show at MOMA; or that works by Romuald Hazoumè, a sculptor from Benin who makes masks out of bits of rubbish, are shown at Gagosian, the trendiest set of commercial galleries in the world.

You can also see the show's influence, if you have access, in private collections—including some it inspired. Jean Pigozzi, heir to a French motor fortune, visited on the last afternoon before it closed. The next week he set about building a collection of African contemporary art, supporting artists with brushes, paints and cash for decades. "'Magiciens' was extremely important in my life," he says.

Daylight on the magic

What then of the controversy? Start with the name. By calling his artists "Magiciens", thus invoking a vague sense of voodoo or black magic, Mr Martin showed a taste for the exotic that post-colonial academia was trying hard to dispel. The name also suggested that the art was somehow conjured up, rather than the result of an intelligence at work. "The message was that it's not real, what they do," says Glenn Lowry, MOMA's director. "It's magic."

Some wondered how far Mr Martin's apparent inclusiveness really went. Many of the Western artists were already unconstrained by borders, taking an interest in the global (as in Alighiero Boetti's embroidered world maps) and the universal (as in the explorations of the subconscious given form in the sculpture of Louise Bourgeois). Yet he was not particularly interested in developing-country artists who explored the developed world and its ideas, says Lucy Steeds, an art historian who has written extensively about the show. Indeed, Mr Martin avoided non-Western artists who were actively engaging with modernism, seeing them as derivative, even contaminated, by the influence of Europeans. It was a bias which led him to ignore great artists from Japan, Latin America and north Africa. One who made the cut, Rasheed Araeen, a Pakistani long resident in Britain, has never let that involvement stop him criticising the project harshly. Simply displaying work by artists from all over the world, he says, was never going to undermine the Western-dominated status quo.

Last rites for the Western canon

Mr Martin's desire that non-Western art should be "authentic" led him to traditional Aboriginal earth paintings, to the coloured face masks carved by Dossou Amidou from Benin and the multi-headed cast-iron sculptures made by Georges Liautaud, a 90-year-old Haitian. For advice, he turned not to art galleries or curators, but to French anthropologists who had worked in west Africa, Asia or the Caribbean.

Yet the stripped-down format of his show often undercut the authenticity he claimed to prize. A work like "Yam Dreaming" is rooted in a spiritual dimension that is specific to the culture of the people who made it. Seen by people ignorant of that culture and in an alien environment, it is robbed of some of its essence. The same cannot be said of Mr Long's "Red Earth Circle", which was much more on its home turf. Centred on the wall at the end of a high-ceilinged hall, it could not help but recall, for a Western audience, the rose window of a cathedral.

The minimal labelling compounded the problem. To add nothing to the name of an established Western artist such as Mr Long—who, having been nominated for the Turner prize in three previous years, was about to win it—was efficiently minimalist. Doing the same for unknowns seemed a denial for artists and viewers alike.

In an unequal world art cannot meet on fully equal terms. Memory, history and association add to a piece's power. So does scholarship: an appreciation of how this work, made here and now, relates to that work there and then. You cannot wish away those depths—but nor should the art world be divided into siloed provinces and ghettoes. Despite its flaws and the assumptions of its time, "Magiciens" helped sweep away many old barriers.

And it posed an always relevant, always vexed question: Who decides what is great art? The bold way in which it presented its artworks together, yet in isolation, continues to be debated 30 years on. Ms Morris, the Tate director, summarises the challenge it embodied: "Once you deconstruct the canon, what do you put in its place?" ■

Millennials in China

Cracks in the wall

Under Red Skies. By Karoline Kan.
Hachette Books; 320 pages; $27. Hurst; £20

CHAOQUN'S BIRTH was a rebellion. Her mother hid her coveted but illegal second pregnancy from officials and neighbours in her village. At the time, under China's one-child policy, women who already had children were sterilised or forced to have long-term contraceptives surgically inserted. But Chaoqun slipped through the system's cracks, and was born in 1989, just a few months before the protests that culminated in a military assault on Tiananmen Square. She grew up to work for the *New York Times*. Under her pen name, Karoline Kan, she has written the gripping autobiography of a generation—and a superpower—caught between tradition and ambition.

There are more Chinese millennials than there are people in America, but they rarely tell their own stories. Born during and after Deng Xiaoping's push to replace a Marxist economy with market capitalism, they grew up amid relative abundance and burgeoning shopping malls. The backdrop of Ms Kan's narrative is unprecedented economic growth, mass urbanisation and the cultural changes they engendered. It arcs from paddy fields to swanky Western parties in Beijing, taking in crowded rooms in the *hutongs*, narrow alleys in the older parts of northern Chinese cities.

