

The Economist

America's next recession

Genetics, germs and saving reefs

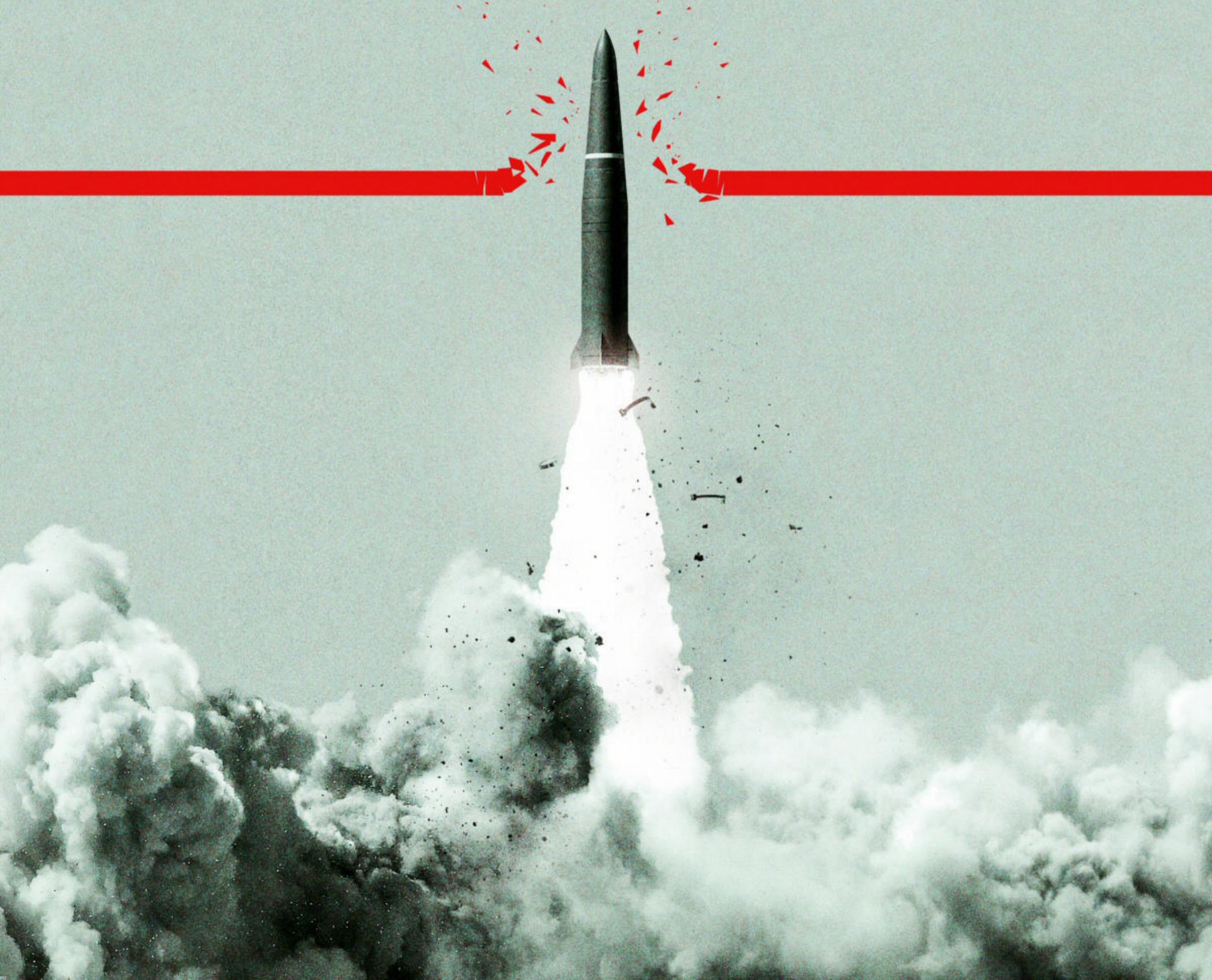
China's overrated spies

Don't take your whole self to work

JUNE 4TH-10TH 2022

A NEW ERA

Why the war in Ukraine makes nuclear conflict more likely



A large school of sharks, including hammerheads and others, swims over a coral reef at night. The scene is illuminated by a bright light source, likely a diver's light, which creates a dramatic effect against the dark blue water.

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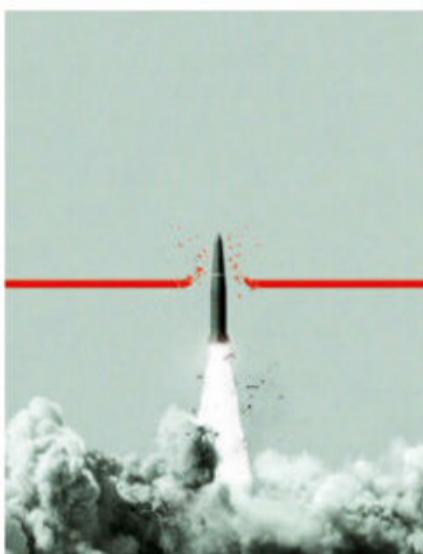
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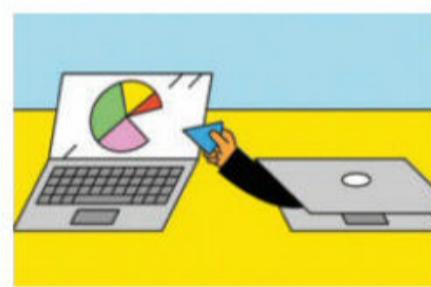
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 to take part in "a severe contest between
 intelligence, which presses forward,
 and an unworthy, timid ignorance
 obstructing our progress."

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Russian forces captured parts of Severodonetsk, a town in Ukraine's eastern Donbas region. Some Ukrainian defenders were holding on, but many of the 10,000 thought to have been stationed there retreated. Russian troops have been advancing slowly in the east of the country, assisted by heavy artillery.

America said it would send more weapons to Ukraine, including long-range rocket launchers that will help the country's defenders shoot back at the Russian artillery pounding their positions in the east. The Pentagon is supplying the new kit on condition that it not be used to strike targets in Russia. President Joe Biden reiterated that America does not seek war with Russia, and does not aim to oust Vladimir Putin, Russia's president.

In an interview on French television Russia's foreign minister, Sergei Lavrov, said that capturing Ukraine's Donbas region (he termed it a "liberation") was an "unconditional priority" for the Kremlin. He denied that Russian soldiers were attacking civilian infrastructure, despite copious evidence that they are. Mr Lavrov also denied rumours that Mr Putin is seriously ill. The Russian president "appears in public every day", he insisted.

The European Union agreed to ban most imports of Russian oil. However, the ban will not cover piped oil, an exemption sought by the Czech Republic, Hungary and Slovakia, which rely heavily on pipeline supplies, and it will be phased in. At first it will block around 65% of total Russian oil ex-

ports to Europe; by the end of the year it will block 90%.

The M23 rebel group, which has long lurked in north-eastern Congo, clashed with the army near the city of Goma. Congo's government accused Rwanda's president, Paul Kagame, of inciting the violence. Congo has been trying to build new roads and trade links with east Africa, which the mayhem threatens.

Around a hundred people, mostly informal goldminers, were killed in clashes in the north-western desert of Chad, close to the border with Libya. The violence began as "a mundane dispute between two individuals", said the country's defence minister.

Off your bike

Lagos, Nigeria's commercial capital, started enforcing a ban on motorcycle taxis. The governor says they endanger road users and enable crime. For many locals, they are a cheap and effective way to beat the city's awful traffic.

A leaked report soon to be issued by the International Atomic Energy Agency, the UN nuclear watchdog, said that unexplained nuclear material had been found at three undeclared sites in Iran, and that Iran had "not provided explanations that are technically credible".

A former presidential candidate in Egypt, Abdel Moneim Abul Fotoh, a 70-year-old Islamist, was sentenced to 15 years in prison with hard labour for disseminating "fake news" and for joining a "terrorist" group, the government's term for the banned Muslim Brotherhood.

Shanghai eased covid-related restrictions, allowing most people to move freely around the city. China's financial hub, home to 25m people, had been locked down for over two months. Restrictions were also eased in Beijing, the capital, which reopened parts of its

public-transport system as well as some malls, museums and other gathering places. Both cities have seen a decline in infections recently.

Taiwan said 30 Chinese warplanes flew close to its airspace, prompting it to scramble its air force. The incident came less than a week after Joe Biden vowed that America would defend Taiwan, were it to be invaded by its giant neighbour.

Sri Lanka's economic situation showed no signs of improvement, as the government continued negotiations for a bail-out. A food shortage is worsening. The agriculture minister has urged farmers to plant more rice. The government has asked for aid from its South Asian neighbours. Inflation hit a new high of 39%. Last month Sri Lanka defaulted on its debts and riots prompted the president to sack the prime minister, his brother.

Pakistan is also facing an economic crisis. Foreign-currency reserves are down to just \$10bn and inflation reached nearly 14% in May. The government is in talks with the IMF for a bail-out, and has raised the price of fuel by 20%. Meanwhile, Imran Khan, the ousted prime minister, has been leading protests to demand fresh elections. He claims, without evidence, that parliament sacked him at America's behest.

Populists triumphed in the first round of Colombia's presidential election. Gustavo Petro, a left-wing ex-guerrilla, won 40% of the vote. Rodolfo Hernández, an ex-mayor who likens his supporters to the "brainwashed" terrorists of September 11th 2001, came second. A run-off will be held on June 19th.

At least 106 people were killed in north-east Brazil when heavy rains swept through the region, causing floods and landslides. It was the fourth big flood in the country in five months.

British Columbia said it would temporarily decriminalise the possession of some illicit drugs. People caught with up to 2.5 grams of opioids, cocaine, methamphetamine or MDMA will not be prosecuted. They will instead be offered treatment. The experiment, the first of its kind in Canada, will run for three years from January.

Also in Canada Justin Trudeau, the prime minister, proposed ways to toughen gun-control laws. He wants to freeze sales and transfers of handguns and revoke the firearms licences of people who commit domestic violence or criminal harassment.

America's Justice Department said it would conduct a review of the police's slow response to the school shooting in Uvalde, Texas on May 24th. An 18-year-old gunman murdered 19 children and two adults. Police cordoned off the school but took more than an hour to confront the gunman, who was shot dead by a Border Patrol agent.

Pomp and circumstance



Britain started four days of celebrations to mark the Platinum Jubilee of Queen Elizabeth II. When she came to the throne in February 1952 Winston Churchill was prime minister and Harry Truman was president of the United States. Seventy years and 150 foreign visits later, it was hoped the 96-year-old monarch would attend at least some of the festivities. An official jubilee pudding was named: a trifle with lemon curd. The British weather was forecast to be unsettled.



The **euro zone's** annual inflation rate leapt to 8.1% in May. The European Central Bank is expected to raise interest rates for the first time in a decade in July and again in September. Surging prices may mean that it will opt for bolder increases than currently envisaged, perhaps of half a percentage point.

If I knew then...

In America Janet Yellen admitted that she had been wrong to think that **inflationary pressures** would be temporary. The treasury secretary said that in 2021 she "didn't fully understand" the risks from supply-chain bottlenecks and other factors that have driven America's inflation rate to a 40-year high, but that the government recognised them now. Joe Biden said that "fighting inflation is our top economic challenge". The issue could hurt the Democrats in the mid-term elections.

India's economy grew by 4.1% in the three months ending March 31st, year on year, a slower pace than in recent quarters. After rebounding from covid-19, the country is now beset by rising prices. Annual inflation reached an overall 7.8% in April, but the category for food, which accounts for half the consumer price index, hit 8.4%.

Oil prices rose sharply, in part because of the EU's long-delayed agreement to place an embargo on Russian oil. The price of Brent crude closed above \$120 a barrel for the first time in two months. Some members of OPEC are reportedly willing to exclude Russia from oil-production targets

agreed to under OPEC+, because Russian volumes have been hampered by sanctions.

Police raided the headquarters of DWS Group, a big German asset-management firm, amid allegations that it misled investors. A whistleblower has claimed that DWS exaggerated the amount it held in ESG (environmental, social, governance) assets. Such embellishment is known as **greenwashing**, and is a growing problem in the ESG industry. America's Securities and Exchange Commission is preparing to tighten the rules on how ESG products are defined and marketed.

There was speculation that another bidder could emerge for **VMware**, an enterprise-software firm. **Broadcom**, a chipmaker, recently agreed to pay \$61bn for VMware in a friendly takeover.

America's Supreme Court put a temporary hold on a law in Texas that would have stopped **social-media platforms** from removing content they label as misinformation or extremist. Industry groups challenged the legislation, saying it would damage the effort to scrub hate speech and propaganda from the sites. In a 5-4 decision the

court did not rule on the constitutionality of the law, but decided to send the issue back to the lower courts.

Sheryl Sandberg unexpectedly decided to step down as chief operating officer of Meta. Ms Sandberg joined Facebook in 2008, helping Mark Zuckerberg transform it into the behemoth social-media platform that it is today. She is one of Silicon Valley's most influential executives and is expected to spend more time working on her charitable causes.

Share prices in **Chinese tech firms** rallied as the two-month lockdown in Shanghai came to an end. Nasdaq's Golden Dragon China Index of Chinese companies that list shares in America recorded its first monthly gain in May since October. Sentiment was also boosted by Alibaba's solid growth in quarterly sales.

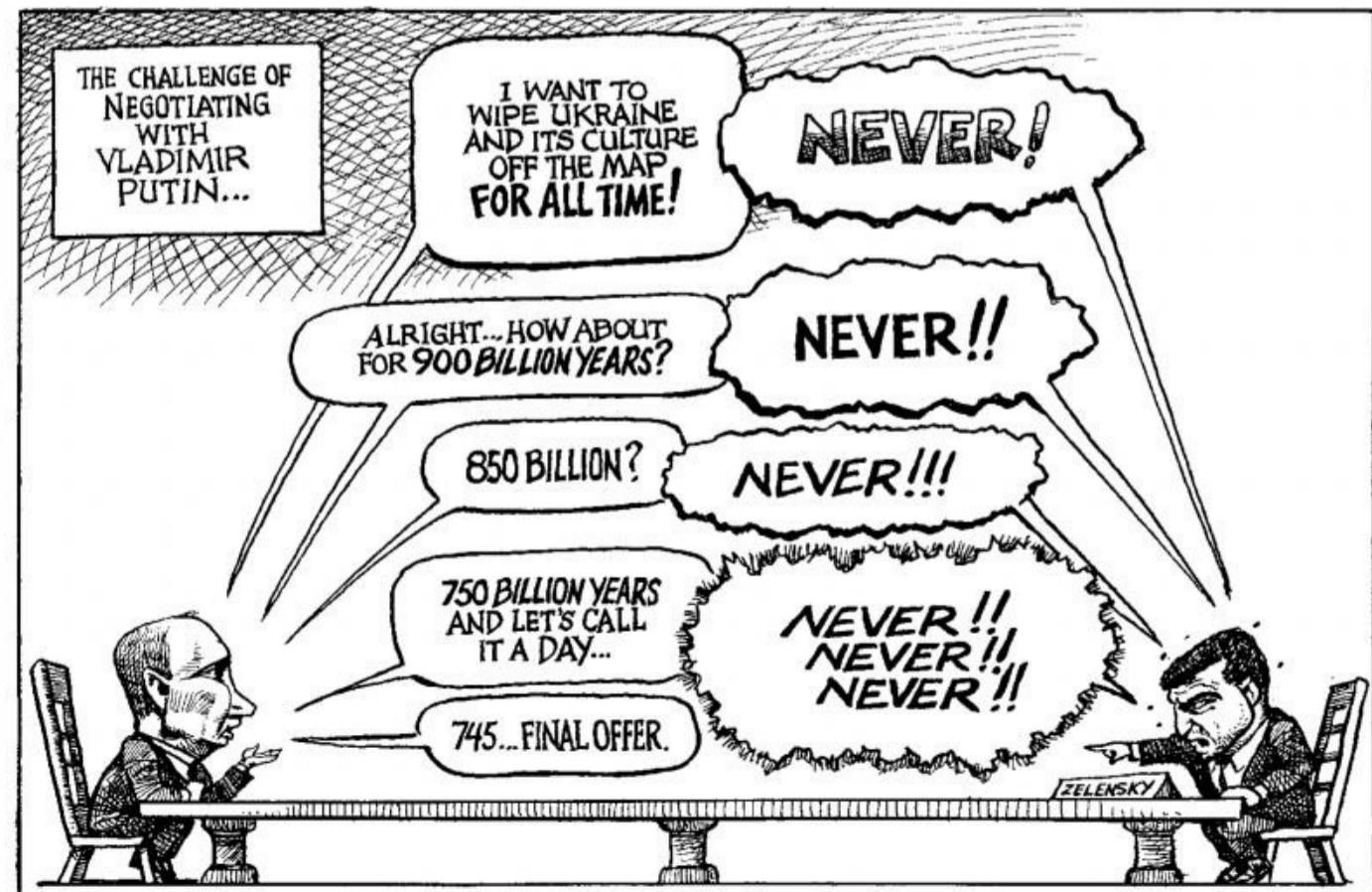
Gold Fields, a gold-mining company based in South Africa, agreed to buy **Yamana Gold**, a Canadian rival, for \$6.7bn. The combined firm will be the world's fourth-largest producer of gold. The price of the precious metal has been volatile this year as central banks raise interest rates. Gold Fields was founded by

Cecil Rhodes in 1887, but has just one mine left in South Africa after expanding to Australia, Peru and west Africa.

Unilever appointed **Nelson Peltz** to its board, after the activist investor's fund accumulated a 1.5% stake. Mr Peltz has sat on the boards of other big consumer-goods companies and is credited with helping to turn around Procter & Gamble by pushing a cost-cutting agenda there. Unilever's shareholders hope their stock will do as well as P&G's, which has risen by 83% since Mr Peltz joined the board in 2018 (he left last year).

The need for speed

"**Top Gun: Maverick**" made \$156m at the American box office over the Memorial holiday, breaking the record for the four-day weekend. Over its first five days the film raked in \$320m worldwide. The producers delayed its release when cinemas shut during covid, preferring it to be viewed on the big screen rather than on streaming devices. Top Gun 2 is tapping into nostalgia for the 1986 original. Around 55% of TG2's audience in America is aged 35 and over, a demographic often overlooked in the blockbusters market.



A new nuclear era

With his threats to use the bomb, Russia's president has overturned the nuclear order

ONE HUNDRED days ago Vladimir Putin launched his invasion of Ukraine by warning of a nuclear strike. Having exalted Russia's atomic arsenal and promised Ukraine's subjugation, he threatened countries tempted to interfere with consequences "such as you have never seen in your entire history". Russian TV has since tantalised viewers with chit-chat about Armageddon.

Even if he never uses the bomb in Ukraine, Mr Putin has thus already upset the nuclear order. After his threats, NATO limited the support it was prepared to offer, with two implications that are all the more worrying for having been drowned out by the drumbeat of Russia's conventional campaign. One is that vulnerable states that see the world through Ukraine's eyes will feel that the best defence against a nuclear-armed aggressor is to have weapons of their own. The other is that other nuclear-armed states will believe that they can gain by copying Mr Putin's tactics. If so, someone somewhere will surely turn their threat into reality. That must not be this war's devastating legacy.

The nuclear danger was growing before the invasion. North Korea has dozens of warheads. Iran, the UN said this week, has enough enriched uranium for its first bomb. Although the New START treaty will limit Russia's and America's intercontinental ballistic missiles until 2026, it does not cover weapons such as nuclear torpedoes. Pakistan is rapidly adding to its arsenal. China is modernising its nuclear forces and, the Pentagon says, expanding them.

All this proliferation reflects the weakening of the moral revulsion that restrains the use of nuclear weapons (see Briefing). As memories of Hiroshima and Nagasaki fade, people fail to grasp how the detonation of a small battlefield weapon, of the sort Mr Putin might lob, could escalate into the tit-for-tat annihilation of entire cities. America and the Soviet Union only just coped with a two-sided nuclear stand-off. There is insufficient alarm at the prospect of many nuclear powers struggling to keep the peace.

The invasion of Ukraine adds to this malaise. Even if Mr Putin is bluffing, his threats eat away at the security guarantees given to non-nuclear states. In 1994 Ukraine surrendered the ex-Soviet nuclear weapons on its territory in exchange for undertakings from Russia, America and Britain that it would not be attacked. By seizing Crimea and backing separatists in the Donbas regions in 2014, Russia flagrantly broke that promise. America and Britain, which pretty much stood aside, broke their promises, too.

This gives vulnerable states an extra reason to go nuclear. Iran may judge that, whereas renouncing the bomb will win it no lasting credit, having one would now stir up less trouble than in the past. If Iran tested a bomb, how would Saudi Arabia and Turkey respond? South Korea and Japan, which both have the know-how to arm themselves, will place less faith in Western commitments to protect them in a more dangerous world.

Mr Putin's strategy of issuing nuclear threats is even more corrosive. In the decades after the second world war, the nuclear powers contemplated deploying atomic weapons in battle. But in the past half-century such warnings have been issued only against countries, such as Iraq and North Korea, that were them-

selves threatening to use weapons of mass destruction. Mr Putin is different because he is invoking atomic threats to help his invading forces win a conventional war.

And it seems to have worked. True, NATO's support for Ukraine has been more robust than expected. But the alliance has hesitated to dispatch "offensive" weapons such as aircraft. Although America's president, Joe Biden, has sent vast amounts of arms, this week he demurred from providing missiles able to strike deep inside Russia. Others in NATO seem to think that Ukraine should settle with Russia, because inflicting a defeat on Mr Putin could back him into a corner, with dire consequences.

That logic sets a dangerous precedent. China could impose similar conditions if it attacked Taiwan, arguing that the island is already Chinese territory. More states may amass more battlefield weapons. That would flout the Nuclear Non-proliferation Treaty, under which they are pledged to work for disarmament.

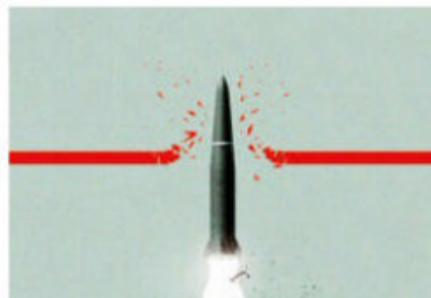
Mr Putin's damage will be hard to repair. The Treaty on the Prohibition of Nuclear Weapons, which came into force last year and is backed by 86 states, calls for their abolition. However, countries with weapons fear leaving themselves more vulnerable, even if collective disarmament might make sense.

Arms control, with scrupulous verification, is worth pursuing. Russia may be wary, but it is impoverished. Nukes cost money and it needs to rebuild its conventional forces. America could retire its land-based missiles without compromising its security in exchange for Russian cuts. Both sides could agree on technical measures, such as not to strike nuclear command, control and communications infrastructure in a conventional conflict. Ultimately, the aim should be to bring in China.

Those talks will be easier if Mr Putin's nuclear tactics fail—starting with ensuring he does not strike Ukraine. Mr Biden wrote this week that America has not detected preparations. But countries such as China, India, Israel and Turkey with access to the Kremlin should be warning Mr Putin of their fury if, God forbid, he actually uses a nuclear weapon.

Sparing Ukraine from a nuclear attack is essential, but it is not enough. The world must also make certain that Mr Putin does not prosper from his aggression today, as he prospered in 2014. If, once again, he believes that his tactics worked, he will issue more nuclear threats in the future. If he concludes NATO can be intimidated, persuading him that he must back down will be harder. Others will learn from his example. Ukraine therefore needs advanced weapons, economic aid and sanctions on Russia in order to force Mr Putin's army into a retreat.

Those countries that see this as just a passing European fight are neglecting their own security. And those arguing in the name of peace that Ukraine needs a truce with Russia right now, to avoid being bogged down in a war it cannot win with an enemy that has already lost its sting could not be more wrong. If Mr Putin thought NATO lacked resolve Russia would remain dangerous. If he were convinced that his nuclear threats had been the difference between defeat and a face-saving stalemate, Russia would be more dangerous than ever. ■



The world economy

America's next recession

A downturn looks likely. It stands to be mild but messy

NO T LONG ago recessions seemed to strike America roughly once a decade. But only two years after the first lockdowns, the business cycle is turning at a sickening speed and another one already seems to be on its way. If you are like most people, your memory of downturns will be dominated by the past two—the financial heart attack in 2007-09 and the pandemic-induced collapse in 2020. Both were severe and highly unusual. By their standards, America's next recession will almost certainly be milder and more pedestrian. But because the world economy, asset markets and America's politics are all fragile, it may yet have nasty and unpredictable consequences.

There is no escaping the squeeze ahead for America's economy. Surging food and petrol prices are eating into people's spending. In April consumer prices were 8.3% higher than a year earlier. Even excluding food and energy prices, annual inflation is 6.2%. Supply-chain problems could flare up for as long as war rages in Ukraine and China sticks to its zero-covid policy. The American labour market is red-hot, with nearly two job openings for every unemployed worker in March, the most since 1950, when data were first collected. A measure of wage growth by Goldman Sachs is at an all-time high of nearly 5.5%—a rate companies cannot bear unless they continue to raise prices fast.

The Fed is promising to pour water on the fire. Investors expect it to have raised interest rates by more than 2.5 percentage points by the end of 2022. The central bank is crossing its fingers, saying that it can hit its 2% inflation target without causing a downturn. But history suggests that by acting to tame inflation it will cause the economy to shrink. Since 1955, rates have risen as fast as they will this year during seven economic cycles. In six of them recession followed within a year and a half. The exception was in the mid-1990s, when inflation was low and the labour market was more balanced. On June 1st Jamie Dimon, the boss of JPMorgan Chase, America's largest bank, warned of an approaching economic "hurricane".

In fact, although a recession is likely, it should be a relatively shallow one (see Finance & economics section). In the crisis of 2007-09 the financial system froze and in 2020 activity in entire sectors ground to a halt. Both downturns saw the sharpest initial drops in GDP since the second world war. This time will surely be different. In some ways America is resilient. Consumers are still flush with cash from the pandemic stimulus and companies have been enjoying bumper profits. The housing market is slowing as rates rise but, in contrast to the late 2000s, it is not about to bring down the country's banks, which are strong. And at least the Fed does not face the predicament it did in the 1980s. Back then, inflation had been above 5% for six and a half years and it had to raise rates to nearly 20%, causing unemployment of almost 11%. Today inflation has been above target for a little more than a year. It should be easier to purge.

The trouble is that even a mild American recession would expose glaring fragilities. One is the commodity-price crisis in much of the world, the result of Russia's invasion of Ukraine. Countries from the Middle East to Asia are facing severe food

shortages and soaring fuel bills. The euro zone is dealing with an especially sharp energy shock as it weans itself off Russian oil and gas. Around the world, household incomes are collapsing in real terms.

An American recession would land another blow on vulnerable parts of the global economy by curbing demand for their exports. Tighter monetary policy at the Fed and the resulting strength of the dollar would also compound what has already been the biggest sell-off in emerging-market bonds since 1994. The IMF says that about 60% of poor countries are suffering debt distress, or are at high risk of it.

Another weakness lies closer to home, on Wall Street. So far in 2022 the American stockmarket has fallen by 15%—comparable to the decline during the mild recession that started in 1991. The sell-off has been orderly and America's banks are stuffed with capital. But after over a decade of cheap money, no one can be sure how stratospheric asset prices will be affected by the combination of higher interest rates and a Fed-induced recession. Stocks are pricey relative to long-run profits.

A system of market-based lending has sprung up since 2007-09 that has yet to be severely tested. It includes investment funds that act like banks, vast derivatives clearing-houses and high-speed bond traders. If something goes wrong, the Fed will find it hard to bail out Wall Street yet again, because it will at the same time be forcing Main Street to cope with higher rates and job losses.

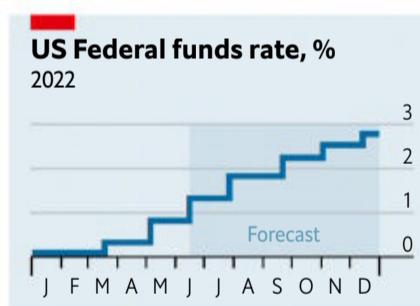
A final fragility is America's hyper-partisan politics. A recession would probably strike by the end of 2024, colliding with campaigning for the presidential election. If the economy is shrinking, the race for the White House in 2024 is likely to be even more toxic than expected.

Politics could distort the government's response to a recession. The Fed may be dragged into a venomous political battle. After receiving handouts amounting to 26% of GDP in the pandemic, voters and firms may expect the state to protect them from hardship this time, too. Yet the Republicans, who will probably control Congress after mid-term elections in November, would be most unlikely to spend money to see off a downturn if that also risked saving President Joe Biden.

From the roaring to the raging 2020s

If America's economy does shrink in the next year or two, it could even alter the country's long-term direction. The best response to a downturn during which inflation remained high would be pro-growth reforms, such as lower tariffs and more competition. Instead, recession may fuel populism and protectionism and even return Donald Trump to the presidency. Three of the past four recessions coincided with presidential elections or shortly preceded them. Each time the party controlling the White House lost power.

Measured by the technocratic yardstick of lost GDP, the next recession could be mild. But not when judged by its impact on the emerging world, asset markets and American politics. Do not underestimate the perils that lie ahead. ■





From aspiring dressmaker to famed fashion designer.

Chasity learned how on YouTube.

Chasity loved sketching dresses, but had no idea how to make them, so she learned how on YouTube. A year later she was making gowns to order, and today her fashion brand, Chasity Sereal, is recognized from the catwalk to the big screen.

For more on how people are growing careers and business opportunities with YouTube, visit yt.be/impact



Colombia

Into the unknown

A presidential run-off between an ex-guerrilla and a TikTok populist puts a stable country at risk

CHUCKING OUT incumbents and everything they stand for is all the rage in Latin America. Peru did it in June last year. Chile did it in December. Brazil is likely to do it in October. May 29th was Colombia's turn, when voters plumped for the two presidential candidates who most clearly represent change. Gustavo Petro, pictured left, is a former guerrilla who got more than 40% of votes (around 8.5m). Rodolfo Hernández, pictured right, is a millionaire who was little-known a few months ago but has fired up devotees with his rants on TikTok. He won 28%. The run-off is on June 19th (see Americas section).

Colombia has long been something of an anomaly in Latin America, a continent where many voters still have a soft spot for *caudillos*. With the exception of a brief period of strongman rule under Álvaro Uribe Vélez, who was president from 2002 to 2010, its politics tend to be moderate. For decades, left-wing extremism has been unpopular, as Colombians have related it with the Revolutionary Armed Forces of Colombia (FARC), a Marxist guerrilla group. Governments have favoured strong ties with America. Investors flocked to Colombia.

Growth has been robust in recent years: income per head rose from \$4,000 in 2000 to \$6,400 before the pandemic. However, inequality is extreme. Few Colombians pay taxes. Discontent fuelled violent protests in 2019 and 2021. Largely thanks to covid-19, an additional 2.8m Colombians (out of a population of 51m) fell below a \$38-a-month poverty threshold in 2020. Since then, Colombia's economy has rebounded more quickly than those of other countries in Latin America, with GDP growing by 10% last year. But a peace deal with the FARC in 2016 was poorly implemented by Iván Duque, the outgoing president, and parts of the country are still violent.

Neither Mr Petro nor Mr Hernández looks capable of tackling

these complex issues. Both were unimpressive mayors. When Mr Petro ran Bogotá, the capital, he had a reputation for falling out with his staff. He was briefly suspended after mismanaging the municipal takeover of a private rubbish-collection service. Mr Hernández's record is worse. As mayor of Bucaramanga, a medium-sized city, from 2016 to 2019 he was suspended three times: after slapping a colleague; calling an official corrupt without evidence; and for violating election laws by campaigning for his chosen successor. An engineer by training, he promised to build 20,000 homes for the poor. None materialised.

Mr Petro has moderated his tone of late, but his policies remain radical. He wants to increase tariffs, renegotiate trade deals and guarantee public-sector jobs for all of the unemployed (around 11% of the labour force). He also wants to end new oil and gas exploration, despite extractive industries accounting for over half of exports.

Mr Hernández is also big on promises and poor on realism. His proposals, often relayed over social media, include such edifying lines as "Fuck fracking". He, too, has a protectionist streak. He talks often about corruption, and says he would want to have a daily press conference in which he names and shames allegedly dirty politicians. As it happens, he is due to be tried for corruption in July. He denies wrongdoing.

Colombia is taking a step into the unknown. Either candidate could destabilise a country that was on track for at least modest success. Colombians need not look far to see the harm that demagoguery can do. The right-wing sort has marred Brazil since 2019; the left-wing sort has wrecked Venezuela. If elected, Mr Petro may be slightly more likely than Mr Hernández to accept checks and balances. But whoever wins, Colombia's institutions will have to brace themselves. ■



Climate change and coral reefs

Surmounting great barriers

To save some ecosystems, humans must intervene more, not less

HUMAN BEINGS have been altering habitats—sometimes deliberately and sometimes accidentally—at least since the end of the last Ice Age. Now, though, that change is happening on a grand scale. The plough and the chainsaw bear much of the blame, but global warming is a growing factor, too. Fortunately, the human ingenuity that is destroying nature can also be brought to bear on trying to save it.

Some interventions to save ecosystems are mind-boggling long-shots. Consider a scheme to reintroduce, by gene-editing Asian elephants, something resembling a mammoth to Siberia. Their feeding habits could restore the grassland habitat that was around before mammoths were exterminated, increasing the sunlight reflected into space and helping keep carbon com-

pounds trapped in the soil. But other projects have a bigger chance of making an impact quickly. As we report (see Science & technology section), one example involves coral reefs.

These are the rainforests of the ocean. They exist on vast scales: half a trillion corals line the Pacific from Indonesia to French Polynesia, roughly the same as the number of trees that fill the Amazon. They are equally important havens of biodiversity. Rainforests cover 18% of the land's surface and offer a home to more than half its vertebrate species. Reefs occupy 0.1% of the oceans and host a quarter of marine species.

And corals are useful to people, too. Without the protection which reefs afford from crashing waves, low-lying islands such as the Maldives would have flooded long ago, and a billion peo- ►

► ple would lose food or income. One team of economists has estimated that coral's global ecosystem services are worth up to \$10trn a year. Reefs are, however, under threat from rising sea temperatures. Heat causes the algae with which corals are symbiotic, and on which they depend for food and colour, to generate toxins that lead to those algae's expulsion. This is known as "bleaching", and can cause a coral's death.

As temperatures continue to rise, research groups around the world are coming up with plans of action. Their ideas include identifying naturally heat-resistant corals and moving them around the world; crossbreeding such corals to create strains that are yet-more heat-resistant; employing genetic editing to add heat resistance artificially; transplanting heat-resistant versions of the symbiotic algae; and even tinkering with the corals' "microbiomes"—the bacteria and other micro-organisms with which they co-exist—to see if that will help.

The assisted evolution of corals does not meet with universal enthusiasm. Without carbon mitigation and decline in local, coral-killing pollution, even resistant corals will not survive the century. Sceptics doubt humanity will get its act together in time

to make much difference. Few of these techniques are ready for deployment in the wild. Some, such as gene editing, are so controversial that it is doubtful they will be approved any time soon. Scale is also an issue. Compared with the task at hand, existing restoration projects are a metaphorical drop in the ocean.

But there are grounds for optimism. Carbon targets are being set and maritime pollution is being dealt with. Countries that share responsibilities for reefs are starting to act together, even in the diplomatic doldrums around the Red Sea. Scientific work-arounds can also be found. The application of probiotics can be automated. Natural currents can be harnessed to facilitate mass breeding. Sites of the greatest ecological and economical importance can be identified to maximise bang for buck.

This mix of natural activity and human intervention could serve as a blueprint for other ecosystems. Hard-core greens—those who think that all habitats should be kept pristine—may not approve. But when entire ecosystems are facing destruction, the cost of doing nothing is too great to bear. For coral reefs, at least, if any are to survive at all, it will be those that humans have re-engineered to handle the future. ■

The Platinum Jubilee

Put out more bunting

Why the queen's 70 years on the throne are worth celebrating

HER FIRST solo engagement took place in 1942, when she inspected the Grenadier Guards at Windsor Castle. More than 21,000 ribbon-cuttings and plaque-unveilings have followed, along with 200-plus official portraits and over 300,000 congratulatory telegrams sent to centenarian subjects. From June 2nd to June 5th Britain celebrates another milestone for Queen Elizabeth II: the Platinum Jubilee, to mark her 70 years on the throne.

Much of what will unfold over the four-day festival is objectively ludicrous. People in large hats will parade around on horses. A lunch in Windsor will feature an attempt on the coveted record of the world's longest dining table. The law of large numbers suggests that someone will die in a bizarre jubilee-themed accident—choking on a Scotch egg, perhaps, or garrotted by bunting. Yet despite the weirdness, the jubilee is not a trifle (though a trifle is the official Platinum Pudding).

Walter Bagehot, a 19th-century editor of *The Economist*, divided the British constitution into two branches, the dignified and the efficient. The jubilee—and more specifically, the woman at its heart—will show that the monarch, the exemplar of the dignified state, is holding up her end of the bargain. That matters all the more when the government, far from being efficient, is consumed by scandal and introspection. The virtues that the queen represents, of continuity and consensus, are not small qualities in modern Britain.

By its very nature, the jubilee represents continuity. A 70-year reign is unprecedented for an English monarch. The queen has been through 14 prime ministers, and may meet her 15th soon enough. She has met four popes and 13 American presidents; only Lyndon Johnson did not touch her white gloves. She has been a thread running through the lives of millions of Britons, 87% of whom have known no other head of state. A hereditary

monarchy is designed to survive the death of the incumbent: the queen, who is 96, is already handing over some of her duties to Prince Charles. But her personal longevity has symbolised the constancy of the state even when other institutions falter.

As for consensus, that lies in the approval the queen enjoys. Eight in ten Britons have a positive opinion of her; people of all ages think of her favourably. Broad agreement is a rarer thing in Britain than it once was. More people still see themselves as Leavers or Remainers than as loyal to a political party.

Politicians seek out wedge issues to galvanise their own supporters, and symbols of state are not exempt. The government talks up pride in the flag. It touts the use of the crown symbol on

pint glasses as liberation from EU tyranny (it really isn't). It is mulling the return of imperial measurements, doubtless hoping that the thought of opening Instapound on their phone will stoke fervour among supporters. The queen transcends such nonsense: she is a unifying figure in a more tribal country.

It has not always been this way. The queen's stiff upper lip did her no favours after the death of Princess Diana in a car crash in Paris in 1997. Yet the consensus in her favour now flows from those same old-fashioned virtues of duty and of self-control.

Bagehot reckoned that the parochialism of a royal family was a source of constitutional strength: it "sweetens politics by the seasonable addition of nice and pretty events". The "petty life" of which he wrote will be on full display this weekend, in the endless dramas that swirl around the queen's children and grandchildren. The uncharitable view of Elizabeth is as a cipher with a handbag. But she has kept her corner of the British state worthy of celebration in the minds of millions. Whatever your view of monarchy, that is an achievement. ■



Fairer elections for Britain

Bagehot set out the democratic tragedy of how millions of British citizens regularly see their votes play a limited role, or no role at all, in general election results (May 14th). Elections should be held with a fair voting system where seats match votes. Proportional representation could clear away a lot of the over-thinking and tactical voting that goes into elections. It might also allow parties to see the positive aspects of co-operation (something blindingly obvious to most citizens) and to offer a range of candidates who reflect the actual community, not the fantasy world of strategists obsessing about being seen as the masters of the universe over voters in marginal seats.

If progressive parties do work together on behalf of their voters then voting reform must emerge to heal British politics. The Conservatives have nothing to fear. We've seen how other parties to their right, like UKIP, have impacted on election results. After all, it is proportional representation for the parliaments in Scotland and Wales that keep the Conservatives alive as a political force in those places. However, political gamesmanship is a second-order consideration. The most important is to ensure that elections perform their principle function: to translate accurately the democratic will into democratic representation.

DARREN HUGHES
Chief executive
Electoral Reform Society
London

Tracking people's health

As general practitioners and tutors of evidence-based medicine, we found your Technology Quarterly on the future of wearable devices in health care (May 7th) to be interesting, but also concerning. There is an assumption that more information, whatever it is, must inevitably be good. In the future, evidence might show that the constant monitoring of biometrics makes people

healthier. We suggest that this is not the case now.

Biometric monitoring, as with any testing of the healthy, is a form of screening. History has taught us that it is the exception, rather than the rule, for screening to be of net benefit. The United States Preventive Services Task Force and Britain's National Screening Committee have recommended screening for only three cancers, and even those are not without controversy. They do not recommend screening for atrial fibrillation, the condition that you mentioned; it seems the risks and benefits are finely balanced.

The predictive value of any test depends on how likely the condition is to begin with, as well as the characteristics of the test. The rarer the condition is initially, the more likely a "positive" result is a false positive. Atrial fibrillation is rarest in the younger population who use such health-monitoring devices, and the predictive value is probably very low. Even monitoring in symptomatic patients can prove to be unhelpful. A recent randomised control trial found no benefit of saturation monitoring on outcome in people with covid-19.

We suggest that there is "Fitbit Feedback Syndrome", which occurs when the awareness of a biological variable being measured causes anxiety in a patient. This then drives a change in the variable, leading to a negative feedback loop. An example would be fitness trackers, where a focus on a fast heart rate causes anxiety, driving that rate ever higher. It is a driver of over-medicalisation. We predict a future increase in incidence.

DR ALEX BURNS
DR EDMUND JACK
PenARC
Exeter

Wearables can lead to accurate diagnoses based on small variations in the wearer's physical condition that wouldn't cause any harm if undetected. Indeed, unnecessary treatment and being labelled "sick" can cause real

harm, including in precisely the conditions you mentioned, such as diabetes, hypertension and kidney disease. Moreover, doctors are not trained to respond to new and often unregulated data. The extra burden of data generated by wearables impacts the amount of time they spend with patients. The rise of wearables is part of the wider datafication of health care. This agenda is being promoted to save money, but there is no evidence to suggest that it does.

DR CHRISTOFFER BJERRE HAASE
PhD fellow in datafication of the clinic
University of Copenhagen

You stated that people with panic disorders "breathe in a particular way that leads to a build-up of carbon dioxide". Actually, the opposite is true; hyperventilating decreases the carbon level. We can all make ourselves feel very uncomfortable quickly by hyperventilating for a short time.