Like millions of others, Ms Kan's mother wanted to move the family away from their village in search of a better life. Because of their rural *hukou* (household registration certificates that limit migrants' access to services and work), it was hard to find a job in a city. But another crack appeared, when a relative asked the family to take over a private kindergarten. As a farmer's daughter, Ms Kan had to prove herself worthy of a place in a city school. She was taught to behave, study for her *gaokao*, the college entrance exam, and not to think for herself. Yet when her teacher told the children to cry because of the death of "dear grandpa Deng Xiaoping", she thought: how can I cry for a man I never knew?

Later she spent two weeks undergoing *junxun*, basic military training that all university freshmen must complete. Ms Kan emerged even more sceptical of the system. She heard whispers and warnings about the bloodshed around Tiananmen, but it was never explained. When she discovered the truth, she cried sincerely. "China collapsed for me suddenly," she writes. "I had no faith in what I had been brought up to believe."

As a student in Beijing, Ms Kan was exposed to foreign ideas. Thanks to an American lecturer's encouragement, she became obsessed with learning English. In "Under Red Skies" she tells her story in straightforward English prose that still suggests her Chinese roots. For example, a romantic crush leads to a little deer roaming in her stomach, not butterflies. After graduation she found a job writing about Beijing for an English-language publication. Later she joined the *Times* as a researcher (the only journalistic role that Chinese citizens are allowed to perform for foreign media).

Ms Kan carved her own path through a series of small rebellions. Her story shows that, for all the government's efforts to suppress the sort of defiance that fuelled the Tiananmen protests, it cannot seal all the cracks through which China's young people learn about the world. ■

Lives of crime

Rough diamonds

The Last Job: The "Bad Grandpas" and the Hatton Garden Heist. By Dan Bilefsky.
W.W. Norton; 304 pages; $26.95

THE TEN-TONNE, bomb-proof door of the Hatton Garden Safe Deposit Company has never been breached. But over the long Easter weekend of 2015, an ingenious gang found another way into the closely guarded vault beneath London's jewellery quarter. After sneaking into the building, the robbers climbed down a lift-shaft, disabled an alarm system and drilled through 20 inches (51cm) of reinforced concrete, before worming their way through the hole to ransack the safe. They made off with wheelie-bins full of gold, cash and gems worth more than $20m.

The Hatton Garden burglary was "the last great British heist", in the words of the prosecutor who eventually convicted the men behind it. It was also one of the oddest, as Dan Bilefsky, a correspondent for the *New York Times*, explains in his entertaining and detailed account of the caper. The fearsome crew behind the crime of the century turned out to be a gang of grandpas, led by a 76-year-old who travelled to the raid using his senior citizen's bus pass. The "diamond wheezers", as the *Sun* newspaper nicknamed them, overcame diabetes, heart disease and incontinence to carry out a spectacular last job.

The story provides a rich slice of London's East End underworld, with a cast including men with names such as "Little Legs" Larkins, Billy the Fish and Jimmy Two Baths. One of the other crooks depicted in the book has a pair of Rottweilers called Brinks and Mat (after the Brink's-Mat robbery, another celebrated hold-up); another once kept a pet lion and has a doorbell that plays the theme from "Goldfinger". Some aspects of the Hatton Garden story sound straight from the script of a Michael Caine film—and indeed, three years after the event, it became one (see picture).

Scotland Yard initially made a hash of the case. The grandpas tripped an alarm as they broke in, but the police failed to respond. In the aftermath of the crime, tips pointed to an eastern European gang called the Pink Panthers. But soon the Flying Squad homed in on the grandpas, largely thanks to John "Kenny" Collins, described by fellow gang-members as a "wombat-thick old cunt", who drove to the crime in his own distinctively painted Mercedes. Police tracked it on CCTV and were led to other members of the crew. By bugging their cars, they pieced the crime together (a task complicated by the elderly crooks' habit of having the radio on very loud, and by their use of obscure Cockney slang).

The grandpas were "1980s criminals who committed a crime in the 21st century", as one of their defence lawyers put it. They used the same mobile phones after the robbery, forgot to throw away their public-transport smart-cards, and boasted about the crime in their bugged cars and in their favourite pub (which was Mr Bilefsky's local too, as it happens), where the police were filming them and passing the footage to a lip-reader.

Eventually the cops swooped, catching the men red-handed with Lidl bags full of loot. "It's overwhelming I suppose, innit?" conceded one of the gang when police confronted him with the evidence. It was: the grandpas pleaded guilty and were sent to a high-security prison, some of them straining with their hearing aids to hear the judge's sentence. ■

Ethics and evolution

The kindness of strangers

Two books explore the evolutionary origins of human morality and societies

CHIMPANZEES AND bonobos are humanity's closest great-ape cousins. They look almost the same as each other, share almost all their (and human) DNA and demonstrate familiar emotions and behaviour. But in an important way, they are opposites. Chimpanzees are routinely violent. Males beat up females to assert sexual dominance, fight each other and kill rivals, friends and even infants. Bonobos, by contrast, enjoy relatively peaceful lives.

Where do humans lie on this spectrum of violence? Are they inherently good or bad, and how does that shape their societies? Two new books offer some answers.

In "The Goodness Paradox", Richard Wrangham, an anthropologist at Harvard, argues that, despite impressions to the contrary, people have evolved into largely docile animals, much like bonobos. But they have maintained the ability to commit acts of planned violence and cruelty, like chimpanzees. They are, at once, much more and much less violent than their primate cousins—the paradox of his title.

Chimpanzees and bonobos have been distinct species for around 900,000 years. Mr Wrangham says part of the reason for their differences is that, on their side of the Congo river, chimpanzees have always had to share their habitats with gorillas; violence and hot-tempered aggression make sense when you have more limited food resources. Across the river, bonobos evolved with abundant fruit and foliage. Natural selection reduced their propensity for reactive aggression (the hot, impulsive type).

These behavioural shifts mirror those of creatures domesticated from their wild cousins, such as dogs or farm animals. Bonobos, it seems, have domesticated themselves in response to their environment. By living in groups, says Mr Wrangham, humans have been domesticated, too.

And domestication set the stage for thriving human societies. A greater capacity for tolerance and co-operation allowed the creation of large, stable settlements and civilisations. In any modern metropolis humans live peacefully in much closer quarters than any other species could without dangerous, possibly fatal consequences. As these societies developed, so did social structures, such as justice and religious ethics, which increasingly keep people from unnecessary aggression and move the moral needle towards good. Mr Wrangham contrasts the trajectory of *Homo sapiens* with the Neanderthals, a human species that became extinct around 35,000 years ago, after living in Europe for half a million years. It was their cognitive inability to work and learn together, he contends, that sealed their doom.

The Goodness Paradox. By Richard Wrangham. *Pantheon; 400 pages; $28.95. Profile Books; £25*
Blueprint. By Nicholas Christakis. *Little, Brown; 544 pages; $14.99*

These are controversial ideas, not all of them proven. Given that the fossil record can provide only fragments of clues about how ancient species might have lived, the confidence of Mr Wrangham's claims is bold. Nonetheless, his skilful storytelling—which intertwines his hypotheses regarding primitive humans with rich details from decades of observations of chimpanzees in Tanzania—makes his book both stimulating and compelling.

Shipwrecked apes

Successful human societies are the focus of "Blueprint" by Nicholas Christakis, a social scientist at Yale. What sorts of behaviour make societies work, and where do they originate? He begins with shipwrecks.

In 1864 two ships, the *Invercauld* and the *Grafton*, were wrecked on opposite sides of Auckland Island, which lies almost 300 miles (480km) south of New Zealand. Survivors from both crews were on the island at the same time, but were unaware of each other's presence. Over the year after their stranding, the 19 survivors of the *Invercauld* splintered into groups, often left the weakest to die and even resorted to cannibalism. Only three crew members lived long enough to be rescued. In contrast, all five survivors of the *Grafton* eventually made it off the island. Shipwrecks, writes Mr Christakis, are good natural experiments in society-building: "survivor camps", he says, "provide fascinating data...about how and why social order might vary, and about what arrangements are the most conducive to peace and survival."

A mean streak a mile wide

The crew of the *Invercauld* were led by a selfish captain who instilled an attitude that every man should look out for himself. The men of the *Grafton*, however, stuck and worked together on everything from repairing boats to sharing their resources equally, even organising a kind of adult-education programme to swap skills. This "social suite" of behaviour, as Mr Christakis puts it, helped them survive.

He argues that this social suite is not just learned from others; it is underpinned by thousands of genes that have evolved to nudge biochemistry and behaviour in such a way that people tend towards a good society. True, there are still appalling wars and horrific murders, but that is not the sum of who humans are. Look at the progress visible all around you, Mr Christakis urges, despite all the well-known episodes of death and destruction.

He ranges across sociology, anthropology, philosophy, genetics and economics, between jungles and laboratories and back again, at what sometimes feels like breakneck speed. But amid the whiplash, Mr Christakis's deep optimism (and considerable evidence) about the arc of human society bending towards good is uplifting. Along the way he delves fascinatingly into human cultures and customs, exploring, for instance, why monogamy and marriage have become so common (though not universal), and what friendship really means, from an evolutionary perspective.

Mr Wrangham is also an optimist, and even posits a counterintuitive role for certain types of pugnacity in keeping humans on the path towards good. Domesticated as it may be, the species maintains the capacity for a proactive, cold-blooded kind of aggression that may have been instrumental in making societies more socially cohesive. Groups of humans could have worked together to identify and root out the most savage people (usually males) in their midst. Executing the miscreants not only removed an undesirable type of aggressive gene from the pool; it also sent a signal that violence would be punished.