DR GEOFFREY AINSWORTH
Vancouver

Notes on India

You acknowledged the progress achieved by India, whoever is the country's helmsman ("India's next decade", May 14th). All the development that is happening is inclusive. But the Western media's bias against India is well known and you tried to make a mountain out of the molehill of single incidents of communal fracas in India. You painted India as a country not safe for minorities, ie, Muslims. A dispassionate analysis reveals that Muslims are more safe in India than China, France, Germany and other countries. Your convenient polemic ignored the ethnic purging of Kashmiri Pandits (Hindus).

P.S. MURTHY
Hyderabad, India

Only at the end of your briefing do you mention the persecution of the Muslim minority ("A new formula", May 14th). The Hindutva focus and targeted attacks on Muslims and

Christians form the Achilles' heel of Narendra Modi's autocracy in reality. And there is Kashmir, where the population is held down by a force of approximately 700,000 soldiers. For India to develop on a sustained basis and earn the respect of the world, it deserves an inclusive leader with strong moral standing. Mr Modi is no such leader.

MALIK SARWAR
New York

Put your feet up at work

Bartleby's take on the mixing of business and leisure (May 7th) was foreseen by Dave Frishberg, a jazz composer and pianist. His song "Quality Time" is about a couple who combine business and vacation. It ends: "I'll fax you back with a plan of attack to let the quality time begin; we'll firm up the timeline, and you can pencil me in."

JAMES WOOSTER
Lake Tapps, Washington

As portmanteaus go, "bleisure" is certainly word vomit. But Bartleby's term for the mixing of play and work, "plork", is also an offensive word in Dutch, an anagram of *prachtig lichaam, onmeunige rotkop*. The gentlest way of interpreting this in English is "Nice Legs Shame About Her Face" the title of a song by The Monks from 1979 which somehow made the British charts.

DAMIAN BEASLEY-SUFFOLK
Newcastle-upon-Tyne

The mixing of business travel with pleasure, unhappily dubbed "bleisure", reminded me that many of us have long practised just the opposite. Those who have resolutely remained at the office mix leisure with business and call it "leisiness".

MORGAN CHRISTEN
Epiquerez, Switzerland



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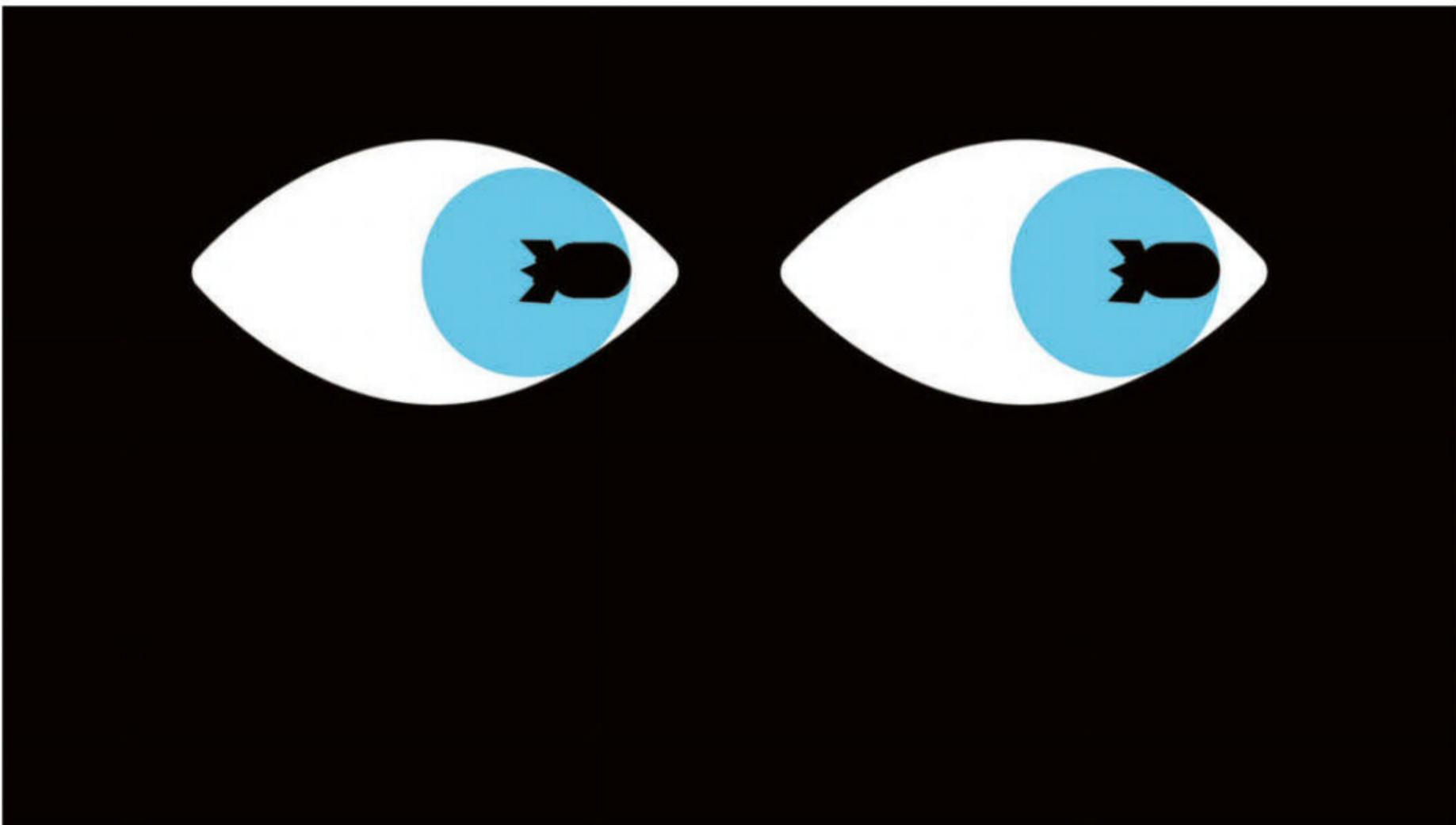
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Thinking the unthinkable

The war in Ukraine is unlikely to go nuclear. But it is increasing the risk that future conflicts will

IN 1999 NINA TANNENWALD, a political scientist at Brown University, wrote a paper analysing something she had observed among generals, politicians and strategists: the “nuclear taboo”. This was not, she argued, simply a matter of general queasiness or personal moral qualms; it had important consequences. The lack of nuclear wars in the years since America’s destruction of Hiroshima and Nagasaki, she argued, was not simply a matter of deterrence. It had also relied on a growing sense of the innate wrongness of nuclear weapons putting their use beyond the pale.

Threats of nuclear attack like those made in the 1940s and 1950s had become vanishingly rare. As the taboo had strengthened, seeking to acquire nuclear weapons had come to be seen as the mark of a barbarian. Avoiding any explicit mention of actually using the ones you already had was the mark of a gentleman. If there was a certain hypocrisy about all this—which there was—it was one that exemplified the French aphorist La Rochefoucauld’s definition of the term: the tribute that vice pays to virtue.

To see such nicety stripped away, tune in to the state-owned television channel Russia-1. “Just one launch, Boris,” warned Dmitry Kiselev, the station’s main news presenter, on May 1st, “and England is gone.” In case this message proved too subtle for the British prime minister, or the audience at home, Mr Kiselev laid out the launch options he had in mind. One was a Sarmat intercontinental ballistic missile (ICBM) shown streaking towards Britain. Another was a Poseidon thermonuclear torpedo, designed to whip up an isotope-laced tsunami. “Having passed over the British Isles, it will turn whatever might be left of them into a radioactive desert,” enthused Mr Kiselev, “unfit for anything for a long time.”

This was not a one-off. “The Russians are really brandishing this,” says Dr Tannenwald. “Every few days, some Russian official is making explicit nuclear threats.” And such thinking runs deeper than broadcast bombast. Boris Bondarev, a diplomat at Russia’s mission to the UN in Geneva, resigned his post on May 23rd in disgust at his country’s invasion of Ukraine.

He told the *New York Times* that what had disturbed him most was the glib fashion in which his colleagues—arms-control specialists, no less—revelled in talk of nuclear war. “They think that if you hit some village in America with a nuclear strike, then the Americans will immediately get scared and run to beg for mercy on their knees,” said Mr Bondarev. “That’s how many of our people think, and I fear that this is the line that they are passing along to Moscow.”

The mixture of norms, treaties, mutual assurances, blandishments, suasion, technical mechanisms, fear and taboo which has kept the world from seeing nuclear weapons used against armies or cities since 1945 was looking pretty ragged even before Vladimir Putin, Russia’s president, warned on February 24th that third parties standing in Russia’s way risked “consequences...such as you have never seen in your entire history”.

In terms of arms control, pacts between America and Russia had almost all lapsed; Russia was developing new weapons, such as Poseidon, not covered by the agreements that remain; China’s nuclear arsenal was expanding rapidly. As to stopping the weapons’ spread, decades of international pressure had failed to prevent North Korea first from acquiring nuclear weapons and then from increasing both their sophistication and the range of targets against which they could be used.

The single non-proliferation agreement of note made in the past decade, the JCPOA deal in which Iran limited its nuclear ►

► programme in return for relief from sanctions, was hanging by a thread, with the Islamic republic closer to a bomb than ever. It is now closer still (see Lexington). And the lack of progress towards disarmament by America, Britain, China, France and Russia, the nuclear-armed states party to the Nuclear Non-Proliferation Treaty (NPT), was continuing to erode the legitimacy of the regime that treaty established.

The invasion of Ukraine has torn further holes in this ragged fabric. With Russia waging a war of conquest and members of NATO providing Ukraine with increasingly capable weapons with which to fight back there is a small but real risk that the two sides might stumble into a war which escalates beyond the nuclear threshold. There is also a separate fear that should things go very badly for Mr Putin (and a mortifying defeat is the preferred outcome for many countries in NATO) he might use a nuclear weapon to shock Ukraine into standing down rather than see his armed forces annihilated, or Crimea lost.

Some pretty strong personal feelings

The severity of these risks and how to handle them is fiercely debated. Emmanuel Macron, France's president, has warned against the "humiliation" of Russia. Polish and other eastern European officials, along with British ones, argue that escalation risks have been over-egged by Germany, Italy and France. But the war's impact on the nuclear order is not confined to the question of whether nuclear weapons will be used in the conflict itself. It is also about the effect their presence in it will have on the norms and incentives according to which other states make decisions in other places. How nuclear weapons are thought about and talked about is changing. What Russia is doing, says Dr Tannenwald, "is very damaging to the nuclear taboo".

Again, the damage is being done to something already suffering neglect. After North Korea tested an ICBM that could reach America in 2017 Donald Trump, a president with little time for taboos, threatened North Korea with "fire and fury like the world has never seen". In 2018 Kim Jong Un, the Korean leader, warned that his nuclear button was "always on my table"—a comment that prompted Mr Trump to retort that his button was "much bigger". At an election rally in 2019 Narendra Modi, India's prime minister, addressed Pakistan's reminders that it had nuclear weapons which would deter India with mockery. "What do we have then?" he asked, rhetorically. "Have we kept it for Diwali?"

Such loose talk might have its origins in the political currents of the past decade, say Oliver Meier and Maren Vieluf of the University of Hamburg. They argue that nationalist-populist leaders, a category in which they include Messrs Putin, Trump

and Modi, are more likely to speak irresponsibly about nuclear weapons. Machismo might be an issue, as might the sort of taste for shock and flirting with the unsayable seen in edgelords online. So might a general scorn for international opinion. It is often among policy elites that the nuclear taboo is treated most seriously. To a man like Mr Trump that makes it suspect in and of itself.

"This kind of open discussion goes even further in reducing that taboo quality of nuclear weapons for many people," says Scott Sagan, a political scientist at Stanford University. "You see open discussions about nuclear superiority and being able to win a nuclear war in the *Wall Street Journal*—stuff that I think is pretty wild. Once you start having people writing about that in major papers, it has an impact on public perceptions." When ideas about winnable nuclear wars were raised by members of Ronald Reagan's administration in the early 1980s there was widespread outrage. Today not so much.

Part of the issue may simply be one of time and forgetting. Save for Queen Elizabeth II (see leader), there is no one anywhere near the corridors of power who remembers, as an adult, hearing the news from Hiroshima and Nagasaki. All but the most precocious of the children who picked up on their parents' dread at the time of the Cuban missile crisis are in their late 60s. The cold-war shadows in which the nuclear taboo grew up, which only started to disperse after Reagan and Mikhail Gorbachev agreed that "a nuclear war cannot be won and must never be fought", have been gone for 30 years.

There is also the fact that breaking the taboo on the use of chemical weapons—a taboo which, unlike the nuclear one, is codified in international law—has turned out to have lower costs than might have been expected. Bashar al-Assad used them in the Syrian civil war but remains in pow-

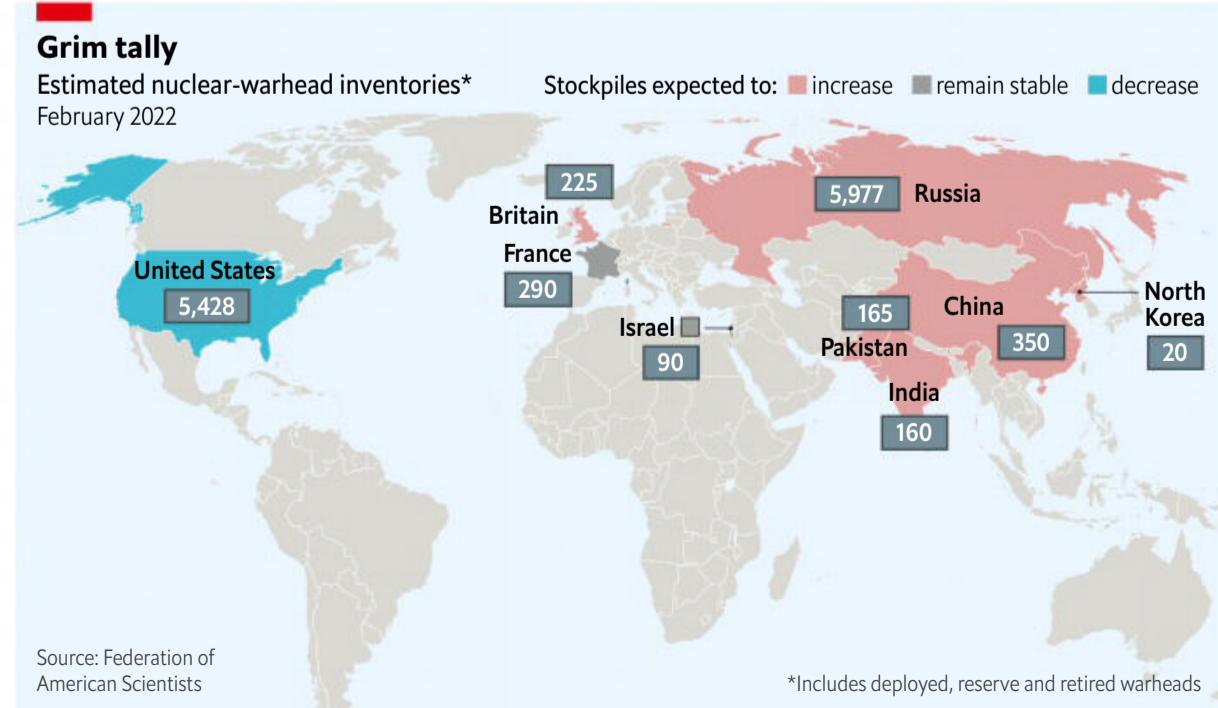
er; poisoners working for Mr Putin and Mr Kim have used them, too. Their use when other options were possible hints that breaking the taboo is a signal all on its own.

It is also possible that the population at large was never as squeamish on the subject as their leaders. President George H.W. Bush privately ruled out any use of nuclear weapons in the first Gulf war, though he allowed some obfuscation on the subject in public statements. But 28% of the American public told pollsters they were fine with the use of tactical, or low-yield, nuclear weapons against Iraq. Among people told it might save the lives of American troops the number was 45%.

Not saying we won't get our hair mussed

Similar feelings might well hold sway today. In 2017 Dr Sagan and Benjamin Valentino of Dartmouth College ran an experiment in which subjects were told that Iran had destroyed an American aircraft-carrier, that America had invaded Iran to overthrow its government in response, and that the invasion had stalled. Should America use nuclear weapons on the city of Mashhad to "shock" the government into surrendering? A clear majority said yes: killing up to 2m Iranian civilians was an acceptable price for avoiding 20,000 American deaths that would result from a continued invasion. It is worth noting that, *mutatis mutandis*, this is quite similar to the scenario in which Mr Putin uses a nuclear weapon to cow Ukraine if it achieves a decisive advantage.

A follow-up published this February by the original authors and Janina Dill of Oxford University showed that this grim calculus held beyond America. Majorities or near-majorities in Britain, France and Israel were supportive of using nuclear weapons in conflicts with non-nuclear nations if they were more effective than conventional ones. That is not a way people think about something which is truly taboo. ►



► “People do not dabble in cannibalism when they are a little hungry; rather they resist until they are on the verge of starvation,” Dr Sagan and Dr Valentino have written. “With nuclear weapons, however, the US public’s preference for nuclear options seems to grow steadily as a function of perceived utility.”

That utility is not really to do with how armies fight. For countries with first-rank conventional forces the need for nuclear weapons on the battlefield itself is quite limited. What nuclear weapons offer that is unique is the ability to put whole cities at risk and threaten populations in the tens or hundreds of millions. It is that which gives them their strategic value.

Yet interest in tactical nuclear weapons has revived in recent years. Russia is thought to have as many as 2,000 of them. The air-dropped bombs which make up the small nuclear arsenal America keeps in Europe can have their yields reduced to very low levels. In 2020 America deployed the W76-2, a low-yield weapon fitted to submarine-launched ballistic missiles.

America’s justification for this was that it provided a capability to respond “in kind” if Russia used a tactical weapon. This suggests that there are cases where, for messaging purposes, nuclear weapons might have to be used simply because they are nuclear—perhaps because the public would expect a nuclear response to a nuclear attack and find anything less unforgivable. That is the opposite of a taboo.

They’re getting ready to clobber us

It is not just because of their presence that the war is changing people’s thinking about nuclear weapons. Their absence matters too. When the Soviet Union came apart in 1991 a third of its strategic nuclear arsenal and much of its nuclear industrial complex sat on Ukrainian territory. Ukraine’s politicians did not control the command systems with which to use those weapons. Their country could not have maintained a viable arsenal without considerable investment, says Mariana Budjeryn of Harvard, whose book on the subject, “Inheriting the Bomb”, is forthcoming. With no enemies halfway around the world to threaten with ICBMs, Ukraine gave up the arsenal, receiving in return assurances from America, Britain and Russia that it would be safe within its borders.

The war has brought with it a lot of coffee-shop counterfactuals about how things might have gone if Ukraine had made a different choice. It would not have been easy. Ukraine’s economy in the 1990s was in poor shape, says Dr Budjeryn, and it needed help from the International Monetary Fund and the World Bank—help which might not have been forthcoming if the country had decided to invest heavily in producing weapons-grade nuclear materi-

al for a sovereign nuclear arsenal. Russia and, in all likelihood, NATO would have been angered.

What is more, nuclear weapons do not make your territory invulnerable. Egypt and Syria attacked Israel in 1973, Argentina seized the Falkland islands in 1982, Pakistan mounted an incursion into the Kargil region of Indian-held Kashmir in 1999. A developing nuclear capability might not have deterred Russia from some sort of action—indeed it might have seen armed conflict come about earlier.

But nuclear states are widely assumed immune to attacks aimed at all-out conquest or regime change, rather than peripheral deserts, islands or mountains. That is because one of their defining qualities, as Hermann Bondi, a long-ago chief scientific adviser at Britain’s Ministry of Defence, once observed, is that no one can afford to make them desperate.

Some countries afraid of their neighbours will doubtless take note—as they will have taken note of the deaths of Saddam Hussein and Muammar Qaddafi, both of whom abandoned nuclear-weapons programmes, and the comparative impunity enjoyed by Mr Kim. Those in South Korea or Japan who want their country to host or build nuclear weapons will be emboldened. It was not by chance that Abe Shinzo, Japan’s former prime minister, encouraged his compatriots to consider emulating the scheme by which European allies host American nuclear weapons just days after Russia’s invasion in February.

Meanwhile countries with nuclear weapons are getting a lesson in the room for manoeuvre their possessions allow. What is distinctive about this war is not that the aggressor has nuclear arms, or that their use has been threatened. It is the explicit way in which those threats are being used to keep third parties out. Seeing that approach work might encourage China to apply the same thinking with respect to

Taiwan. The extent to which nuclear haves—and possibly almost-haves, like Iran—are emboldened in this way could well further increase incentives for proliferation among the have-nots.

Turn the music down, just a little

The hope that arms control might help in some way seems forlorn. In principle, delivering some of the disarmament promised under the NPT could reinforce the non-proliferation norm. But that will not happen. America is unwilling to limit future missile defences, which Russia and China would like it to do. There are no established verification regimes for new weapons such as hypersonic gliders and under-sea drones. China seems intent on narrowing the warhead gap with America. And Russia is more committed to nuclear weapons than ever. The damage the war has done to the material state and reputation of Russia’s armed forces “takes us back to the late 1990s,” says Kristin Ven Bruusgaard of the University of Oslo. Then “Russian conventional forces were in a particularly dire state and Russian strategists were deliberating that Russia would potentially need to resort to nuclear weapons at a very early stage in a conflict with NATO.”

The question of who wins in Ukraine thus has a world-changing side-wager running on it. “The value of nuclear weapons as a tool of statecraft hinges on the outcome of this war,” argues Dr Budjeryn. If Ukraine prevails with Western weaponry and recovers the territory it has lost since February 24th, “perhaps the conclusion will be that these weapons are only good for terrible dictators who are inflicting pain—but in the end they’re useless.” That would be a harder case to make if Ukraine is defeated and dismembered. “The world will emerge from this with some deep questions and very painful understandings about the role nuclear weapons play in human affairs.” ■





Food retailers

The not-so-super market

BENTONVILLE, ARKANSAS

Why grocery shopping in America is ripe for a shake-up

AMERICANS HAVE long been proud of their supermarkets. The first grocer with food in aisles, to be picked up by shoppers rather than kept behind a counter, opened in Memphis, Tennessee, in 1916. In Bentonville, the hometown of Walmart in north-west Arkansas, Americans flock to a bombastic museum celebrating the firm's founder, Sam Walton, and his commitment to "bringing low prices to underserved rural communities".

Today Americans spend a smaller share of their income on food to be cooked at home—about 6%—than people in almost any other rich country. Low prices are reflected in low profit margins. At Kroger, America's second-biggest supermarket chain, the net margin, after taxes, is about 1.2%; at Walmart, the biggest, it is 2.3%.

Yet Americans are finding themselves served less and less well by their supermarkets. Food prices have risen by 11% over the past year, which is sharply more than in other rich economies. As customers change their shopping habits in response, that in turn is shaking up the grocery business. A fall in the share prices of big super-

market firms last month, as several reported they had overestimated demand and stocked too much, hints at the effect.

Even before the current bout of inflation, food prices in America had been rising faster than most other prices for the previous 20 years. A study in 2017 by the UN's Food and Agriculture Organisation found that the cost of eating healthily in America was 65% more than in Britain, and among the highest in the rich world (see chart). The inflation figures suggest that this will, if anything, have worsened since. Though Americans still spend a smaller proportion of their income on supermar-

ket food than Europeans, the gap has been narrowing. In absolute terms they spend more, even though they also eat out more, and eat less healthy, cheaper foodstuffs.

Why are American consumers not getting a better deal? A transatlantic comparison is revealing. Walmart, which accounts for about 26% of the American market, has a gross margin (its profit before fixed costs like rent and labour are taken into account) of about 25%. For Tesco, Britain's largest chain, which has 27% of its home market, the equivalent figure is 8%. Since the two firms both have low net margins (overall profitability), this suggests that Walmart has higher fixed costs, and has to charge a big mark-up. American retail is "high cost, high touch", says Simeon Gutman of Morgan Stanley, a bank: customer experience is prioritised over price.

Walmart's shops are enormous, selling plenty besides groceries. Tesco operates over 4,000 shops, the bulk of which are its smallest. Walmart has only 4,700 shops in total, despite serving a population about five times larger. On average, its supermarkets are ten times larger by floor space than Tesco's. Bigger stores increase consumer choice. A Walmart supercentre might stock 140,000 different items, compared with just 40,000 at Tesco's biggest branches. But it also means they may be wasting a lot of space by stocking products that do not sell, adding to costs. American supermarkets sell far less per square foot of shop space than British supermarkets, notes Bryan Roberts, a consultant based in London. ➤

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Americans are used to perks such as having someone to bag their groceries for them. "There is an almost old-school service that has been a part of the model that hasn't really existed in Europe for some time," says Simon Johnstone of Kantar, a research firm. But this does not come at no cost. Cheaper own-brand products have penetrated less, making up less than a fifth of sales by value, compared to more than 40% in Europe. "We know that American supermarkets have to start cutting down the assortment, we know that they have to start moving to more automated processes," says Mr Johnstone.

Another problem is that America's supermarkets, despite often lacking competition locally, are less concentrated nationally. Regional firms may have the power to squeeze customers, but they do not have the size that European supermarkets have to resist price increases by suppliers. Their suppliers are raking it in. Last month Tyson Foods, America's biggest meat supplier, announced its latest quarterly profits were 74% higher than in the same period last year. Meat prices have spiked so much that in January the Biden administration announced a plan to try to boost competition in the industry.

For retailers, however, sharper competition is now arriving. Last month Walmart's chief financial officer, Brett Biggs, told CNBC, a broadcaster, that its customers are increasingly looking for cheaper products, squeezing margins, which in turn squeeze the firm's profits. Shops such as Costco, and Walmart's Sam's Club, where customers can buy in bulk more cheaply, are thriving.

Among the supermarket chains expanding fastest in America is Aldi, a German discounter, which has more than 2,000 shops. They are Spartan but affordable. Another is Trader Joe's, a Californian company now owned by the family of Aldi's founder, famous for its \$2 range of wine (Two Buck Chuck). Both operate smaller supermarkets, typically around 15,000 square feet (1,400 square metres), with more limited ranges, and far more private-label products that cost much less,

on shelves that are refreshed more often. Customers adore them.

Amazon, as well as owning Whole Foods, an upmarket grocer, now runs 29 "Fresh" supermarkets, mostly in suburbs of large cities. At these stores shoppers need not use a till at all, instead being automatically charged as they pick items off the shelves and walk out. Until recently, home delivery of groceries in America (unlike Europe) has often relied on gig-economy workers walking round ordinary supermarkets—a costly model.

But that is also changing. Walmart's head of e-commerce, Tom Ward, is British

and has brought ideas pioneered in Britain, such as "dark stores", where goods are packed exclusively for delivery. In Arkansas, Walmart has even experimented with dispatching groceries by drone. On May 24th it announced that the programme is expanding to five more states.

How much these ideas will change how Americans shop is unclear. Cutting product lines is often unpopular; big cars and big fridges still support a model of big grocery stores with surprisingly high prices. Still, as consumers fret about inflation, the pressure on American supermarkets to innovate and cut costs is bound to grow. ■

New uses for old stores

Mall makeovers

WASHINGTON, DC

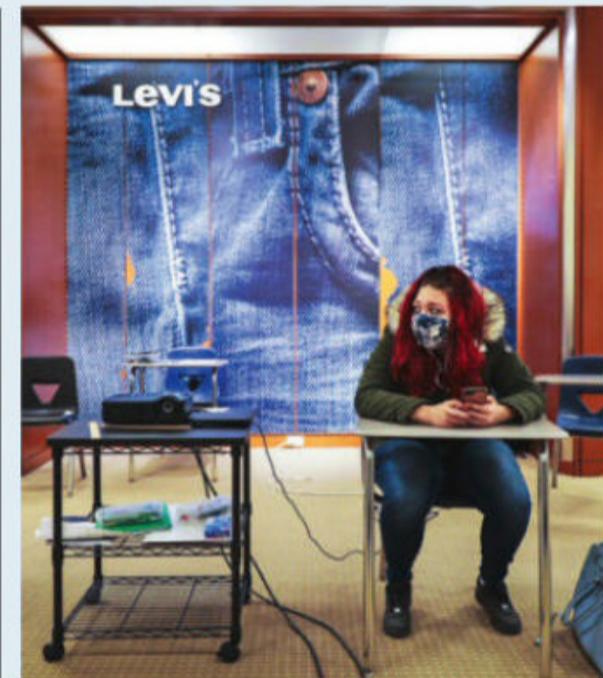
Department stores become schools, clinics and even cannabis farms

IN 2018, like many other department stores, Macy's in Burlington, Vermont, closed its doors. In 2021 it reopened as a school. Toxic chemicals had been found at Burlington High, and the empty Macy's offered an airy stopgap until a new building could be ready in 2025. Pupils have grown used to studying in a library created out of the china department, where books sit on backlit display shelves, and eating lunch below a Michael Kors sign (a teacher has stuck a "café" sign next to the designer's name). They especially like riding on the vast glass escalators, says Lauren McBride, the principal.

Across America empty shops in malls, notably the "anchor" spaces once filled by department stores like Macy's, are being put to new use. As people spend more on dining out and holidays and less on clothes, such stores' sales have shrunk. The pandemic, which drove shoppers online, accelerated that decline. Macy's in Burlington was one of 100 or so closures announced by the retail chain in 2016; more followed. JCPenney has shut 175 shops since 2020. Lord & Taylor has gone online-only.

Green Street, an analytics firm, estimates that of more than 1,000 empty anchor boxes in America around 80% are in "B" and "C" malls (with lower sales per square foot than high-performing "A" malls). More malls were downgraded during the pandemic, says Vince Tibone, an analyst. Because some tenants have lease clauses that allow them to pay less rent if anchors depart, and an empty shopfront is off-putting, mall landlords are eager to get new tenants "even if they aren't the sexiest", he says.

Those now inhabiting old department stores range from offices to theatres. In March the city council in Springfield,



The lesson department

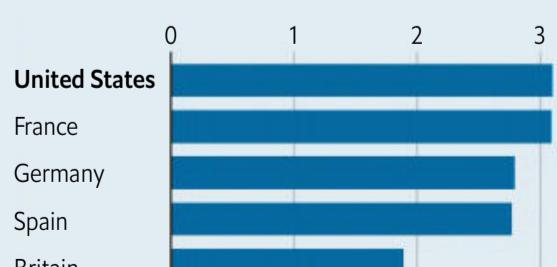
Massachusetts, approved plans to grow cannabis on the second floor of an old Macy's in the city's Eastfield mall (and sell it on the first). The Medical University of South Carolina has set up clinics in the old JCPenney at the Citadel Mall in Charleston, which still has shops. Ellen Dunham-Jones, a professor of architecture at Georgia Tech, who keeps a database of retrofitted malls, says 32 enclosed malls have been wholly or partially redeveloped for health care. (Most redeveloped malls, she says, are mixed-use.)

Health-care businesses can make good use of large stores and malls because many hospitals were built in places where there is little room to expand. Malls offer a lot of parking space (a benefit enjoyed by Burlington High's pupils and teachers). In suburban areas malls are often well placed for ageing populations that need more doctor's appointments and fewer new shoes.

Food for thought

Average daily cost of a healthy diet*

Selected countries, 2017, \$



*Providing adequate calories and nutrients for an active and healthy life

Source: UN Food and Agriculture Organisation

California primaries

Hey, big spender

LOS ANGELES

The mayoral race in Los Angeles may reveal the limits of progressive politics

AN ELECTION IN Los Angeles is not complete without celebrities weighing in. For the mayoral contest on June 7th, Snoop Dogg, a godfather of gangsta rap, has endorsed Rick Caruso, a billionaire former Republican who has vowed to clean up the city's homeless encampments but offers few details on how he will do so. Kris Jenner, matriarch of the Kardashian clan, is also stumping for Mr Caruso. Karen Bass has Magic Johnson, a Los Angeles Lakers basketball legend, on her team. Ms Bass, whom Joe Biden considered for the vice-presidency, wants to leave Congress to set up shop in City Hall.

The contest is arousing more interest than usual, for two reasons. Eric Garcetti, the current mayor, is term-limited, making this the first open race since he took office in 2013. Second, turnout is expected to balloon. This is not because the candidates inspire particular devotion or ire, says Fernando Guerra, director of the Centre for the Study of Los Angeles at Loyola Marymount University (LMU). Rather, it is the first time California has mailed ballots to all registered voters—and the first election in more than a century that coincides with statewide races. Angelenos voted in 2015 to move local elections to even-numbered years from 2020, giving Mr Garcetti an extra-long second term.

This is a big change for Los Angeles. The city's leaders in the early 20th century set up local elections to be non-partisan and as isolated as possible from national politics, says Raphael Sonenshein of California State University, Los Angeles. Some of that non-partisanship remains. The top two finishers on June 7th will advance to a runoff in November regardless of their party affiliation. Only if a candidate receives more than 50% of the votes will they win outright. The chances of that are slim. Polling from a pro-Bass political-action committee shows Mr Caruso and Ms Bass with 37% and 35% of the vote respectively. Kevin de León, a city councilman and former leader of the state Senate, is a distant third.

Electoral reforms a century ago also left their mark in another way. New York City's charter gives to its mayor any powers that are not assigned elsewhere, whereas Los Angeles disperses power between the mayor, city council and Los Angeles County—which is nearly the size of Connecticut and home to a quarter of Californians. The region's sprawl and political fragmenta-

tion make tackling complex issues harder.

Consider homelessness, which has dominated the campaign so far. About 66,000 homeless people—or 11% of America's homeless—live in Los Angeles County, many of them in tent encampments on the streets. Angelenos are furious that the city has been unable to house more people, despite voting in 2016 to tax themselves to create more housing for the chronically homeless. Proposition HHH, a \$1.2bn bond, was supposed to help build 10,000 units; 1,500 had been built as of April.

Frustrations over homelessness, plus spiralling housing costs and rising violent crime during the pandemic, have cast a pall over a usually sunny city. Last year, for the first time since 2014, when LMU began polling, a majority of Angelenos thought the region was heading in the wrong direction. "I think the city just feels harder," says Mr Garcetti. Nearly 400 people were murdered in the city in 2021, the highest toll since 2006.

Though grisly, that is still far below the levels seen in the 1990s. Some 2,600 people were killed in 1992, the year South LA erupted after four police officers were acquitted of beating Rodney King, a black man. Mr Guerra sees parallels with mayoral elections that followed the Watts riot in 1965 and Rodney King riots in 1992. In 1969 Angelenos re-elected Sam Yorty, a race-baiting incumbent with ties to the police. In 1993 they opted for Richard Riordan, a Republican who has endorsed Mr Caruso. "There are great similarities where the liberal democratic regime doesn't have an answer to the question of public safety and it opens the door for the opposition to make a succinct argument and walk into the mayor's office," says Mr Guerra.

Mr Caruso, who registered as a Democrat in January, is betting that pattern will continue. The property developer has poured \$37.5m of his \$4.3bn fortune into the race thus far, and suggests he will

spend what it takes to win. His message is simple: clean up encampments and get more police on the streets. Ms Bass says she decided to leave Congress to run, in part, because she doesn't want to see the confluence of crises move Los Angeles in "a conservative direction". Voters cannot punish Mr Garcetti at the ballot box—he might quit LA entirely if his nomination to be Mr Biden's ambassador to India comes good—so they may take their frustrations out on Ms Bass, who has represented parts of Los Angeles in Congress since 2011.

The primary is just an appetiser for the main course in November if Ms Bass and Mr Caruso advance, as is probable. Even if Mr Caruso eventually loses, the success of his campaign so far suggests the lure of progressivism fades when public safety is the top concern. What does it mean for Democrats that Los Angeles, a bastion of the left, is seriously contemplating a billionaire ex-Republican as mayor? ■

Pro-choice clergy

The religious majority

WASHINGTON, DC

A prominent priest is a reminder that many clergy support abortion rights

WHEN AN EPISCOPAL priest, Katherine Hancock Ragsdale, was appointed interim president of the National Abortion Federation (NAF) in 2018, her detractors dusted down the insults they had thrown at her when she declared abortion "a blessing" outside a clinic in Alabama in 2007, and when she was appointed the first openly gay dean of an Episcopal seminary, Episcopal Divinity School, in 2009. "High priestess of abortion", they called her, "lying baby-killing witch" and "fat, angry dyke"—"to which I was so tempted to respond, 'I'm not angry,'" she recalls.

The Rev Ragsdale, who retired from the NAF last year, but remains on the board of NARAL Pro-Choice America where she has been for 20 years, says she considers her abortion-rights activism part of her duty as a minister. There is nothing in the Bible, nor most of the 2,000-year-old teachings of Christianity, that proscribes abortion, she says. There is plenty in both about standing up for the poor, who bear the brunt of any loss of abortion rights.

Opposition to *Roe v Wade*, the Supreme Court ruling which in 1973 declared abortion a constitutional right, has chiefly come from Christian groups. If *Roe* is overturned soon it will be the result of half a century of religious activism. Yet most American Christians want it to stand. Data from the Public Religion Research Insti- ►



Stars, or frustrations, aligning for Bass?

► tute (PRRI) suggest that a comfortable majority of mainline Protestants and Catholics believe abortion should be legal in all or most cases (30% of white evangelicals think it should be legal). This reflects the teaching of most churches in America.

The Catholic church has long held that abortion is murder. But since 1967 the Episcopal church has maintained its “unequivocal opposition to any legislation on the part of the national or state governments which would abridge or deny the right of individuals to reach informed decisions [about abortion] and to act upon them”.

Even the Southern Baptist Convention, which today roundly condemns *Roe*, once called for legislation to allow access to abortion in some circumstances. It continued to do until the late 1970s, when Jerry Falwell, a Southern Baptist televangelist, and Paul Weyrich, a Catholic strategist, established the Moral Majority to mobilise Christian voters. The success of that movement has obscured an earlier, pre-*Roe* tradition, in which liberal clergy helped women obtain abortions.

In 1967 a group of ministers in New York formed the Clergy Consultation Service, to help women with unwanted pregnancies. More than 1,000 ministers (and some rabbis) became involved in the service, which referred women to safe abortion providers across America. After abortion was legalised, several Christian and Jewish groups established the Religious Coalition for Reproductive Choice, which the Rev Ragsdale chaired for nine years.

If *Roe* is overturned she says she hopes that “clergy will rise to the occasion again, getting people to safe places or helping them find illegal abortions where they are, taking advantage of medication abortion to make that possible”. She recognises that the extreme polarisation that now surrounds the issue will make this a lot harder. “Will I be disappointed? Oh I hope not, but I fear so.” ■



Many sides to holiness

Gun advocates

Adjusting their sights

HOUSTON

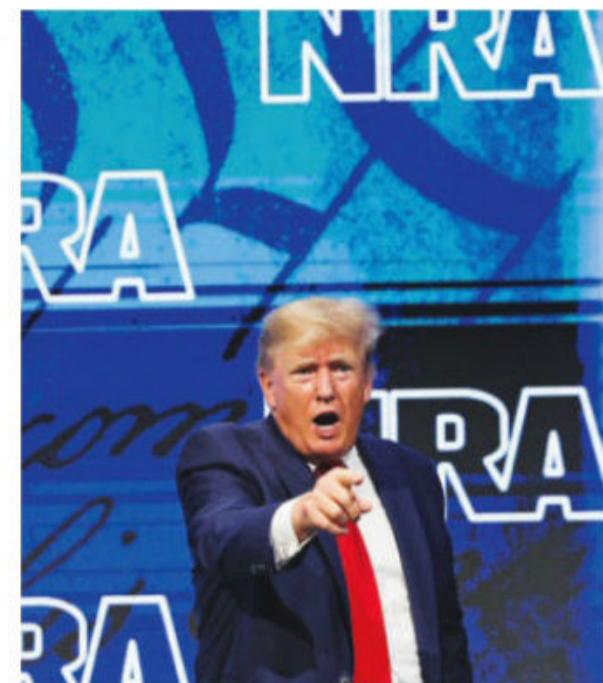
Gun groups have ideas for halting mass shootings. None involves gun control

AT THE ANNUAL meeting of the National Rifle Association (NRA), in Houston on May 27th-29th, members listened to speeches and milled around booths, as they contemplated buying their next gun. A salesman for Glock, a manufacturer of handguns, categorised his pistols according to the amount of flesh they penetrate: 20 inches (51cm), in the case of the Glock G40, priced at \$750. He hopes his daughters will soon have the sharpshooting acumen to carry one round for self-defence.

A different sort of self-defence is on the minds of some gun enthusiasts, who are feeling besieged by efforts to regulate firearms. The NRA met three days after an assailant in Uvalde, Texas, killed 19 children and two teachers at an elementary school. It was the most lethal school shooting since six- and seven-year-olds were massacred a decade ago at Sandy Hook Elementary in Newtown, Connecticut. Democrats, including President Joe Biden, have urged colleagues to pass laws to regulate gun sales further. Proposals include restricting sales of high-capacity magazines, though their fate is uncertain in a divided Senate.

Gun advocates have shot back at any new restrictions and stressed other ideas for preventing mass shootings. Broadly, they offer four. One is to “harden” schools so they look more like government buildings, with an expanded police presence, security-screening and a “single point of entry”, to stop shooters from coming in through back doors, as happened in Uvalde. In Houston former president Donald Trump advocated “strong exterior fencing”. Yet even if all schools could somehow be “hardened”, a shooter could still target children in a playground, says Adam Winkler, of the University of California, Los Angeles, the author of a definitive history of the right to bear arms.

A second line of argument is that the only way to stop a “bad guy” with a gun is a “good guy” with a gun, so teachers, guards and more people should be armed. Wayne LaPierre, the NRA’s boss, trotted out this line after Sandy Hook, and it has become as common and unscrutinised as folklore. “If guns made us safer, America would be the safest country in the world,” considering how many guns are in circulation, says Mr Winkler. At Uvalde, plenty of “good guys” with guns were present anyway: at one point, as many as 19 officers waited in the hallway to confront the shooter, finally do-



A wall-builder who also loves fences

ing so more than an hour after he arrived. (The Department of Justice has launched an investigation into the police response.)

Gun proponents also argue that the real culprit in shootings is not guns but mental disorder, and the solution should be to focus efforts there. Yet many of the people who make this point, including Senator Ted Cruz and Governor Greg Abbott of Texas, have opposed the expansion of Medicaid, a government health-care scheme for the poor, which would provide funds for mental-health services in the state, says Mark Jones of Rice University in Houston.