That, in turn, could lead to the emergence of a moral code and demonstrate the benefits of more congenial or generous behaviour. Be good to your neighbours, in other words, lest they gang up and condemn you to death. ■

Economic data

	Gross domestic product, % change on year ago: latest		quarter*	2019†	Consumer prices, % change on year ago: latest		2019†	Unemployment rate, %		Current-account balance, % of GDP, 2019†	Budget balance, % of GDP, 2019†	Interest rates, 10-yr gov't bonds: latest,%		change on year ago, bp	Currency units: per $ May 1st	% change on year ago
United States	3.2	Q1	3.2	2.2	1.9	Mar	2.2	3.8	Mar	-2.6	-4.7	2.5		-46.0	-	
China	6.4	Q1	5.7	6.3	2.3	Mar	2.5	3.7	Q1§	0.2	-4.5	3.2	§§	1.0	6.74	-5.9
Japan	0.3	Q4	1.9	1.0	0.5	Mar	1.1	2.5	Mar	3.9	-3.4	-0.1		-11.0	111	-1.3
Britain	1.4	Q4	0.9	1.0	1.9	Mar	1.8	3.9	Jan††	-4.1	-1.6	1.2		-33.0	0.76	-2.6
Canada	1.6	Q4	0.4	1.6	1.9	Mar	1.7	5.8	Mar	-2.6	-1.1	1.7		-64.0	1.34	-3.7
Euro area	1.2	Q1	1.5	1.3	1.4	Mar	1.3	7.7	Mar	3.2	-1.2	nil		-55.0	0.89	-6.7
Austria	2.4	Q4	5.1	1.3	1.8	Mar	1.8	4.8	Mar	2.0	-0.1	0.3		-43.0	0.89	-6.7
Belgium	1.1	Q1	0.7	1.3	2.1	Apr	2.2	5.7	Mar	0.1	-1.0	0.5		-37.0	0.89	-6.7
France	1.1	Q1	1.2	1.2	1.2	Apr	1.3	8.8	Mar	-0.6	-3.3	0.3		-47.0	0.89	-6.7
Germany	0.6	Q4	0.1	1.0	2.0	Apr	1.4	3.2	Mar‡	6.6	0.8	nil		-55.0	0.89	-6.7
Greece	1.6	Q4	-0.4	1.8	0.9	Mar	0.9	18.5	Jan	-2.5	-0.4	3.4		-44.0	0.89	-6.7
Italy	0.1	Q1	0.9	0.1	1.1	Apr	0.9	10.2	Mar	2.1	-2.9	2.6		78.0	0.89	-6.7
Netherlands	2.2	Q4	2.2	1.5	2.8	Mar	2.3	4.2	Mar	9.9	0.8	0.2		-51.0	0.89	-6.7
Spain	2.4	Q1	2.9	2.1	1.5	Apr	1.2	14.0	Mar	0.8	-2.4	0.9		-29.0	0.89	-6.7
Czech Republic	3.0	Q4	3.4	2.8	3.0	Mar	2.2	2.0	Mar‡	0.2	0.7	1.9		14.0	22.8	-6.0
Denmark	2.5	Q4	3.4	1.9	1.2	Mar	1.1	3.7	Feb	6.3	1.0	0.1		-50.0	6.64	-6.5
Norway	1.7	Q4	1.9	1.9	2.9	Mar	2.3	3.8	Feb‡‡	7.1	6.4	1.7		-24.0	8.65	-6.5
Poland	4.5	Q4	2.0	3.8	2.2	Apr	1.7	5.9	Mar§	-0.6	-2.4	3.0		-7.0	3.81	-6.3
Russia	2.7	Q4	na	1.5	5.3	Mar	4.9	4.7	Mar§	6.5	2.4	8.2		84.0	64.8	-2.0
Sweden	2.4	Q4	4.7	1.6	1.9	Mar	1.7	7.1	Mar§	2.6	0.3	0.2		-55.0	9.51	-6.9
Switzerland	1.4	Q4	0.7	1.8	0.7	Mar	0.5	2.4	Mar	9.7	0.5	-0.3		-39.0	1.01	-1.0
Turkey	-3.0	Q4	na	-1.7	19.7	Mar	16.1	14.7	Jan§	-0.6	-2.3	19.9		736	5.95	-31.1
Australia	2.3	Q4	0.7	2.5	1.3	Q1	2.0	5.0	Mar	-2.4	-0.2	1.8		-98.0	1.42	-5.6
Hong Kong	1.3	Q4	-1.4	2.2	2.1	Mar	2.3	2.8	Mar‡‡	4.5	0.5	1.7		-52.0	7.85	nil
India	6.6	Q4	5.1	7.2	2.9	Mar	3.3	7.6	Apr	-1.6	-3.4	7.4		-36.0	69.5	-4.0
Indonesia	5.2	Q4	na	5.2	2.5	Mar	2.8	5.3	Q3§	-2.7	-2.1	7.8		96.0	14,250	-2.4
Malaysia	4.7	Q4	na	4.5	0.2	Mar	0.8	3.3	Feb§	2.4	-3.4	3.8		-36.0	4.13	-5.1
Pakistan	5.4	2018**	na	3.4	9.4	Mar	7.8	5.8	2018	-4.2	-6.0	13.2	†††	470	141	-18.2
Philippines	6.3	Q4	6.6	5.9	3.3	Mar	4.4	5.2	Q1§	-2.2	-2.5	6.0		-25.0	52.1	-0.7
Singapore	1.3	Q1	2.0	2.4	0.6	Mar	0.5	2.2	Q1	17.0	-0.6	2.2		-43.0	1.36	-2.2
South Korea	1.8	Q1	-1.4	2.4	0.6	Apr	1.1	4.3	Mar§	4.5	0.7	1.9		-87.0	1,168	-8.6
Taiwan	1.7	Q1	2.0	1.8	0.6	Mar	0.1	3.7	Mar	13.1	-1.2	0.8		-27.0	30.9	-4.2
Thailand	3.7	Q4	3.3	3.5	1.2	Apr	0.9	0.9	Mar§	8.8	-2.5	2.2		-35.0	31.9	-1.2
Argentina	-6.2	Q4	-4.7	-0.9	54.1	Mar	46.1	9.1	Q4§	-2.1	-3.2	11.3		562	44.2	-53.6
Brazil	1.1	Q4	0.5	1.5	4.6	Mar	4.0	12.7	Mar§	-1.3	-5.8	7.1		-78.0	3.95	-11.1
Chile	3.6	Q4	5.3	3.2	2.0	Mar	2.2	6.9	Mar§‡‡	-2.5	-1.4	4.0		-50.0	677	-9.4
Colombia	2.9	Q4	2.4	3.1	3.2	Mar	2.9	10.8	Mar§	-3.5	-2.0	6.6		15.0	3,231	-13.1
Mexico	1.3	Q1	-0.8	1.6	4.0	Mar	4.1	3.6	Mar	-1.7	-2.3	8.2		66.0	18.9	nil
Peru	4.8	Q4	11.4	3.7	2.6	Apr	2.2	7.5	Mar§	-1.6	-2.0	5.6		64.0	3.31	-1.5
Egypt	5.5	Q4	na	5.1	14.2	Mar	12.1	8.9	Q4§	-0.1	-7.3	na		nil	17.1	3.7
Israel	2.9	Q4	3.1	3.1	1.4	Mar	1.2	3.9	Mar	2.7	-3.7	1.8		-4.0	3.59	0.6
Saudi Arabia	2.2	2018	na	1.9	-2.1	Mar	-1.1	6.0	Q4	3.6	-6.7	na		nil	3.75	nil
South Africa	1.1	Q4	1.4	1.5	4.5	Mar	5.0	27.1	Q4§	-3.2	-4.0	8.6		36.0	14.4	-12.0

Source: Haver Analytics. *% change on previous quarter, annual rate. †The Economist Intelligence Unit estimate/forecast. §Not seasonally adjusted. ‡New series. **Year ending June. ††Latest 3 months. ‡‡3-month moving average. §§5-year yield. †††Dollar-denominated bonds.

Markets

In local currency	Index May 1st	% change on: one week	Dec 31st 2018
United States S&P 500	2,923.7	-0.1	16.6
United States NAScomp	8,049.6	-0.6	21.3
China Shanghai Comp	3,078.3	-3.9	23.4
China Shenzhen Comp	1,636.6	-6.4	29.1
Japan Nikkei 225	22,258.7	0.3	11.2
Japan Topix	1,617.9	0.4	8.3
Britain FTSE 100	7,385.3	-1.2	9.8
Canada S&P TSX	16,502.8	-0.5	15.2
Euro area EURO STOXX 50	3,514.6	0.3	17.1
France CAC 40	5,586.4	0.2	18.1
Germany DAX*	12,344.1	0.3	16.9
Italy FTSE/MIB	21,881.3	0.7	19.4
Netherlands AEX	571.6	0.6	17.2
Spain IBEX 35	9,570.6	1.2	12.1
Poland WIG	60,145.5	-1.3	4.3
Russia RTS, $ terms	1,248.4	-1.2	17.1
Switzerland SMI	9,769.7	1.2	15.9
Turkey BIST	95,415.6	-0.8	4.5
Australia All Ord.	6,466.5	-0.1	13.3
Hong Kong Hang Seng	29,699.1	-0.4	14.9
India BSE	39,031.6	-0.1	8.2
Indonesia IDX	6,455.3	0.1	4.2
Malaysia KLSE	1,642.3	0.3	-2.9