Lastly, “gun rights” proponents argue that new restrictions would do nothing. They point to high crime rates in cities with strict gun laws, such as Chicago. This ignores the deadly interstate flow of firearms. Most of the guns found in crime scenes in Chicago are from places with loose gun laws, says Kris Brown of Brady, a gun-control organisation.

Gun groups say that no new restrictions could have avoided what transpired at Uvalde. But Uvalde is, in fact, a “difficult case for the pro-gun groups”, says Mr Jones of Rice: if Texas limited sales of rifles to those 21 and over, instead of 18, the assailant would not have been able to buy two assault rifles within a week of his 18th birthday, one of which he used in the massacre. Mr Jones predicts that Republicans in Washington are going to be “under increasing pressure” to raise the minimum age to 21 for gun purchases.

Families of the victims in Uvalde will certainly push back against the anti-gun-control arguments of the NRA and the politicians it funds. Youth marches are planned for June 11th in Washington, DC, and across the country. Too many lives have been upended by firearms. After the NRA convention your correspondent headed by Uber to Houston airport. Her driver mentioned he was going to a funeral: his brother had accidentally shot himself. ■

First responders

Policing differently

ALBUQUERQUE AND SANTA FE, NEW MEXICO

Alternative responses to non-criminal offences are gaining ground

INEED TO know what's going on," says a distressed middle-aged woman with light-brown skin and dark curly hair. She is standing in the courtyard of a run-down apartment complex, gesturing towards a flat on the ground floor. The door is locked, the lights are off and the window coverings are drawn. Flies buzz between the covering and the window panes. The woman fears her elderly friend is dead inside.

Three civilians in grey-uniform t-shirts and jeans have arrived. Colin, a young former police officer, squats by the window and sniffs. Many first responders are familiar with the distinctive odour of death. A call to management confirms that the friend had died and was taken away two weeks ago. "The leasing office would not even tell me if she still living there or not. They know that she's not there!" the woman exclaims. "Why did they do that?" The team comfort her and walk back to their vehicle, with "Albuquerque Community Safety" (ACS) on its doors, and drive away.

After George Floyd's murder, protesters called for police reform. On May 25th, the second anniversary of his death, President Joe Biden signed an executive order aimed at improving accountability for federal law-enforcement agencies. But Congress has yet to pass the George Floyd Justice in Policing Act, a bill aimed at improving police accountability.

Numerous protesters also demanded that municipal governments "defund the police". The slogan is now defunct. Many police departments that lost funding saw

their budgets as a share of overall spending rise slightly in 2021.

However, if the silly slogan has gone, the push for reforms has not. Many reformers were hoping for a reallocation of funds and responsibilities. Quietly, some local governments have been doing this.

A few have created a unit that is separate from the police and fire departments. In New Mexico, Albuquerque's government set up ACS as a third branch of public safety, devoted to behavioural troubles. Its teams vary: some have a police officer and others not. They respond to emergency calls involving issues ranging from mental health to substance use and homelessness.

An hour's drive away, Santa Fe launched an alternative response unit (ARU) within its fire department last May. Rather than being completely separate from the police, a group of responders (a case manager, a paramedic and sometimes a police officer) answer calls related to mental health together. Sometimes they take people to the safety of shelters or crisis-intervention centres. The case manager will follow up to help some people with the services they need. This can involve anything from getting government identification to placement in a rehabilitation facility.

These units provide welcome relief for police. Most police calls do not involve a crime. The situation described above at the apartment complex is known as a welfare check, and it is one example of a non-criminal call typically handled by a police officer. A *New York Times* analysis of three ar-

eas (Montgomery County in Maryland, New Orleans and Sacramento) found that one-third or more of police time is spent on these types of calls. About 13-19% of time went on routine traffic matters. Only 19-31% was devoted to property violations or other low-level crime—such as drug use, disorderly conduct and the like—and just 4% to violent crime.

That police have wide-ranging responsibilities beyond crime is not a problem in itself. But many departments are overstretched. Recruitment and retention have been poor for years, well before demands to "defund the police" began. Officers are overworked. An investigation in 2019 by Boston 25 News, a television channel in that city, found that many officers in the area worked 40-50 hours of overtime a week, in some cases tripling their base pay. The police department in Albuquerque is short of 400 out of 1,400 officers; in Santa Fe 34 of 169 positions are currently vacant.

"On a normal 'man-down' call, when the ARU is not working, it's two police cars, a fire truck and an ambulance—seven people," says a Santa Fe fire chief, Andres Mercado. This is a waste of resources for a person who is on the ground due to intoxication or illness, he explains. He plans to expand the ARU, which currently operates only on weekdays from 8am until 6pm.

Softly, softly—and safely

Albuquerque's police department has also got some relief thanks to the ACS. "It's working very well for us as police because we chronically have calls...it never stops," says Matt Dietzel, a lieutenant in the police department. If ACS responds, then a police officer does not need to go. And it seems to be easier to recruit people for these roles.

Reformers argue that having unarmed personnel arrive to calls could help reduce violence. Among rich countries, America has the highest annual rate of civilians killed by police (34 per 10m people, more than triple the rates in Canada and Australia). Black Americans are more than three times as likely as white people to be killed. Reducing interactions with armed officers could be part of the solution, the thinking goes. "They're not showing up guns drawn," says Daniel Lawrence of CNA, a think-tank. "They're coming in a way that's meant to show you, hey, we're not here to arrest you. We're trying to help you."

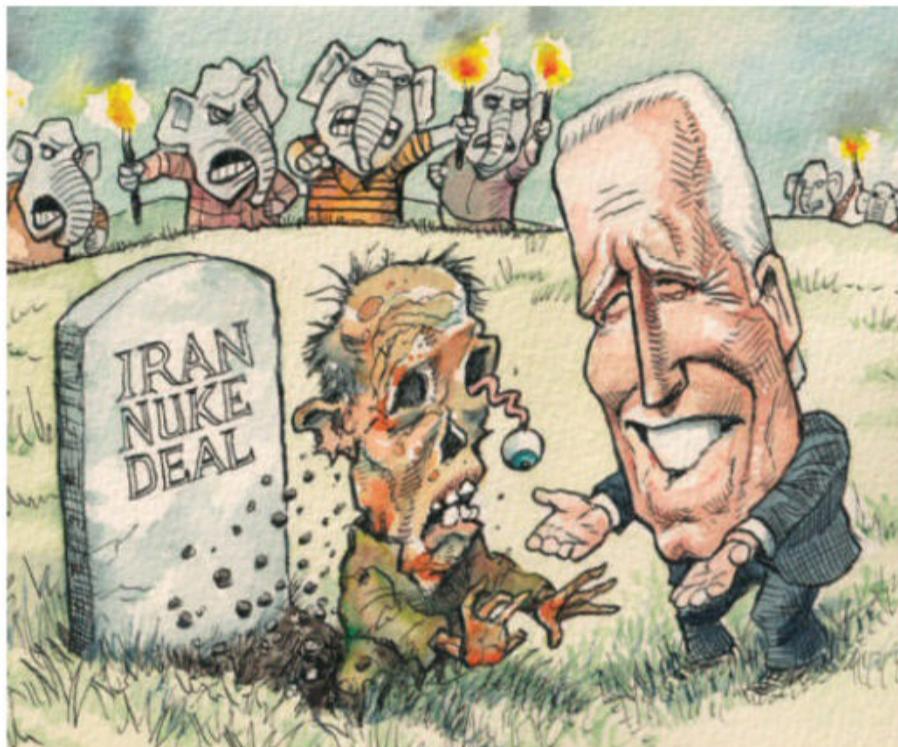
More time is needed to determine which type of programme is the most effective and how much police intervention is still required. These experiments also require more money, not less, to get started, which may inhibit their spread. Other areas trying similar things include Eugene, Oregon (a pioneer) and Chicago, as well as Charlotte-Mecklenburg in North Carolina and Phoenix, Arizona. In New Mexico, the innovative approaches look promising. ■



Albuquerque's finest first responders

Lexington | The zombie nuclear deal

Iran's defunct nuclear-containment pact has contaminated American politics



FOUR MONTHS ago the Biden administration appeared to have decided it was now or never for Iran's blighted nuclear-containment deal. Negotiated under Barack Obama then abrogated by Donald Trump, the Joint Comprehensive Plan of Action needed to be salvaged—as the administration hoped it would be—or else abandoned. Because time-limited, the strictures that the seven-party agreement placed on Iran's nuclear programme would have had diminishing utility even if the Iranians had abided by them after America walked out. And they did not. Iran has enriched 18 times the quantity of uranium permitted under the deal, some of it to weapons-grade levels. “You can't revive a dead corpse,” warned Rob Malley, Joe Biden's chief negotiator on the issue.

The JCPOA now looks even more terminally challenged. Instead of returning to mutual compliance with America, the Iranians issued a new demand: that Mr Biden remove their Islamic Revolutionary Guards Corps from a list of terrorist organisations. He balked at that, and the negotiations, conducted by European third parties, have since been stuck, even as Iran's illicit centrifuges continue to whirr. Appearing before the Senate Foreign Relations Committee on May 25th, Mr Malley said the prospect of Iran returning to the JCPOA looked “at best, tenuous”.

The deal's potential benefits have continued to shrink, meanwhile. Its “sunset clauses”, which from 2025 onwards would steadily free the Iranians of most constraints on their nuclear programme, are not the only reason for that. The nuclear know-how they have accrued over the past three years would ensure that, even if persuaded to give up their uranium pile, they could reassemble it twice as fast.

Back in 2015, when the JCPOA was signed, the Shia state was thought to be potentially months away from a nuclear breakout (that is, from having enriched enough uranium to make a nuclear bomb). The deal was expected to extend that time-frame by a year, with intrusive international surveillance that could alert the world to any breaches. If Iran wanted to break out today, it is estimated that it could do so now in a few weeks. Returning to the deal could at best stave that off by around six months.

Yet instead of ditching the moribund deal, the administration is still pursuing it. “We thought that, by February or early March,

the deal would no longer be worth the sanctions relief. We have reached a different assessment,” says a senior administration official. What explains this apparent change of heart?

In part, the war in Ukraine, which has made the administration especially averse to risking conflict in the Middle East. Three simultaneous nuclear dramas, in North Korea, Ukraine and Iran, would be a lot. Yet the administration's shifting rhetoric mainly denotes a failed negotiating tactic. Modest, and unlikely, as a warmed-up JCPOA would be, the administration has seen no good alternative to it. The evidence suggests there isn't one.

For the JCPOA's detractors—including almost all Republicans and some Democratic senators—the opportunity cost of the arrangement, as they viewed it, outweighed the gains. In return for constraining its illicit nuclear programme, Iran was given sanctions relief; it was meanwhile free to engage in all sorts of rogue-state behaviour outside the ambit of the JCPOA. The rationale for Mr Trump's decision to scrap the deal and load Iran with new sanctions—a policy he described as “maximum pressure”—was that this would force it to mend its ways generally. Yet Iran's consequent rush to nuclearise is only one of the ways in which it has not done so. It also doubled down on its ballistic-missiles programme and regional troublemaking—including attacks on Saudi Arabia and on American and allied troops based in Iraq. “The alternative theory JCPOA critics advanced was given a chance,” Mr Malley said in his testimony. “It failed.”

The deal's critics are undaunted by that reality. Senate Republicans have introduced bills to re-politicise the issue, including one by Ted Cruz forbidding Mr Biden to re-enter the JCPOA. It got nowhere; yet he and other hyper-partisan Republicans view the issue as a win however it turns out. Failure to resuscitate the pact would make the Biden administration look ineffectual. And if it succeeds it will not only have recommitted itself to a weaker version of what Mr Trump described as “the worst deal ever”. Mr Biden would also be forced to give away more leverage than Mr Obama did—in the form of Mr Trump's many additional sanctions, which are still in place. The Republicans, concedes the senior official, are “licking their chops” over the prospect of such a gift.

This represents more than an argument about leverage and America's dwindling ability to impose its will on the world (though it is certainly that). Democrats consider it merely the latest example of Republicans ducking responsibility for serious problem-solving in favour of a relentlessly oppositional search for political advantage. As on gun control, climate change, healthcare reform and other big issues, this has led to another sort of diminishing return. Democrats earnestly cobble together an imperfect solution; Republicans trash it, making the problem worse; which in turn makes the Democrats' follow-up solution even feebler, so even easier for the Republicans to trash. And thereby America's—and in this case, the world's—problems mount.

There is no Plan B

The Biden administration is plainly committed to reviving the imperfect, now weakened, nuclear deal. That is commendable—there is indeed no good alternative. At the same time, it must half-dread the issue being brought to a head, either way, ahead of this year's mid-terms. There is no political advantage in it, only rancour. This would appear to present the Iranians, in whose court the JCPOA ball now lies, with an interesting choice. If they wanted to exert maximum pressure on the creaking American political system, they should probably re-enter the deal pronto. ■

**Peru**

Fight the power company

HUARAZ**A climate lawsuit pits a Peruvian farmer against Germany's largest electricity firm**

IT TAKES TWO bumpy hours in a 4x4 to climb from the city of Huaraz, 3,000 metres up in Peru's Cordillera Blanca mountain range, to the turquoise puddle of Lake Palcacocha, 1,500m higher. On May 25th a convoy of 16 vehicles made the ascent, kicking up dust as it went. It carried an unusual group of people, including a Huaracino farmer, his lawyers, judges from Germany and Peru, and climate scientists.

It was the farmer, Saúl Luciano Lliuya, who had brought them together. In 2015, Mr Luciano Lliuya (pictured) teamed up with Germanwatch, a German green NGO, to sue RWE, Germany's largest power company and Europe's second-largest emitter, for belching nearly 7bn tonnes of greenhouse gases between 1854 and 2010. This, he says, has put his house at risk of a devastating flood. Last week's expedition marked the first step of his claim. If he wins, there would be global implications.

Mr Luciano Lliuya, his lawyers and Germanwatch say that the pile-up of greenhouse gases in the atmosphere has accelerated the melting of the glaciers above Palcacocha, causing the lake to swell danger-

ously. They say there is an imminent danger that an avalanche, landslide or both will send hundreds of thousands of cubic metres of snow, ice, rock and dirt crashing into the water, causing a tsunami-like wave that will break through the lake's barriers and rush downstream, destroying and burying everything in its path. Scientists call such events "glacier-lake outburst floods". They are a growing concern in the Himalayas as well as the Andes.

In 1941 the second-most deadly such glacier-lake outburst flood on record submerged large parts of Huaraz when Lake Palcacocha burst through the natural dam that held it back. Between 1,800 and 4,000 people died. The lake now holds 34 times more water than it did before 1941—water that was previously solid ice. By destabilis-

ing the glaciers, climate change has also increased the risk of an avalanche or landslide big enough to trigger another flood. Officials say that 50,000 of Huaraz's 120,000 inhabitants are at risk, including Mr Luciano Lliuya.

Engineering solutions do exist. Ones put in place after 1941, intended to be temporary, include two modest dams and ten large PVC pipes to siphon water away from the lake. A more ambitious plan, involving higher dams and better siphons, lingers in government files. Mr Luciano Lliuya's claim asks RWE to pay 0.47% of the costs of implementing it.

The landscape is changing

That calculation comes from a study published in 2014 by Richard Heede of the Climate Accountability Institute, an American environmental organisation, which found that the activities of 90 large industrial emitters collectively accounted for 63% of the carbon dioxide and methane emitted between 1854 and 2010. This share is further broken down to the company level, laying the responsibility for 0.47% of historical emissions at RWE's door.

The case was thrown out in 2016. But in a surprise appeal ruling in November 2017, the higher regional court of Hamm, in Germany, decided it merited going one step further. The case rests on being able to convince the court of two key points: that Lake Palcacocha poses an imminent threat to Mr Luciano Lliuya's property and that RWE bears some responsibility.

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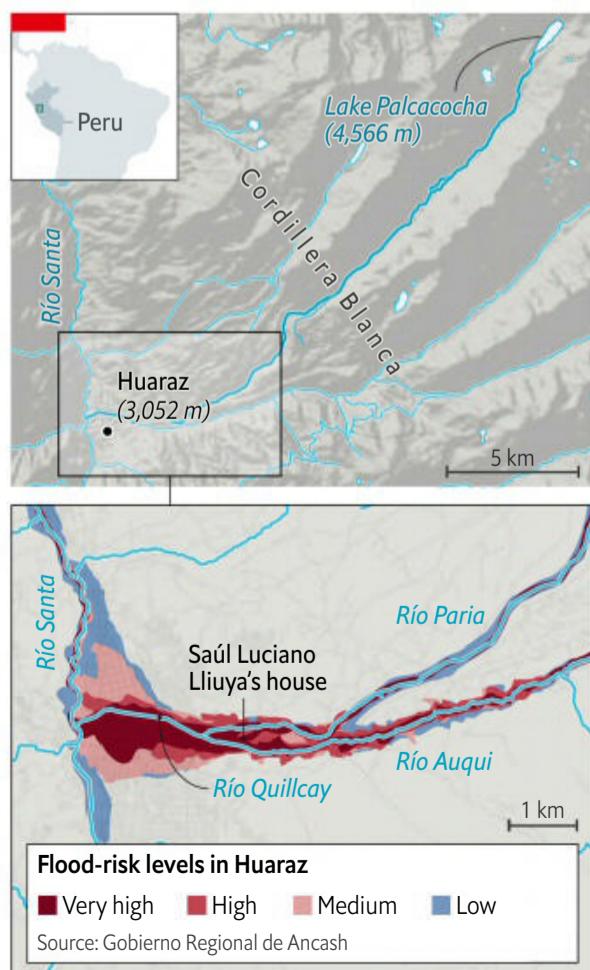
If Mr Luciano Lliuya's team are successful with the first point, they will then have to demonstrate a complex chain of cause and effect. This will test the legal vigour of attribution science, a booming discipline which allows researchers to detect the influence of human emissions in specific climate events using repeated model simulations. (RWE's lawyers argue that legally establishing facts precludes the use of "general modelling".)

Despite repeated warnings

In addition to demonstrating a causal link between the risk of a glacier-lake outburst flood and climate change, Mr Luciano Lliuya's lawyers will also have to convince the court that RWE's emissions can be held partly responsible, in a quantifiable manner. RWE's lawyers have questioned whether 0.47% of historical emissions (which they also argue is an over-estimate of their share) would cause 0.47% of the risk that Mr Luciano Lliuya faces. The lawyers also say that it is impossible to attribute climate change "to a single person or company". The rise in global temperatures, they argue, is caused by "innumerable sources".

On top of this, RWE's emissions were and continue to be legal. They were generated as a by-product of electricity that was used by millions of Europeans to power their homes and businesses over decades. Most of the emissions were produced before the age of cheap solar and wind power, and before net-zero targets.

However, Germanwatch notes that RWE was run in the 2000s by a climate sceptic, in spite of scientific evidence available at the time. Court documents suggest that the



German judges may consider that climate impacts were foreseeable from 1958, when the amount of CO₂ in the atmosphere began to be recorded each day.

Even if Mr Luciano Lliuya wins and RWE is ordered to pay up, the risk to his property will be unchanged. Funds covering 0.47% of the project to reinforce the lake's defences will leave 99.53% outstanding. And in any case that project is well within the local government's budget. The fact that it has sat around for six years has more to do with bureaucracy and corruption. Local beliefs complicate matters. When sophisticated flood-warning systems were installed in two neighbouring villages, threatened by different lakes, the locals destroyed them (see box).

Why, then, pursue a case? Part of the answer lies in the UN climate talks. For years,

rich and poor have been at loggerheads over "loss and damage", a poorly defined concept that revolves around the fact that rich nations have historically emitted more and poor ones have suffered the most. The poor want the rich to pay; the rich refuse to do so. Now the issue is being thrashed out in the courts, as well. If Mr Luciano Lliuya wins, his lawyers stand ready to sue other big fossil-fuel companies.

But even if Mr Luciano Lliuya loses, there are likely to be more cases. Perhaps that would accelerate a green transition. Some poor governments may even decide to sue richer counterparts. Long before that happens, however, Mr Luciano Lliuya will need options to protect his family, property and livelihood. At the moment all three are precarious, through no fault of his own. ■

Adapting to climate change

The great rain robbery

HUALCÁN

Why Peruvian villagers tore down a flood-warning system

WHEN A DROUGHT swept across Hualcán, a village in Peru, in 2016 many of its indigenous residents felt they knew what was to blame: antennae at Lake 513, a blue-green pool of water some 1,400 metres above them. Villagers had seen scientists make the trek to visit the antennae over the years, but few knew why. Some said the masts had been put there to block rains to benefit a copper mine. In November that year dozens of Quechua villagers and farmers dismantled them. Within hours, it started raining, claims Juan Reyes, a local. "The antennae seemed to be withholding the rain," he says.

They were not. Lake 513 is one of hundreds of new lakes that have formed beneath Peru's tropical glaciers as climate change melts them, threatening villages below with floods and landslides. The antennae were part of a system of sensors, video cameras and radio signals that would trigger sirens downstream when disaster struck.

The story highlights a difficulty involved in helping Peruvians adapt to climate change. Local farmers have vowed to bar scientists from re-installing the system, which would give the inhabitants of Carhuaz downstream about 15 minutes to evacuate. Now the municipality relies on workers at another project to report potential landslides. Officials plan to ring bells and blow whistles.

Christian Huggel of the University of Zurich, who spent four years developing the dismantled system, says his team underestimated the cultural challenges.

For locals, water scarcity seems a more urgent problem than a disaster that may never happen. Similarly in Huaraz, a city where thousands live in a flood path, some residents have opposed the mapping of flood risks because of concerns about property values.

Today batteries from the dismantled early-warning system at Lake 513 gather dust in the village church. Justina Rodríguez, a 70-year-old farmer who was never taught to read or write, says she hasn't heard of climate change and is not worried about a disaster. But she notes that the days are hotter, the nights colder, and the rains are less predictable. Now that the antennae are gone, she says, if another drought strikes, she won't know what to blame.



Unhappy to bear the weight of antennae



#ModernMBA



Colombia

A change is gonna come

BOGOTÁ

A leftist ex-guerrilla and a populist face off for the presidency

FOR MOST of the past century, Colombia was unaffected by the shifting tides of Latin American politics. During the 1960s and 1970s, when right-wing military dictatorships swept across the region, it had a restricted democracy in which two parties, the Liberals and Conservatives, agreed to share power every four years. As the pendulum swung towards the left in the late 1990s and early 2000s, Colombia elected a right-wing strongman. But now Colombian exceptionalism seems to have run its course. In the first round of presidential elections on May 29th, voters delivered a blow to the established parties that have ruled the country for most of its history.

A leftist ex-rebel and a populist outsider will compete in a run-off on June 19th. Gustavo Petro, the leftist, won 8.5m votes, or 40% of all ballots cast. Rodolfo Hernández, a former mayor who was little-known until a few months ago, took almost 6m votes, or 28%. Federico Gutiérrez, who was backed by the country's traditional parties, managed just 24%. The election appears to be part of an anti-incumbent wave that is upending politics across Latin America.

Mr Petro's path to power had seemed clear. He was expected to face Mr Gutiérrez in the run-off, where his anti-establishment credentials would have given him an edge. But the rise of Mr Hernández has complicated matters. The 77-year-old construction magnate has a stronger claim to be a political outsider than Mr Petro, who has been a congressman for decades and has run for the presidency twice before. Mr

Gutiérrez has already said he will vote for Mr Hernández in the run-off; his supporters are expected to follow.

One of the few things that Mr Petro and Mr Hernández have in common is that they were shoddy mayors. Both were suspended from office. Mr Petro, who ran Bogotá, the capital, from 2012 to 2015, was briefly removed in March 2014 after mishandling the municipal takeover of a private rubbish-collection service. He was reinstated a month later when the Inter-American Court of Human Rights ruled that his dismissal had been unfair.

Mr Hernández, who was mayor of Bucaramanga, a city in the north, from 2016 to 2019, was removed three times: for slapping a city councillor, for denouncing a public official for corruption without proof and for using public office to campaign for a candidate he wanted to be his successor. He resigned before the end of his term. He also has a rubbish problem. In July, two weeks before the new president is supposed to take office, Mr Hernández will stand trial on a corruption charge involving the licensing of a refuse-collection service which allegedly would have benefited his son (he denies any wrongdoing).

Apart from his stint as mayor, little is known about Mr Hernández. His policy programme is thin, and he has refused to attend the presidential debates. He promises to slash VAT, which makes up the bulk of Colombia's tax revenues, from 19% to 10%. That could overheat the economy, which is suffering from 9% inflation, the

highest since 2000. And, like Mr Petro, he wants to increase trade barriers and "review" free-trade deals in order to strengthen agriculture and manufacturing, potentially hurting productivity. None of this would reduce the budget deficit, which is expected to be 6% of GDP this year.

Mr Hernández blames corruption for most problems. As mayor he promised to build 20,000 homes for the poor. Yet not a single one was completed—because, he says, his predecessor had pilfered the municipality's coffers. He says he wants to follow in the footsteps of Andrés Manuel López Obrador, Mexico's populist leader, and host a daily press conference in which he would show pictures of politicians he deems corrupt, regardless of evidence. He thinks the courts take too long.

But in other ways Mr Hernández is difficult to place on an ideological spectrum. He supports gay marriage and abortion, and thinks drug prohibition has not worked. He says he would slash salaries for elected representatives. A basic-income grant would replace welfare programmes.

Mr Petro's programme is more grandiose. While he also wants to increase tariffs and renegotiate trade deals, he plans to increase tax collection by 5.5% of GDP over four years, through pension reform and by clamping down on tax exemptions. He would ban new licences for oil exploration even though crude oil, coal and minerals account for more than half of Colombia's exports. He promises to make university education free and to guarantee state jobs for all the country's unemployed—around 11% of the labour force.

Both candidates would have to rule with a divided Congress. Mr Hernández's self-styled League of Anti-Corrupt Rulers won only two seats in legislative elections in March. He did not propose a list for the Senate, and has vowed not to make alliances with politicians of any stripe. Mr Petro would have an easier time. Though his coalition does not have a majority, it has the largest bloc of seats in the Senate. Mr Petro has also included politicians from traditional parties in his campaign.

If elected, Mr Hernández may try to forge a direct connection with the people, bypassing the normal institutions. He has a fondness for tweeting out policy pronouncements. As mayor, he hosted Facebook Live events every week in which he lambasted other politicians and hailed his own achievements. In an interview with the *Washington Post* he likened his followers to the "brainwashed" terrorists who committed the September 11th attacks on the United States, because, he says, he has a "messianic" effect on them. Such gaffes have allowed Mr Petro to present himself as the "safe" candidate. That may convince a few voters. But for now it seems that Mr Hernández has the edge. ■



Pakistani politics

Interfering Imran

DELHI

The ousted prime minister is jeopardising his successor's attempts to fix the economy

ONCE OR TWICE a year, the approaches to Islamabad, Pakistan's staid, leafy capital, start to resemble a jumbled cargo port. Piles of shipping containers sprout up at motorway junctions on the outskirts of the city and at strategic crossroads inside it. Lines of riot police stand guard. Residents grumble, knowing traffic will get choked, schools will close and getting to work will take twice as long.

The appearance of the barriers, put there by police, signals that the city of 1m is under siege from one of the country's "long marches". These are more aptly described as long drives: convoys of protesters travel in cars and minibuses from cities such as Lahore and Peshawar, a few hours away by road. These ritualised displays of street power, in which political parties rally their supporters and lead them towards the capital, are a favourite tactic for anyone trying to rattle the government.

No one is keener on them than Imran Khan (pictured, centre), the cricketer-turned-populist who leads his own Pakistan Tehreek-e-Insaf (PTI) party. Since being ousted from his job as prime minister

in a no-confidence vote in April, he has refused to leave the pitch. Instead he has taken to street protests, threatening to bring down the new government.

He blames his inauspicious exit on a conspiracy between the opposition and America, which he claims was keen to see the back of him because he refused to pander to America's foreign-policy demands. America says this is nonsense. Mr Khan's supporters have lapped it up anyway. Over the past few weeks, huge crowds have rallied to him, demanding new elections to kick out the "imported" government. They have also criticised the armed forces, whose support is essential for any govern-

ment, in unusually explicit terms.

Mr Khan's latest hurrah came on May 25th, when he urged supporters to march on the capital and stage a sit-in until new elections are held. But turnout was unimpressive. In the end, he scrapped the plan as the protesters reached central Islamabad and skirmished with security forces, who fired tear gas. He announced a fresh deadline of May 31st for elections to be called and warned of more marches if the government does not comply.

There has been much speculation about why the march was dispersed. Mr Khan says he wanted to prevent bloodshed. His opponents say he was disappointed with the size of the turnout. PTI insiders claim that the march was halted after the generals gave assurances that elections, at present scheduled for late 2023 when the current parliament's term ends, would be brought forward to this year.

Mr Khan's latest deadline came and went. He had not called a new march by the time *The Economist* went to press. Some observers suspect that he may need time to rally his supporters after the anticlimactic ending to his last push on the capital. His allies think he is unlikely to return to Islamabad imminently.

It is hard to see why the new prime minister, Shehbaz Sharif, a former chief minister of Punjab and the younger brother of Nawaz Sharif, a former prime minister, would agree to call early elections. His government, less than two months old, has taken tentative steps towards repairing re-►

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lations with the West. But it has not yet devised a strategy to tackle the economic crisis it inherited. In part that is because Mr Khan's protests have kept it distracted. Mr Sharif has also failed to seize the political initiative. Last month the country watched the flailing prime minister board a plane to London to seek advice from his older brother, who lives in exile.

The country's finances are in wretched shape. The pandemic and the fallout from the war in Ukraine have battered an economy already reeling from decades of mismanagement, outsize military spending and a focus on debt-driven infrastructure projects that generated no returns. Inflation hit 13.8% in May, driven largely by the price of food and transport. The rupee has lost 8% of its value against the dollar since early April (see chart). Foreign reserves had dwindled to \$10bn by May 20th, enough to cover imports for only about six weeks.

The reserves are at their lowest level since 2019, when Pakistan last sought help from the IMF. Only half the \$6bn bail-out agreed at the time has been disbursed. Mr Khan, then prime minister, originally agreed to cut subsidies and reform the economy but reduced fuel prices instead. The country is running deficits on both its budget and its current account. It needs some \$37bn worth of financing for the fiscal year beginning in June, reckons the finance minister.

On May 26th Mr Sharif at last seemed to act more decisively. The government announced a cut in fuel subsidies, raising prices by 20%. This won approval from the IMF, which has made the resumption of its loan programme conditional on policies to stabilise the economy. The currency and the stockmarket rallied slightly in response to the move. A bail-out will also unlock credit from allies such as China and Saudi Arabia, which are unwilling to extend more help without assurances that the IMF will release the bail-out money.

To obtain those, the government will have to introduce more unpopular measures. This month it is likely to announce

cuts to subsidies on electricity and the passage of an austerity budget. But dissolving parliament and calling early elections would distract from the goal of improving macroeconomic stability, even though Mr Sharif could win a real mandate. The IMF is unlikely to take seriously a government that may not be in power for more than a few weeks, particularly given the risk that Mr Khan might return to power. Early elections would probably need approval from the generals. No matter what PTI insiders claim, this will be harder to gain than it might have been a few months ago given new hostility towards the army among Mr Khan's supporters.

Even so, Mr Khan does not appear to be giving up hope. He is petitioning the Supreme Court to guarantee safe passage for potential follow-up marches. The coming spate of painful economic moves will supply him with plenty of excuses to paint the government as American stooges and enemies of the people. The appointment of a new army chief, due in November, will add yet more uncertainty to the political balance. To fix its economy, Pakistan badly needs stability. It will spend the coming months with anything but. ■



Go quietly or we'll rename the capital

may not grasp them. One is to replace the constitutional council with a constitutional court; another is to turn the budget-control committee into an audit chamber. The reforms will almost certainly pass. The choice is between retaining a much-disliked status quo and choosing change, however limited.

Mr Tokayev wants to transform what he calls the "super-presidential" system established by Mr Nazarbayev into one with greater checks and balances. Central to this is the removal of all mention of Mr Nazarbayev from the constitution. He will lose his bespoke powers and privileges, including immunity from prosecution and the right to rule in tandem with Mr Tokayev. Close presidential relatives will be banned from holding senior public positions.

Yet the reforms do more to curb the power of the ex-president than of the presidency itself. Mr Tokayev will still appoint the prime minister, cabinet members, security chiefs and the heads of the central bank and constitutional court. It is true that he will lose the right to strike down statutes passed by local mayors and governors. But they are his appointees.

Mr Tokayev says his new Kazakhstan will offer a more level political playing field. He is adamant he wants the next election—which is due in 2026 but may be called early—to deliver a more robust parliament under a reformed electoral system. The president and many other officials will be barred from joining political parties. He also promises to make it easier to form parties. The number of signatures needed to support an application will fall from 20,000 to 5,000. Yet a similar reduction two years ago made no difference. All new applications ahead of an election last year were rejected. Mr Tokayev has for years tried to play the reformer. What he does with his probable referendum victory will show how much he means it. ■

Kazakhstan

The rights of one man

ALMATY

Proposed constitutional changes will mean less power for the ex-president

WHEN KASSYM-ZHOMART TOKAYEV became president of Kazakhstan in 2019, he promised his people a "listening state". But even a deaf one would have heard the clamour in January, when Kazakhs took to the streets to register their displeasure at rising fuel prices. As the protests spread, the demand morphed into one for broad political change. Some 230 people were dead before order was restored to the streets.

Five months down the line, Mr Tokayev (pictured, right) is keen to show that he has been listening. On June 5th Kazakhstani will vote in a referendum on wide-ranging constitutional reforms that he hopes will reset relations between the state and its citizens. He promises to build a "new Kazakhstan", which he bills as a "second republic". It will replace the discredited one he inherited from Nursultan Nazarbayev (pictured, left), his strongman predecessor, who ruled for nearly three decades.

The referendum is a yes-or-no affair covering a package of 56 measures, some of which are so arcane that even the president's allies admit that ordinary voters





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Gaming in Asia

Powering up

BUSAN

South Korea is trying to reclaim its e-sports crown from China

SOME 4,000 FANS gathered at the BEXCO Centre in Busan, a big port city in South Korea, on May 29th. Another 2.2m tuned in online. They were there for the finals of the Mid-Season Invitational, a prestigious e-sports tournament. A dozen teams had been competing over the course of three weeks to show off their skills at League of Legends (LOL), an online strategy-fantasy game. Now just two remained: Royal Never Give Up from China and T1, representing the home side. As the battle raged, T1 soon sputtered. The mood in the hall grew sombre. Some fans left early. By the time the Chinese team, locked down at home and joining virtually, emerged victorious, few were left. Confetti rained down in a half-empty hall.

The enthusiasm, and crushing disappointment, reflect the place e-sports have in South Korean youth culture. The games are not just fun, but a source of national pride. Since the 1990s players have honed their skills in PC bangs (internet cafés), where children would go straight after school. Games such as StarCraft and LOL filled time and fired up competitive spirit like after-class basketball in America or football in Brazil. The pool of talent expanded, and South Korean players came to dominate online-gaming championships.

No longer. China is now on the rise. Chinese companies are at the heart of gaming globally. The country's biggest tech firm, Tencent, owns Riot Games, which developed LOL, as well as 40% of

Epic Games, which makes Fortnite. They are among the most popular games in the world. Interest in the pastime has grown, too. There are some 685m gamers in China, including those who play on their phones, compared with 33m in South Korea. Over the past few years China has consistently beaten South Korea in big championships.

South Korea conspired in its own downfall. "Skilled Korean players and coaches played a role in cultivating the e-sport scene in China," says Choi Eun-Kyoung of Hanshin University, near Seoul. South Korean masters, drawn in by big money, taught Chinese players the lessons of their success and established real-world gaming academies and systems for spotting and recruiting talent.

South Korea now spies a chance to catch up. Last year, China limited under-18s to three hours of online gaming a week. Given that serious players start as young as 14 and practise some 70 hours a week, Chinese e-sports are bound to suffer. South Korea, meanwhile, last year scrapped a decade-old law banning under-16s from playing online games in the dead of night. Local governments are investing in gaming academies. During a campaign visit to LOL Park, an e-sports venue in Seoul, Yoon Suk-yeol, South Korea's new president, asked gamers for ideas on how to improve the perception of gaming among parents, who think it is addictive and a waste of time. "Our deeds shape the future," he said, quoting a LOL character. China's deeds may help, too.



Game boy



The Philippines

Knock-on effects

MANILA

Rodrigo Duterte's war on drugs pushed poor families deeper into penury

REYNA WAS 17 when her boyfriend Gabriel was murdered in front of her. In October 2016 he returned to their home in Bagong Silangan, a crowded slum area in Manila, after a shift working as a rickshaw driver. She said it was a "normal day" until armed men burst in through the front entrance and pushed Gabriel to the ground. They did not identify themselves, but she later learned that they were policemen who accused Gabriel of being a drug dealer (Reyna says he was not; both names have been changed). Hearing the commotion, Gabriel's 70-year-old father woke from his nap and asked the men what was happening. They shot him. Then they shot Gabriel. Both men died.

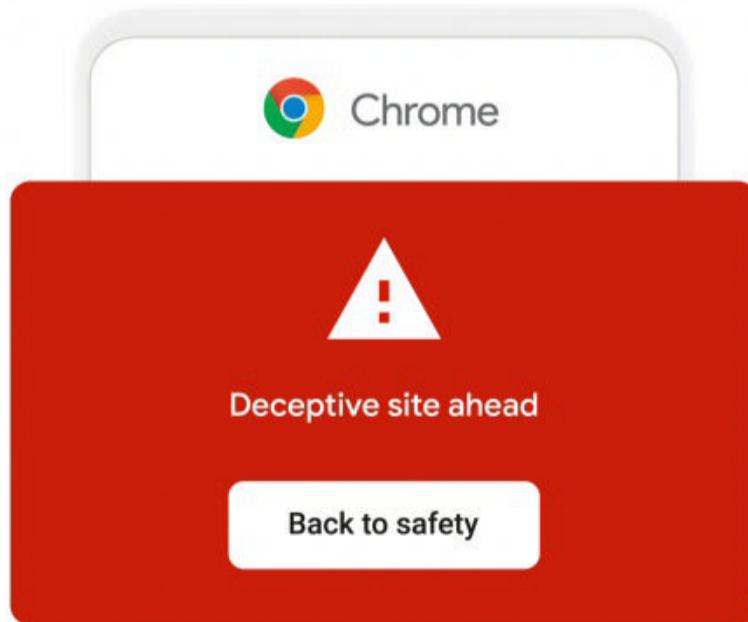
Gabriel and his father were victims of the war on drugs started by Rodrigo Duterte, the Philippines' outgoing president. During his tenure police and vigilantes were encouraged to shoot anyone they believed—or claimed to believe—was involved with drugs. At least 6,201 people were killed by police in anti-drugs operations between July 2016 and September 2021, according to the government's own numbers, and several times more than that according to human-rights groups.

Yet the true toll of the drug war on Philippine society goes beyond the thousands of mostly poor men who have been murdered over the past six years. Mr Duterte's campaign has been economically disastrous for their families, especially those who benefited from the government's flagship anti-poverty programme.



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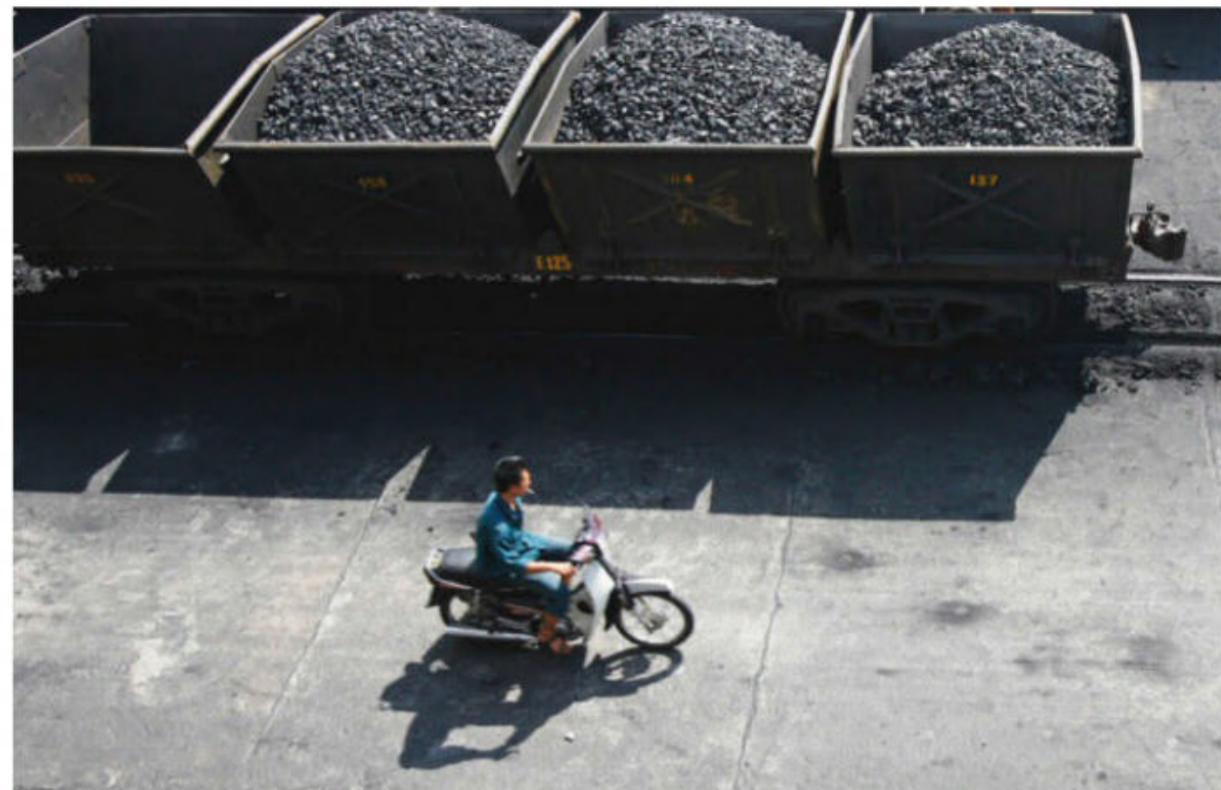
Since 2008 the Philippines has run one of the world's biggest and most successful welfare schemes: the Pantawid Pamilyang Pilipino Programme, or the 4Ps. It provides cash grants to poor households that comply with certain conditions, such as sending their children to school and attending health checks. The programme covers over 4m households, or about 20% of the population. By 2015 it had helped lift 1.3m Filipinos out of poverty, a threshold the government set at around 12,000 pesos (\$230) per month for a family of five in 2021. School enrolment for children in 4Ps households is near-universal.