	index May 1st	% change on: one week	Dec 31st 2018
Pakistan KSE	36,784.4	0.8	-0.8
Singapore STI	3,400.2	1.1	10.8
South Korea KOSPI	2,203.6	0.1	8.0
Taiwan TWI	10,967.7	-0.5	12.8
Thailand SET	1,673.5	nil	7.0
Argentina MERV	29,571.4	-0.6	-2.4
Brazil BVSP	96,353.3	1.4	9.6
Mexico IPC	44,597.3	-1.0	7.1
Egypt EGX 30	14,920.2	1.0	14.5
Israel TA-125	1,466.3	-1.2	10.0
Saudi Arabia Tadawul	9,362.0	1.3	19.6
South Africa JSE AS	58,528.4	-1.0	11.0
World, dev'd MSCI	2,170.0	0.1	15.2
Emerging markets MSCI	1,080.5	-0.4	11.9

US corporate bonds, spread over Treasuries

Basis points	latest	Dec 31st 2018
Investment grade	155	190
High-yield	436	571

Sources: Datastream from Refinitiv; Standard & Poor's Global Fixed Income Research. *Total return index.

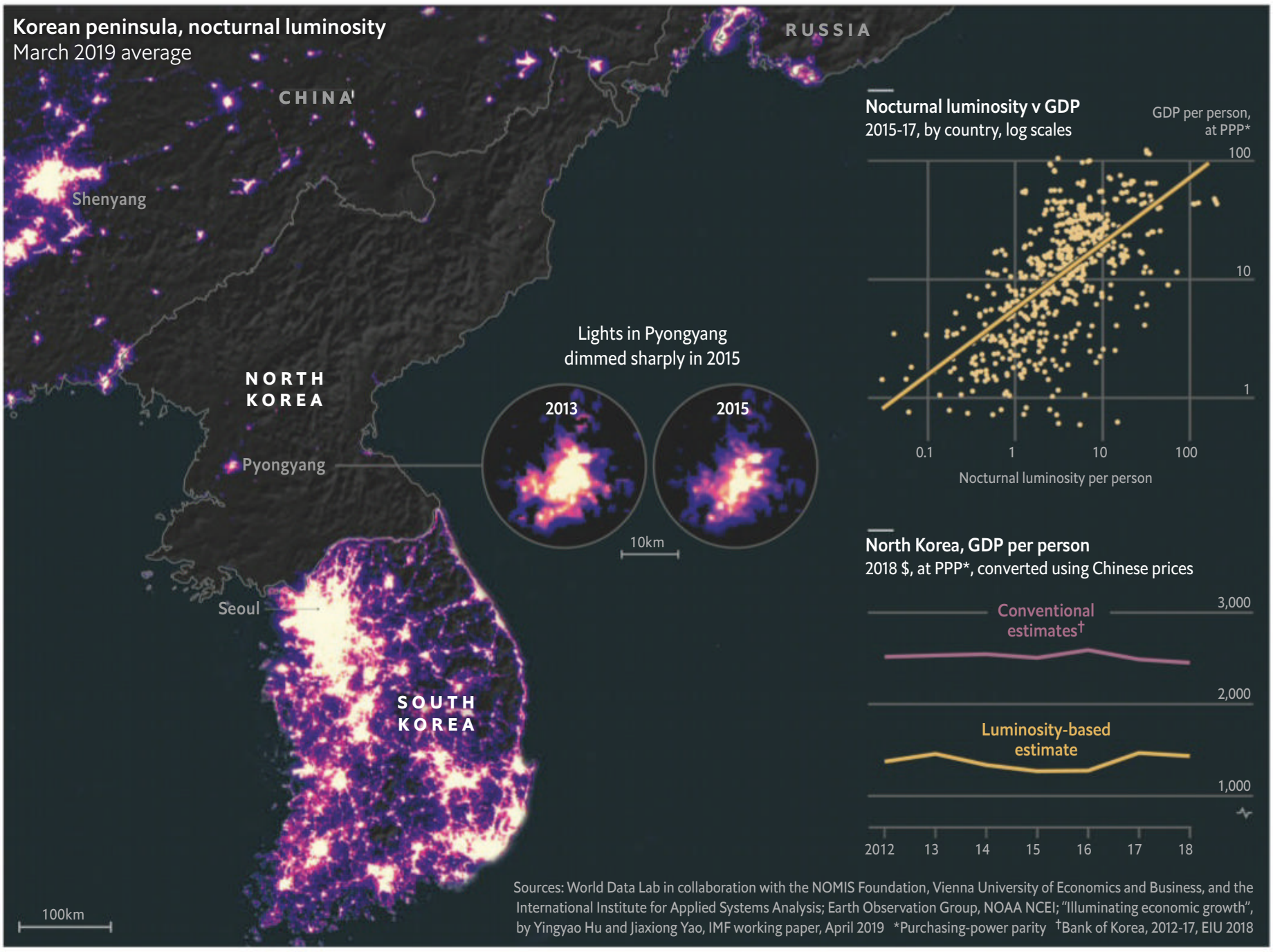
Commodities

The Economist **commodity-price index**

2005=100	Apr 23rd	Apr 30th*	% change on month	year
Dollar Index				
All Items	137.7	136.4	-2.4	-13.2
Food	141.0	139.4	-2.9	-14.6
Industrials				
All	134.3	133.4	-1.9	-11.6
Non-food agriculturals	124.5	125.1	-0.4	-12.6
Metals	138.5	136.9	-2.5	-11.1
Sterling Index				
All items	193.6	190.4	-2.5	-9.5
Euro Index				
All items	152.8	151.4	-2.6	-7.1
Gold				
$ per oz	1,268.8	1,283.1	-0.6	-1.6
West Texas Intermediate				
$ per barrel	66.3	63.9	2.1	-5.0

Sources: CME Group; Cotlook; Darmenn & Curl; Datastream from Refinitiv; FT; ICCO; ICO; ISO; Live Rice Index; LME; NZ Wool Services; Thompson Lloyd & Ewart; Urner Barry; WSJ. *Provisional.

For more countries and additional data, visit **Economist.com/indicators**



When the lights go out

Satellite data shed new light on North Korea's opaque economy

Viewed from space at night, North Korea looks like the recently released first image of a black hole: an abyss, ringed by the brilliant glow of South Korea, China and Russia, from which nothing can escape. But the Hermit Kingdom does emit a bit of light, which orbiting satellites detect. And nocturnal luminosity is one of the few reliable sources of information about the country. It implies that North Korea's economy is poorer, more volatile and more vulnerable to weather than formerly thought.

Night lights are a strong proxy for economic activity. A new paper by the IMF finds that they explain 44% of the variation in countries' GDP per person—as close a tie as that between a person's height and hand size. In places where records are poor or manipulated, night lights offer an alternative measure of output. One study found that among countries with similar luminosity, autocracies reported GDP growth 15-30% higher than democracies did.

Nowhere are good economic data rarer than in North Korea. The most detailed numbers come from South Korea's central bank, which derives them from figures on production volumes of various goods. When adjusted for the cost of living in a developing Asian economy, the bank's most recent estimate of North Korea's annual GDP per person is enough to buy goods and services that would cost $2,500 in America.

The picture painted by night lights, however, is even grimmer. In 2013 a group of scholars compared luminosity and GDP within rural China, obtaining an equation to estimate economic output from light. A forthcoming paper by World Data Lab, a startup, and a team of researchers applies this formula to North Korea. It yields a standard of living that would cost $1,400 a year in America, making North Korea one of the world's ten poorest countries.

The data also suggest that the economy has been unusually volatile. In 2013-15 luminosity fell by 40%. That implies a 12% reduction in GDP, including 19% in the capital region, Pyongyang. Since 2016, however, the country has brightened again.

International sanctions are unlikely to have produced this darkening. They were made stricter in 2016-17, just as luminosity rose. A drop in the prices of North Korean exports, like coal, may have played a part.

But the main cause was probably weather. North Korea relies on hydropower, and in 2015 it was parched by a drought. The Bank of Korea also reckons that electricity, gas and water output fell by 13% in 2015.

The economy may not have shrunk as much as the dimming suggests. Recessions caused by power cuts could disproportionately reduce lighting. Many North Koreans own solar panels, which power daytime activity not shown in night lights. And state buildings, whose illumination is a political choice, make up much of the capital's glow. As with physics inside a black hole, no one knows what economic laws apply within North Korea's eerie silhouette.

Nonetheless, a 40% drop in luminosity indicates a serious recession. And this year the government has admitted publicly that heatwaves, floods and drought have caused a dire food shortfall. The regime appears much better prepared to weather trade sanctions than the wrath of nature. ■

A muckraker's life

Lyra McKee, investigative journalist, was killed by a stray bullet while covering a riot in Derry on April 18th, aged 29

LIKE MANY a small child, Lyra McKee at four years old was all questions. Why should her mother, who was poor and had six children and was bringing them up single-handed on the Cliftonville Road in north Belfast, have to pay her bills? Why would she go to jail if she didn't? No answer ever satisfied her, and she would leave her mother with "Why?" ringing in her ears.