In the Metro Manila area, where the drug-related killings were concentrated, at least 20% of victims were from 4Ps homes, according to a study published last year by Abigail Pangilinan, an independent researcher, and Maria Carmen Fernandez of Cambridge University. They spoke to a sample of these households and discovered that nearly two-fifths of 4Ps children had dropped out of school, causing the payments to stop. "Surviving families had to contend with several shocks from the loss of a family member: loss of income, trauma and isolation," says Camilo Gudmalin, former director of 4Ps.

Other benefit schemes were also closed to victims' relatives. Since 1992 the Philippines' justice department has run a programme in which the families of victims of violent crime can claim compensation of up to 10,000 pesos. But in cases of drug-related killings, families have been told that their loved one is an enemy of the state and therefore ineligible, says Rowena Legaspi, the director of Children's Legal Rights and Development Centre, a local NGO.

Now families face another morbid choice. Anyone buried in a public cemetery is treated as a tenant rather than a resident. The leases need to be renewed every five years. Reyna and Aurora, another of the bereaved, are trying to scrape together 10,000 pesos to protect their late partners from eviction. Reyna frets that losing the remains could impede any future investigation into the deaths. The impact of the killings is "at a minimum, devastating" for the families, says Father Flaviano Villanueva, a priest who helps families of victims to exhume and cremate their remains.

Although the killings have not stopped entirely, their frequency has fallen sharply, perhaps partly because of international condemnation. It may fall even further. Ferdinand "Bongbong" Marcos, the newly elected president, will take over from Mr Duterte on June 30th. He vows to keep up his predecessor's drug war, but to "do it with love", by going after the drug lords rather than street-level dealers and by investing more in rehabilitation. Mr Duterte will be gone soon. But the effects of his war on drugs will be felt for a long time. ■



Climate targets

Steaming ahead

SINGAPORE

Vietnam is leading the transition to clean energy in South-East Asia. But it still needs to wean itself off coal

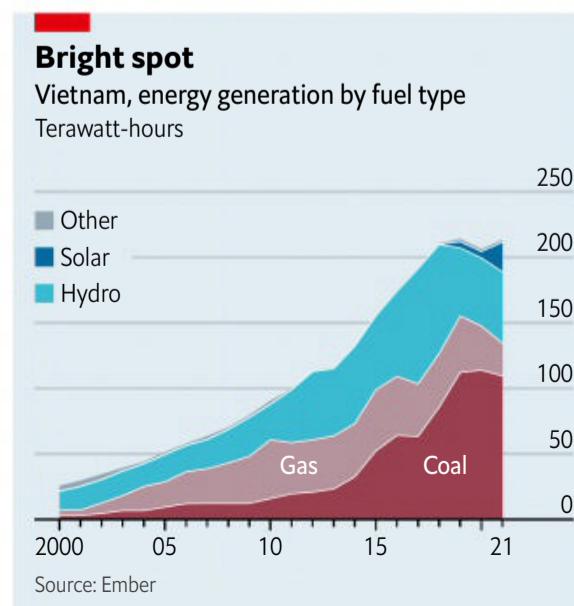
SOUTH-EAST ASIA is among the parts of the world most vulnerable to climate change. Yet this smoke-belching region seems uninterested in forsaking fossil fuels. Vietnam is a bright spot on an otherwise soot-black map.

In the four years to 2021, the share of electricity generated by solar in Vietnam increased from practically nothing to nearly 11%. Not only was this a faster rate of increase than almost anywhere else in the world. It is a bigger share than larger economies such as France or Japan have managed. By last year, Vietnam had become the world's tenth-biggest producer of solar power. Underscoring his country's commitment to the energy transition, Pham

Minh Chinh, Vietnam's prime minister, vowed in November to stop building new coal-powered plants and to reduce his country's emissions to net zero by 2050.

Other South-East Asian countries hoping to up their game can learn a few lessons from Vietnam. It has quadrupled its wind and solar capacity since 2019. This "extraordinary achievement" is primarily the result of political will and market incentives, according to a study conducted by Paul Burke and Thang Do of the Australian National University, and others. In 2017 the government began paying solar-power suppliers a fixed-rate "feed-in tariff" of as much as 9.35 US cents for every kilowatt-hour they delivered to the grid, which was generous given that costs typically range between 5 and 7 cents per kilowatt-hour. The result is that 100,000 rooftop solar panels were installed in 2019 and 2020, increasing the country's solar capacity by a whopping 16 gigawatts. Other South-East Asian countries have tried feed-in tariffs, but they have been insufficiently enticing.

Reforms making it easier for foreign investors to do business in Vietnam have helped, too. So has ending the monopoly of Vietnam Electricity (EVN), the state energy firm, on domestic generation. By contrast, foreign investors in other South-East Asian countries often find themselves draped in red tape, and must compete against domestic fossil-fuel firms, which enjoy chunky subsidies.





Digital attacks are
being used to censor critical
information online

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► But if Vietnam hopes to achieve net-zero emissions by 2050, it will have to work even harder. Demand for energy in the country has grown by about 10% a year over the past decade, according to Dezan Shira, a consulting firm. More and more of it is being met with coal. The share of electricity generated by the dirty stuff increased from 33% to 51% in the five years to 2021, says Ember, an energy think-tank in London (see chart on previous page). The government must also ensure that the economy continues to boom—before the pandemic it was growing by 5-7% per year—

even as the country weans itself off coal.

Government planners “need to ramp up wind and solar very quickly, year in, year out”, says Mr Burke. It is not yet clear how they will do this. The master plan outlining how the country will generate energy, published once a decade, is being revised, and may be out as early as this month. Most of the electricity derived from renewables currently comes from hydroelectric dams.

Planners also need to consider the grid, which must be expanded and upgraded so that it covers the entire country and is able to cope with the intermittent nature of

power supplied by renewables. It does not even have the ability to absorb all the renewable energy Vietnam is currently generating. “Improving the grid will be extremely expensive, almost certainly requiring the government to seek private investment,” says an analyst based in Hanoi. But some at EVN, as well as policymakers worried about national security, are reluctant to cede big transmission assets to the private sector. “Mindsets at EVN can shift,” says the analyst, “but it will happen slowly.” To reach its targets, Vietnam will need to hurry them along. ■

Banyan Incredible hulks

The luxury of Asia's malls is no substitute for genuine public spaces

THE SHOPPING mall was invented, nearly 70 years ago, in America. It was then copied in Europe. Yet Asia has inarguably made the shopping mall its own. Eight of the world's ten biggest malls are in the region; exclude China and five still remain, all in South-East Asia.

Asia's glass-and-concrete malls sucking city dwellers indoors mark a huge architectural and cultural break. Until near the end of the 20th century, the region's monumental architecture was dominated by imposing projections of imperial, communist or newly minted post-colonial state power: think of Beijing's Forbidden City and Tiananmen Square, Lutyens-era New Delhi or Sukarno's reshaping of Jakarta, with wide avenues and imposing government buildings. What will future archaeologists, then, make of the vast retail boxes jutting out of Asia's urban sprawl?

They may divine Asian antecedents. In early 20th-century Japan, the development of railways made terminuses the natural place for multistorey emporiums that blended shopping with entertainment and even culture: exhibitions of exquisite kimonos, lacquerware, pottery or woodblock prints designed to appeal to a burgeoning middle class. Just as many of Tokyo's posh department stores were built by railway companies, so today one of Hong Kong's big mall developers is the public-transport operator. Passengers are whisked effortlessly from the platform to the mall above.

In the densest conurbations, the concept goes a step further. Various malls are connected by underground tunnels or, more dramatically, sky-bridges. Discouraged from ever touching the ground outside, you float for miles through elevated rivers of retail and entertainment bliss, sampling shops,

eateries, cinemas, exhibitions, play areas, skating rinks and even parks. High-rise housing blocks also connect, allowing residents to descend to heaven. Here is a safe space for multi-generational families or friends to gather. Bangkok is one example of the trend. Singapore is an apotheosis of sorts, a republic of malls.

Yet Banyan is, by profession, a flâneur in Asia. And despite notable improvements in public transport, an invariable consequence of mall-building is to wrap developments in ever-widening networks of highways and approach roads. Heavily discriminated against is the pedestrian trying to cross the city at ground level.

Nor is the flâneur nourished once inside the pleasure domes. There sit the same store brands and the same eateries (though if you are lucky you may be able to sit “outside” under plastic palm trees). Artificial light replaces the natural kind, an intentional disruption to circadian rhythms to keep you trapped in mall-time. Less heaven than inescapable purgatory. In the malls along Singapore's Orchard Road, getting out is a challenge. You pop

your head above ground like a marmot, to find that you are in the wrong place. No choice but to return to the mall and wander about for another eternity.

To be fair, malls offer shelter from the heat and humidity: one Hong Kong colleague hates malls except from May to October, when the weather is at its most oppressive. But try napping on a bench, if you can find one. A security guard will soon be nudging you awake. All this points to a glaring, if little mentioned, feature of Asia's malls. Though supposedly open to all, they are pseudo-public spaces at best. In India officious guards keep out anyone but the upper classes, unless they are employees or carrying someone's bags. Everywhere behaviour is circumscribed by the (unpublished) by-laws of private developers. People in power surely approve of malls' anaesthetising effect upon political expression.

If true civic space and accountability existed in abundance outside the malls, it would not matter. But governments too often give politically well-connected developers cut-rate land, eating into scarce public space. In Manila the biggest malls sit in surreal, first-world developments that are a self-enclosed world away from nearby slums, poverty and violence. Manila's elites, who live in these developments, are notoriously unconcerned with confronting the city's huge challenges.

Does the pandemic mark peak mall? In many, footfall is returning only slowly. Shopping is moving fast online. In South-East Asia tax perks and easy money have encouraged a mall surfeit, with hulking carcasses now rotting across the cityscape. Future archaeologists will wonder why 21st-century urban planners thought shops needed so much space, and people so little.





Chinese intelligence

Imperfect spies

China's spooks are good at hacking and harassing dissidents. But in other areas they have a lot to learn

IN RECENT YEARS Western officials have maintained a steady drumbeat of warnings about Chinese spies. In short, the spooks are getting bolder and better. Among other things, they're accused of hacking into Microsoft's Exchange email service, stealing Western defence and commercial secrets, harassing Chinese dissidents overseas and bugging the headquarters of the African Union (all of which China denies). Yet, when confronted by overwhelming evidence that Russia was about to invade Ukraine, China's spies appear to have dropped the ball.

Whatever Vladimir Putin told Xi Jinping when the two presidents met in Beijing on February 4th, China did not seem

prepared for Russia's invasion three weeks later. One giveaway was its failure to make plans to evacuate its citizens in Ukraine. China's embassy first advised them to stay at home or fix a Chinese flag "on an obvious place on your car". If Chinese officials had in mind "Wolf Warrior 2", a nationalistic film in which the hero passes the front-lines of an African conflict by raising a Chi-

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nese flag, they were disappointed. China's parroting of Russian propaganda has not made it popular in Ukraine. Two days later the embassy retracted its advice, warning citizens: "Don't show your identity or display identifying symbols."

Meanwhile, at the United Nations, Chinese diplomats squirmed as their government struggled to formulate a coherent position. China seemed surprised, too, at Ukrainian resistance to Russia and at Western support for Ukraine. In the days after the invasion, Chinese officials quizzed foreign counterparts about the situation on the ground. Before the war, a foreign diplomat in Beijing recalls Chinese interlocutors confessing that they had limited understanding of central and eastern Europe, but were fortunate to have the Russians to explain it for them.

Of course, other countries failed to anticipate the invasion, too. Perhaps Mr Putin did forewarn Mr Xi and convince him it would be done in days. But given China's reputed capabilities, its lack of contingency planning and situational awareness suggest a serious intelligence failure. The heartening conclusion for many Western governments is that China's spies are not always as good as advertised.

Keeping America busy

China has indeed expanded its espionage activities and capabilities in recent years, say intelligence officials. Much of that has focused on stealing technology in industries it seeks to dominate, such as robotics, aerospace and biopharma. Chris Wray, the director of the FBI, said in January that his agents open a China-related counter-intelligence case roughly every 12 hours. China's cyber-espionage activities are especially brazen, outstripping those of all other countries combined, he said. In 2020-21 China's cyber-spies "demonstrated a higher tolerance for risk" than before, reported Mandiant, a cyber-security firm.

China has got better at human intelligence, too. Some American officials blame a Chinese mole—as well as a compromised communication system—for the jailing or execution of many CIA sources in China between 2010 and 2012. China's spies have moved beyond the ethnic-Chinese sources they used to rely on, often using stolen data to identify those with vulnerabilities, and making approaches via LinkedIn and other social media. China has also escalated efforts to secure political influence in democracies, often by offering funding or perks to politicians, although that's usually done through a Communist Party branch called the United Front Work Department, rather than its spy agencies.

Still, when it comes to snooping on foreign governments, China's global interests have expanded so rapidly in the past three

► decades that its intelligence agencies seem to have struggled to identify clear priorities for what information to seek and where. “Even if you pull down every single piece of data in the Kremlin and Putin’s dachas, you still have to sort through it all to figure out what it is that you actually want to know about,” says Peter Mattis, a former CIA analyst who is now at the Special Competitive Studies Project, an NGO in Virginia. “If you’re searching through massive data, your results are only as good as your queries.” China’s focus on defence and commercial tech often comes at the expense of insight into decision-making in foreign capitals, say other experts.

Another area where China could improve is analysis, which is hobbled by a political culture that offers few incentives to take initiative or challenge orthodoxy. Junior and mid-ranking Chinese intelligence officers lack sufficient status to make potentially risky calls when interpreting raw information. Those are usually made by officials at the vice-ministerial level or above. And even they may not pass on assessments that conflict with Mr Xi’s wishes or worldview. “Rather as with the KGB, the difficulty has been in telling truth to power,” says Nigel Inkster, a China specialist and former deputy chief of Britain’s Secret Intelligence Service. One consequence is that Chinese spies, unlike most Western counterparts, often ask sources for written analysis that can be passed up the chain but is ultimately attributable to the source, not the handler.

A related problem is that Chinese spies, while targeting high-value assets, have a tendency to recruit peripheral figures—often retired foreign officials or academics—and to do so within China. They don’t do as well getting at difficult targets, says Nicholas Eftimiades, a former American intelligence official. To understand the situation in Ukraine, “they would need to get someone in the Polish government or the Polish military, or the Ukrainian military, who could report out what’s going on” in more-or-less real time, he says.

Running such assets also requires tradecraft, another long-running Chinese weakness (though it is now improving). In a study of 595 documented cases of Chinese espionage, mostly since 2000, Mr Eftimiades found that in 218 of them the organisations and individuals involved used little or no tradecraft or did not make any significant attempts to hide their activity. Last year China suffered an embarrassment when Afghanistan expelled about a dozen suspected Chinese spies.

Spying on Russia presents China with particular challenges. Despite some recent success recruiting Russian sources, China probably has less insight into the Kremlin’s thinking than do Western countries, which spent decades spying on the Soviets.

China fell out with the Soviets, too, in the late 1950s, but lacked resources for serious espionage. Since the end of the cold war Russia has attracted far more Western investors than Chinese ones. And Western countries, unlike China, are home to many politically connected Russians.

Such obstacles might be reassuring to some who are worried about China’s rise. But they also point to a more sobering conclusion: Mr Xi appears to be making enormously consequential decisions based on dodgy intelligence. It is unclear whether the root cause is the information itself, the analysis applied or how it is communicated to China’s leaders. In any case, the outcome could be deadly miscalculation.

Imagine a confrontation over Taiwan, the democratic island that China claims as its own—and threatens to recapture by force. Chinese spies have multiple sources there, but they skew towards pro-unification types, rather than those now in power. If Mr Xi were to consider military action, he would need his intelligence agencies to gauge at what point America might intervene. China’s spies direct many more resources to America than to Russia, and have better access to people who inform government decisions there. Even so, they might struggle to predict American moves in a crisis. And even if they get it right, the question remains: would they share a view that conflicts with Mr Xi’s? ■

China in the Pacific

Treasured islands

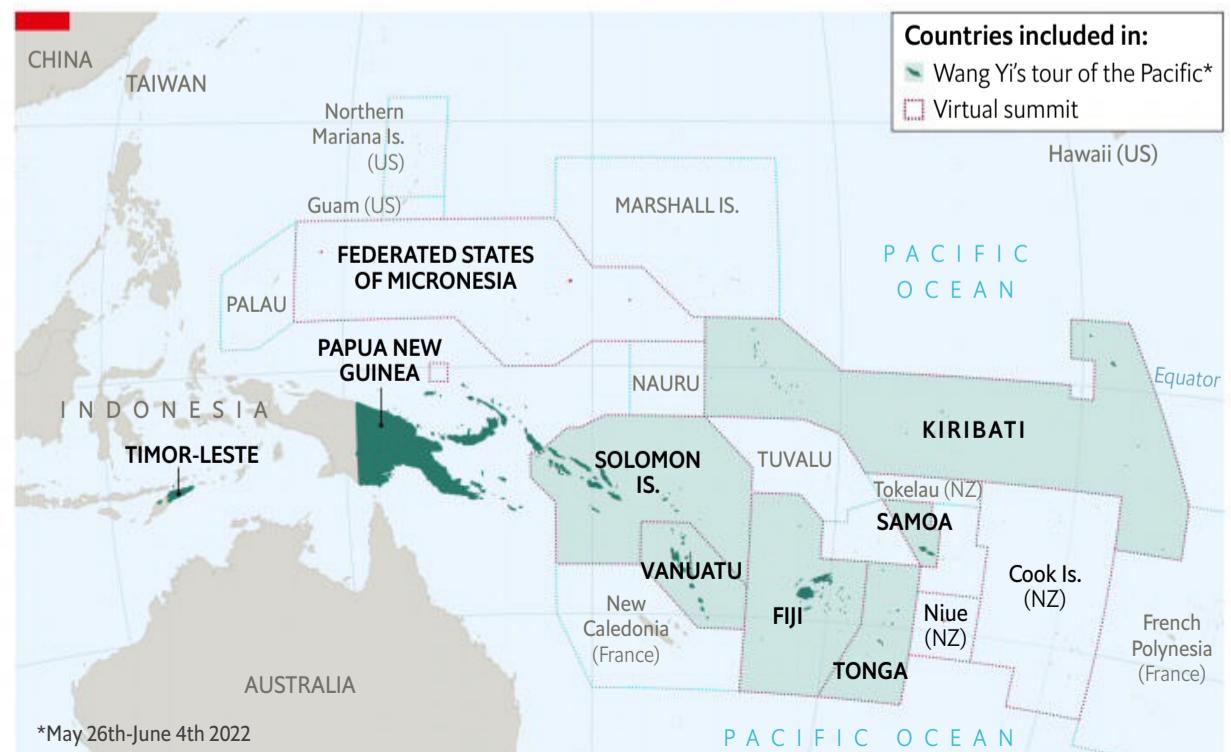
China’s interest in the Pacific islands is growing. But they have their own interests

DURING THE second world war, some of the fiercest fighting in the Pacific took place as the Allies pushed Japanese forces back in a “leapfrogging” campaign across the islands that dot the ocean north-east of Australia. Now America and its allies are scrambling to defend their hold on the region against an island-hopping diplomatic offensive from China that they fear could lead to a military presence. But China is facing not just Allied resistance. Many Pacific-island countries want more done to address local needs—especially climate action—and are wary of being sucked into a global geopolitical contest.

That contest escalated dramatically in April when China signed a security pact

with the Solomon Islands. According to a leaked draft, it would allow Chinese ships to visit and Chinese security forces to deploy there (if invited). On May 26th China’s foreign minister, Wang Yi, began an unprecedented eight-country tour of the region (see map), seeking other agreements touching on security. The trip has reaped some fruit. As well as various economic deals, Mr Wang inked one in Samoa on building a police fingerprint-laboratory and others in Tonga to provide a police lab and customs-inspection equipment.

But he failed to persuade ten countries in the Pacific to sign a regional agreement encompassing trade and security at a virtual summit on May 30th. Mr Wang indicated ►



▶ afterwards that he would continue to push for the deal. “Don’t be too anxious and don’t be too nervous,” he told participants. Later China published its proposals, including scholarships, training and medical assistance, but excluding those on security that had put off some states.

China may yet manage to secure some version of the deal. Many countries in the region have close ties to America, Australia and New Zealand—but feel neglected by them. They see China as a critical source of trade, aid and investment that can help their economies recover from covid-19. Even so, some in the region have deep concerns about China’s efforts to link security with economic engagement and about its proposals to co-operate on cyber-security, policing and data networks.

Most vociferous was the response from David Panuelo, president of the Federated States of Micronesia (FSM). In a leaked letter to Pacific countries, he said the deal could allow China to conduct mass surveillance in the region and trigger “a new Cold War era at best, and a World War at worst” if China were to attack Taiwan. His opposition was perhaps expected: America handles FSM’s defence by agreement.

Resistance to Mr Wang’s efforts elsewhere may also be linked to diplomatic manoeuvres by America and its allies. Australia’s new prime minister, Anthony Albanese, said on May 28th that he has a “comprehensive plan” for the Pacific, including a boost in aid and re-engagement on climate change. Two days earlier his foreign minister, Penny Wong, rushed to Fiji and promised that Australian partnership “won’t come with strings attached”. Ms Wong visited Samoa on June 2nd, signing an eight-year development partnership, before heading to Tonga.

America, meanwhile, said Fiji would join a new American-led pact, the Indo-Pacific Economic Framework. And on May 31st President Joe Biden and Jacinda Ardern, New Zealand’s prime minister, met in Washington and pledged to help Pacific islands with infrastructure and security.

Even so, the pushback against China is motivated not just by the concerns of America and its allies. Fiji’s prime minister, Frank Bainimarama, welcomed Mr Wang but sought a stronger commitment on climate action. “Geopolitical point-scoring means less than little to anyone whose community is slipping beneath the rising seas,” said Mr Bainimarama. Samoa’s prime minister, Fiame Naomi Mata’afa, seemed frustrated at the rush to sign China’s deal, saying it should be discussed by the Pacific Islands Forum, which includes Australia, New Zealand and four countries with diplomatic ties to Taiwan. According to Samoan media, her explanation for not signing was simple: “We did not have enough time to look at it.” ■



Sand demand

Down with the tyrants

The dark side of China’s property boom

ENVIRONMENTALISTS HAVE long fretted about soaring global demand for sand. It is used to make the concrete that is being poured into the world’s expanding cities, often at the expense of vital ecosystems such as rivers and lakes from which the material is extracted. No country is hungrier for it than China, where the damage caused by rampant illegal mining has been enormous. In March the Communist Party’s mouthpiece, the *People’s Daily*, called it “irreparable”.

The central authorities are trying to impose better order. Since 2000 they have declared various curbs on sand-dredging in the Yangzi river, where extensive mining has threatened embankments used to prevent potentially catastrophic floods. But restrictions have driven diggers elsewhere: many to the country’s largest freshwater lake, Poyang (pictured). This expanse of water changes in size seasonally to a maximum of about 4,500 sq km, roughly three times the area of Greater London. The fluctuations help to regulate the Yangzi’s flow, but sand-mining is hindering this function. In May officials released an environmental study on a proposed remedy: a 3km dam. It did not impress China’s small band of green activists. They fear the structure could make matters even worse for Poyang’s beleaguered wildlife, including rare cranes and porpoises.

Last year the central government launched new campaigns against unauthorised mining, beginning in March with a crackdown along the Yangzi. This included seizing and scrapping hundreds of dredging boats and sand barges that had been operating illegally on the river. In July they declared a year-long

nationwide war on *shaba*, or “sand tyrants”, and *kuangba*, or “mine tyrants”, who extract other minerals. The names refer to the mafia-like control they exert over mining in their areas. Thousands of suspects have been arrested so far. Last year more than 1,200 officials were prosecuted for being the “protective umbrellas” of such criminals. In August the authorities began another year-long operation aimed at illegal dredging, this time covering all rivers in China.

In April the UN’s environmental agency, UNEP, warned of a looming “sand crisis”. It said ill-regulated extraction in many countries was fuelling violence, making coastlines more vulnerable to rising sea levels, and exacerbating floods. But to Chinese city-dwellers—the main beneficiaries of the country’s sand-fuelled building frenzy of recent decades—these concerns may seem remote. To some of them, at least, it is not the mining of sand but getting their hands on it that makes them anxious.

Officials also use the term *shaba* to describe a kind of criminal who can make life hell for the buyer of an urban flat. These are often sold as empty shells: walls need plastering, flooring must be laid. Much sand and cement is needed. In collusion with the property-management firms that look after apartment blocks, a *shaba* gang will demand that such materials are bought only from them. They are usually low-quality and overpriced. Anyone who tries to get them from another source will be beaten up.

China’s property market has been hammered by pandemic-related lockdowns and state efforts to rein in developers’ debt. But the *shaba* can wait.

Chaguan | Xi bans grumbling by party elders

Party factions were annoying to China's past leaders, but offered a safe outlet for dissent



TO GRASP THE dire state of political debate in modern China, consider this: there are reformist speeches by Deng Xiaoping, the late paramount leader, that could easily be banned by censors today. A good example is Deng's speech on the benefits of collective leadership of the Communist Party and Chinese state, delivered in August 1980 as he moved against veterans of the recently ended Mao era and replaced them with modernisers.

Deng was a party man, not a dissident. A ruthless, battle-hardened revolutionary and nationalist, he backed those reforms that promised to make one-party rule and the economy work better, and thus strengthen China. Still, when re-read in 2022, his speech on the reform of party and state leadership sounds like a cry of dissent. For it is a cogent argument about why it is folly, given China's history, to hand too much power to one person.

Later this year President Xi Jinping is expected to secure a third term as party chief and with it personal authority of a sort last enjoyed by Chairman Mao Zedong. At preparatory meetings nationwide, provincial party bosses are busy declaring fealty to the "two establishes": clunking party-speak for establishing Mr Xi as the core of the party leadership and for establishing Xi Jinping Thought as China's guiding ideology. Such Mao-era titles as "helmsman" are being dusted off. Party newspapers talk of living through an era whose greatness is signalled by the emergence of Mr Xi, a man of "outstanding leadership and majestic personality".

Deng explained four decades ago why such developments are dangerous. His speech in 1980 drew on fresh memories of the Mao years, a cruel time of policy blunders and man-made famines, political purges and a personality cult that only ended with the despot's death in 1976. It opens with four principles. First, he warned against excessive concentrations of power. Next, noting the limits to any one person's knowledge, experience and energy, Deng counselled against handing two or more jobs to the same individual: a bitter joke in a China in which Mr Xi is party boss, military chief, head of state and chairman of numerous policymaking bodies. Third, Deng called for a clearer distinction between the political-oversight role of the party and the technocratic work of the government: a principle increasingly trampled since 2012, when Mr Xi took over and reassured party authority over institutions of

state. Fourth, Deng backed the promotion of younger officials to prevent succession crises. Mr Xi turns 69 this month and has no named heirs. For good measure, Deng denounced fawning praise that implies that "history is made by a few individuals", a notion that he called not very Marxist (a fair argument, given Marx's focus on the large economic and social trends that shape events).

On one point, Deng seemed to concur with his present-day successor, when he warned in 1980 against "factionalism", recalling the destructive infighting of the late Mao period. Mr Xi's first decade as chief has seen ever-stricter party rules against "cliques and cabals" and the disparaging of leaders' policies. Discipline has been reinforced by a years-long anti-corruption campaign. It has seen millions of party members and officials of all ranks investigated, ostensibly for graft and immorality but with notably harsh prison sentences for grandees who challenged or criticised Mr Xi. Last month the party announced, in effect, a ban on grumbling, with retired senior members forbidden to make "negative political speeches" or comment publicly on important policies.

Mr Xi's silencing of dissent is more ambitious than anything his predecessors attempted. For decades after Mao's death, party chiefs hailed the wisdom offered by "collective leadership" while denouncing "factionalism". But in fact they knew, and tacitly accepted, that these are two aspects of the same phenomenon, argues Olivia Cheung of the University of London's School of Oriental and African Studies, author of an elegant new research paper: "Factional model-making in China: party elites' open political contention in the policy process". The paper sets out how national leaders governed by balancing rival factions. In turn, norms emerged that allowed elders to show disdain for mainstream party policies without crossing a line into open revolt. By way of a case study, the paper describes a procession of party elders, retired generals and Mao family members who between 1990 and Mr Xi's elevation as leader visited Nanjie, a village in the central province of Henan that rejected land reforms to become a collective again. Their visits indicated disquiet over the party's embrace of capitalism and were welcomed by Nanjie's politically savvy leaders. Now, bowing to the times, the village calls itself part of Mr Xi's nationwide campaign of rural-poverty alleviation, even if it is still festooned with posters of Mao, Stalin, Lenin and Marx. Factional signalling by leftists and others was annoying to previous leaders, but had its uses. Mr Xi's ban on grumbling is really a ban on informal ways in which elders talked to one another, says Ms Cheung. Without informality, the party risks becoming an echo chamber.

Where are the safety valves?

Chinese politics is often simplified into a saga of a few clashing personalities. That misses the extent to which Mr Xi presides over a sprawling political machine, powered by competing interest groups. He has dismantled safety valves that allow that machine to vent internal pressures, says Jude Blanchette of the Centre for Strategic and International Studies, a think-tank in Washington. Such pressures have not gone away: Mr Blanchette is intrigued to see Deng's speech from 1980 being posted on Chinese social media. That is not evidence that Mr Xi faces a coup, despite recent speculation about rifts at the top. It is a reminder that he is not guaranteed a successful third term, not least because unhappy Chinese bureaucrats are masters at foot-dragging. Understanding such dangers, Deng in 1980 declared: "No leading cadre should hold any office indefinitely" (before retaining supreme power for himself). It would be a brave elder who quoted his words today. ■

**Somalia**

Better luck this time

MOGADISHU

A new president says he will beat back the jihadists, then talk to them

WHEN HASSAN SHEIKH MOHAMUD entered Villa Somalia as president in 2012, his writ ran little farther than the sandbagged gates of the bullet-pocked, Italian-built, Art Deco palace of the head of state. Though the central government had recently wrested control of most of Mogadishu, the capital, and had recaptured some strategic towns here and there, vast swathes of the country's centre and south remained in the hands of al-Shabab, a jihadist group with links to al-Qaeda.

Terrorist attacks were routine: just two days after his election, Mr Mohamud narrowly survived an assassination attempt. After two decades of anarchy and civil war, Somalia then looked less like a country than a gaggle of warring fiefs. "We started from scratch," says Mr Mohamud of his first term as president.

Today he finds himself in a similar position. On June 9th he will be sworn in as president again, the first time since independence in 1960 that a Somali has held the office twice. But since he handed over the

reins in 2017 to Mohamed Abdullahi Mohamed, better known as Farmaajo, the country has slid backwards. Last year a crisis sparked by Farmaajo's attempt to stay in office by delaying elections threatened a return to full-scale civil war. Though the outgoing president eventually handed over power peacefully, he left behind a country more divided, more diplomatically isolated and less secure than it has been for years. Many Somalis and their country's foreign allies have welcomed the return of the seasoned Mr Mohamud as the man to fix the violent mess. Can he do so?

Speaking to *The Economist* in a heavily fortified hotel in Mogadishu, he says it was the sight of his successor ripping up the

fragile gains of the previous decade that prompted him to run for office again. The populist Farmaajo sidelined the leaders of Puntland and Jubaland, two powerful regional states, and wangled loyalists into running the other three. He lashed out at critics and packed his cronies into the federal security forces, which then threatened to disintegrate violently along clan lines. Whoever has run Somalia, a labyrinth of clan loyalties has long prevented the emergence of a true sense of national unity.

Farmaajo upset foreign allies, too. He drew closer to Qatar and Turkey at the expense of other influential states in the Gulf. He picked fights with neighbouring Kenya and Djibouti. His cosying up to Eritrea and its vicious dictator, Issaias Afwerki, was particularly unpopular.

By contrast the avuncular Mr Mohamud, an academic and civil-rights campaigner, has a more conciliatory flavour. He has moved fast to mend bridges with opponents at home and abroad. Said Deni, president of Puntland, the oldest and strongest of the five federal states (excluding the breakaway would-be country of Somaliland), notes that one of Mr Mohamud's first moves after winning the election was to invite all Somalia's regional leaders to a meal together. He promised them he would share power and complete a new federal constitution. "It was a good speech," concedes Mr Deni grudgingly (the two ran against each other in the election). ►

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44 Israel's budding business in Morocco

► Foreign leaders have also rushed to support the new man. Kenya's president is to attend the inauguration—a sign that diplomatic relations, so prickly under Farmaajo that they were severed entirely for several months, may be on the mend. "We cannot afford any outside enemies," Mr Mohamud explains. Meanwhile America, which in February took the unusual step of banning visas for Somali officials who disrupted the electoral process, says it will send hundreds of troops back into Somalia to help the government fight al-Shabab. "[Mr Mohamud] is somebody we can work with," says an American official.

But he can expect a rough ride. Al-Shabab, which was knocked back in his first term, is resurgent and still controls much of the countryside (see map). "Most of the districts we liberated have been lost again," he laments. Though al-Shabab rejected the election, it may well have hoped that Farmaajo would win. On his watch it was widely believed that the jihadists had infiltrated state institutions, especially the security apparatus. "The previous government had no plan to fight al-Shabab," says Mr Deni. The group has spread across the country. Few places are safe from the jihadists. To journey just a few hundred metres down the road from the international "green zone" by the airport to meet the president, your correspondent had to be accompanied by seven soldiers in a jeep and a mounted machinegun.

Al-Shabab is well entrenched in the territories it controls. Its people still extort cash from businesses and conscript children into their guerrilla units. They also run courts and provide basic goods and services. The new president says that al-Shabab today collects more tax revenue than the federal government does. Local businessmen say the group mediates legal

disputes more cleanly and efficiently than the official courts. "They've established a state within a state," says the president.

So does he have a coherent plan for fighting them? "To defeat al-Shabab the government must out-compete it on service delivery," argues Ahmed Abdullahi Sheikh, a former commander of the Danab, an American-trained fighting unit. Mr Mohamud, a moderate Islamist with links to the Muslim Brotherhood, also stresses ideology. "Our vision is to take the Islamic narrative from al-Shabab and show the people that the state protects their faith. This means waging a multi-front war."

That may be a bit glib. A lasting solution will probably also require negotiations with al-Shabab. During his previous term Mr Mohamud tried to win over defectors with promises of an amnesty, mainly in vain. Now he concedes that the battle will

end at the negotiating table—but not yet. The last big offensive against al-Shabab was in 2019. Mr Mohamud says he intends to launch a new one, first to contain the jihadists, then to push them back deeper into the countryside. In theory talks could then begin. In practice this could take years. Al-Shabab has certainly proved resilient as well as ruthless.

Mr Mohamud's previous term was a mixed bag. His cabinet was fractious and unstable. Corruption was especially rampant. Like his successor he failed to organise a direct election on time, settling instead for an indirect one whereby members of parliament were elected by delegates chosen by about 14,000 clan elders. He too was indirectly elected. This time, though, he comes armed with experience and a reservoir of goodwill. He will need to seize advantage of both. ■

Congo, Rwanda and Uganda

Roads to hell

NAIROBI

Congo wants to join East Africa. Men with guns object

BARELY TWO months after the fanfare that greeted the Democratic Republic of Congo as the seventh member of the East African Community (EAC), making it a bloc of 300m people stretching from the Indian Ocean to the Atlantic, blood is being spilt again in the troubled north-eastern corner of that vast, mineral-rich but chaotic country. The club's other members had high hopes that, by pulling Congo's economy eastwards, an array of infrastructure deals including roads and electric power lines would boost trade and prosperity across the region (see map on next page).

They also agreed to create a joint military force to sweep away the dozens of armed groups that impede such happy progress. But the latest burst of violence shows how hard it will be to fashion the EAC into a coherent diplomatic and trading power. Indeed, Congo's membership may exacerbate rivalries, especially involving Rwanda and Uganda, within the club.

The latest ructions have been caused mainly by a group of rebels known as the M23, named after an earlier Congolese peace deal signed on March 23rd 2009. Largely dormant since their defeat in 2013, they are on the move again from their hideouts in the volcanic mountains of Congo's North Kivu province which abuts Rwanda and Uganda. On May 26th they attacked a military base 40km (25 miles) from Goma, north-eastern Congo's commercial hub, grabbed a swathe of territory and forced

thousands of terrified civilians to flee.

Congo's government has blamed Rwanda for inciting the rebels, who are led by ethnic Tutsis and whose previous insurrections relied on support from Rwanda, whose strongman president, Paul Kagame, is a fellow Tutsi. His people in turn accuse Congo's army of firing across the border with Rwanda. Another blow-up between Congo and its neighbour would renew havoc in the region, which has suffered a string of devastating conflicts in the past quarter of a century.

Mr Kagame, who has led Rwanda since overthrowing the government that committed the anti-Tutsi genocide of 1994, presents his tiny country as a peacekeeper. Last year he deployed his army, one of the most effective in the region, to the north of Mozambique, to help quell a jihadist revolt there. He resents competition for status and influence, especially from his next-door neighbour, Uganda, which in the past has backed its own favoured Congolese rebel factions. The M23's latest surge may have been sparked by Mr Kagame's anger at a recent Ugandan military operation, at Congo's request, to attack the Allied Democratic Forces (ADF), a Ugandan jihadist group allied to Islamic State that has also been lurking in north-eastern Congo. Last year the ADF carried out suicide-attacks in Kampala, Uganda's capital.

The Ugandan army has so far failed to hunt down and nail its leaders, instead ►

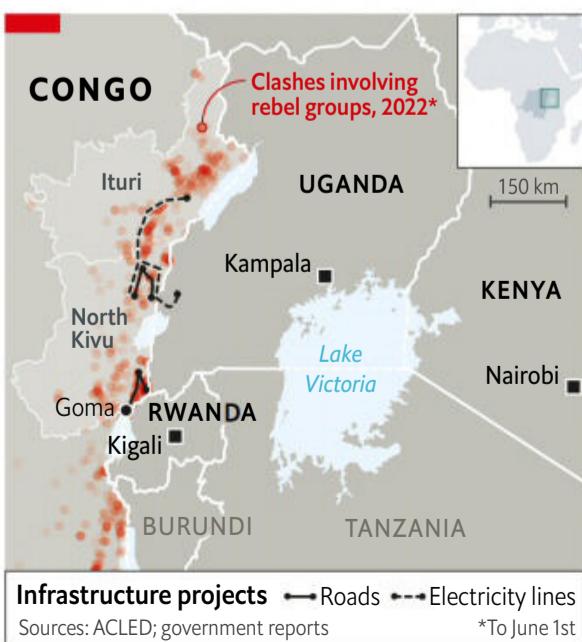


▶ pushing them farther north-west into Congo's Ituri province. Uganda's bigger aim is to provide security for building roads into eastern Congo, including territory close to the area where Rwanda and Uganda converge. Uganda's president, Yoweri Museveni, hopes to draw more of eastern Congo's trade, including the illicit flow of minerals, through Uganda rather than Rwanda. But in February Mr Kagame sneered at Uganda's operations in Congo and implied that the ADF had linked up with Rwandan Hutu rebels implicated in the genocide. "We will wage war where it started," he said. "We do what we must do, with or without the consent of others."

To get his way Mr Kagame may try to exploit divisions within Uganda's ruling circle. While at loggerheads with President Museveni, he has been cosying up to the Ugandan leader's son, Muhoozi Kainerugaba, who commands Uganda's land forces. Lieutenant-General Kainerugaba has hinted on Twitter that he might like to succeed his ageing father at the next election, in 2026. He has also advertised his warming friendship with Mr Kagame.

Uganda's president is plainly annoyed by Mr Kagame's ploys. The father can still, it seems, make his son jump. On May 17th, just hours after the Ugandan general said he would withdraw his troops from Congo, he abruptly changed his mind and said on Twitter that the mission would carry on for at least another six months. Mr Museveni, not to be outdone by Mr Kagame, or by his own son, has said he too would send troops to Mozambique.

The UN, which has been trying in vain to keep the peace in Congo for more than 20 years and still has 16,000 soldiers and police there, has already been drawn back into the fray—and is hitting the M23. But the UN's special envoy needs first of all to make Congo's competing eastern neighbours accommodate each other. Otherwise, the EAC's hopes of becoming an economic powerhouse may be dashed within months of its enlargement. ■



Criminal justice in Kenya

Inequality before the law

NAIROBI

The police and the courts smile on the powerful and punish the poor

FIGHTING AN ELECTION campaign is a time-consuming business. Prudent candidates therefore like to rid themselves of distractions well beforehand. Aisha Jumwa, an MP running to become a county governor in Kenya's general election on August 9th, is a model of efficiency in this regard. On April 5th, after a judge ruled that prosecution evidence had been withheld from Ms Jumwa's lawyer, she secured a five-month delay in a trial where she is accused of murdering a political rival's uncle. Six days later she persuaded a magistrate hearing a separate case in which she is charged with embezzling constituency funds to grant a similar postponement. Ms Jumwa denies both charges.

Mathew Lempurkel was meant to be missing August's election since he was in prison after being convicted of assaulting the woman who unseated him as MP the last time Kenyans went to the polls, in 2017. In December, however, a judge agreed to release him pending an appeal. Mr Lempurkel, a populist who is also on trial for hate speech, has been cleared to run against his former victim.

A decade or so ago the idea of Kenyan judges granting bail was as outlandish as the prospect of a politician appearing in their courts. Defendants often languished in custody for years. But since a new constitution was adopted in 2010, judges must now allow bail in almost all cases, no matter how serious the charge. Campaigners

have welcomed this move, since it should strengthen the presumption of innocence.

The reality is often different. If you have the misfortune to be hauled before a Kenyan court, your immediate fate often depends on how much cash you have. Magistrates and judges may grant bail, but poor Kenyans often cannot afford to raise it. Bigwigs rarely have this problem. Between 2016 and 2020, official data show that Kenya's jails held an average of just under 120,000 remand prisoners a year, more than 60% of the total prison population. None was a politician.