It didn't stop when she got older, though. Her hero was Walt Disney's Robin Hood, a talking fox who righted wrongs and, obviously, unearthed them first. So she was almost bound to become, as she did, the most dogged investigative journalist. She got especially persistent if she felt there were secrets involved, things people didn't want anyone to know. These she had to find out. Not all at once, A-Z, which quickly bored her, but little clues, a breadcrumb trail, which she could follow to see where it led.

She was lucky, or perhaps unlucky, that she lived in Northern Ireland, where secrets were everywhere. In her Catholic section of Belfast part of this was cultural, so that having children out of wedlock was shameful and suicide in the family was a disgrace, both to be buried deep. And then there was her own huge, aching secret that she had kept close since the age of 11, that she was gay and damned to hell for it, much as she spent long nights in bed bargaining with God to let her off. As a teenager she knew only one boy who was openly gay, Big Gay Mick with his thin body and baseball cap and camp too-high voice. No one else was that brave, and until he spoke you might have taken him too for one of the hard men who still loitered along Murder Mile, as people called it.

There lay the biggest nest of secrets. The 30-year Troubles between unionists and republicans, Catholics and Protestants, had officially ended when she was eight with the Good Friday Agreement, and after that the long civil war was swept under the carpet or was wrapped like a wound under bandages, whatever metaphor you liked; but hidden, although it still permeated everything. In one article in 2016 she looked into the fact, barely spoken of, that in the ten years after the end of the Troubles the suicide rate had almost doubled in the province, with a fifth of the victims younger than 25. She raised the idea, again hardly mentioned, that trauma might be passed down from parents to "Ceasefire Babies", like herself, who had never known fighting directly but lived in its shadow and, sometimes, died from it.

Certain stories turned her into a workaholic monster, working all night and never switching off. A man called Thomas was murdered, and a source told her this was "something related to children"; in 1978 he had passed information about child pornography to the police, but there the trail ended. What then? In 2012 she took up the case of Robert Bradford, a prominent politician shot dead in 1981, who was rumoured to have been "asking questions". About what, no one would say. But she had to know. In 2017, in Harlem Café just by Ulster Hall, a veteran journalist (often the best sources for young cubs like her) casually mentioned that "a lot of kids" had disappeared during the Troubles. Immediately she had to find out: who? why? where from? And where were the bodies now?

People often asked her who she was working for. The truth was, mostly not for anyone, or only for the public, who had a right to know. Her route through journalism had been really haphazard. At Queen's University, where she went for a spell before she dropped out, finding it too like school, she asked a newspaper editor at a careers fair whether he hired investigative reporters, and he laughed at her. No, they didn't hire those people any more. She trundled between online media sites and online news, publishing here and there, but it was a struggle. One article that took six months' research earned her £50. A lot of the time she was broke. Still, she got her MA in investigative journalism from Birmingham and ended up doing what she loved most in the world, so she was rich for that.

Rich from muckraking, such a good word: "to search for and expose misconduct in public life". It was very hard in Northern Ireland, as her Muckraker blog laid bare every week. A Freedom of Information request to the police brought the preposterous answer that it would take them 10,692 hours to look through six months of files for the missing children. Her prime source for "Thomas's Story" gave her information that was 80% verifiable, but then had that gap in it. Documents were embargoed. She would spend hours upon hours digging, only to find nothing and feel useless.

Her readers helped, though. She saw them as her collaborators. Her social network was so wide—all genders, ages, faiths, persuasions—that if one potential source jibbed at talking to a gay Catholic with an unkempt geeky look and a Harry Potter T-shirt, another would say, "She's all right." Then the site she mostly worked for, Beacon Reader, allowed readers to fund their favourite reporters, and she ran with that. She eventually thrived as a freelance because she crowdfunded her research into Bradford and the lost children, giving subscribers exclusive online chunks of her findings and her writings. This brought in $6,000, led to articles in places like *Private Eye*, the *Atlantic* and BuzzFeed, and won her time to turn her research into a two-book deal with Faber. With the news industry as it was, she would tell younger journalists (for she was giving lots of talks now), muckrakers had to be entrepreneurs.

It seemed a long time since all that crazy bargaining with God and her misery about her own secret. She had told her family when she was 20 and they had been fine with it, and some years later she told her parish priest, Martin Magill, and that was fine, too. Far from being damned, her career was booming, she had found the love of her life in Sara Canning and had moved to Derry-Londonderry—hateful name, great city!—to be with her. All people had to do was talk to each other, and walls would tumble down.

But of course some still wouldn't talk. They'd fob that pesky journalist off. Paper trails ran out, or had never existed in the first place. And then what? It seemed the best course might be to sniff when trouble might happen and get up close to it, witness it with her own two eyes, right beside the gunmen and the police. ■

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