Kenya has made impressive strides in improving political accountability in recent years. Anti-corruption agencies and prosecutors have shown greater stomach for pursuing the powerful. Stroll through the corridors of the anti-corruption courts and the list of well-connected defendants is striking. On May 30th, for example, Mohammed Swazuri, a former chief of the National Lands Commission, was facing fraud charges. The ex-head of Kenya's state power utility was later up before the same magistrate to answer corruption allegations. In a second court a county governor was explaining how he had nothing to do with the disappearance of funds from a World Bank project.

Yet this progress is being undermined because it is still far too easy for big shots to game the system and slow the judicial wheels while out on bail. This is partly be-

▶ cause Kenya has too few court officials. Judges with heavy caseloads may hear cases simultaneously, so a trial may stutter along in chunks, lasting several years. A defendant with an expensive lawyer can snag it in endless procedure.

In July 2011 court hearings began into a request to extradite Chris Okemo, a former energy minister, and Samuel Gichuru, another ex-head of Kenya's state power utility, to Jersey on corruption charges, which they deny. After a series of procedural appeals Kenya's Supreme Court ruled that extradition hearings could go ahead. But Kenya's director of public prosecutions reckons it could take another five years before a decision is taken.

Corruption helps bigwigs too. Transparency International, a watchdog, rated the courts as Kenya's "most bribery-prone institution". It is easy to slip cash to a court clerk to make a file disappear or a witness turn up on the wrong day, giving grounds for another adjournment. Magistrates, who hear most of the corruption cases, are often thought to be buyable.

The National Integrity Alliance, a group of watchdogs, has named 25 politicians seeking office in August who, it says, should be barred from running because criminal charges have called their integrity into question. Among them is Rigathi Gachagua, recently chosen as running-mate for Kenya's present deputy president, William Ruto, the narrow favourite to succeed his estranged boss, Uhuru Kenyatta.

Electing such figures carries with it a threat, says Sheila Masinde, Transparency International's director for Kenya. Corrupt individuals, if elected, may be loth to enact reforms to create a fairer judicial system because it might harm them.

Gilbert Omware, a crusading lawyer who headed a charity that raised funds to stump up bail for poor defendants, has just completed a typical day at the Makadara law courts in Nairobi. He had defended a young motorcycle-taxi driver arrested for possessing an unlicensed weapon—a used tear-gas canister fired into the slum where he lived by riot police during unrest after the last election, five years ago. Mr Omware's client has been in custody ever since, because he could not raise the 50,000 Kenyan shillings (£340) set as bail.

Kenya's courts, especially the Supreme Court, are more often asserting independence against political interference. Some say the country has too few judges because the executive has retaliated by withholding funds. Yet the endless delays that allow the political elite to wriggle out of justice persist. Too many rich people, from corrupt bosses to dodgy prosecutors and lawyers on the make, benefit from the system. "Criminal justice is a poor person's problem," bemoans Mr Omware. "The political clamour to fix it is non-existent." ■

Israel and Morocco

More than just business buddies

MARRAKECH

Israeli firms are piling into the Arab kingdom in the western Mediterranean

IN A RAILWAY carriage heading towards Marrakech four Moroccan women, all strangers to each other, talk about Israel. "They're so much more welcoming than the racist, superior French," says a Moroccan tour guide, recounting her experiences of passport control. An events organiser shares videos of her raves for Israelis in a farm outside Marrakech. A nurse uses the French word for Jerusalem, not the Islamic al-Quds, though all the women are speaking Arabic. "Israel has always protected us," she says, then has a dig at the Palestinians. "The king gave Yasser Arafat everything and he just betrayed us by siding with Algeria over Western Sahara," referring to the Palestinians' longtime leader and Morocco's dispute over a sandy territory that it occupies. All four applaud the peace deal Israel signed with Morocco a year and a half ago.

For decades Israel was Morocco's shadowy secret. Business between the two went through networks of intermediaries, often Jewish-Moroccan exiles in Paris and intelligence agents. Syrian tanks captured by Israel ended up in Morocco. Israelis helped fortify the wall that Morocco built to keep guerrillas out of Western Sahara.

Now that the secret friendship has become official, the couple are getting to know each other. They have signed a plethora of military, business and cultural deals, often with loud hurrahs. The Arab-Israeli



Welcome to a synagogue in Marrakech

conflict seems like ancient history.

Israel's satellite channel, i24, is opening bureaus in Casablanca and Rabat, Morocco's commercial and political capitals. The gala i24 staged on May 30th had a grander guest list than most Western embassies could hope to muster on their national days. Huge Stars of David flashed on a stage in the heart of the Chellah, Rabat's crenelated medieval fortress, candle-lit for the occasion. Wine from the Israeli-occupied Golan Heights lubricated a sumptuous five-course meal.

Israeli tourists, meanwhile, are flocking in. Morocco expects 200,000 this year, up fourfold since the accord, with ten direct flights a week. Some Israelis come to party, others to visit the shrines of what Morocco says are some 600 Jewish saints, or to rediscover family roots, since some 700,000 Israelis are of Moroccan origin.

Well-organised trade delegations are piling in, too. Officially, trade at last count was worth a modest \$131m a year. But that excludes arms, services, a flourishing digital and cyber market and joint ventures with third countries. One deal involving Morocco and Marom Energy, an Israeli company, together with a Spanish consortium, to provide solar and wind power for Spain is worth \$1.2bn. Israeli companies are bidding for big water projects, including a desalination plant for Casablanca. They are also looking into fishing, cannabis farming and gas. Morocco has just hosted a three-day parade of Israeli startups, including Supplant, a company that calibrates irrigation according to weather and soil type. "There's such high interest," says an Israeli diplomat. "It's crazy."

Military deals discreetly dwarf all the others; five of the latest are said to be worth hundreds of millions of dollars apiece. Moroccan officials say Israeli digitisation has given them the edge over Algeria in their row over Western Sahara. Israel Aerospace Industries is building two plants to manufacture drones and may even install a missile-defence system. "Mossad at our borders," cried an Algerian headline, when Israel's defence minister arrived in the kingdom last year.

Morocco may be warier of creating full-blooded political links, as it fears a one-sided deal. King Mohammed suspended plans to open an embassy in Tel Aviv and has yet to accredit Israel's ambassador. Western Sahara remains a stumbling block. To entice Morocco into its peace deal with Israel, Donald Trump's administration promised to recognise Moroccan sovereignty over the disputed territory. But President Joe Biden has backed away—and Israel has stopped short of recognition. For full diplomatic relations, Morocco seems to be saying, both America and Israel should fully accept Morocco's Saharan claim. In other words, land for peace. ■

**War in Ukraine**

The battle for Severodonetsk

KYIV

Ukrainian troops face encirclement as Russia advances

SEVERAL THINGS told Arif Bahirov that it was time to leave Severodonetsk: the bodies on the streets, left because it was not safe to remove them; the fires that were no longer being extinguished; the missile that landed in the apartment downstairs. On May 21st the media manager dusted off his mountain bike and checked the tyres. He grabbed a few treasured possessions, as well as water and the most calorific food he could find, and threw them into a rucksack. Then he started pedalling towards Bakhmut, 70km away.

The artillery-pockmarked road along which Mr Bahirov cycled is now a central focus of Russia's attempt to regain the initiative in Ukraine. As the bigger of the two supply roads linking Severodonetsk, a town that sits at the easternmost point of a salient that juts into Russian-held territory, this route largely determines whether Russia can encircle a Ukrainian defence force estimated at 10,000 troops. The invaders have pounded the road with everything they have; and they now have at least part of it in easy firing range. Mr Bahirov didn't know any of this when he set off. He

had been without news, an internet connection or electricity for weeks. So he survived by wartime intuition: jumping into the nearest ditch whenever he heard artillery or fighter jets, and hoping for the best.

The endgame for Severodonetsk seems to be under way. Excited Russian TV correspondents at the scene are already claiming a complete victory. That is an exaggeration at this point, but their troops have a solid foothold in most of the town, with fierce battles now taking place in the westernmost streets. Local sources suggest that Ukraine has already begun to pull back from positions around Severodonetsk ahead of a broader retreat.

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Speaking on May 30th Serhiy Haidai, the governor of Luhansk, the province in which Severodonetsk lies, said it was only a matter of a few days before a retreat to Lysychansk might be necessary. The twin town lies across the Donets river and offers the additional advantage of being on a hill, though the threat of encirclement remains. Mr Haidai, who grew up in Severodonetsk, said it was a personal tragedy to see his hometown in flames. Nearly 65% of the town's housing is now damaged beyond repair, he said. But he was proud to have helped evacuate all but 15,000 of the town's pre-war population of 120,000: "I've done what I set out to do."

Russia has committed a substantial proportion of its battle-worn forces to the operations to take Severodonetsk and Lyman, a transport hub and possible bridgehead for crossing the Donets river farther north. These modest battlefield targets are a remarkable step down from the Kremlin's initial ambition of taking over the entire country, and they also fall some way short of the more recently stated objective of taking the whole Donbas region, which includes neighbouring Donetsk province. But the advance is real and bloody. According to President Volodymyr Zelensky, Ukrainian losses are running at 60-100 soldiers daily, with a further 500 injured.

Oleksiy Arestovych, a presidential adviser, says his country's artillery units had been particularly affected in the barrage. "We simply haven't had the systems or munitions to answer fire," he says. A mis-

match in firepower also seems to have let Russia reverse at least some of Ukraine's recent counteroffensives farther north near the city of Kharkiv. A forward spotter in a Ukrainian reconnaissance team there says that marines from the Russian Baltic Fleet and other elite units are now reinforcing their defensive positions with concrete. "They are in for the long haul and won't be easy to move," he said.

But this second phase of war has not been cheap for Russia. On May 30th British defence intelligence reported "devastating losses" among Russia's mid- and junior-ranking officers, who had been pushed forward by senior officers desperate for good news to report up the chain of command. "Our soldiers tell me they don't understand what is happening," says Mr Haidai; "Twenty men go on the offensive; we shoot, they fall. Ten of them get up; we shoot, and they fall. And then [they] send in another 20 men." Mykhailo Samus, a military analyst based in Kyiv, says that the intense fighting in Donbas will eventually favour Ukraine. Military science suggests losses will fall disproportionately on the advancing side, he notes. "Add in foliage, woodlands, water and defensive constructions built over eight years of war, and you understand every metre Russia moves forward comes at a massive loss to its men and equipment."

There are no reliable numbers on the level of Russian losses in Donbas, but telephone intercepts released by Ukraine this week also purport to show one Russian unit on the edge of mutiny. In one expletive-laden exchange with a friend, a young soldier is heard to say that just 215 men remain from a unit that once numbered 600. "Our brigade can't take shit because there's nothing of it left. We have one full-time gun commander, two artillery pieces left from 12, and only three of 12 vehicles actually move."

Ukraine, meanwhile, is taking advantage of Russia's focus on Donbas to launch counter-attacks in Kherson province, in the south of the country and adjacent to Crimea. Its units are advancing with some success in two directions towards the villages of Snihurivka and Davydiv Brid. Its aim appears to be not to push Russian forces out of the region, but to deter them from attacking farther north towards the mining city of Kryvyyi Rih, the hometown of Mr Zelensky. Mr Arrestovych said that Western heavy-artillery systems had joined that battle just in time. "We had nothing to shoot for a week, but then suddenly we were able to hit the Russians hard, precisely, and they weren't happy."

After some debate, America now seems set to deliver more-powerful rocket systems that would allow Ukraine to attack Russian guns and break up its supply lines (see article on next page). The new weap-



onry is unlikely to arrive soon enough to stop Severodonetsk from falling. But it could be used to stop the Russian advance, and even, in time, to offer Ukraine an opportunity to retake the town and others like it in the east and the south. Mr Bahirov certainly hasn't given up hope of returning. "I left the bike in storage in Bakhmut. It's going to be my big performance, my victory lap—riding back to Severodonetsk the very way I left." ■

Kharkiv

Tragedy on Shakespeare Street

KHARKIV

How war has changed Ukraine's second city

QUICK THINKING saved Yulia Rebenko from probable death. She ran from her kitchen to the bathroom as soon as she heard the first thuds. By the time the artillery reached her flat on Shakespeare Street on the afternoon of May 26th, slicing through the chestnut trees to land outside her window, Ms Rebenko was two walls away from the impact. She walked away with minor cuts. At least nine others ended up in the morgue.

Ukraine's second city, a proud, gutsy, working-class centre, faces a most uncertain future. Because it is only 40km from Russia, few thought Kharkiv stood any chance of withstanding an invasion. In the event, enemy armour was inside the sprawling city boundaries within the first three days. But a combination of spirited resistance and a reluctance by Moscow to commit the kind of forces needed to encir-

cle the city meant Kharkiv somehow survived. In mid-May Ukraine counter-attacked and retook several villages to the north and north-east. Many people began to hope normal life was possible; some even began to return home. The reality has proven more sobering. The northern parts of the city remain within range of Russia's long-range artillery, as the Shakespeare Street attack demonstrated. The Russians are digging in, reinforcing their positions in a way that will make pushing them back again very difficult.

Governor Oleh Synyehubov says the battle for Kharkiv does not look as though it will end soon. "We understand it isn't a one-month story, and we will need to live within this new reality," he says. He has been without an office since a Russian cruise missile took out his headquarters in March. Just over half of Kharkiv's 1.5m people have left. Everyone who remains is vulnerable to Russian jets, rockets and, in places, artillery; he wants them to stay at home unless they have an urgent need to be on the streets. Some appear to be heeding his advice. But others defiantly ignore it. The Ditch, a cocktail bar 2km from Shakespeare Street, continued with its plans to re-open after three months despite the renewed missile strikes. "Artillery doesn't faze us any more," said Daria Taran, barman and co-owner. "We know a missile might have our name on it. But that's fate."

Over at the city's gigantic Barabashova market, once the beating heart of Kharkiv trade but now mostly reduced to scorched rubble, a couple of shopkeepers are daring to set up again. Iryna Petrovna has returned to sell flasks and metal pans. Her inventory is Chinese, and with Ukraine's ports under Russian blockade, she knows she is unlikely to get new stocks. "We're scared as hell, but what else can we do? We need to work."

The market lies at one end of the sprawling Saltivka district—a tough, Soviet-built prefab jungle that owing to its position in the north of Kharkiv has borne the brunt of Russian violence. It used to be called the Moscow district, but like many other Russian-themed names, that has changed. In safer parts of the city, people are returning, but here the traffic is one-way. Residents are returning to pick up whatever possessions they can before scurrying: paintings, televisions, fridges, air-conditioning units, toilet fittings. Alla Yaroslavtseva, 57, emerges from the charred ruins of 80 Natalii Uzhvii Street clutching a handful of memories. She doubts that she will ever return. She worked all her life to buy her flat outright in the hope that she could pass it on to her children, she says. "Now I have to start again because the fucking Russian World decided to come and liberate me. From what? From my apartment? From my home?" ■

American weapons

Getting the upgrade

WASHINGTON, DC

America sends advanced missiles to help Ukraine fend off Russia

UKRAINE'S DEFENCE ministry recently released unusual aerial footage of the war in Donbas. It did not show Ukraine's successes against Russia, but rather its vulnerabilities: pockmarked fields being blasted by salvos of incoming Russian rockets. "This is what the largest and most horrific war of the 21st century looks like," said the tweet on May 26th. "Ukraine is ready to strike back. To do this, we need NATO-style MLRS. Immediately."

Belatedly, Western allies are responding. President Joe Biden announced on May 31st that he would send "more advanced rocket systems and munitions that will enable them to more precisely strike key targets on the battlefield in Ukraine." The Pentagon said it would send a first consignment of four M142 High Mobility Artillery Rocket Systems (HIMARS), currently pre-positioned in Europe. Each carries a pod of six GPS-guided missiles, accurate over distances as far as 70-84km—about three times the range of the howitzers that America has supplied thus far. Reports say Germany and Britain are likely to provide HIMARS's older cousin, the M270 Multiple Launch Rocket System (MLRS), which fires the same family of missiles.

Given that Ukrainian troops will require three weeks of training, the weapons may arrive too late to save the city of Severodonetsk (see earlier story). And HIMARS comes with conditions. America will not provide the bigger Army Tactical Missile System (ATACMS), which has a range of

about 300km. And Ukraine has had to promise not to fire the weapons at Russian territory.

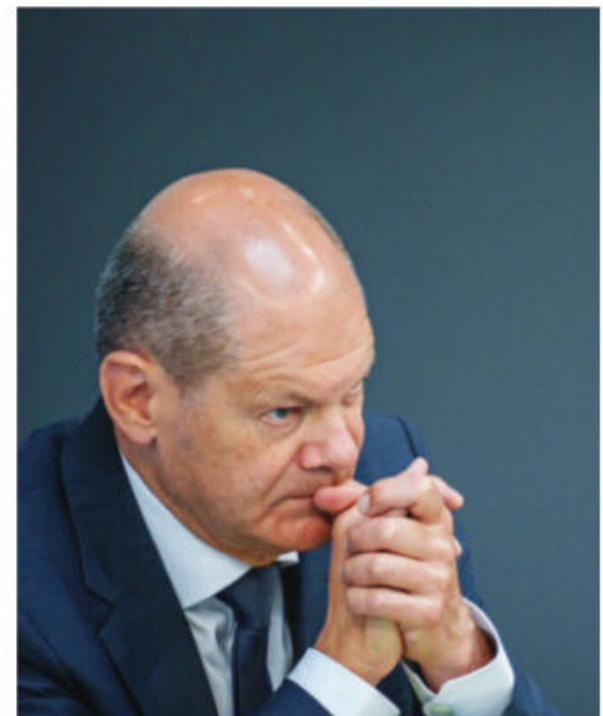
As the war has shifted from close-in battles around Kyiv and Kharkiv to artillery duels in the open terrain of Donbas, the Russians have made use of their overwhelming firepower, including rocket artillery such as the Uragan and the Smerch, which are less accurate and slower to move than HIMARS. Ukraine has some of these too, but struggles to get new supplies.

Why the delay in providing the more effective Western systems? American officials say they had to wait for the money—supplemental funding of \$40bn in humanitarian and military aid for Ukraine was only signed into law on May 21st—and were giving priority to weapons that Ukraine could use quickly. But America is also worried about escalation with Russia.

Writing in the *New York Times*, Mr Biden was at pains to reassure the Kremlin. America sought neither war with Russia, nor to unseat President Vladimir Putin. Unless NATO were attacked, it would not be directly involved in the conflict. "We do not want to prolong the war just to inflict pain on Russia," Mr Biden wrote. He also warned of "severe consequences" if Russia used any kind of nuclear weapon.

Built on the chassis of a Bradley tracked armoured vehicle, MLRS carries two pods, with a total of 12 missiles. Early versions fired "dumb" rockets that scattered bomblets over wide areas. Later munitions, called GMLRS, were guided by satellite; cluster warheads were superseded by tungsten balls (akin to a shotgun) or single warheads (aka "the 70km sniper rifle"). HIMARS packs less punch, having just one pod, but is wheeled rather than tracked, and is faster. It can thus "shoot and scoot" more nimbly to avoid counter-battery fire.

Jeff Edmonds of the Centre for Naval Analyses, an American think-tank, argues that GMLRS will be of most use against command-and-control centres and other "high-value targets". To be most effective, they will need to be combined with drones and other means of target-spotting. Despite talk of HIMARS being a "game-changer", Colin Kahl, the Pentagon's under-secretary for policy, is cautious about its impact. "No system is going to turn the war. This is a battle of national will," he says. "It is a grinding, hard conflict...it will stretch on for a long time." ■

**The right stuff****Germany and Ukraine**

The reluctant giant

BERLIN

Accusations of dithering are damaging Germany's international image

"THE WAR raises many questions. Can violence be fought with violence? Can [true] peace only be established if force is not employed?" This pronouncement by Olaf Scholz raised a fair few eyebrows when tweeted, in a cryptic translation from the original German, by Germany's delegation to NATO. The delegation failed to explain that the chancellor had been speaking at a convention of German Catholics. It was a gathering of pacifists (who, as it happened, spent most of their powwow discussing whether Jesus was transgender). So perhaps Mr Scholz was questioning pacifism, rather than endorsing it? It was just one of countless examples of the German leader's inept communication over the war in Ukraine.

Germany is getting criticism from many sides for its apparent reluctance to support Ukraine with military kit, which is tarnishing its reputation within the EU and NATO. "Germany 'breaks its promise' to give Kyiv more heavy weapons," declared a recent headline in the *Times*. "There is a clear absence of political will within the German government to deliver heavy weapons to Ukraine," lamented Andrij Melnyk, Ukraine's ambassador to Germany, to *Politico*, an online newspaper.

In fact, even in proportion to its mighty economic size, Germany is more or less in line with the average member of the EU in providing hardware and funding for military equipment, though admittedly much of it has still to arrive in Ukraine. But despite this, Mr Scholz keeps being singled out

► out for a lack of leadership and courage because he has two big problems, according to Wolfgang Ischinger, a former chairman of the Munich Security Conference. One is the poor communication. The other is that many members of Mr Scholz's Social Democratic Party (SPD) do not support the huge rearmament that is central to the new foreign and security policy he outlined in what has been dubbed his *Zeitenwende* ("historic turning point") speech, made three days after Russia's invasion began on February 24th. As a result, his party is slowing down the implementation of the new policies. It is perhaps for fear of alienating its members even further that Mr Scholz has been so reluctant to say clearly that Germany is now supplying light and heavy weapons to Ukraine because it wants Ukraine to win the war.

In a big debate in the Bundestag on June 1st the chancellor recited a long list of the weapons that Germany has already sent to Ukraine. It includes some 2,500 anti-aircraft missiles, such as Stingers, thousands of anti-tank weapons (many of which, however, turned out not to work), over 15m rounds of ammunition, 54 M113 light armoured vehicles (with Denmark), machineguns, a field hospital, lorry-loads of explosives, communications equipment, anti-drone guns, night-vision goggles, medical equipment, tents and fuel. He also confirmed that the German government has now promised to supply Ukraine with the IRIS-T SLM medium-range surface-to-air defence system, one of the most modern of its type available, and one that is capable of protecting a city as large as Kyiv. Germany is also supplying 30 Gepard anti-aircraft tanks, plus ammunition for them, though these will only arrive in Ukraine in July. And it is providing seven self-propelled state-of-the-art howitzers (the Panzerhaubitze 2000). Ukrainians are currently being trained to use them.

Germany is also helping central European countries to provide Soviet-built equipment to Ukraine by replacing what they send with newer and better Western kit. (The advantage of this is that Ukrainian soldiers are already familiar with Soviet-built tanks.) The Czech Republic will provide 20 T-72 tanks to Ukraine and Germany will give the Czechs 14 Leopard 2 tanks and an armoured earthmover to help fill the gap. Germany is doing something similar with the Greeks. Yet it is not backfilling enough, says Andrzej Duda, the Polish president. Mr Duda has accused the German government of not honouring a promise to make up for the 200-plus Soviet-made tanks it has sent to Ukraine with modern German ones. Steffen Hebestreit, a spokesman for the German government, denies this. He said he was "flabbergasted" by the accusation as Germany had never made such a promise.

All this causes problems. "For 70 years Germany was educated to be a pacifist country," says Alexander Graf Lambsdorff, a leading politician of the pro-market Free Democratic Party (FDP). This means that Germany's armed forces are small and woefully ill-equipped, and also that many of the country's leading politicians are steeped in that pacifist culture. Rolf Mützenich, the leader of the Social Democrats' parliamentary group in the Bundestag, the lower house of parliament, fought for disarmament for two decades. He wrote his doctorate on nuclear-weapon-free zones. By his own admission it "gnaws" at him to have to vote for his country's rearmament. Late on May 29th German political leaders, some with gritted teeth, finally approved the central piece of Mr Scholz's new securi-

ty policy, a supplementary €100bn (\$107bn) defence fund. It is likely to be approved by parliament by the end of this week.

Despite all this, damage has been done, in particular in central and eastern Europe where many observers are furious. "The impression here is that we can rely only on Britain, America and our own region," says Radek Sikorski, a former Polish foreign minister and a current MEP. They helped Ukraine early, even before the war started, whereas in his view Germany has done too little too late. Poland is doing more for Ukraine than most, if not all, EU countries. Yet, given its history and pacifist political culture, Germany is helping Ukraine militarily more than many expected. If only it were better at saying so, and moving rather more quickly. ■

Wildlife crossings

For hedgehogs, not road hogs

CHAGNY

France is building overpasses to reduce roadkill

MOTORISTS HEADING from Paris to the Mediterranean on the *autoroute du soleil* this summer may be surprised by the proliferation of bridge-building over France's main north-south artery. The intended beneficiaries are more unexpected still: hedgehogs, badgers, wild boar, weasels, deer and other furry, spiky or slimy things. Between 2021 and 2023, 19 new *écoponts*, or wildlife bridges, will be built over the A6 and other motorways operated by APRR, a private firm, at a total cost of over €80m (\$86m). This will bring its network of green bridges in France to 119.

Designed to reduce roadkill and help animals roam more freely, wildlife bridges have become popular from Canada to

Australia. In France they have a long history. APRR built its first, near Fontainebleau, in 1960. Early versions were rudimentary. Today's models, such as the one under construction to connect forests near Chagny, in Burgundy, are deluxe: 25 metres wide, complete with a pond for frogs and other amphibians, opaque wooden-fenced sides to shield the passing critters from the glare of headlights, and carefully laid piles of rocks and branches and landscaped vegetation. Pedestrians are banned.

Every year an estimated 29m mammals are killed on roads in Europe. It is hard to say how many are saved by *écoponts*. A study for Vinci, another French motorway operator, found that between 2011 and 2015 each of its green bridges was used each year on average by 1,086 red deer, 150 wild boar, 104 roe deer, 48 foxes, eight badgers, four weasels, one hedgehog and one wolf. Smaller mammals and reptiles preferred underpasses: on average 189 badgers (as well as 37 weasels, 37 genets and five fire salamanders, among others) crossed via each of its motorway tunnels.

Private motorway operators are making these hefty investments in order to green their reputations and keep their state-awarded operating concessions. Governments too have been building eco-bridges. Sweden is putting up "renoducts" to help migrating reindeer. Germany has built more than 80 wildlife crossings, which have helped to protect the grey wolf. Green campaigners approve, but add that fewer cars on the roads would be better still.



Keeping the wolf from the voiture

Charlemagne | Squabbling in unison

Concerns over European disunity are overdone—for now



UNITY AMONG the nations of Europe is like a French *soufflé*. First comes the impressive puff, then, inexorably, a graceless sagging as the dish is tested by time and cutlery. Both the diplomat and the diner are then left wondering whether the whole thing was worth whipping up in the first place. Russia's invasion of Ukraine on February 24th jolted Europe into unity. Acting as one made the EU into something akin to a geopolitical power, albeit precariously. As expected, 100 days later that unity looks somewhat punctured. Intra-European squabbling has resumed, and is now quite loud. But what sounds like serious discord must be interpreted by European standards. In the ways that matter, continental unity is holding up rather well.

Europe has more potential rift lines than national dishes. To oversimplify, in past crises the division has often been between flinty northerners who resent being made to pay for ever more costly European schemes—bail-outs, stimulus packages and so on—and spendthrift southerners. Over Ukraine, by contrast, the main fissure has been between east and west. Eastern hawks, notably in Poland and the Baltics, fear that anything other than an unambiguous defeat of the Russian invasion will encourage Vladimir Putin to attack them next. In their eyes the traditional powers that dominate the EU are showing insufficient steel in their support of a neighbour under attack. France, Germany and Italy, they mutter, are complacent about the threat Europe faces, and would rather chit-chat with Mr Putin than stand up to him.

Some of the criticism aimed at the “old Europe” trio, to revive a phrase, is warranted. Olaf Scholz, Germany's chancellor, sometimes declares that Mr Putin must not win and at other times sounds like an otherworldly peacenik. “Can violence be fought with violence?” he recently mused. Promises of German arms deliveries to Ukraine have not always been followed up with actual deliveries. France has sent advanced kit into battle, but President Emmanuel Macron has also warned that Russia should not be humiliated. Mr Macron is using the war to promote his idea of “strategic autonomy” (ie, a Europe that depends less on America). Mario Draghi, the Italian prime minister, has pleaded with Europeans to crank up the pressure on Russia rather than chill with the air conditioning afforded by cheap energy—while Russian crude ex-

ports to Italy have in fact increased, and some Italian firms have bowed to the Kremlin's demand for payment in roubles.

All three leaders sporadically call for a ceasefire. The hawks object that this would mean accepting Mr Putin's theft of Ukrainian territory, and giving his forces a chance to dig in, regroup and attack again. Worse, Messrs Scholz, Macron and Draghi regularly speak to Mr Putin, which the hawks deride as pointless, counter-productive or bordering on treasonous. None has yet been to Kyiv, a city that eastern European leaders (and Britain's Boris Johnson) visited while rockets still rained on it. Of the big western European powers, only Italy is overtly pushing for Ukraine to become a candidate for EU membership, something easterners fervently desire.

These rifts are not imagined—even if some of the charges against the old guard are. Reports that Italy had sought a sanctions carve-out for its luxury-goods exports to Russia turned out to be bunk (and Mr Draghi used his central banker's wonkishness to devise painful sanctions on Russian foreign currency reserves). Charges that Mr Macron tried to nudge Ukraine into giving up territory for peace look similarly flimsy; he has made clear time and again he is speaking to Mr Putin at the behest of Ukraine. Germany has been least successful in dodging criticism. But kinder analysts point out that the overhaul of its foreign and defence policy, known as *Zeitenwende* and including a €100bn (\$107bn) boost to its armed forces, was never likely to achieve overnight results.

More importantly, the spiky intra-EU rhetoric is not blocking co-operation. Where it matters, Europe has shown unity. On May 30th, in their fourth meeting since the invasion, European leaders agreed upon stiffer sanctions against Russia. Their sixth such package included an embargo on most imports of Russian crude oil. That the deal took several weeks to come good was not because France or Italy demurred, but because the Putin-friendly regime in Hungary played hardball, threatening to veto the whole thing. Hungary depends on Russian oil delivered via a pipeline, which is now much cheaper than other sources. It won an exemption from sanctions for piped crude. As with any EU policy, oil sanctions would not have been seriously considered, let alone passed, without the encouragement of the biggest countries. Nor would €9bn in financial aid to Ukraine have been mobilised without the consent of the three biggest contributors to the club's budget.

A lot of hot air

Europe has a propensity to look more fractious than it is. Democracy is always noisy; a union of 27 democracies even more so. Leaders who snipe at each other on the European stage are often playing to a domestic audience, while forgetting that their neighbours also have domestic politics. Every time Mr Draghi publicly favours delivering weapons to Ukraine, say, he is taking a political risk: the Northern League and Five Star Movement, the two biggest parties backing his fragile coalition, are vocally against it. In eastern Europe, where the public eagerly reach into their pockets when asked to donate money to buy weapons to pummel Russians, leaders lose no votes by sounding hawkish.

How long will unity last? An obvious next step would be for the EU to slap sanctions on Russian gas, which the Kremlin would struggle to reroute to other clients, but which European customers (not least German ones) would also struggle to replace. The possibility seems distant at the moment—but then again, so did an oil embargo a few weeks back. As the struggle continues to stop Russia from biting chunks out of its neighbours, European unity will be further tested. But so far, it seems to be holding. ■



The Supreme Court

Separation anxiety

Britain's highest court takes a conservative turn

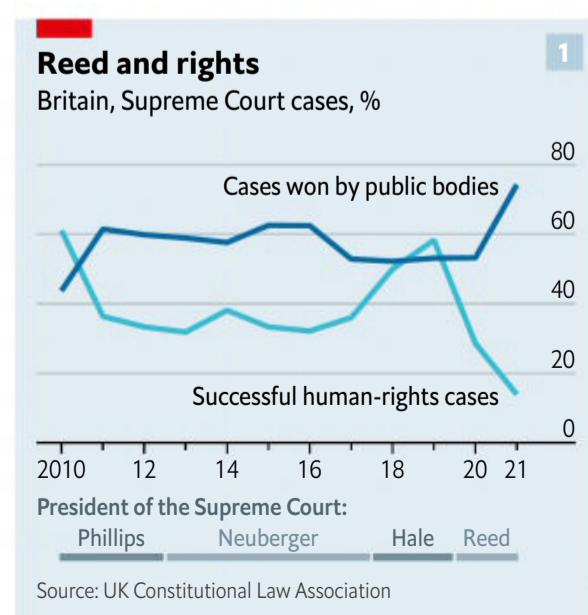
IN 2015 THE Conservative government announced that it would restrict child-benefit payments to two children per family in order to trim budgets. That was challenged by two mothers, who argued it breached their legal rights to privacy and a family life. When the case reached the Supreme Court in July 2021, it was dismissed by Robert Reed, the president, and six of his colleagues with a striking brusqueness.

The case was part of a trend of lobbyists turning to the courts after failing to get their way through politics, he remarked in his judgment, which found that the generosity of welfare systems is a question for lawmakers alone. "There is no basis, consistent with the separation of powers under our constitution, on which the courts could properly overturn Parliament's judgment that the measure was an appropriate means of achieving its aims," he wrote.

That judgment met with warm approval from the British government, which declared it a welcome part of "the ebb and flow of case law, between more and less activist approaches". In truth, the tide has been going in one direction for a while. An

analysis of data by Lewis Graham of the University of Oxford suggests a trend towards a more "executive-minded" Supreme Court. In the first two years of Lord Reed's presidency, the court has rejected more human-rights claims and sided with public bodies more frequently (see chart 1).

Polling conducted for *The Economist* by Ipsos suggests that Britons are in a state of



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— Lessons from covid for the flu

happy ignorance about the Supreme Court: just 29% say they are familiar with its work (see chart 2). Unlike America's Supreme Court, it cannot strike down primary legislation but only ministerial decisions, so it has a limited role in deciding questions such as abortion or free speech. But its short history shows how much it matters.

The Supreme Court was opened in 2009 by the Labour government. It took on the job of Britain's highest appeal court, previously performed by judges sitting in the House of Lords. A new constitutional landscape—which included devolution in Scotland, Northern Ireland and Wales, and the introduction of a human-rights law—demanded a high-profile body to oversee it.

That has made Britain's most senior judges bolder and more independent-minded, argues Charles Falconer, a former justice secretary who designed the overhaul. "In the old days you would see the Law Lords hanging around the chamber, and eating in the Lords' dining room, and they'd be picking up currents which they'd reflect quite frequently in the way they dealt with public law."

Others were less convinced. Many Conservatives thought the reforms vandalism. Their sense that something was amiss was reinforced in September 2019 when the judges, among them Lord Reed, ruled unanimously that Boris Johnson's suspension (or "prorogation") of Parliament during the Brexit saga had been unlawful. The then president, Brenda Hale, became a folk-hero to Remainers. Cabinet ministers

called the decision a constitutional coup.

In the election campaign that soon followed, the Tories promised a constitutional review to prevent the courts from being “abused to conduct politics by another means” and to “restore trust in our institutions”. Ministers mused about changing the court’s name. Dominic Raab, the justice secretary, has since proposed new reforms to the human-rights act. He intends to halt the “incremental expansion of a rights culture without proper democratic oversight”. This is a restorationist agenda, seeking to revive an older constitutional orthodoxy which stresses the supremacy of Parliament and the ability of ministers to exercise discretion without a judge looking over their shoulder.

Talk of reviews and name changes has subsided at the same time as the court has taken a more restrained approach. “The idea that we have gone soft on the government or we are reluctant to find against the government is completely without foundation,” remarked Lord Reed recently. But he added: “What has been perhaps more evident in our judgments is greater respect for the separation of powers.”

Take the case of Shamima Begum, a Briton stripped of her citizenship after travelling to join Islamic State in Syria. In February 2021 the Supreme Court upheld this decision, reasoning that the government’s view that Ms Begum was a security risk demanded respect from the courts because the home secretary was accountable to Parliament. Or that of Margaret McQuillan, the sister of a Northern Irish woman shot in 1972; British troops were suspected to have been involved. In December 2021 the court asserted a firm cut-off date for investigating historic human-rights abuses.

The Supreme Court has also taken a distinctly limited view of the powers of devolved parliaments, emphasising the tight constraints imposed by Parliament in Westminster. That makes any legal bid by the Scottish government to force an independence referendum in 2023 look much less likely to succeed.

Veil of ignorance

“How much, if anything, do you feel that you know about each of the following?”

Britain, May 2022, % responding



Source: Ipsos

Views differ on what is happening. Connor Gearty, an academic and human-rights barrister, points to a change in leadership. On this view, judges such as Lady Hale took a more flexible and imaginative approach, taking into account the life experiences of litigants and the good of society. Mr Gearty sees the court under Lord Reed as taking a more old-fashioned, “formalistic” approach, focused on narrow legal questions.

Jonathan Sumption, who served on the court from 2012 to 2018, thinks the new orthodoxy predates Lord Reed’s term, and is shared by a generation of talented judges. The prorogation decision under Lady Hale wasn’t a case of extreme judicial activism at all, he says. Sometimes defending the will of Parliament means standing up to overweening governments. At other times it means pushing back at campaigners seeking to change government policy.

Others see a court shielding itself from a harsh political climate. Lord Reed and

Lord Burnett, the head of the judiciary in England and Wales, seem to think it is “constitutionally unwise for there to be a sense of conflict between the judges and the executive,” says one senior lawyer. Lord Reed has sought to mend bridges with MPs, patiently reassuring them in meetings that he understands the court’s role. In a speech on May 30th Lord Burnett said: “Judges should be allergic to politics.”

Politics has a habit of seeking judges out, however. One idea in the Tory ether is to give Mr Raab more discretion over picking judges (at the moment he approves or rejects a single candidate picked by an independent panel). Growing attention is paid to the decisions of individual judges, and attempts are made to categorise them as activists or conservatives. That worries liberals, who fear the independence of the judiciary is under threat, but it is also an inevitable product of the court’s importance. With status comes scrutiny. ■

Boris Johnson's future

What changed?

The prime minister’s position looks more precarious

SOMETHING IS SHIFTING in Westminster. In January, when the scandal over parties held in Downing Street during covid-19 lockdowns flared, some Conservative MPs talked of ousting Boris Johnson. A vote of confidence in Mr Johnson’s leadership would be triggered if 54 Tory MPs send letters demanding one to a party grandee. That threshold was not met; the moment passed.

Such a contest now looks rather more likely, even if Mr Johnson would still have a good shot at winning the ballot that would follow. Around 30 MPs have publicly called for him to quit; more have expressed unease about his leadership. Dissenters seem to be evenly spread: from northern and southern seats, newbies and greybeards, from the right-wing and moderate flanks of the party. More MPs are planning to test the mood of their constituents over this royal jubilee holiday weekend; depending on what they hear on doorsteps and at fetes, they may add to the no-confidence letters.

What has changed? Sue Gray’s report into the Partygate affair, which was published on May 25th, was lurid enough in its descriptions of Downing Street drinking to anger the public, yet too patchy to provide the catharsis that MPs hoped for. Details continue to trickle out about a gathering said to have been organised by the prime minister’s wife, which Ms Gray chose not to investigate. His independent ethics adviser has

reportedly been mulling resignation.

At the same time growing numbers of MPs think that the party cannot win the next election under Mr Johnson. The Tories’ polling has hovered in the mid-to-low 30s since January; a poll number in the 20s would be widely interpreted as irreparably bad. A £15bn (\$19bn) package of handouts to protect families against inflation that was announced by the government on May 26th has made little political difference. For fiscal disciplinarians on the Tory benches, that’s a lot of buck for no bang.

Many MPs had used the war in Ukraine as a pretext for not moving against Mr Johnson. But the war exerts a weaker grip on their attention now. The critical moment may come on June 24th, the day after two by-elections in England that the Tories are widely expected to lose. It may come sooner. It may not come at all.

That the process is so opaque is a result of changes in 1998 to the rules for Tory leadership contests. Previously, rebels would simply organise a direct leadership challenge, as Michael Heseltine did against Margaret Thatcher. Democratising the system has produced a lottery: since only one person knows how many letters have been sent, no one else can be sure if or when the contest will begin. If it does, there is no consensus over who should replace Mr Johnson. The uncertainty is thrilling Westminster and paralysing the government.



Education and climate

Survival of the bookish

BASANTPUR, NEPAL; KITUI, KENYA; AND PENANG, MALAYSIA

People with less schooling are finding it harder to adapt to climate change

WHEN SHADRACK LOLOKURU was “nine or ten”, his relatives put him into a bucket and lowered him into a well. From the murky bottom, he filled the bucket and passed it back up so the family’s cows could drink. No one thought this odd. Among his people, the Samburu of northern Kenya, “a five-year-old is regarded as old enough” to help look after cows, he says; herding them, guarding them and making sure the precious beasts have enough grass and water.

Mr Lolokuru is now in his 50s and still owns cows with his two brothers. Water is even scarcer than when he was a boy, partly thanks to climate change. The Horn of Africa faces its worst drought in four decades this year, says the World Food Programme. For the Lolokuru family, harsh weather is becoming the norm—and they disagree over how to adapt.

Mr Lolokuru and his younger brother Robert are educated; both work as accountants in Nairobi, the capital. Their older

brother Lkitotian, who tends the herd back in their home village, has never been to school. The bookish and unbookish brothers see the world very differently.

Shadrack Lolokuru reads the news and understands that this year’s parched conditions are not a one-off. The weather is likely to be permanently hotter, and with more extremes. So he favours selling half of their herd. That way, they will have enough water to keep the remainder healthy. If they don’t, the whole herd could die. “Our cows [sometimes] become too weak to walk to where the water is. They drop dead on the way.”

Uncowed

But Lkitotian does not want to sell. He has a “cultural attachment” to a bigger herd, explains Shadrack. “The more cows you have, the higher your social standing; the harder-working and more responsible people think you are,” he says. “The fewer cows you have, the less of a man you are.” Lkito-

tian, like many of his neighbours, also struggles to understand climate change. “They don’t get it. They don’t believe the weather is changing. They believe it will go back to how it has always been for generations,” laments Shadrack.

Gradually, Shadrack is persuading his brother to sell some cows. The herd has been trimmed from 140 head to 100 in recent years. Lkitotian is unhappy about this, but he trusts and respects his younger brothers. Intra-family negotiations are fraught. Shadrack says he has “to tread carefully”. But he can see what will happen if he does not win the argument. Several families in his home village have lost all their cows; some show up on his doorstep in Nairobi and ask for help finding jobs as security guards.

The importance of education in grappling with climate change is underappreciated. Its role in mitigating global warming—better-educated folk have fewer children and invent more green technology, but also tend to emit more—is for another article. This one looks at how a bit of learning can help people adapt, and how its absence leaves them vulnerable.

Whether Earth warms a little or a lot, people will have to change how they live and work. A study by Erich Striessnig, Wolfgang Lutz and Anthony Patt of the International Institute for Applied Systems Analysis in Laxenburg, Austria, suggests ➤

ways education can make this easier. Better-educated folk have more access to information, such as early warnings for storms or droughts. Education "enhances cognitive skills and the willingness to change risky behaviour while at the same time extending the personal planning horizon". It leads to better health, so people are physically able to adapt, and to higher incomes, which always come in handy.

The authors compare two scenarios for sub-Saharan Africa: one in which 30% of young women had completed secondary school by 2050, and one in which 70% had. They estimate that in the second case the death toll from floods, droughts, wildfires, extreme temperatures and other extreme weather between 2040 and 2050 would be 60% lower.

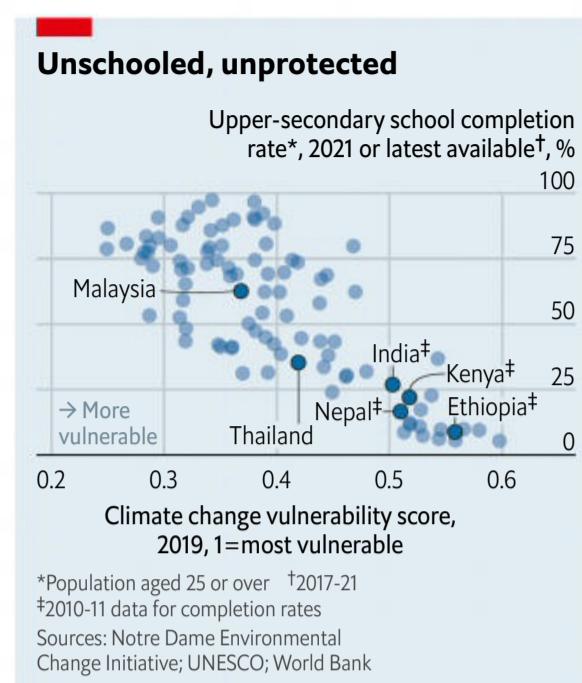
It seems that education itself makes the difference, and not simply the wealth that often accompanies it. A study by Raya Muttarak of the University of Bologna and Anna Dimitrova of the Wittgenstein Centre in Vienna looks at the relationship between floods and childhood stunting in India. In places where monsoon rains were one standard deviation above average (a proxy for flooding), infants were 20% likelier to be severely stunted, presumably because floods destroy crops and spread disease, for example by flushing sewage into sources of drinking water.

Since stunting affects brains, too, these infants will surely do worse in school. But if the mother was educated, the researchers found, her child was much less likely to be stunted. Indeed, children born in poor households but to educated mothers faced roughly the same risk of stunting due to floods as children born in wealthy households but to uneducated mothers.

There are several likely reasons for this. Mothers with more schooling typically understand more about nutrition. They are more scrupulous about hygiene, and more inclined to seek conventional (as opposed to mostly useless traditional) medicine. Because they are better at acquiring new information, they are better at assessing unfamiliar risks and respond in a more informed way to sudden changes.

Ms Dimitrova found similar results when looking at which households coped best with drought in Ethiopia. The mother's education was the key to preventing stunting. Professor Muttarak also found that in a coastal area of Thailand, a 1% increase in the number of women with secondary education in a village raised by 11% the odds of any household in that village being prepared for a disaster such as a tsunami. Such women were better at abstract thinking: they could imagine an event they had never observed, devise an escape plan and share it with their friends.

In Nepal, when Samir K.C. of the Asian Demographic Research Institute looked at



deaths from floods and landslides, he found that education was a far better predictor of survival, both for families and their livestock, than wealth (using whether families lived in a house with a permanent structure as a proxy for wealth).

Unfortunately, the parts of the world most imperilled by climate change, such as Africa and South Asia, often have woeful schools (see chart). And covid-19 has made matters worse, by closing classrooms for 1.6bn children globally. Before the pandemic, 53% of ten-year-olds in low- and middle-income countries could not read a simple text. That figure may have risen to 70%, estimates the World Bank.

Another brick in the sea wall

That would be an emergency under any circumstances; global warming makes it more so. "Formal schooling equips people with the capacity to adapt to climate change. That's one reason why it's so im-



Time to hit the books

portant for states to help children make up for all the learning they have lost during the pandemic," says Professor Muttarak.

Professor Lutz argues that given the unpredictability of climate change, a lot of money destined to be spent on grand engineering projects to protect against its effects will be wasted. By contrast, improving education in poor countries, especially education of girls, will make societies more resilient under almost any scenario. It may therefore be a more efficient use of some of the money splurged on sea walls and dams, he argues.

The very poor tend to be very conservative. Often, they stick doggedly to the farming methods that fed their forefathers. Such risk aversion is rational. Trying something new can be fatal if you have no savings or safety-net. An accountant who retrain as a lawyer may find her new job dull; a subsistence farmer who tries a new planting technique that fails may starve.

Education, however, gives people the confidence to break free of traditions, the curiosity to seek out new information and the cognitive skills to process and act on it.

Consider the Mulwa family of Kitui county in eastern Kenya. Isaiah and his adult son Philip grow maize on neighbouring plots. Isaiah's crop is barely knee-high; Philip's towers over the tallest visitor's head. Isaiah, who received only rudimentary schooling, expects just half his usual harvest this year because the rains are so bad. "There is nothing we can do," he says, "We just wait for the next rain. And pray to God that it will be better."

Philip, who is better educated, is less fatalistic. He has dug a retention ditch to conserve water. He and his wife buy fertiliser and drought-resistant seeds, rather than simply taking seeds from the previous year's crop. They test the pH of the soil, and add lime if it is too acidic. They plant their seeds earlier than their neighbours do, so they catch the first rain. They have adopted all these techniques in the past 10-15 years, partly in response to climate change. The new ways work well, as Philip's burgeoning crop demonstrates. He offered to teach them to his father, but "he's not interested" and uses none of them.

In this, Isaiah is not unusual. Few of the villagers understand what is happening to the weather. "I don't know," say several.

It is a sentence heard in unschooled households throughout the developing world, as people who fear any change try to grasp the gigantic one that has been thrust on them. Some 6,000km away from Kenya, on the plains of Nepal, *The Economist* found similar bafflement.

At first glance the small town of Basantpur resembles the kind of bucolic idyll depicted in many Bollywood movies. Goats, chickens and ducks scot about outside squat brick houses. Cattle shelter from the

► sun in open sheds. Miles of rice paddy stretch into the distance.

Yet wrenching disruption is afoot. Crop yields have fallen by half in the past five or six years, estimates Harikala Kaphle, a 78-year-old (she thinks) who toils with her son and daughter-in-law on a third of a hectare. The rains are less predictable than they were. She does not know why, or what to do about it. She has consulted no experts, sought no advice, received no training. A few times she built embankments but they got washed away. "What can I do? The rain is too heavy. Sometimes it even tries to take down my house," she says.

It is hard for her to know where to start. She has had no education, and cannot read or write. Her son and daughter-in-law had a couple of years of primary school, but they too started farming as children. "If I had studied until 5th grade, I could have done a lot [more]," she says.

One of her neighbours, Ashok Kumar Lamichhane, takes a different approach. His farm is smaller, only a fifth of a hectare. But he grows higher-value cash crops, such as bell peppers, cucumbers and chillies, and sells them for a healthy profit.

Rising temperatures and more erratic weather have brought a multitude of problems, from floods and landslides to invasive weeds and dengue-spreading mosquitoes. Mr Lamichhane is not helpless, however. The son of farmers, he was educated up to the tenth grade; he devours instructional YouTube videos from India, Nepal and the West on how to farm better, how to stop landslides and so on.

"It is not exactly the same, so I cannot exactly copy the methods," he says. "But I can adapt them to my conditions." When landslides were washing away his embankments, he learnt a new method involving the use of shrubs and branches to build more robust ones, for example. As water sources dry up—another problem—he has employed drip irrigation. Mr Lamichhane now wants to diversify into growing mushrooms commercially. "It would have cost 300,000-400,000 Nepali rupees [\$2,500-\$3,200] to do training in India," he says. "But I learnt it on my own online." He has done at least 100 courses of agricultural training, he says proudly.

The most basic educational achievement—literacy—can make the difference in helping people adapt to climate change by creating the foundation to learn new skills. Consider the work of the Penang Inshore Fishermen Welfare Association (PIFWA), on Malaysia's west coast. It started as an organisation to keep foreign trawlers from poaching local fish. But it soon diversified into planting mangrove trees and teaching local people how to do so, too.

Environmentalists love mangoes. They are the only trees that thrive in salt water, and their tangled roots create an effective

sink for trapping carbon dioxide. Fishermen like them because all kinds of fish breed in mangrove swamps.

PIFWA has helped plant 400,000 mangrove saplings—a huge boon at a time when builders have been devastating mangroves in Malaysia and elsewhere. This has largely been paid for not by the organisation itself, but by other local groups it has taught and worked with.

Mangroves of academe

At the end of a dirt track that winds through criss-crossing waterways is PIFWA's education centre, a low-slung blue building. Inside is a classroom with posters of birds, fish and the threats to them. A vocabulary list shows how to spell "logging", "deforestation" and "timber". For 25 years the group has been preaching the benefits of mangroves in schools and factories, to local politicians and especially to local women, who "have been really effective at talking to their husbands", says Ilias Shafie, the president of PIFWA.

At first it was hard, but the tsunami of 2004 woke people up to the necessity of having mangrove forests to protect the coastline. Also, in recent decades education has improved enormously. As recently as 1980, only a fifth of Malaysian adults had completed lower secondary school. Now more than three-quarters have. In other words, the vast majority of adults of working-age are literate. And that makes it "much easier" to teach them about conservation and persuade them to take it seriously, says Mr Shafie. Now there are plenty of mangroves in the area, filling local fishermen's nets and protecting coastal villages from storms and floods.

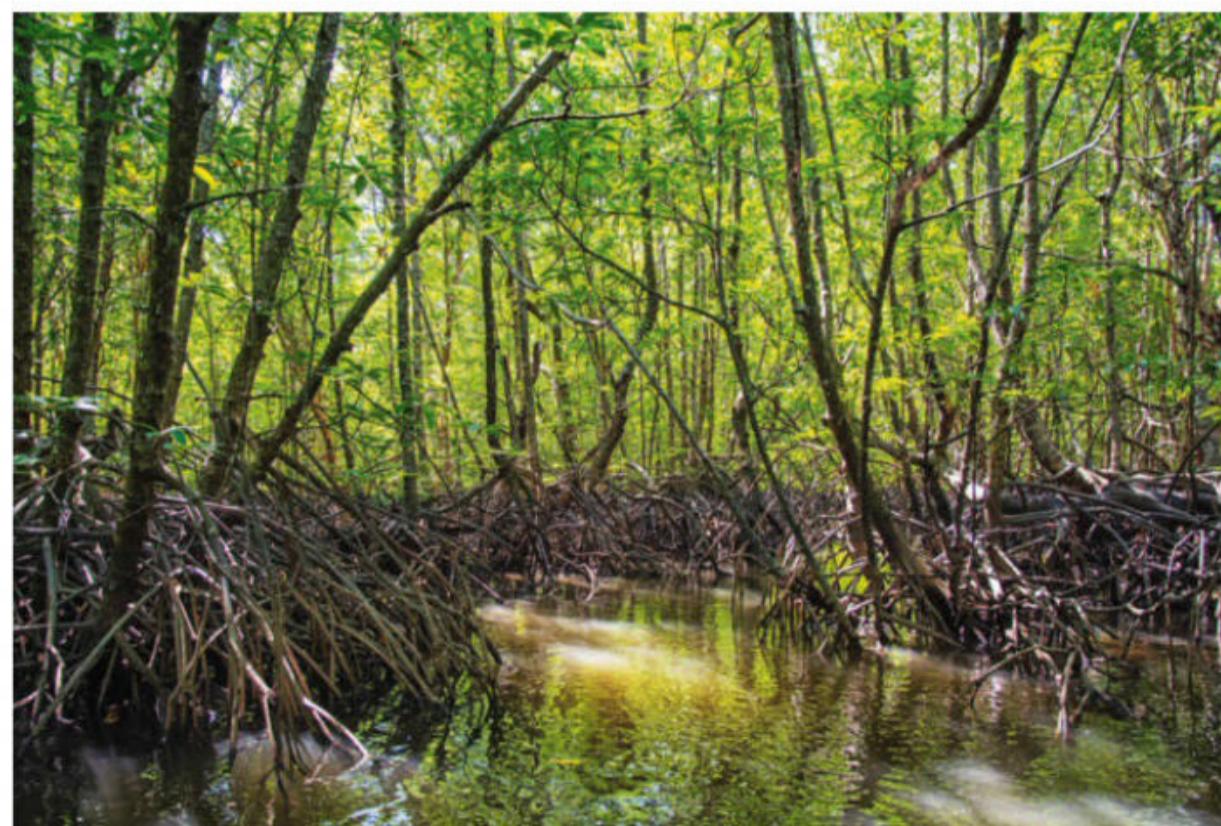
Education can create virtuous circles; ignorance, vicious ones. For example, par-

ents in Shadrack's home village in northern Kenya pay school fees for their children by selling milk. Less-educated parents are more likely to see their cows die of thirst, leaving them no way to pay the fees. Many pull their children out of school. Some do so pre-emptively, to avoid selling their last cow. This sets up the next generation for failure. By contrast, better-educated farmers tend to put their children's education above almost anything else.

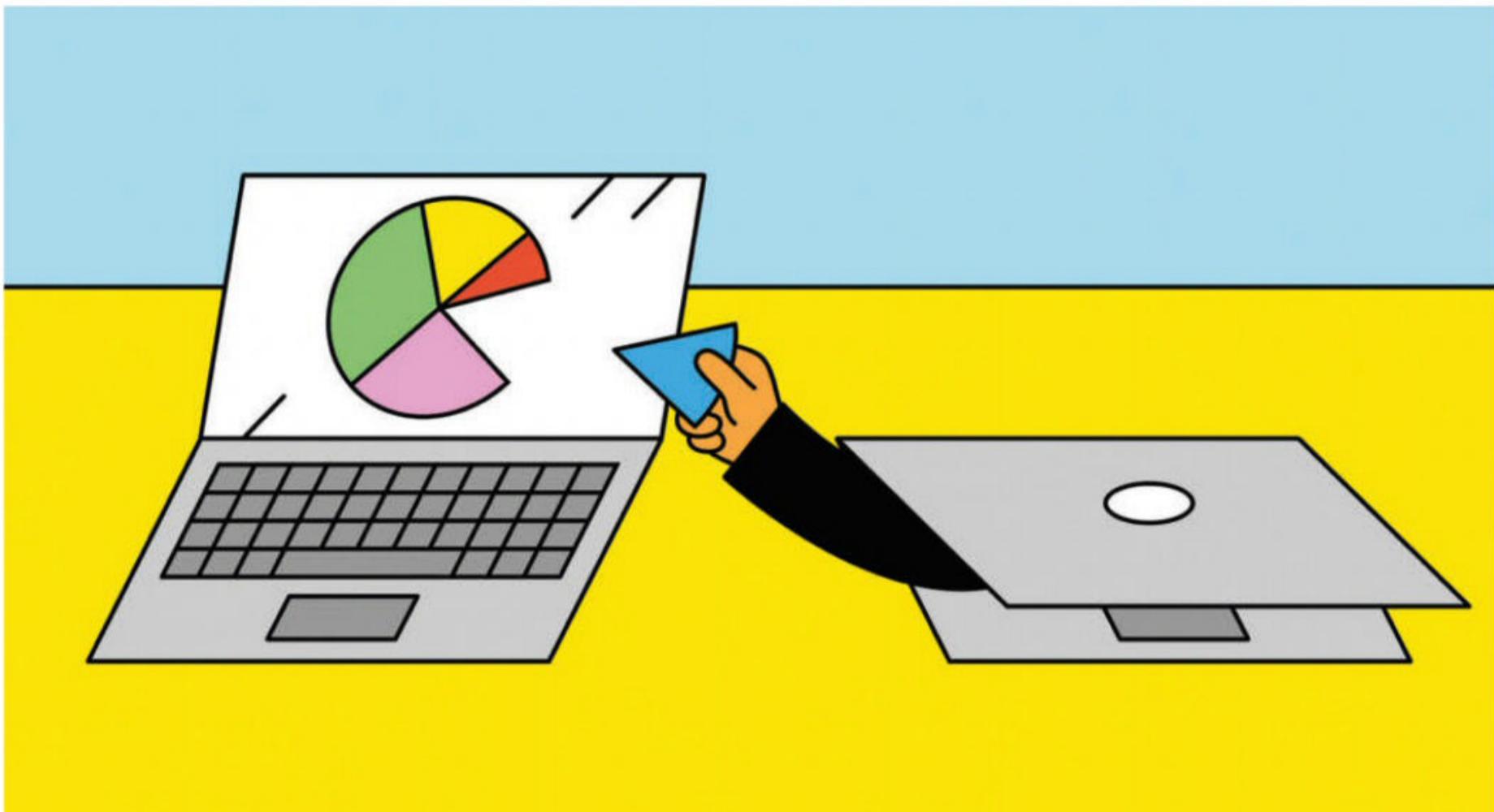
A story from eastern Kenya is even more striking. In Makueni county, a rocky hill rises above two villages. In recent years, there has never been enough rain. But when it comes it comes in unpredictable deluges, sweeping away topsoil, digging ravines and then vanishing towards the sea. The local government built a simple concrete barrier on the hill to catch these deluges and pipe them to the villages below, which were desperately short of water.

In one village, Masue, the villagers welcomed this innovation. Suddenly their school had tap water. This was a double blessing. Not only could villagers get clean water simply by queuing for it. But also the girls, who used to walk miles to fetch water most days, could go to school instead, and bring water home with them. Enrolment doubled. The next generation in Mafue will be better educated than their elders.

By contrast, the village on the other side of the hill, Kasuvi, was less keen. Many people there believed an old myth that if you tamper with a natural source of water, it will dry up for ever. They were so alarmed by the new plastic pipe on their side of the hill that they smashed it with pangas, recounts Douglas Mutua, a local head teacher. Many of the people in that village are "illiterate", he sighs, and such people "find it hard to change their ideas". ■



Where people learn, fish school



Corporate espionage

On her CEO's secret service

Spying in business is entering a worrying new era. Companies need to take it more seriously

FOR ESPIONAGE of the cloak-and-dagger variety, it is hard to beat John le Carré or Ian Fleming. But the world of corporate spying has plenty of drama, too. Take the alleged skulduggery in a recent court case involving two American software firms. In May a jury awarded Appian, based in Virginia, \$2bn in damages after it had accused Pegasystems, from Massachusetts, of illegally snooping on it to gain a competitive edge. The trial revealed that Pegasystems executives had referred to a contractor hired to obtain ingredients of Appian's secret sauce as "our spy" in internal documents, and had dubbed the overall effort "Project Crush". Pegasystems, whose share price slumped after the ruling, and which is set to face a barrage of class-action suits from disgruntled investors, has vowed to appeal against the "unjust" decision.

The episode illustrates how interest in business espionage has broadened. Snooping is no longer centred on a few "sensitive" industries, such as defence and pharmaceuticals. It is increasingly used to target smaller companies in surprising sectors, including education and agriculture. It has, in short, become a general business

risk. Corporate espionage may be entering an era not unlike the cold war heyday of great-power spookery.

There are two intertwined reasons for this: the inexorable growth of the intangible economy and the growing sophistication of online hackers. CEOs should be worried when they see their firms' secrets being hawked on the dark web; one marketplace, Industrial Spy, flogs stolen data and documents to "legitimate" businesses. Information is sold in packets ranging from a few dollars to millions. Keeping intellectual property (IP) safely locked in the digital vault can be devilishly difficult.

When they hear about IP, most people

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think of patents. Securing patents has become more difficult, in America at least, since a pair of Supreme Court rulings in the past decade chipped away at, respectively, protection for "business methods" and "abstract ideas" (which many software-based inventions are). This has left companies more reliant on developing and safeguarding trade secrets. These can be anything from algorithms and client lists to chemical processes and marketing plans. Among the most famous trade secrets are Coca-Cola's recipe and the formulation for WD-40. Most are more mundane: recent legal battles have involved industrial-baking agents and floor-resin formulas. Patents offer stronger protections, but trade secrets last for ever—if they are well kept.

Christine Streatfeild of Baker McKenzie, a law firm, talks of a "pivot" in the past five years, as more companies in more industries wake up to the need to protect their secrets. She points to stepped-up efforts in consumer goods, steel and even cannabis. Baker McKenzie has advised legal marijuana-growers in America on steps they can take to curb rivals' access to information about their cultivation techniques, soil recipes, extract flavouring and so on.

Digitisation makes the problem thornier. As old industries, from carmaking to education, increase investment in software, they have more bits and bytes worth stealing. Industries with lots of startups are particularly vulnerable, says Sidhardha Kamaraju of Pryor Cashman, another law firm, because they combine lots of new tech with mobile employees who hop be-

▶tween up-and-coming firms. In 2018 Alphabet's Waymo self-driving unit won a \$245m settlement from Uber after alleging that one of Waymo's former engineers took trade secrets along with his office bric-a-brac when he left for the ride-hailing firm.

At least legislative protections for trade secrets have grown stronger. A turning point in America was the Defend Trade Secrets Act, passed in 2016, which greatly expanded the type and number of secrets covered by federal law. Its passage led to a 30% jump in cases filed, says Tim Londergan of Tangibly, an IP-management firm.

The bad news is that many firms are poor managers of such secrets. It is not enough to make reasonable efforts to keep the information confidential. The secret also has to be clearly articulated. Failure to do this has been exposed in a number of recent cases. In one, Mallet, a baking-products firm, failed to block an upstart rival from using release agents (which allow loaves and buns to be more easily removed from pans) similar to its own, after an American appeals court ruled, in effect, that Mallet hadn't adequately described and documented its secret formula.

Such rulings have led more bosses to demand "IP audits" and use the results to better safeguard secrets. This, in turn, has spawned a cottage industry of trade-secrets consultants. Lawyers, too, are in demand. Patent lawyers are plentiful but few really understand trade secrets and they tend to focus on litigation, once the problem has arisen, says Mr Londergan. "Companies need help earlier." They also need to focus more on risks emanating from corporate partners, for instance in joint ventures. This is often an afterthought even among multinationals.

Corporate Bonds

TSMC is a rare globally active company that comes close to best practice in articulating and managing its trade secrets. The Taiwanese chipmaker has good reason to want to get it right. It operates in a highly sensitive industry chock-full of proprietary information that rivals would love to get hold of. On its doorstep is China, which bears Taiwan ill will and is widely acknowledged as the world leader in IP theft (having been its victim in the 18th century, when Jesuit priests were sent from Europe to nick Chinese trade secrets in porcelain-making). The Taiwanese authorities say that in recent months they have uncovered several attempts by China to poach semiconductor engineers using Chinese firms that registered on the island unlawfully by hiding their origins. In May Taiwan's parliament passed a law that punishes anyone who obtains or uses designated "core" technologies for the benefit of "external entities" with up to 12 years in prison.

America, too, has cracked down with

China in mind. The Department of Justice says that roughly four in five economic-spying cases it brings "allege conduct that would benefit the Chinese state". The best-known case of suspected espionage by China, involving Huawei, a maker of telecoms gear, is the tip of a large iceberg.

As big a threat as China is, it isn't alone. Ostensibly friendly states spy, too. Israel has been known to snoop on American firms for the benefit of its tech and military industries. And it is not always helpful to think of the threats posed by different kinds of actors—company insiders, corporate rivals or governments—as discrete. Sometimes they are at work simultaneously. Take the recent sentencing of You Xiaorong, a former chemist at Coca-Cola, to 14 years at Uncle Sam's pleasure. Ms You was convicted of stealing trade secrets relating to coatings on the inside of beverage cans. She used the filched formula to set up her own company in China, with backing from a local partner. Their venture received grants from the Chinese government. Whether or not Chinese officials were aware of the theft is unclear.

The case highlights another challenge for firms trying to keep a lid on secrets. They can spend as much as they like on beefing up IT systems, but they must still watch out for analogue forms of exfiltration. Operatives for Procter & Gamble (P&G) were once caught diving in dumpsters outside a Unilever office in Chicago in search of information about its consumer-goods rival's marketing strategy. Ms You apparently used her phone to take pictures of sensitive documents to bypass Coke's security measures. People use smartphones in offices all the time. How to tell if it is for nefarious reasons?

Moreover, much corporate spying can be—from the point of view of those being spied on—frustratingly fuzzy. Some of it is perfectly legal. Many hedge funds watch activity in factories, using foot-soldiers or satellite imagery, to gauge output and bet accordingly on stocks. At the other extreme is stuff that no CEO in their right mind would countenance: P&G's top brass were so appalled when they learned of their underlings' trash-rummaging at Unilever that they shopped their own company, resulting in a \$10m settlement.

In between is a large grey area where operatives "ride the ragged edge" of morality and the law, as Eamon Javers puts it in his book, "Broker, Trader, Lawyer, Spy". Many of them work for outfits that companies hire in order to gain plausible deniability. This industry came of age in the vicious takeover battles of the 1980s and has since grown at breakneck speed. Its well-known names, such as Kroll and Control Risks, are at the top of a pyramid containing thousands of mostly small firms.

Most such work is legal and boring—for

instance, due diligence on clients' prospective business partners. But there are cases of firms undertaking dubious activity, from wiretapping to impersonation. In the 19th century, the industry's grandfather, Allan Pinkerton, laid out (and largely followed) a strict code of conduct. Mr Javers fears that some of Pinkerton's modern-day counterparts routinely violate many of his gentlemanly commandments.

None of this is going away. Employee mobility is at or near an all-time high. Companies, and the tactics they use, get more desperate in downturns. And the geopolitical backdrop is growing frostier, increasing incentives for underhand activity by states or their proxies. "Casino Royale" it may not be, but the spectre of surging economic espionage is real. ■

Business in Russia

Patent aggression

Intellectual property is another casualty of the war

AS ITS ECONOMY was being bombarded with Western sanctions in early March, Russia decided to amend a section of its civil code. The world took little notice of decree number 299, which authorised the use of patented inventions, including in medicine and digital technology, from "unfriendly countries" without asking the owner for permission or paying any compensation. Unsurprisingly, Ukraine, which Russia invaded, is deemed "unfriendly". So are America and the EU, which are not at war with Russia but are pounding its economy and arming the Ukrainians.

Russia's move is not illegal under inter-►



Peppovna the pig

► national law. Countries are allowed to make exemptions to patent rules in a national emergency. Cumbersome paperwork and tedious price negotiations can cause delays. But some compensation, no matter how paltry, is expected. Under Russia's new law, though, patent holders could get nothing.

Although the law applies only to patents, which protect inventions, it indirectly gives a free pass for other kinds of intellectual-property (IP) infringement. This is because the courts will offer little protection against opportunists, says Maria Ostroshenko, an IP lawyer at ALRUD, a Moscow law firm. She notes that some Russian judges are now asking why the IP of international companies, including trademarks and copyright, deserve protection. This has never before been in question.

Western firms are already feeling the shift. In early March Entertainment One UK, the British arm of a Canadian company, lost its case against a Russian rival using a fake Peppa Pig, one of its trademarked cartoon characters. The case was dismissed, says Vladimir Biriulin from Gorodissky and Partners, Russia's biggest IP firm, because Britain falls into the "unfriendly" camp. When Entertainment One asked for compensation, an arbitration court in Russia ruled that granting such a demand was "an abuse of right" in light of British sanctions. In May a higher court rejected the firm's appeal.

Facing isolation from the West and friendly courts at home, Russians are feeling emboldened to grab foreign IP. More than 50 applications to register Western brands such as Coca-Cola and Christian Dior were made in the last two weeks of March alone. Patented software and devices whose foreign producers have stopped selling in Russia are likely to be next. On May 6th Russia published a 25-page list of goods that could be imported without permission from the owner. It includes Apple phones, Nintendo game consoles and parts for Tesla cars, as well as weapons and ammunition.

William Miles of Briffa, an IP-law firm in London, reports that all this means his clients have "zero interest" in introducing new trademarks or inventions in Russia. This will chill innovation, predicts Koen Berden of the European Federation of Pharmaceutical Industries and Associations, whose members include Johnson & Johnson, Novartis and Pfizer. The new law is already hurting pharmaceutical research and development, which was starting to recover from years of underfunding and neglect. Most foreign drugmakers are refusing to launch new trials in Russia as long as the war rages on, making it hard for new medicines to get approved. That is unwelcome news for a country that imports nearly 70% of its drugs. ■



A shake-up at Meta

Leaning out

SAN FRANCISCO

Sheryl Sandberg, Mark Zuckerberg's second-in-command, quits Facebook

WHEN I TOOK this job in 2008, I hoped I would be in this role for five years," wrote Sheryl Sandberg on her Facebook page on June 1st. With that the chief operating officer of Meta, the social network's parent company, announced her resignation. The year she joined Facebook made \$272m in revenue. Last year turnover reached \$118bn. Aside from Mark Zuckerberg, Meta's boss, no one has done more to build the tech behemoth, which boasts more than 2bn users around the world.

In 2008 Facebook was in its infancy. Mr Zuckerberg, then 23 years-old, had no concrete plans to make it a viable business. Ms Sandberg had been running Google's advertising operation, after stints at McKinsey, a consultancy, and America's Treasury. A compulsive organiser, she was brought on to provide adult supervision. She "handles things I don't want to", Mr Zuckerberg once said. That included commercial strategy and staffing, as well as politics.

Ms Sandberg flourished in the role. She masterminded the firm's growth as an ad platform. By 2010 Facebook was profitable. Last year only Alphabet, Google's parent, earned more advertising revenue. One of her books, "Lean In", became synonymous with female empowerment in the boardroom. All this helped cement her place as Mr Zuckerberg's second-in-command.

But over the past few years speculation grew that the relationship was fraying. Mr Zuckerberg apparently blamed Ms Sandberg for a scandal which involved the sharing of Facebook users' private data with

third parties by Cambridge Analytica, a political consultancy. Other reports suggest that the Trump years added extra strain. As a vocal Democrat she became less effective at advocating for the firm in Trumpian Washington. Meta denies there is a problem. Ms Sandberg says she is leaving to pursue her philanthropic work.

The departure comes at a tumultuous time for Meta. Fewer teenagers are signing up to Facebook. Even Instagram, Meta's youth-friendly platform, is losing out to TikTok, a hipper rival. New privacy rules introduced by Apple allow users to opt out of ad-tracking. That makes Facebook less valuable to advertisers. Meanwhile lawmakers are increasingly concerned about misinformation on social media.

Mr Zuckerberg wants the firm to go all-in on the "metaverse". Over the past year, the firm has bulked up its virtual-reality teams, ploughing \$10bn into the effort. It plans to release four new headsets by 2024. As a digital-ads guru, Ms Sandberg may have found herself adrift at a firm veering towards hardware.

The exit of Mr Zuckerberg's adult supervisor seems to alarm investors; Meta's share price dipped by 3% on the news. And it leaves his firm looking like a one-man show. He is the only founder still calling the shots at one of America's tech giants. Reports were already swirling that his management style had become more iron-fisted, taking big decisions with less counsel. Without his long-term partner, he may start to cut an even more solitary figure. ■

The movies

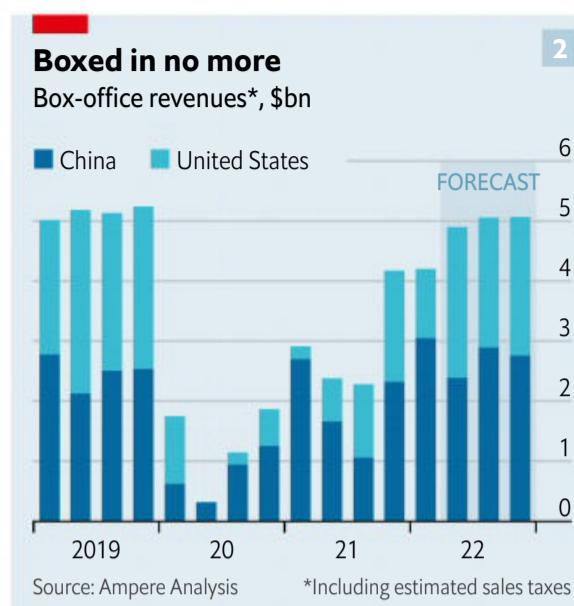
"Top Gun" takes off

A high-flying debut at the box office sparks hopes of a theatrical recovery

YOUR KIND is headed for extinction!" barks a senior officer to Tom Cruise's hero in "Top Gun: Maverick", a supersonic action flick released by Paramount last week. "Maybe so, sir," replies Maverick. "But not today."

Cinema owners are feeling similarly defiant. Worldwide box-office receipts fell by 72% in 2020, when the pandemic forced film buffs to say goodbye to the silver screen and hello to their sofa. After ticket sales recovered only partially in 2021, many predicted curtains for theatres. Yet "Top Gun", a sequel to a classic of the genre from 1986, raked in \$248m on its opening weekend, the biggest-ever debut for a film starring Mr Cruise. Its domestic haul of \$156m over the long weekend broke the Memorial Day record set by one of Disney's "Pirates of the Caribbean" films in 2007.

Theatre owners hope that "Top Gun" heralds the beginning of a broader recovery. It is only the fourth-biggest opener of the pandemic era (see chart 1). However, the other big hits—Sony's "Spider-Man: No Way Home" last December, Marvel's "Dr Strange in the Multiverse of Madness" in May, and Warner Bros' "The Batman" in March—have all been superhero flicks, with young fans. "Top Gun", by contrast, sold 55% of tickets to over-35s. This suggests that viewers old enough to harbour fond memories of Mr Cruise's original turn as Maverick 36 years ago are now ready to



come back to the movies, too.

The recovery is far from complete. This year's worldwide box office will be only about three-quarters of 2019's, forecasts Gower Street Analytics, a research firm. China, which these days rivals America as the biggest cinema market, is still locked

down and in any case increasingly hostile to Hollywood ("Top Gun" has no Chinese release date). Russia is also off-limits since its invasion of Ukraine. Above all, studios are focusing attention and resources on their streaming platforms, releasing fewer films in cinemas, for shorter runs.

The summer release slate is promising: June will see "Jurassic World: Dominion" from Universal and "Lightyear", the latest in Disney's "Toy Story" series. "Thor: Love and Thunder", the next Marvel movie, is out in July. Yet there will be strong reasons to stay at home, too. On the day that "Top Gun" was released, Netflix unveiled its latest season of "Stranger Things" and Disney+ launched a "Star Wars" spin-off, "Obi-Wan Kenobi". In August Warner Bros Discovery will start a new "Game of Thrones" saga, before Amazon releases a "Lord of the Rings" series in September. This latest adaptation of J.R.R. Tolkien's fantasy epic is the most expensive piece of television ever made, with a budget around three times that of "Top Gun". ■

Digital labour

Hire hurdles

SAN FRANCISCO

Big tech's red-hot jobs market may be cooling

CAN I KEEP the monitor and mouse?" a fired tech worker recently asked on Blind, an anonymous social-media platform where techies go to compare notes on employers. The questions used to be about how much Meta was paying or what perks Apple offered. As America's technology giants contend with supply-chain uncertainties, a looming recession (see Finance & economics section) and sliding share prices, many users are instead asking if the sizzling market for tech jobs is cooling.

The first sign of trouble came on April 28th. In a quarterly earnings call Brian Olsavsky, Amazon's chief financial officer, said that the e-commerce titan's warehouses were overstaffed, costing about \$2bn (9% of operating profit) in the past year. A memo leaked a week later from Meta, Facebook's parent company, said the firm was putting a freeze on new hires in most teams. Other big tech names, including Microsoft, Nvidia, Snap and Uber, have made similar noises. So far this year listed tech firms worth a combined \$3.4trn have announced hiring freezes or firings.

The commotion comes after a prolonged boom in tech jobs. During the 2010s the number of positions in America's tech industry increased by 4.4% a year on average, triple the rate of the overall economy,

according to a study by the Brookings Institution, a think-tank. The pandemic turbocharged the trend. Work, leisure and shopping shifted online, boosting demand for digital services. Last year listings for tech jobs increased by over 80% compared with 2020, observes Amit Bhatia, co-founder of dataplace.io, a research firm. Demand for tech skills also surged outside the sector as companies uploaded their operations to the cloud and boosted cyber-security, making the market even tighter. The number of applications for each tech-industry opening fell by a quarter in 2021.

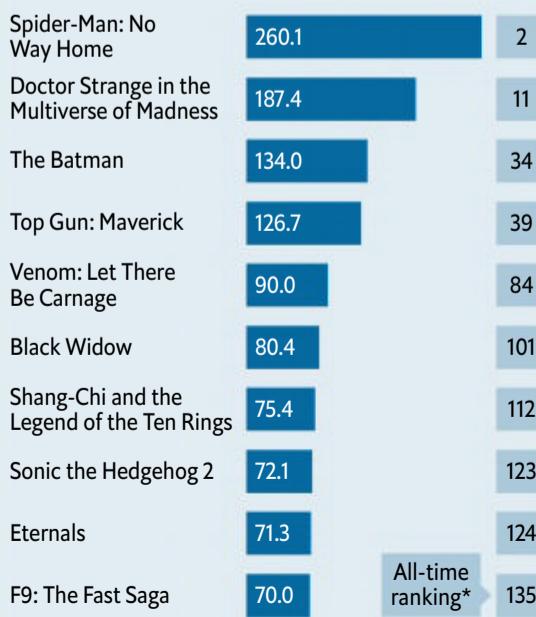
Much of the jobs growth came from startups and newly listed companies. But the tech giants, too, were adding plenty of employees. Between 2020 and 2021 Amazon, Meta and Netflix all increased their full-time staff by over a fifth. The ranks at Microsoft and Alphabet swelled by 11% and 16%, respectively. That compares with a median of 3% for firms in the S&P 500 index of America's largest companies.

So far redundancies, rather than just hiring freezes, have been largely confined to startups, such as Getir, a Turkish grocery-delivery app, and newly public firms such as Peloton, a maker of web-connected exercise bikes. Sackings at established tech companies have been modest. On May 17th ►

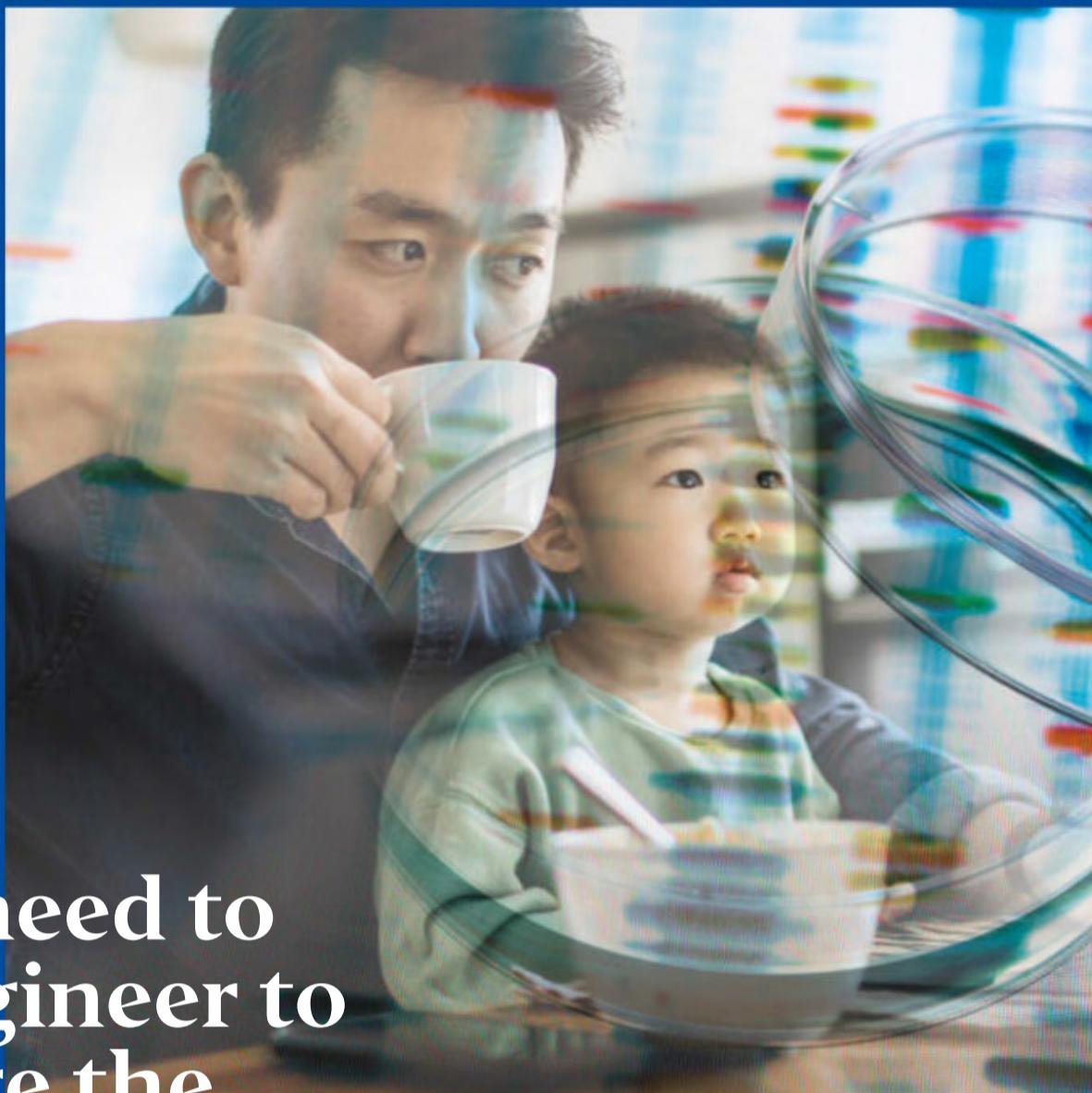
The hits everyone missed

US and Canada, box-office revenues

Top opening weekends, Mar 2020-May 2022, \$m



Source: Box Office Mojo



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► Netflix, a video-streamer, laid off 150 staff. The following week news broke that PayPal, a payments firm, was cutting 80 or so jobs. In both cases that was roughly 1% of their respective workforces.

Strategically important teams are protected from the measures. Microsoft's hiring slowdown applies to its software units, such as Windows and Teams, but not its fast-growing cloud business. PayPal's lay-offs affected staff researching emerging technologies, such as quantum computing, while sparing core functions. Many of the sacked Netflixers worked in mar-

keting rather than on shows. Demand for the most prized skills, such as understanding of advanced data science, is so high that people who possess them will be sought out even in a downturn.

At the big tech companies talented employees who hint that they want to jump ship are still receiving generous counter-offers, says Greg Selker of Stanton Chase, an executive-search firm. On May 16th Microsoft said it was raising its budget for salary increases for certain workers, in an attempt to stop talent from fleeing. Amazon did something similar a few months earli-

er. Tech-focused recruiters say business is perky. Indeed, the number of listings for technology-industry jobs in May and April was far higher than at the same time last year, notes Mr Bhatia.

Some analysts argue the tech industry is bigger, more mature and stable than in the go-go 1990s, which may shield its workers from the pain of previous busts. Others note that after the dot-com bubble burst in 2000, tech work began disappearing only a year after the stockmarket crash. One thing is certain: the anxiety level of posts on Blind will stay high for a while. ■

Bartleby Your whole self

And why you really should not bring it to work

A PHRASE THAT first became fashionable a decade ago is everywhere. "Bring your whole self" is one of four values that British Land, a property developer, trumpets on its website. Quartz, a publisher, ran a workshop last year called "How to navigate the whole-self workplace". "Your whole self is welcome here," pledges ING, a bank, to prospective employees. (Whole Foods uses the phrase on its global careers site, too, but it has a decent excuse.)

There are spin-off selves. Workday, an enterprise-software firm, wants its employees to be their "best selves" at work. Finn, a classified-ads site in Norway, is hiring for a compensation and benefits specialist who loves to bring their "full self" to the office. Key, an American bank, prefers to use the term "authentic self". The idea that unites these phrases is that employees need not pretend to be someone they aren't. Instead of having a workplace persona and a non-workplace persona, people can just relax and always be themselves.

Behind this thought lies a good intention—or rather lots of good intentions. The notion of the whole self variously captures the idea that people are more engaged in work if they believe in a firm's purpose; that teams are more effective if colleagues understand each other; that people with different identities should feel comfortable in their own skins; that firms should care about and respond to issues that affect their staff's well-being, from mental health to child care; and that leaders need to show some of their personal side to be connected with their staff.

None of these things is silly. Many are in fact actively desirable. However, any idea that covers so much ground is bound to have holes in it, and this one

would make a colander blush.

Most obviously, no one should actually bring their whole selves to work. People are a melange of traits, some good and some bad. Many of them should be kept well away from the workplace. Your professional self displays commitment to the job and eats lunch at a desk. Your whole self is planning the next holiday and binges ice cream on the sofa. Your professional self makes presentations to the board and says things like: "Let's get the analytics team to kick the tyres on this." Your whole self cannot operate a toaster and says things like: "Has anyone seen my socks?" Pretending to be someone you are not is not a problem; it's essential.

For the same reasons, your employer may say it wants you to bring your whole self to work but doesn't really mean it. A company is a hierarchy, in which even the most understanding bosses expect people to follow orders rather than their hearts. Say something that causes your firm embarrassment, as a senior HSBC executive did last month by making fun of apocalyptic warnings about climate

change, and you will end up being disowned rather than lauded for authenticity. This column is named for a short story by Herman Melville, in which the eponymous character speaks his own truth by saying "I would prefer not to" to every single request made of him by his manager. He ends up dead.

Any job that involves a uniform is by definition asking employees to subsume their personalities, not express them. When times are tough or performance is shoddy, an employee is an individual second and a line item in the budget first. If the circumstances require it, he will be asked to leave and take his whole self with him.

As a result, the bringing of whole selves is carefully circumscribed. Candidates for jobs typically feel obliged to tell interviewers a few things about themselves in order to show that they are rounded human beings. Without fail those things are along the lines of "I have a dog called Casaubon, run a local food bank and love to go sea kayaking." They are never "I hate animals, exercise and my fellow humans."

Lots of executives, too, deal in whole-selfery of a very synthetic kind. As a rule of thumb, if you are taking advice on how to be authentic, you are not being authentic. And if you are scheduling meetings in order to display vulnerability, you are mainly showing controlled cunning.

One of the attractions of the workplace is that it is a place where there is a shared endeavour. That endeavour is called "work". You need to be friendly to be a good colleague, but you don't need to be friends. You need to be capable of empathy, but you don't need to constantly emote. You have to turn up, try hard and play your part. You have to bring your role self.



Schumpeter | Powerless proxies

The golden age for the dispensers of shareholder counsel is over



ANNUAL GENERAL MEETINGS (AGMs) of shareholders used to be dull affairs. A company's owners would gather to elect board members or, after the global financial crisis of 2007-09 exposed the gulf between fat-cat bosses and their workers, cast (mostly non-binding) votes on executive compensation. In the past few years, though, they have turned into corporate confessionalists, with nothing short of a company's soul at stake. Motions are proliferating on decarbonisation and diversity targets, political donations, workers' rights and much else besides. A record 592 environmental and social proposals were filed in America ahead of this year's AGM season, which spans May and June. In the 20 years from Amazon's initial public offering in 1997, the e-empire's shareholders voted on 22 resolutions brought by fellow investors. At the latest AGM on May 25th they were asked to weigh in on 14. How can the harried fund manager keep track?

Enter proxy-advisory firms, hired by investors to sift through the resolutions and make recommendations on which boxes to cross. There may be no monopoly in the market for ideas, but when it comes to proxy advice the market is a cosy duopoly. Institutional Shareholder Services (ISS) and Glass Lewis meet more than 90% of the demand for such counsel in America.

The pronouncements of these corporate philosopher-kings grew in prominence after 2003, when new rules required American institutional investors to disclose their voting policies. For most investors it is cheaper instead to outsource the task to ISS or Glass Lewis. The work is lucrative. In 2021 ISS, which has annual revenues in excess of \$250m, was bought by Deutsche Börse, a German exchange operator, for \$2.3bn. The same year two Canadian public pension funds sold Glass Lewis to a private-equity firm.

The duo's recommendations carry weight. One study identified 114 institutional investors, representing more than \$5trn in assets under management, who "robovoted" in lockstep with either ISS or Glass Lewis during the 2020 proxy season, mechanically deferring to their recommendations. It is difficult to tell how a shareholder would have voted but for a proxy recommendation. Still, the advisers have almost certainly moved the needle in some important shareholder votes (and in plenty of unimportant ones, too). They have also wielded a softer power, moulding the ever-

changing norms of corporate governance through changes in their voting policies and other public displays of wisdom. No press coverage of an important AGM is nowadays complete without a nod to their stance, as when the media leapt on ISS's recommendations that dissented from Amazon management's guidance on nine issues, from executive pay to human-rights due diligence, plastic use and gender and racial pay gaps.

As shareholders' concerns expand from narrow profits to broader "purpose", you would expect the advisers to be enjoying a golden age. In fact, their proxy power may start to decline, for three reasons. The first is structural. In the past decade share ownership in America has become ever more concentrated in the hands of giant asset managers such as BlackRock, State Street and Vanguard. These behemoths run their own departments of corporate-governance *consiglieri* and so have little need for the proxy advisers' services. In 2008 the trio between them owned 13.5% of the average company in the S&P 500 index of big American firms, according to Bloomberg, a data firm. They now hold nearly a quarter. In May BlackRock struck a cautionary note on environmental and social resolutions, noting that these were becoming prescriptive to the point of micro-management. Smaller institutional investors may prefer to side with their bigger peers rather than the proxy firms in such matters, especially if the concentration of ownership continues to rise.

Second, managements are putting up a fight. This year's votes are still being tallied, but environmental and social resolutions have not had the knock-out run their backers expected, in part because companies that were caught off guard last year got their act together. On May 27th Twitter went further, announcing in a regulatory filing that it would ignore a shareholder vote which booted Egon Durban, a billionaire tech dealmaker, off the social-media firm's board, citing the influence of proxy advisers on the result. ISS had recommended evicting Mr Durban because he sits on six other public-company boards. That makes him "overboarded" in ISS's eyes. Twitter retorted that Mr Durban is a "highly effective member" with "unparalleled operational knowledge". Merely sitting on more boards than the ISS likes should not automatically disqualify him, the company implied.

In 2019, 319 companies signed a letter chastising a lack of transparency and accuracy in proxy advisers' recommendations and calling for regulatory action. Soon afterwards the Securities and Exchange Commission (SEC), which had dithered for years, finally began to rein in the proxy firms—the third challenge to their role. In 2020 the SEC adopted new rules requiring increased disclosure of potential conflicts and open channels of communication between proxy advisers and companies. Last November the agency's current head, Gary Gensler, watered down some of those amended rules, for example removing the requirement that proxy advice be sent to the management allowing it to respond. But they remain less proxy-friendly than in the past.

Annual general mayhem

Clashes pitting the proxy advisers against big investors, management and regulators look poised to intensify—all the more so if, as seems likely, AGMs continue to be a venue for some investors to push their politics. Asking two opaque firms, supposedly in the name of transparency, in effect to nominate America Inc's boards of directors was dubious enough. Trusting them to resolve the complex trade-offs at the heart of 21st-century capitalism would be a travesty. ■

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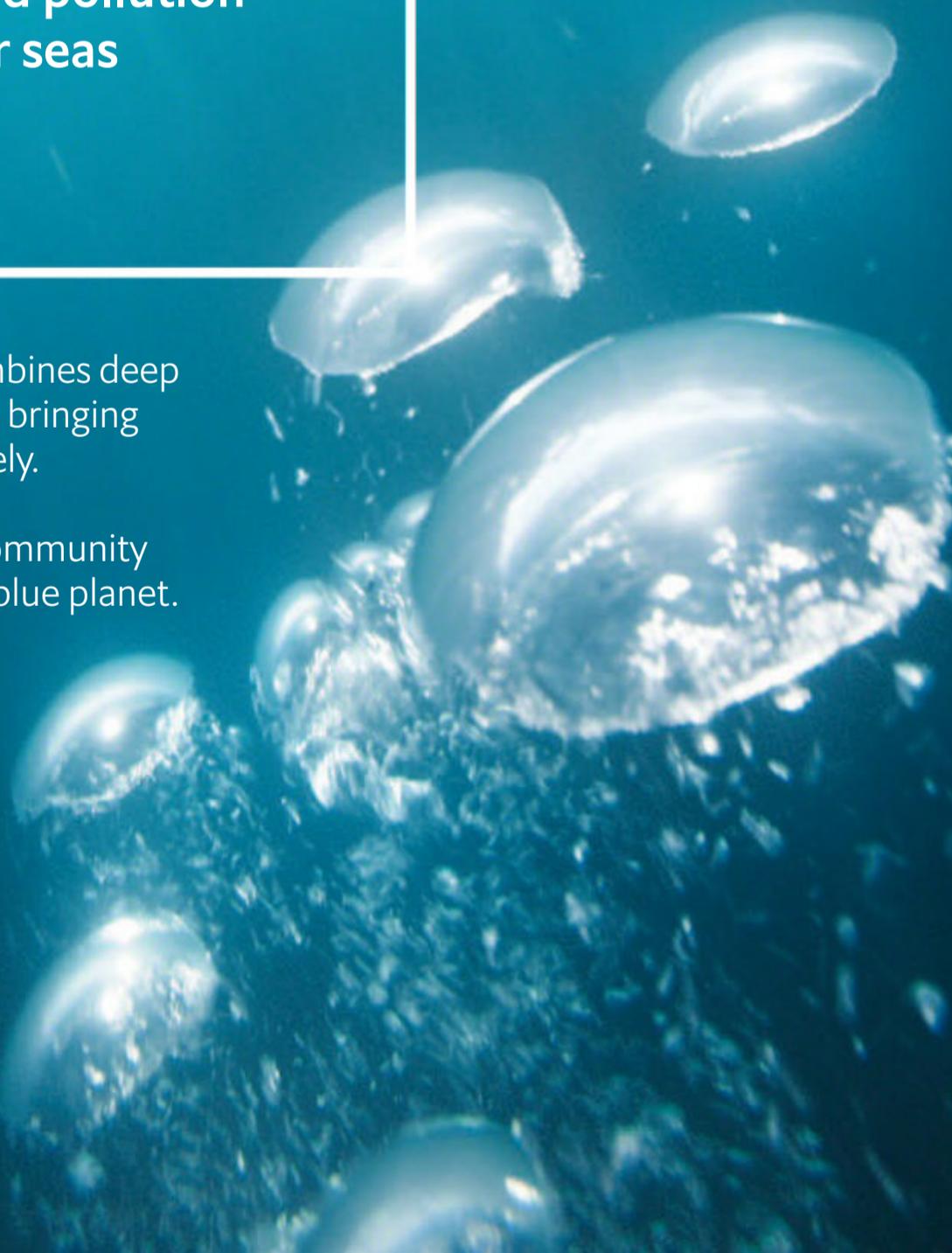
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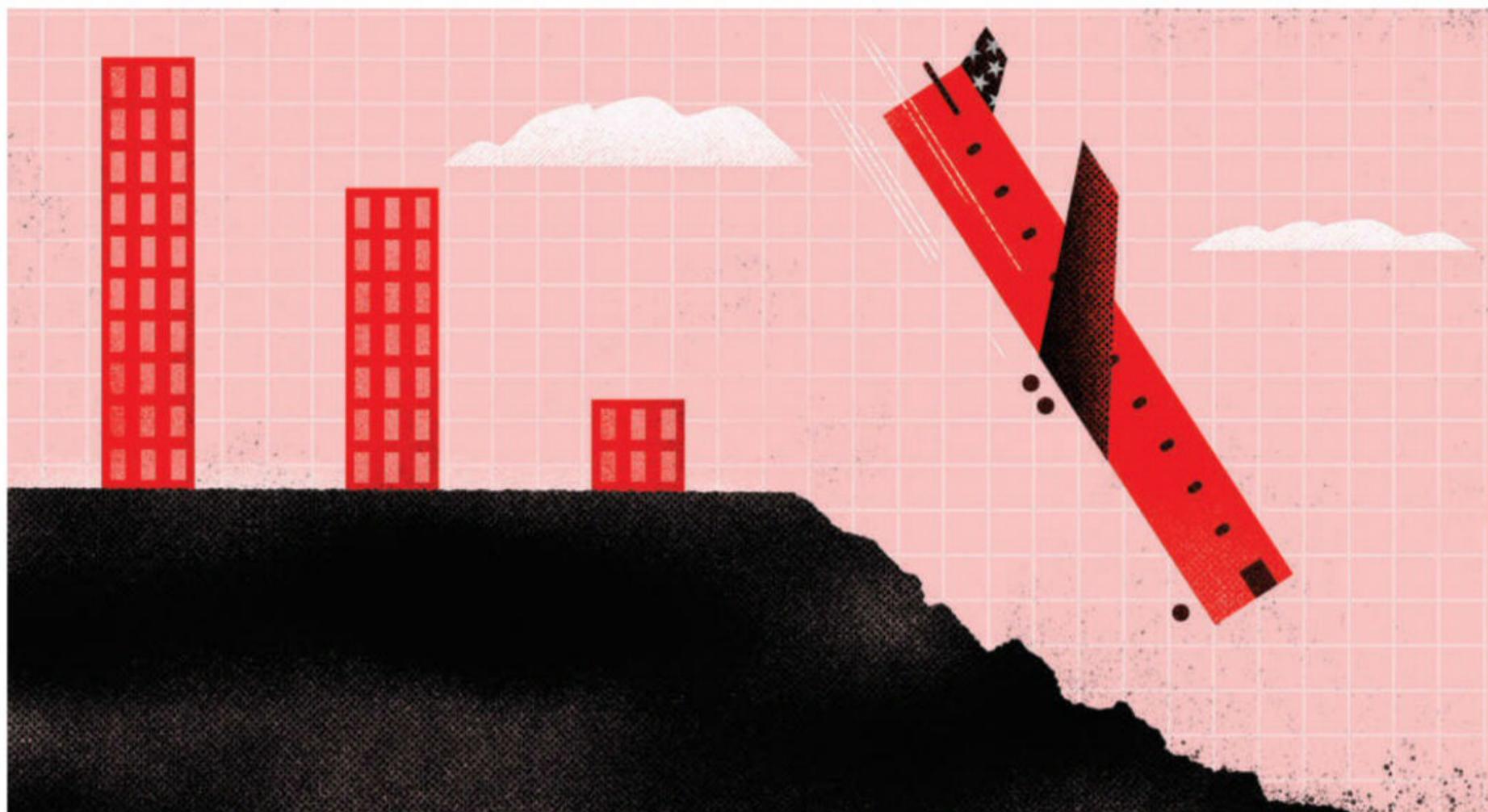
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Recession watch

The shape of things to come

WASHINGTON, DC

America's next downturn may have a mild flavour—but a bitter aftertaste

THESE DAYS it is hard to turn a corner without bumping into predictions of an American recession. Big banks, prominent economists and former officials are all saying that a downturn is a near certainty as the Federal Reserve wrestles inflation under control. Three-quarters of chief executives of Fortune 500 companies are braced for growth to go negative before the end of 2023. Bond yields and consumer surveys are flashing red. Google searches for "recession" are soaring.

The track record is certainly ominous. As Larry Summers, a former treasury secretary, has observed, whenever inflation has risen above 4% and unemployment has dipped below 4%—two thresholds that, when breached, indicate economic overheating—America has suffered a recession within two years. It is well across both thresholds now.

For much of last year the Fed and investors alike believed that inflation would fade as the pandemic subsided. No one believes that now. There is broad agreement that, supply snarls and energy-price surges notwithstanding, demand is also excessive, and that tighter monetary policy is

needed to return it to a normal level. The question is how tight, and therefore how much the economy could suffer: the higher the Fed has to raise rates, the more punishing the downturn will be. Investors are pricing in pain, as indicated by the fall in stocks since the start of the year.

If America does slip into a recession, how might it play out? One way of trying to divine the path of a downturn is to consult history. America has suffered 12 recessions since 1945. Many observers point to similarities between today's predicament and the early 1980s, when Paul Volcker's Fed crushed inflation, causing a deep recession in the process. Others look at the downturn that followed the energy crises

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of the 1970s, echoed by the surge in oil and food prices today. Still others point to the dotcom bust in 2000, mirrored by the collapse in tech stocks this year.

But these parallels have serious flaws. Inflation is nowhere near as entrenched as at the start of Mr Volcker's era. Growth is far less energy-intensive than in the 1970s. And the economy faces more complex crosswinds now than it did after the bust of 2000. The unusual nature of the deep covid-induced downturn in 2020, and the roaring recovery in 2021, when fiscal and monetary stimulus flooded the economy, limits the relevance of past episodes.

A better way to think about a recession, if it comes, is to look at America as it is today. Consider three different facets: the real economy, the financial system and the central bank. All three, working in concert, suggest that a recession would be relatively mild. Households and businesses' balance-sheets are mostly strong. Risks in the financial system appear to be manageable. The Fed, for its part, has been too slow to respond to inflation, but the credibility it has built up over the past few decades means it can still fight an effective rear-guard action. There is, however, a sting in the tail: when the recession ultimately ends, the consequences of the past few years of living dangerously with inflation may make for a sluggish recovery.

Start with the resilience of the real economy, which may well be the most important line of defence in a downturn. The general population is on a sound financial footing, a welcome change from the over-►

► extended consumers of the past. Household debt is about 75% of GDP, down from 100% on the eve of the global financial crisis of 2007-09. Even more striking is how much less Americans pay annually to service their debts. Because so many have shifted to cheaper mortgages as interest rates have fallen in recent years, their annual debt payments now add up to about 9% of disposable income, about the lowest since data were first collected in 1980.

Moreover, many households have larger-than-normal cash buffers thanks to the stimulus payments of the past two years, plus their reduced spending on travel, restaurants and the like at the height of the pandemic. Overall, Americans have excess savings of about \$2trn (9% of GDP) compared with before covid. They have started to use some of this cash as living costs rise, but still retain a useful cushion.

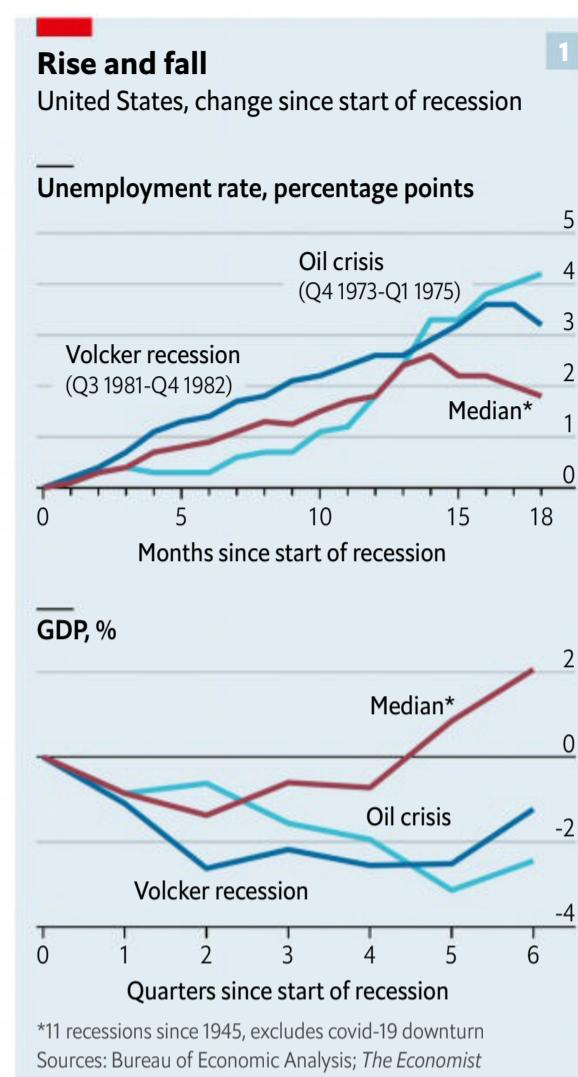
In any recession one big concern is how many people will lose their jobs. Unemployment tends to rise during recessions: in the median post-1945 downturn in America, excluding the brief covid recession, the peak jobless rate rose by nearly three percentage points (see chart 1). A rise in unemployment seems more economically necessary today, as a way to relieve some of the upward pressure on wages and dampen inflation.

Could things play out differently, though? The labour market has, by some measures, never been so tight: a record 1.9 jobs are available for every unemployed person. This has fuelled optimism that companies could, in effect, cancel their job ads without firing people. Jerome Powell, chairman of the Fed, has expressed this hope. "There's a path by which we would be able to moderate demand in the labour market and have vacancies go down without having unemployment going up," he said on May 4th.

Hurting me softly

In practice, though, the labour market is unlikely to adjust so smoothly. Mr Summers has drawn attention to the concept of the Beveridge curve, which portrays a basic relationship: the more vacancies there are, the lower the unemployment rate. Since the onset of the pandemic the curve has shifted outwards (see chart 2 on next page). In other words, it now seems to require more vacancies to get to the same unemployment rates as in the past—an indication of faltering efficiency in the economy's ability to match the right people with the right jobs. One possible explanation is that some people are still reluctant to work because of the health risks from covid. Another is regional variation: some states, like Utah and Nebraska, have giant needs for workers, but not enough people are willing to move to them.

Whatever the precise reason, the impli-



cation is that it is too optimistic to think that the Fed's tightening can reduce vacancies without also reducing employment. Yet that does not mean that Mr Powell is all wrong. The Beveridge curve could also move back as the recovery progresses and more people re-enter the workforce. Say the unemployment rate increases by two percentage points instead of the nearly three points in the median recession. That would take the rate to about 5.5%, lower than the average of the past three decades. Though painful for those who end up on the dole, it would be a good outcome as far as recessions go. By contrast, 11% of Americans were out of work by the time Mr Volcker had finished tightening.

Even if most people are fairly well insulated from a recession, they are still likely to curtail their spending as the economy goes south. Belt-tightening would, in turn, translate into less revenue for businesses. A key question is how those lower earnings will interact with high debt levels: unlike households, companies have ramped up their borrowing over the past decade. Non-financial business debt stands at about 75% of GDP, not far from a record high.

Reassuringly, many companies sought to lock in rock-bottom rates during the pandemic. In 2021 companies reduced debt coming due this year by about 27%, or \$250bn, mainly by refinancing their existing debt at lower rates and for longer durations. That makes them less sensitive to an increase in interest rates.

Less reassuringly, riskier companies al-

so took advantage of easy money. Bonds that are rated BBB, the lowest rung of investment-grade debt, now account for a record 57% of the investment-grade bond market, up from 40% in 2007. When a recession strikes, the ratings on many of these bonds could slip a notch or two. And when bonds go from investment-grade to speculative, or junk, status, they become far less appealing for a universe of investors such as pension funds and insurance firms. That increases the chances of a flight to safety when the mood sours.

Even so, thanks to the starting point of low funding costs, there are limits to how bad things might get. In a pessimistic scenario—where a recession collides with higher input costs and rising interest rates—S&P, a rating agency, forecasts that about 6% of speculative-grade corporate bonds will go into default next year. That would be well up from the 1.5% rate now, but half the 12% rate in 2009. Intriguingly, the sector today holding the most low-quality debt is media and entertainment, featuring many leisure companies such as cruise lines. A recession would sap demand for their services. But as worries about covid recede, there is also a pent-up desire to get out and have fun again. The paradoxical result is that a swathe of low-rated companies may be positioned to fare better than most during a downturn.

How well fortified is the financial system, America's second facet? Headlines in recent years about Basel 3 capital standards for banks may have caused more than a few pairs of eyes to glaze over. But these rules have served a purpose, forcing large financial firms to hold more capital and more liquid assets. Banks went into 2007 with core loss-absorbing equity worth about 8% of their risk-weighted assets. Today, it is more like 13%, a much plumper margin of safety. "A recession would not look like it did after the financial crisis. The system is just not levered like it was back then," says Jay Bryson of Wells Fargo, a bank.

New threats have, inevitably, emerged. Prudential regulations have pushed risky activities into darker corners of the financial system. Non-bank lenders, for instance, issued about 70% of all mortgages last year, up from 30% a decade ago. Ideally, that would spread risks away from banks. But bank lending to these non-banks has also boomed, creating a web of opaque linkages. Insurers, hedge funds and family offices—in effect investment firms for the ultra-rich—have also taken on additional risks. They carry more debt than 15 years ago and are among the biggest investors in lower-rated corporate bonds.

Emblematic of the new kind of danger are collateralised loan obligations (CLOs). These are typically created by syndicating loans, pooling them and then dividing them into securities with different ratings ►

depending on their payment profiles. The value of outstanding CLOs has reached about \$850bn, making it the biggest securitised credit market in America. And high-risk leveraged loans form a growing share of CLOs, which are partly converted into investment-grade assets through the alchemy of securitisation. The parallels with the dodgy mortgage-backed securities of the financial crisis are obvious. Yet the similarities can also be overstated. The CLO market is about half the size of the riskiest mortgage-securities market in the early 2000s. CLOs connect investors to a wide range of industries, not just property. They also tend to be longer-term investments, more resistant to market ups and downs.

Moreover, an important stabiliser for the financial system will be the relative solidity of America's most important asset market: property. An exuberant surge in house prices over the past two years means a decline in sales and values may be on the cards. But property is also dramatically undersupplied. Sam Khater of Freddie Mac, a government-backed mortgage firm, estimates that America has a shortage of nearly 4m homes because of a slowdown in building over the past 15 years. It is far better for the financial system to enter a recession with a giant underinvestment backlog than with an overinvestment hangover, as was the case in 2007.

The final factor in assessing the impact of a recession is monetary policy. As of March the median forecast by members of the Fed's rate-setting committee was that inflation would fall to close to 2% in 2024 without interest rates having to exceed 3%.

It seems a fair bet that rates will go quite a bit higher. James Bullard, the relatively hawkish president of the St Louis Fed, reckons that the central bank will need to increase rates to 3.5% by the end of this year. A simple rule of thumb, which combines the Fed's desired real rate of interest and expected inflation, suggests even higher nominal rates may be needed. If the real neutral rate, which neither stimulates nor restrains growth, is 0.5%, then the Fed would probably want to hit a real rate of about 1.5% to rein in inflation. Add on short-term inflation expectations of 4% per year, as indicated by consumer surveys at present, and that suggests that the Fed may need to lift its nominal rate to 5.5%. "There is a substantially greater probability that we'll need higher rates than the Fed now envisions or the market now predicts," says Mr Summers.

Put differently, the Fed is embarking on a journey with a clear destination (low inflation), an obvious vehicle (interest rates) but hazy guesses about how to get there (how high rates must go). It will know the correct path only by moving forward and seeing how the economy reacts.

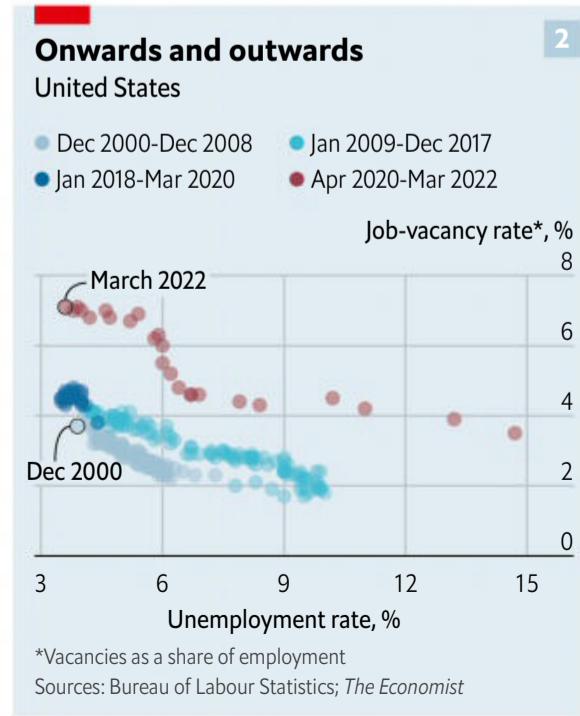
It has barely taken its first steps, raising



rates by three-quarters of a percentage point over the past three months and setting out a plan for shrinking its assets. But it may be pleased with the results so far, clearly visible as financial markets rush to price in future tightening.

For all the Fed's missteps of the past year, investors still have respect for it, a precious legacy of the past four decades, starting with Mr Volcker's leadership, in which it kept a lid on inflation. Equities, which were looking bubbly, have tumbled in value. The impact on mortgages has been dramatic: 30-year fixed rates have risen above 5%, the highest in more than a decade. Yet credit spreads have widened only somewhat, an indication that lending markets are not too stressed. Taken together, this looks like an orderly sell-off and an early success for the Fed. Although inflation expectations, as measured by bond pricing, still point to annual inflation of 3% over the next five years, they have come down by about half a percentage point since March.

Mr Bullard's case for optimism is that



much of the work of taming inflation can be done by resetting expectations at a lower level. The real economy would then not need to bear the weight of the adjustment. The key objective for the Fed is therefore to prove to investors that its vows to quash inflation are credible. "It is more game theory and less econometrics," he says. The Fed's record over the past couple of months, since belatedly training its sights on inflation, opens up the possibility that it may be able to tame prices without a punishingly high increase in rates. That, in turn, would make for a lighter recession.

Why worry, then? For one thing, even a mild recession hurts. Imagine the unemployment rate does rise by two percentage points, as in our relatively hopeful scenario. That would imply job losses for about 3m Americans. The political consequences may be even more dramatic. The recession in 1990 shows up as a mere blip in economic trends, but it helped pave the way for Bill Clinton's victory over George H.W. Bush. A mild recession in 2023 could put paid to Joe Biden's beleaguered presidency, perhaps helping usher Donald Trump back into the White House.

This will make the policy response to a looming recession much more controversial. If, as expected, the Republicans seize control of Congress from the Democrats in mid-term elections this November, there would be little chance of a muscular fiscal stimulus as growth slows. Republicans would see little reason to bail out Mr Biden, especially if the financial system holds up.

The task of easing would fall squarely on the Fed. But having just fought to contain an overheating economy and bring inflation to heel, the central bank would be queasy about revving up demand too much. And if the current cycle of rate increases stops at a low level, the Fed would not have much room to cut rates anyway. The next step would be once again to unleash quantitative easing (ie, purchasing assets such as government bonds in order to lower longer-term interest rates). It would, however, be fearful of the optics of "printing money" so soon after whipping inflation and just as a contentious election campaign gets under way.

The upshot is that policymakers are likely to have a limited arsenal if the next recession is just round the corner. Given the strengths of the economy today—flush consumers, solid businesses and safe banks—the next downturn ought to be mild. But even a mild recession must be followed by an upturn for the economy to return to full health. And with fiscal policy on the sidelines and monetary policy badly hobbled, the chances are that America would face a painfully slow recovery. After two years of focusing on high inflation, low growth may move back to centre-stage as the economy's principal problem. ■

Oil prices

Crude calculations

Why oil is spiking again

IN THE 1970S Arab states used the “oil weapon” of embargoes to punish Western governments for supporting Israel. On May 30th the heads of the 27 EU member governments agreed to turn the weapon on themselves, as part of a fresh round of sanctions against Russia following its invasion of Ukraine. As well as cutting off Sberbank, Russia’s largest bank, from the SWIFT cross-border payment system, the package will also ban purchases of Russian crude oil and refined products, such as diesel, by the end of the year. There would, the EU said, be a “temporary” exemption for oil delivered through pipelines. The price of a barrel of Brent crude leapt above \$120 on the news, its highest level since March.

In principle, the decision is highly significant. As well as demonstrating unity, and the bloc’s willingness to bear economic pain to punish Russia, it cuts one of the few remaining trade ties with the Kremlin. It also imperils one of Russia’s most lucrative sources of foreign-currency earnings. The EU is Russia’s biggest market for crude, buying about half the country’s oil exports.

There are reasons, however, to be sceptical that the move will deprive the Kremlin of much foreign currency. For a start, the ban applies only to seaborne oil, transported via tankers. That is the price of unity: excluding oil delivered by pipelines was necessary to find a compromise with Hungary, which is both more sympathetic to Russia than most EU countries and critically dependent on the Soviet-era Druzhba pipeline (a name meaning “friendship” in Russian). Hungary imports about 65% of its crude from Russia.

Seaborne oil makes up a similar share of Europe’s imports from Russia. But the ban is likely to have a limited impact on the oil market. Many tankers are already subject to “self-sanctioning” in parts of the West. Dockworkers have refused to unload ships carrying Russian cargoes and oil majors have been worried about the hit to their reputations from accepting ship-

ments. Western financiers are stepping back from writing insurance contracts. Insurers based in Russia’s allies could partly replace them, but have shallower pockets.

A big question is whether Russian seaborne crude, once placed under sanctions, will go unsold. So far Russia’s oil exports have risen even as the country has come under sanctions. According to analysts at JPMorgan Chase, a bank, much of the increase has gone to India, which has not issued sanctions of its own.

Another question is whether Europe does eventually ban piped Russian oil, which is harder to redirect to other countries. Poland and Germany have said they will cease importing via the Druzhba pipeline. Yet it is hard to imagine Hungary’s dropping its opposition to a wider ban. Viktor Orban, the country’s populist prime minister, has demonstrated his willingness to block EU decisions before. Thanks to a hefty discount on Russian crude—the Urals benchmark is trading significantly below Brent—MOL, a Hungarian oil group, reports “skyrocketing” margins.

Partial though the embargo may be, such is the tightness of the oil market that prices still surged. Demand for fuel is strong as the pandemic subsides and consumers start driving and flying again, and as governments try to shield voters from the impact of higher energy costs. China’s easing of coronavirus restrictions in recent days has also added to the thirst for oil. The prices of industrial metals, including iron ore and copper, have rallied, too.

Meanwhile, the Organisation of the Petroleum Exporting Countries (OPEC) and its allies, which include Russia, have shown little sign of increasing production just yet. The group was due to meet on June 2nd, as we went to press, and was not expected to depart from its plan to gradually increase supply to levels seen before the pandemic (although prices dipped on re-

ports that it was mulling a plan to exclude Russia from its production targets, allowing Saudi Arabia and others to pump more to make up for any lost output).

Tight supply and robust demand together translate into higher prices for consumers at the pump. To make matters worse, a shortage of refinery capacity in America has raised prices for petrol and diesel even further than the cost of crude. The surging dollar adds to costs for Europe and emerging markets, notes Francisco Blanch of Bank of America. None of this is welcome news in an already inflationary environment. According to figures published on May 31st inflation in the euro area rose to 8.1% in the year to May, higher than economists had expected.

The Arab embargoes of the 1970s caused short-term pain for the West, but also spurred a drive for fuel efficiency that ultimately reduced its reliance on oil. European governments today may find themselves hoping that the short-term pain for consumers similarly gives way to the long-term gain of energy security. ■

China's economy

Growth v debt

SHANGHAI

A curious breed of financing vehicle illustrates a dilemma for policymakers

CHINA’S LOCAL-GOVERNMENT financiers have a complex identity. Tasked with developing land and doing public works, they act on behalf of, and with approval from, city and provincial authorities. Yet at the same time they represent large companies, known as local-government financing vehicles (LGFVs), which have the ability to raise billions of dollars from global investors. The thousands of LGFVs around the country owed an estimated 53trn yuan (\$8.3trn, equivalent to 52% of annual GDP) in debts last year.

Conflicts of interest have naturally arisen for the bosses of these hybrid firms. In some cases they have been caught giving chummy private companies lucrative stakes in government projects. Others have used their official status to guarantee bank loans for friends. In Sichuan province a government financier was recently found to have lent out state funds to private firms at rates as high as 20% a year. In Hunan province a boss was caught charging companies that work with the government consulting and paperwork fees. Such practices might fly in the private sector—but not with anti-corruption investigators.

The central government is taking new interest in such dodgy dealings. More than



Darker days for Russian oil

Finance internships: We invite promising journalists and would-be journalists to apply for our 2022 internships, which are supported by the Marjorie Deane Foundation. Successful candidates will spend three months with *The Economist* in London writing about finance and economics. Applicants are asked to send a covering letter and an original article of no more than 500 words suitable for publication in the Finance & economics section. Applications should be sent to deaneintern@economist.com by July 17th.

► 40 high-ranking officials at LGFVs have been put under investigation or detained since the start of the year. The Ministry of Finance has warned provincial authorities about the risks associated with corruption in the quasi-state sector. The renewed attention on graft at LGFVs betrays growing concerns about the role the companies play in generating economic growth, along with the piles of debt they have amassed in the process.

LGFVs are a uniquely Chinese problem. Invented in the 1990s to get round rules that banned local governments from raising debt, the companies became one of the most important sources of economic growth over the past two decades, as they carried out vast numbers of public projects. Their status as non-government entities allowed them to borrow heavily from investors in China and abroad. One of the oddities of LGFVs is that it is city and provincial authorities that are on the hook for those debts. But LGFVs' borrowings are not included in official government budgets, making it hard to gauge risk.

The latest scrutiny brings with it two complications. For a start, it comes at an awkward moment. The economy has been hit hard by recent lockdowns to contain covid-19. In response, China's leaders have announced plans for infrastructure spending this year to help achieve a lofty GDP-growth target of 5.5% (see Free exchange). LGFVs would typically play a key role in funding and contracting much of the building activity across the country. But the crackdown on corruption and other restrictions means that managers will be less likely to take risks. Normally this would be considered a good thing. This time, however, an unwillingness to take on new projects could come at the cost of precious GDP growth at a time when the Communist Party can ill afford it.

Moreover, tighter oversight has had the unintended effect of exposing LGFVs to currency risk. The firms must gain regulatory approval to issue bonds within China. Greater scrutiny over their use of funds has led to onshore-debt issuance by LGFVs falling by 22% in the first four months of 2022, compared with the same period last year. This has pushed the companies into the riskier offshore market: dollar-bond issuance by LGFVs soared by about 150% during the same period, according to Pengyuan, a rating agency. But few of these companies earn dollar revenues, making it harder to repay the bonds. A default would send a shock wave through the bond market.

Such dangers explain why Beijing's technocrats want to reduce the importance of LGFVs, especially as local governments can now issue bonds directly, reducing the need for fiddly workarounds. For as long as the growth target is in peril, though, LGFVs will be going nowhere. ■

Consumer spending

Balance of payments

Could a shift from goods to services ease inflation?

ASKED RECENTLY about Amazon's sprawling network of warehouses, Brian Olsavsky, the firm's finance chief, did not mince words. "We have too much space right now." As consumer demand surged during the pandemic, the online retailer doubled its capacity from 193m square feet (18m square metres) at the end of 2019 to 387m square feet two years later. Today it has a glut, which the company says is costing it tens of millions of dollars a day.

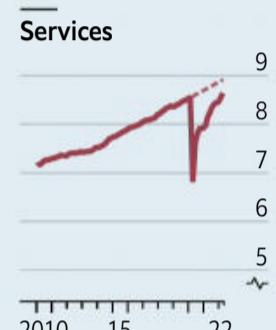
Retailers are bracing themselves for a slowdown as central banks raise interest rates. But Amazon's troubles reflect another crucial development for the global economy: a shift in spending from goods back to services, reversing a pandemic-era trend. This switch should ease pressure on global supply chains and lower inflation. But it has been slow and uneven.

Confined to their homes during the worst of the pandemic, consumers in the rich world splurged on appliances, cars and furniture. The binge was most notable in America, where it was fuelled by three rounds of "stimmy" cheques. People bought substitutes for the services they could no longer enjoy—an exercise bike, say, to make up for closed gyms. Perhaps as a result of having a little extra cash, they also treated themselves to things like watches and luxury products. A year into the pandemic, the composition of consumer spending had changed dramatically. By spring 2021, goods accounted for 42% of household spending in America, up from

Switchback

United States, consumer spending, \$trn
2012 prices, annualised

Pre-pandemic trend



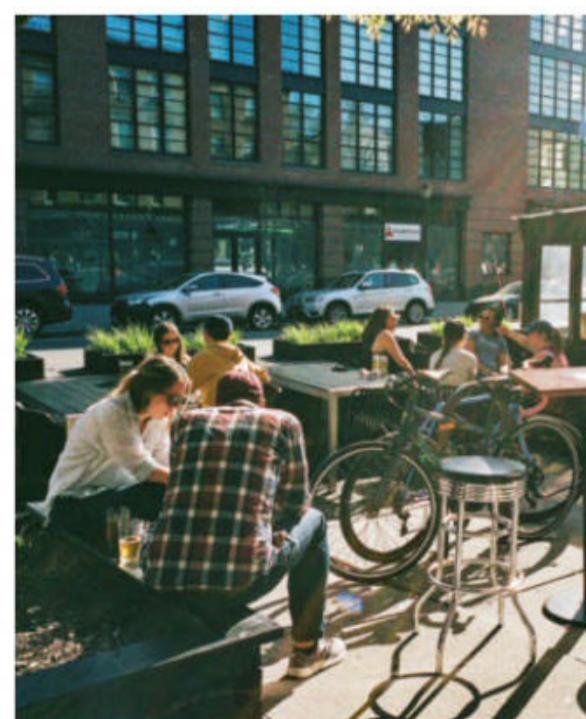
Source: Bureau of Economic Analysis

36% before the pandemic; services accounted for 58%, down from 64%, a drop worth more than \$900bn per year.

Several other Western countries experienced a similar rise in goods consumption, though few witnessed a bigger boost than America. Daan Struyven and Dan Milo of Goldman Sachs, a bank, compare the evolution of goods spending in real terms across 23 OECD countries. America outperformed all but two. The latest data from the OECD suggest that the Nordic countries also splurged. On average, though, they spent about 5% more on goods in 2021 than pre-pandemic trends would have suggested, compared with 10% in America.

The spending spree, where it occurred, helped lift economies out of recession. But it also contributed to an inflation headache. A deluge of new orders overwhelmed global supply chains, which were already strained by pandemic-related disruptions, leading to clogged ports and shipping delays. With demand outstripping supply, goods prices rose. America's Bureau of Labour Statistics reckons that goods prices boosted consumer-price inflation by 4.9 percentage points in the year to April 2022, having reduced it by 0.1 points in the 12 months before the pandemic.

Now spending is starting to shift in the other direction. Data published on May 27th showed that spending on goods fell in the year to April, and is now 9% above its pre-pandemic trend, down from a high of 16% last year. Spending on services is up by 7% in the same period, and is just 3% below pre-pandemic trends. But some services have been quicker to recover than others. Messrs Struyven and Milo of Goldman



Back on the streets

► Sachs note that while “fun” spending categories with pent-up demand such as food services, air travel and hotels have rebounded over the past year, others have lagged behind. Services that cater to white-collar professionals have been slow to recover. Spending on public transport is about 24% below where it would have been without the pandemic; laundry and dry-cleaning revenues, meanwhile, are 20% below trend.

Even some essential services have been slow to recover. Spending on doctors’ and dentists’ services is about 15% below trend;

child care is down by 22%. Appetite for many non-essential goods, by contrast, shows little sign of abating. Spending on jewellery and recreational vehicles is 53% and 43% above trend, respectively. Spending on pets is up by 23%.

One question is whether the composition of consumer spending will return to pre-pandemic norms. The hope is that this eases bottlenecks and helps bring down inflation. Yet several uncertainties lie ahead. The process looks likely to be slow. If recent trends in America continue, goods and services spending will not return to

pre-pandemic levels until perhaps the third quarter of next year. And some habits could stick: the rise of remote working, say, may have permanently changed the consumption mix, keeping the relative demand for goods higher than it was before the pandemic.

Hovering over all this is a potentially souring economic backdrop, as people become gloomier about their finances. Consumers, especially those in America, powered an extraordinary goods boom over the past couple of years. What they do next is much less certain. ■

Buttonwood The inventory cycle returns

Why companies have become more prone to over-ordering stock

REMEMBER THE Great Moderation? This refers to the period before the global financial crisis of 2007-09 during which there was a marked fall in the volatility of GDP growth in rich countries. Explanations for it ranged from wiser monetary policy (yes, really) to globalisation. In fact, much of it was down to something more mundane: smaller inventories. One authoritative study found that more than half the improvement in the stability of rich-world growth was explained by diminished inventory cycles.

The classic stockbuilding cycle, in which inventory changes add to the momentum of GDP on the way up (through over-ordering) and on the way down (through stock clearances), is showing signs of a revival. Some big American retailers, notably Walmart, have reported large increases in stocks. In part this is the result of errors in forecasting demand. But it also reflects an increase in the desired level of inventories. As just-in-time production gives way to just-in-case stockpiling, the scope for greater volatility in GDP, and in corporate earnings, is increasing.

To understand why inventories are rising again, it helps first to understand why they fell. Improvements in computing mean that firms have more detailed and timelier information about demand from consumers. Such changes made large precautionary stockholdings redundant. A related factor is carrying cost. Interest rates were high in the 1980s, when businesses first began to favour leaner inventories. And a dollar in stock is a dollar that cannot be used profitably elsewhere. Accompanying this was the widespread adoption of just-in-time manufacturing, with its emphasis on flexible supply.

For the leanest companies, inventory consists of whatever FedEx or UPS is carrying for them. Or it did until recently. The tech-and-trade wars between America and China challenged assumptions about the security of supply. The pandemic (and now the war in Ukraine) upset them completely. The pattern of demand suddenly shifted as locked-down consumers could not spend on dining out or live entertainment; instead they spent more on goods that could be ordered online and delivered to their door. Meanwhile shortages of workers and of key inputs, notably semiconductors, meant that some orders could not be fulfilled. Businesses lost sales for want of inventory. Logistical snafus became a board-level discussion.

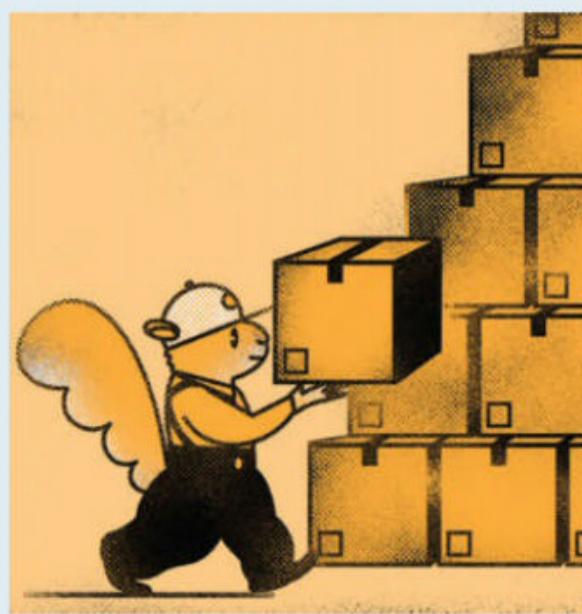
The result, inevitably, has been an overcorrection. Having lagged behind spending, inventories got ahead of it. The share prices of Walmart and Target fell sharply in mid-May when the two retailers revealed they had been left with large stocks of unsold goods, after misjudging the strength of demand. Even the mighty Amazon has been blindsided, as the e-

commerce share of retail sales, which exploded in the pandemic, has fallen back towards its pre-covid trend.

The cyclical effects of all this will have to be reckoned with. Some retailers may be holding the wrong stock for the time of year. They will either have to store it, mark down prices to clear it quickly, or move it on to discount retailers that specialise in selling out-of-season stock. Inflation will be lower than it would otherwise have been. Some companies that have over-ordered will cut back on purchases to allow stock levels to adjust to the trend in spending. Albert Edwards of Société Générale, a French bank, reckons that the pain will be felt more in China, as “demand for Chinese imports gets hit hard just when the Chinese authorities are struggling to revive their moribund economy”.

Yet there is something more profound at play. Just-in-time production assumes a largely frictionless world—of open borders, predictable demand and low transport costs. This can no longer be relied upon. Inventory is a form of insurance against unexpected delays. And though insurance is costly, company bosses seem willing to pay for more of it. The trade-off between efficiency and self-insurance, between just-in-time and just-in-case, has shifted markedly towards the latter. And larger inventories imply greater scope for inventory cycles in the future.

There is a paradox here. The more companies seek to self-insure by holding more stocks, the more volatile GDP (and thus corporate earnings) is likely to become over time. American retailing might thus be offering a preview of a particular future—of jumpier revenues and more frequent profit warnings. The Great Moderation is going into reverse.



Free exchange | Red elephants?

China's infrastructure stimulus will be less wasteful than a recession



RARELY CAN so much have been used by so few. During Shanghai's long lockdown, which mercifully eased this week, the city's impressive infrastructure stood in splendid isolation from most of the citizens it is meant to serve. The metro (all 831km of it) was eerily quiet. The two airports, which handled 120m passengers in 2019, operated at 99% below their normal level. The famous mag-lev train neither magnetised nor levitated. Six-lane highways provided an ocean of road space for handfuls of scooters. China is renowned for creating "ghost cities": new, sparsely populated districts that gradually come to life as people move into them. Shanghai's lockdown reversed this process, turning a lively metropolis into something undead.

This surreal underuse of existing infrastructure notwithstanding, the government's best hope for reviving the economy is to add more of it. Much more. Spending on transport, water conservation and renovating old neighbourhoods will be a "strong driving force" for the economy, helping to employ China's 290m migrant workers, said Li Keqiang, the prime minister, in an emergency teleconference with thousands of local officials on May 25th. The government will also "vigorously" promote 102 "major projects", listed in the country's five-year plan, such as flood prevention, ultra-high-voltage power lines and four-lane expressways—including one to a city in Yunnan renamed Shangri-La.

If Omicron resurges, recurring lockdowns may prevent China spending its way out of trouble this year. But even if everything goes to plan, a successful stimulus will raise a deeper question. Does China need all that additional infrastructure? Or will the extra spending leave behind superfluous "white elephants", as undisturbed by human traffic as the airports, roads and railways of locked-down Shanghai?

The question is tricky to answer, because infrastructure in China is hard to measure or even define. The definition used by the National Bureau of Statistics (NBS) often leaves out areas such as gas and electricity, as well as social sectors like education and health care. Worse, the official investment figures, designed with central planners in mind, are not consistent with modern national accounting. Nor, owing to shifts in classification and reporting thresholds, are they consistent with themselves over time. As Car-

sten Holz of the Hong Kong University of Science and Technology once noted, if one intended to make this data "as unusable as possible, one could probably not do a better job than the NBS does".

In a paper published by the World Bank in 2020, Richard Herd nonetheless estimates that China's stock of infrastructure and government capital rose from 64% of GDP on the eve of the global financial crisis in 2007 to 107% in 2016 (the most recent figure in his paper). This new prominence of infrastructure (and housing) in Chinese investment may help explain the country's productivity slowdown over the past decade. Another measure by the IMF adds up all the investment undertaken by China's central and local governments. According to this method, the stock of public capital was even larger: 151% of GDP in 2019, among the highest shares in the world.

Both of these measures compare the scale of China's infrastructure with the size of its GDP. This convention makes some sense: a bigger economy needs a larger backbone to support it. Conversely, a small economy, where people are few in number or limited in their means, can fit into a smaller infrastructural frame. If few people can afford cars, flights or smartphones, a country will have less need of roads, airports and 5G towers. According to this logic, infrastructure is a kind of "input" that should be sized according to the scale of production.

But GDP is not the only relevant comparison. Indeed, saying that a country's infrastructure should be kept in proportion to its GDP is tantamount to saying that poor countries should have poor infrastructure. Some common components of infrastructure are more like amenities than inputs to production. A cleaner environment, a faster bus trip or a more comfortable train journey are things people of all income levels can appreciate. On this view, what matters is the amount of infrastructure per person, regardless of their income.

Sadly, China's infrastructure is less impressive when compared with the size of its vast population. For example, it has 120km of motorways per 1m people, compared with 179km in France and 326km in America. And it has 106km of railway per 1m people, compared with 236km in Britain and over 400km in Germany. China's metro lines are more than 20 times as long as those in France. But China's population living in cities (of over 500,000 people) is also more than 20 times as large. China also has only 4.4 intensive-care beds for every 100,000 people, according to some estimates, compared with 14 in America—a catastrophic shortage of medical infrastructure that helps explain its lack of tolerance for covid outbreaks. Indeed, there are 37 economies in the IMF's database that have a higher stock of public capital per person than China. Presumably those economies do not think that their extra infrastructure is entirely superfluous.

The longer road to Shangri-La

Critics of China's proposed infrastructure stimulus worry that it will crowd out other, more productive forms of spending. But in China's covid-wrecked economy, other spending is unusually weak. Without government help, the level of demand might not be enough to fully employ the country's labour and capital, including its existing infrastructure. A recession can impose the same kind of compulsory idleness on an economy as a lockdown. The time and energy that China's workers will devote to extending power networks, waterways and roads to Shangri-La might otherwise be lost to the economy for ever. Wasteful spending is a curse in China. But underspending can be the most elephantine waste of all. ■

**Conservation**

Reef knots

Corals are threatened by global warming. A bit of pre-emptive tinkering by people might help to save them

IT IS NOT news that coral reefs are in hot water. Corals, which are sessile animals related to sea anemones, host within their tissues algae that provide them with both food and their tourist-attracting colours. But as temperatures rise, the photosynthetic mechanisms of these algae go haywire. Instead of molecular oxygen, the normal waste product of photosynthesis, they start generating highly reactive and therefore toxic oxygen-rich compounds, such as peroxides. If they do this to excess, their hosts expel them, bleaching the coral concerned white.

Bleached corals can linger for a while, but starved of their symbionts' supply of nutrients they are vulnerable to disease. Eventually, if the temperature does not drop far enough to permit the algae to be readmitted, they die.

And the world is getting warmer. As a consequence, the amount of coral in it has fallen since 1980 by between 30% and 50%.

Locally, things can be yet more dramatic. In just three years (between 2015 and 2018) Australia's Great Barrier Reef lost more than 30% of its corals to death-by-bleaching. Surveys conducted this March showed that another Barrier Reef bleaching event is now under way. This instance is particularly worrying because it is the first to take place during a Pacific cooling event called La Niña—rather than during either its warming opposite, El Niño, or an intermediate period between the two.

These losses affect more than just tourists. Coral reefs are important parts of the world's ecology. They host a third of multi-

cellular marine species, including many commercially important fish. They also provide free coastal defences. Cities such as Cancun, Honolulu and Miami rely on them to keep the waves at bay. According to a study published in 2014 by Robert Costanza, an economist at University College, London, such benefits have a value of up to \$10trn a year. Preserving reefs is thus of practical as well as aesthetic importance. So something needs to be done to stop heat-induced bleaching.

One approach is to identify species that are already heat-resistant and transfer them to reefs which are at risk. Some of the most spectacular examples of heat-resilient coral come from sites in the Gulf of Aqaba at the northern tip of the Red Sea, which is one of the hottest places on the planet. Several coral species found here can weather heat that would lead to mass bleaching elsewhere. A study published in 2021 by Romain Savary of the Swiss Federal Institute of Technology in Lausanne showed that a particular Red Sea reef-builder called *Stylophora pistillata* was able to withstand rises in excess of 5°C above the 27°C at which it normally lives—a greater increase than Earth is expected to face this century.

Similar pockets of heat resistance might be expected to have evolved elsewhere, too. Anne Cohen of the Woods Hole ►

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► Oceanographic Institution, in Massachusetts, is responsible for a newly launched project which sets out to identify “super reefs” of this sort around the world. Using a mix of genetic analysis and hydrologic modelling, she aims to find reefs that are heat-resistant and genetically diverse, and therefore potentially able to restore neighbouring bleached sites to their former glory. She then hopes to expand protections for these reefs, in order to increase their chances of survival as heat-resistant resources for the future.

The evolution of resilience to heat is not, though, merely a matter of geography. It has also been found around the world in corals living cheek-by-jowl with more vulnerable specimens. This suggests its origins are complex. Christian Voolstra of the University of Konstanz, in Germany (who is also a co-author of Dr Savary’s paper), is leading a project intended to identify the responsible parts of a coral’s genome.

Some don’t like it hot

To do this he subjects a range of corals to intense blasts of heat, to see how they fare. While this 18-hour stress test, known as CBASS (Coral Bleaching Automated Stress System), cannot capture the full effects of long-term bleaching, his hope is that the most bleach-resistant corals will nevertheless show their mettle in it.

Having established which corals are resilient, the next step is to search for genes or genetic variants that are shared by such corals but are absent from others. Dr Voolstra’s initial studies lead him to believe just a few genes will indeed turn out to be responsible. And although some will be geographically specific, he expects others will be found all over the world.

Further evidence points in that direction, too. In 2020 Phillip Cleves of Stanford University published work which showed that knocking out one particular gene in a species called *Acropora millepora* significantly reduces its ability to withstand heat. If resilience genes like these could be catalogued, and their presence identified in the field, that would allow researchers to identify resilient corals much more quickly than CBASS can. This might be done using either some easily spotted biochemical consequence of their presence (a so-called biomarker), or one of the new generation of hand-held gene-sequencing devices now coming onto the market.

Even if the full genetic complexity of heat resistance can be elucidated, though, other mysteries will remain. Certain corals are able to survive heat that kills their closest cousins as well as their unrelated neighbours. This has led to speculation that heat-resistance can also be conferred on corals by symbiotic organisms—either particular types of their companion algae, or perhaps the bacteria that collectively

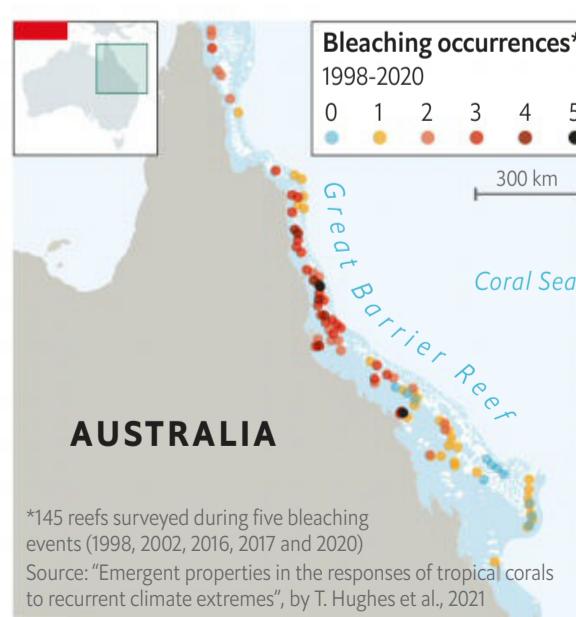
constitute their “microbiome”.

It would make a lot of sense from both the coral and the algal point of view for corals’ algal symbionts to evolve more robust mechanisms of photosynthesis, which do not misbehave at high temperatures. Presumably, given time and continued global warming, that would happen naturally. But it might be possible to give the process a helping hand. Indeed, in a paper published in 2020, a group led by Madeleine van Oppen of Melbourne University showed it was possible to make a palpable difference to algal production of reactive oxygen-rich compounds with just four years of selective breeding for heat tolerance.

Even if the algae cannot be pressed into service in this way, though, other microscopic organisms living within a coral might be. Microbiomes—the collectives of bacteria, fungi and viruses that cohabit with most animals, especially in their guts—are now taken seriously as physiological influencers. The human microbiome has been connected, with various degrees of plausibility, to conditions ranging from obesity to Alzheimer’s disease, and gut microbes are essential to the digestive processes of animals as diverse as cattle and termites. There is no reason for corals to be exempt from their influence.

Raquel Peixoto of the King Abdullah University of Science and Technology in Saudi Arabia is investigating the matter in collaboration with Dr Voolstra. In preliminary experiments, she and her team have isolated several microbes shared by resilient corals and then inoculated them into a few dozen unresilient varieties that lack them. The survival rate of the inoculated corals, when exposed to a temperature rise of 4°C, was 40% higher than that of the uninoculated ones.

Whatever cocktail of genetics and germs is needed to produce resilience, each of these factors suggests its own next steps. If genetics is the key, then corals with the relevant genes could be given priority by conservationists, transplanted to new sites, or else induced to breed more



productively, perhaps by crossing different heat-resistant strains. If the microbiome is responsible, then probiotic injections could be developed. This would be exciting. Breeding for heat resilience would take generations. Probiotic injections could transform the prospects of a coral head doomed in the here and now. Some experiments even suggest that individual corals could be “hardened up” to adapt to warmer climates within their own lifetimes—and might then pass that toughness to offspring via a process called epigenetic inheritance, which allows certain acquired characteristics to be handed down for a generation or two via mechanisms that control gene expression.

One last possibility is genetic tinkering using CRISPR-Cas9 DNA editing or a similar technique to insert or modify genes for heat resilience. This is an approach that Dr Cleves is exploring, though he has no intention as yet of taking his experiments outside a laboratory. The prospect of conducting them on a reef remains controversial, since it would mean letting genetically modified organisms loose in the wild. But as the planet continues to heat up, he believes there may come a point where conservationists have no alternative. Besides, it might be quicker than trying to achieve similar results by crossbreeding.

Know your enemy

The immediate priority, however, is to develop a better understanding of what is out there. This means doing several things. These include creating standard heat-resistance tests, so that species from different sites can be compared; investigating resistant corals to see which biomarkers they share; interbreeding resistant corals to find any undesirable characteristics that are inherited along with thermal resilience; and plumbing the transformative potential of probiotics.

Further challenges await those seeking to turn such observations to practical effect. The first is scale. The Great Barrier Reef, admittedly the largest target, is the size of Italy. By contrast, a restoration project a few hectares in size would be regarded as ambitious at the moment, so the first targets are likely to be reefs of high value as tourist attractions or natural sea defences.

In the longer term, automated disseminators of souped-up coral larvae or resilience-encouraging probiotic bacteria could help. So might identifying reefs that, by virtue of local currents, play an outsize role in propagating larvae to other sites—for these could be the most useful places to start. For Dr Cohen, recruiting these natural nodes will be crucial to engineering change over sufficiently large areas. “We have to let nature do its thing,” she says, “because only nature can do it on the scale that’s necessary.” ■

Testosterone and family life

Like father, like son?

Sons of absent fathers have more of the main male hormone

MOST MALES in the animal kingdom do little parenting. Their strategy is simple: inseminate as many females as possible and hope for the best. Sometimes, though, parental investment by a male pays off. Songbird chicks are usually tended by both mother and father. Wolf packs see alpha males and females collaborate to raise the cubs. And in human beings, too, the children's father hangs around to lend a hand in bringing up the kids.

Sometimes.

Understanding why some men settle down to form families with the mothers of their children, and others don't, is normally seen as the prerogative of social science. But biology has a role, too. And work just published in the *Proceedings of the National Academy of Sciences*, by Lee Gettler of the University of Notre Dame, in Indiana, clarifies how part of that biological mechanism, testosterone, operates.

Previous studies suggest that high levels of testosterone, the principal male hormone, are bad for family life. Fathers with lower testosterone levels provide more child care and are better partners to the children's mothers. Indeed, fatherhood is often associated with a drop in testosterone levels. Conversely, high-testosterone males are less likely to stick around.

Dr Gettler has shown something further. This is that a man's adult testosterone level seems correlated with whether his father was present during his teenage years. His data come from a survey begun in Cebu City, in the Philippines, in 1983. This monitored the health and nutrition of 966 men enrolled as babies. It also collected extensive information on whether the fathers of these men were around and providing parental care in the households in which they were brought up. It further documented whether participants got married, had children and, if they did, whether they participated in child care. Crucially, it also measured their testosterone levels at the ages of 21, 26 and 30.

Overall, Dr Gettler and his colleagues found that on becoming fathers, men had lower testosterone levels if their own fathers had lived with them and been involved in their care during their teenage years. Specifically, if that had happened, testosterone levels in their saliva were 16% below those of men whose fathers had not stuck around to help raise them.

This difference has two possible expla-

nations. One is that it is directly genetic, with high-testosterone fathers (those least likely to stick around) begetting high-testosterone sons. In this case the correlation with paternal absence would be a coincidence. The other is that teenage experience actually modulates testosterone levels. This explanation, which Dr Gettler favours, could lead to a vicious circle of high-testosterone men abandoning their sons, who thus become high-testosterone in their turn.

Testosterone levels are not, Dr Gettler found, completely deterministic in the matter of parental care. Some of those in the survey whose fathers were absent during their adolescence, and who ended up with high levels of the hormone, did nevertheless become nurturing parents. But they are indicative.

Why this pattern should pertain is an unanswered question. But a zoologist looking at these data might be tempted to see in them an example of developmental plasticity, in which the same genes produce different, but appropriate, outcomes in different circumstances.

If nurturing young carries a cost in reproductive opportunities foregone elsewhere (which it presumably does), then it would not have been favoured by evolution in times of uncertainty—the sorts of times that lead to early death. A dead man cannot care for his children, and dead children cannot be cared for. Better, evolutionarily speaking, to spread your genes far and wide while you can. Since the absence of a father could, in turn, mark such uncertain times, for that absence to trigger a high-testosterone developmental pathway encouraging this would make sense, even if it is not appropriate to the modern world.

That is speculation. But whatever the truth, Dr Gettler's discovery surely throws a useful light on the problem of fatherless families, and how to try to end it. ■

Aerodynamics

O for the wings of an albatross

Borrowing tricks from birds may result in smoother flights

WHILE CHATTING to a customer in the family bicycle shop in Dayton, Ohio, Wilbur Wright was idly twisting a piece of cardboard that had once contained an inner tube, when he came up with an idea. The "semi-rigid" way in which the cardboard could be deformed yet still retain its stiffness might, he considered, provide an answer to a little problem he was working on with his brother Orville: how to design a



Not just for the birds...

wing for a heavier-than-air flying machine.

The Wright brothers knew, from ornithological observations, that if a wing on one side of a bird's body meets the oncoming flow of air at a greater angle than the opposite wing does, then that wing will rise. An aircraft wing which could be made to twist like this would help a pilot bank and turn. Using mechanical gears and levers to rotate an entire fully-rigid wing to do that would make the plane too heavy. A semi-rigid wing, however, could be warped into different angles using a lightweight series of wires and pulleys. Which is how, on December 17th 1903, the brothers achieved the first controlled and sustained flight of a powered aircraft.

The Wright brothers called their system wing-warping. But it did not last. Within a few years, aviators began adopting a more reliable form of control that fitted hinged ailerons and flaps to the trailing edges of wings, and in 1915 Orville (Wilbur having died three years earlier) conceded, and followed suit. But, in a slightly different guise, wing-warping is now back. And not only that. In their efforts to make wings more efficient, which saves fuel, aerospace engineers are also looking for inspiration from birds' wings in another way, by borrowing a trick from the most accomplished long-range flyer of them all, the albatross.

Airbus, a giant European producer of passenger jets, recently completed a series of tests on new forms of wing control using a model in a wind tunnel at Filton, near Bristol, in south-western Britain. As a result, the company is now fitting these systems to a specially built wing that will, as an experiment, be used to replace one of those on a Cessna Citation business jet. This aircraft will then test the new designs in real flying conditions.

One feature of the eXtra Performance Wing, as it is called, is that instead of hav-

►ing moving surfaces attached to the wing with hinges, mechanical actuators will change the shape of a semi-flexible surface on the trailing edge. These “morphing” surfaces will be multifunctional, meaning that by moving them up or down they can be used either as ailerons (which allow the pilot to bank and turn a plane) or as flaps (which provide extra lift). Pop-up spoilers that emerge from the top surface of the wing will conversely reduce lift, and help slow the aircraft during landing.

The wing itself will have a high aspect ratio—in other words, a long, thin shape that helps (at the expense of manoeuvrability) to reduce aerodynamic drag. The problem with long wingspans on passenger aircraft, however, is that a plane might not fit into the gates at airports. Hence the idea is to fold the wing tips up once the plane is on the ground.

Hinge and bracket

Folding wings are not a new idea. Naval aircraft, which already have a low aspect ratio, have long folded their wings in order to fit into the cramped confines of aircraft-carriers. And Boeing, an American firm that is Airbus’s chief rival, is developing a new version of its 777 aircraft, the 777X, which will also fold its wing tips. (When unfolded, these will add 3.4 metres to the length of each wing.)

Airbus, though, is giving this idea a new twist, by borrowing a trick from the albatross. During long flights, an albatross locks the elbow joints of its extended wings to make them rigid. Thus fixed, they work much like those of a glider (a type of aircraft that has among the highest aspect ratios of all). The bird unlocks its wings and flaps them when it needs to manoeuvre or cope with gusty conditions.

The Airbus wing tips will do something similar. When unlocked in flight, they will be capable of flapping freely up and down during gusts of wind or periods of turbulence. In this way, says Oliver Family, who leads the project, aerodynamic loads on the wing will be reduced, allowing the wing to be made lighter—which, in turn, improves fuel economy. The flapping tips will also help provide a smoother flight. In addition, the project will explore the use of sensors that could spot gusty conditions ahead of the plane and prepare the wing tips for flapping.

The converted Citation, which is due to fly by 2024, will be operated remotely by a pilot on the ground. This is a safety measure, because Airbus intends to use its test flights to push the aircraft to its limits. The company says it is not committed to using these new systems in future aircraft. But if one or other of them proves its worth, passengers gazing idly out the window of future airliners are likely to see the wings on their aircraft moving in unusual ways. ■

Conserving amphibians

Froggie went a sportin’

How to toughen up zoo-bred animals for release into the Big Bad World

CAPTIVITY IS A cushy number compared with the rigours of the wild. No predators. Little risk of disease. And a guaranteed food supply that you don’t have to work for. But that makes you soft. And if the purpose of your captivity is eventual reintroduction into a natural habitat, because you are a member of a rare species that human beings would rather did not become extinct, then having to make your own way in the world when that moment arrives can come as a rude awakening.

This is a problem faced by the mountain yellow-legged frogs which are part of a captive-breeding programme run by San Diego Zoo that is intended to boost that species’ numbers in the mountain streams of California. But, as she reports in the *Journal of Applied Ecology*, Talisin Hammond of the San Diego Zoo Wildlife Alliance, the arm of the zoo in charge of the programme, has a plan to do something about it. She is limbering up her charges prior to their release by putting them on the aqueous equivalent of a treadmill.

Ecologists have long understood that animals raised in captivity can be confused and disoriented when liberated. Breeding programmes therefore go out of their way to provide artificial habitats that are as naturalistic as possible. Amphibian vivaria intended for this purpose are thus supplied with plants, branches, soil and water similar to those found in the wild. Yet Dr Hammond and her colleagues suspected they



Survival of the fittest

might need something more: a Jacuzzi.

In the wild, yellow-legged frogs live in streams that, in the summer at least, have powerful currents. So presumably they have to develop the strength to swim against these. She therefore set about introducing such currents in captivity. She took 146 one-year-old (ie, juvenile) captive-bred frogs and 110 two-year-olds (ie, sub-adults), tagged them all and divided each group in two. She then put half into enclosures equipped with a Jacuzzi jet that acted as a sort of aquatic treadmill; the others, which served as controls, had a conventional filtration pump.

Five weeks later, she and her colleagues measured the amphibians and gave them a 30-second swimming test, which they filmed. The resulting videos recorded how far each frog travelled per stroke of its limbs, and also the total distance it moved in the half minute available. Shortly thereafter, they released their charges into the wild and monitored them for four subsequent months.

The results were striking. Though the two-year-olds gained no noticeable benefit from having an aquatic treadmill in their enclosure, the one-year-olds definitely did. After just five weeks in the Jacuzzi-jet enclosures, their legs were proportionally longer, compared with the sizes of their bodies, than the limbs of one-year-olds raised in the control enclosures. The one-year-olds from the Jacuzzi-jet enclosures also became better swimmers, travelling more per stroke in the test, relative to their overall body size, than the control frogs.

Crucially, one-year-olds that had had access to the aquatic treadmill also survived better in the wild. Monthly attrition rates were 65% for the control juveniles but only 49% for the Jacuzzi-jet juveniles. Though the two-year-olds had a better overall prognosis after release than the one-year-olds, which was expected, because they were bigger, and so better able to look after themselves, there was no significant difference between the attrition rates of the Jacuzzi-jet animals (38% per month) and the controls (40%).

These findings lead Dr Hammond and her colleagues to suggest that there is a critical developmental window, closed by the time an animal is two years old, when frogs’ anatomies can change in response to their circumstances, and that this knowledge can be used to toughen them up for release at an appropriate moment.

Strictly speaking, the researchers would, to prove the point, need to repeat the experiment, having first allowed both sets of one-year-olds to mature into sub-adults, to see if the survival difference persisted. But, on the face of things, it looks as if a regular workout in a Jacuzzi does indeed improve a yellow-legged frog’s prospects of making it in the real world. ■



Live music

The new ventriloquists

The profitable rise of the work-from-home rock star

THURSDAY NIGHT and the lights are low, as the four members of ABBA, one of the most successful musical acts in history, take to the stage for the first time in nearly 40 years. Or do they? To the crowd at a purpose-built arena in east London, ABBA's quartet—Agnetha, Björn, Benny and Anni-Frid—look authentic, their sequinned dresses and feathered mullets swaying to the beat provided by a live band. Yet the singers are computer-generated illusions, captured as they looked in 1979, and their voices a blend of recordings from nearly half a century ago. The virtual “Abbatars”, who played their first concert on May 26th, will perform seven shows a week while the human band members stay at home and collect the royalties.

Concertgoers got used to digital performances during the lockdowns of 2020-21, when in-person gigs were not possible. Since the relaxation of covid rules, people have returned to shows in person. But even as live music roars back, some digital innovations are here to stay. Selling tickets to online video-streams of live gigs has become standard. Online gaming platforms

are experimenting with hybrid music-gaming experiences. Musicians are realising that, pandemic or not, there is money to be made in performing gigs without being physically in front of the audience.

ABBA's extraordinary new show, “Voyage”, goes even further. It demonstrates the potential for a new category of event that is at once in-person and virtual. ABBA's reanimation took six years and cost £140m (\$175m), a third of which went on the high-tech London stadium. The band members spent five weeks performing on a stage in Stockholm, in front of 160 cameras operated by Industrial Light and Magic, a visual-effects company that has previously

brought to life Jedi knights and Avengers.

Their rejuvenated virtual selves are eerily real: dancing, jiving and, between songs, joshing with the crowd (virtual Benny insisting that he is the real thing: “I just look very good for my age”). On the opening night the audience, which included the king and queen of Sweden, suspended their disbelief, unselfconsciously cheering and applauding what was, strictly speaking, an empty stage.

Most high-tech concerts are nothing like as sophisticated as the ABBA show. But basic digital services are changing the economics of even ordinary gigs. In the early days of lockdown, singers live-streamed impromptu concerts from their bedrooms on online video platforms such as Twitch. They soon realised that, when competing for screen time with the likes of Netflix, “you need it to look as cinematic and as spectacular as the latest blockbuster,” says Ric Salmon of Driift, one of several firms that sprang up in 2020 to help musicians stream professional-looking gigs. As shows got slicker they charged more: whereas in April 2020 only about 1% of live-streamed concerts were ticketed, 18 months later nearly half were, at an average price of \$16, says Tatiana Cirisano of MIDIA Research, a firm of analysts.

The number of live streams fell by about half last year, as life got back to normal. But acts have continued to make money from online gigs—and they expect to make more. In March BTS, a Korean pop sensation, streamed a concert for 2.4m ▶

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▶ paying viewers online and in cinemas. By 2028, according to MIDIA, live-streamed concerts will generate \$4bn-5bn a year, more than at the height of the pandemic. Last year Live Nation, the biggest live-entertainment company, acquired Veeps, a live-streaming startup. Spotify and Deezer, subscription music services, have both done deals with Driift.

The name of the game

A recent tour by Little Mix, a British pop group, gives an idea of the new normal. The trio played 24 dates in April and May, in arenas packed with giddy teenagers. They commissioned Driift to live-stream the final show, which sold nearly 60,000 tickets at £13 to fans in 143 countries. Another 29,000 paid to watch the feed in cinemas, suggesting total streaming ticket sales of a little over £1.1m. Producing the live video cost about £250,000. "There's nothing like being in the room," says Steve Homer, the chief executive of AEG Presents, a live-events giant which promoted Little Mix's in-person gigs. But streaming has become "a good bolt-on".

Some artists see it as more than that. As social media have squeezed musicians into ever shorter formats, an hour-long video-concert is "an opportunity to create beautiful long-form content", says Mr Salmon. Digital gigs also provide artists with more data about their fans.

Meanwhile, a new breed of online gaming experience is allowing some artists to transcend the constraints of real-life shows. In concerts held on Fortnite, an online video game, Travis Scott has mutated into a giant and Ariana Grande has sprouted wings and let her fans ride flying unicorns. Roblox, another gaming platform, hosted a Wild West-themed concert in which Lil Nas X appeared as a colossal cowboy. Minecraft, a world-building online game, has held music festivals. No one thinks such shows are substitutes for in-person performances, but they seem to be outliving the pandemic as an evolving entertainment category in their own right.

These varied formats and technologies hold out the tantalising prospect for fans—and concert promoters—of more opportunities to see artists perform. Life on the road is draining, especially for ageing stars or those with children. ABBA's virtual show is in some ways an extension of its early adoption of the music video in the 1970s, which helped the band become world-famous despite doing only a handful of international tours. "Voyage" can play to hundreds of thousands of fans a year for as long as the band members—or perhaps, one day, their estates—choose.

In theory there is no limit to who could take advantage of this technology. Already Whitney Houston, who died in 2012, performs six nights a week in a Las Vegas ho-

tel, in what the show's organisers describe as "holographic" form. Buddy Holly, Roy Orbison, Maria Callas and Tupac Shakur have been brought back for similar posthumous concerts.

The ABBA concert shows how to optimise the effect. The proof of the show's persuasiveness came at the end of the premiere when, after a closing rendition of "The Winner Takes It All", the Abbatars departed and the real ABBA members came on stage to take a bow. It was the final trick played on the audience: the "real" band members turned out to be another illusion. They vanished and the *real-real* ABBA came on stage, to a wild ovation.

"Voyage" had sold more than 300,000 tickets before its opening night; the 3,000-capacity London arena is almost fully booked for summer. A quarter of the tickets have been bought by fans overseas. If the Abbatars are a hit they may perform simultaneously in other cities: the advan-

tage of virtual talent is that "you can just copy-paste them", says Svana Gisla, a producer of "Voyage". (What's more, she adds, "they don't take days off and they don't get covid.") Entertainment companies have sent scouts to the show. It may give other ageing rock stars something to ponder.

Ludvig Andersson, Benny's son and a producer of the show, is also trying to wrap his mind around the experience of working alongside a recreation of his 33-year-old father. Digitally capturing the band members reminded him of the "19th-century idea of a camera sucking out your soul...That's exactly what we did." He has come to think of the Abbatars as individuals in their own right: a "combination of them being ABBA and them being themselves...A ghost in the machine." Whoever or whatever they are, the troupers, immortalised in 120 terabytes, are destined to go on entertaining new audiences, frozen for ever in 1979. ■

Intermediaries

Stuck in the middle with you

A new book lays out the problems with complex supply chains

Direct: The Rise of the Middleman Economy and the Power of Going to the Source. By Kathryn Judge. Harper Business; 304 pages; \$29.99 and £22

IN 2011 THERE was an outbreak of *E. coli* in Germany. Thousands of people fell ill. The authorities suspected that salad ingredients were to blame, but did not know which ones were contaminated with the bacteria. Their initial guess was Spanish

cucumbers—and so European consumers avoided that country's fresh produce. Only later did the authorities find that salad sprouts grown in Germany were to blame.

The reason for the confusion, argues Kathryn Judge, a professor at Columbia Law School, was the complex supply chains that have developed in the global economy. It is not easy for regulators, let alone consumers, to know where goods come from. She draws a parallel with the subprime-mortgage crisis of 2007: loans ►►



A mango at the price of a stone

had been repackaged so many times that investors were far from sure which financial products, and which banks, were safe. So they avoided them all, thereby exacerbating the panic.

These supply chains have evolved in the name of economic efficiency. But Ms Judge suggests they are inherently fragile and that their opacity can mask the costs paid by consumers—and the profits made by intermediaries—as well as the environmental damage they cause. In addition, what she calls the “middleman economy” has led to the emergence of powerful intermediaries such as Amazon or Walmart. These companies may offer low prices to consumers, but their relentless focus on costs may have adverse social effects in the form of low wages or poor working conditions at their suppliers.

Ms Judge urges readers to buy directly from suppliers when they can, noting that only 15% of the money consumers spend on food goes to the farmer who grew it. One initiative the author recommends is “community supported agriculture”. At one such site, Genesis Farm in New Jersey, more than 300 families come each week to pick up a basket of vegetables. They have no choice over which items they get: that depends on the weather, the season and the farmer’s planting decisions. In return, however, consumers get fresh produce and the prospect of a healthier diet.

All this may be very commendable, but the scale of such projects is inevitably limited. It would hardly be practical, let alone environmentally sound, for everyone who lives in Manhattan to trek out to New Jersey to buy their produce every week. When you contemplate all the items in a typical supermarket trolley, it is clear that most consumers will simply not have the time or the resources to buy more than a handful of items directly from the suppliers.

And while complex supply chains have their drawbacks, relying on a single supplier can be problematic, too—as European countries dependent on Russian gas know only too well. More consumers bought their food directly from local suppliers in the late 19th century, but that was an era marked by adulterated products and outbreaks of food poisoning.

As a concept, the “middleman economy” is a little imprecise. There have been middlemen around since ancient times in the form of merchants. Retailers are middlemen, as are banks. But Ms Judge is right to point out that intermediaries have acquired a lot of power in the modern economy. She offers guidance for policymakers, including making sure “existing antitrust laws are applied with rigour”. Consumers, too, should be made more aware of the role intermediaries play, the associated fees and the working conditions at the original suppliers of the goods they buy. ■

New American fiction

Desperate straits

Leila Mottley's debut novel is gritty, skilful and sobering

Nightcrawling. By Leila Mottley. Knopf; 288 pages; \$28. Bloomsbury Circus; £16.99

IT DOESN'T MATTER how lucky you are”, says the protagonist of Leila Mottley's debut novel, “because you still gotta work day in and day out trying to stay alive while someone else falls through the cracks.” “Nightcrawling” tells the compelling story of a young black woman who, despite her best efforts, finds herself “stuck between street and gutter”. Set in the author's native Oakland, California, and inspired by a true crime which made headlines in 2015, the book is both a searing depiction of sexual exploitation and a gripping account of a struggle for survival.

Seventeen-year-old Kiara Johnson has had her unfair share of hard knocks. Her father is dead and her mother is in rehab. She lives with her brother Marcus, a fellow high-school dropout, in a rundown apartment complex generously called the Regal-Hi. As he follows his deluded dream of making it as a rap star, she is forced to act practically. Kiara divides her time between searching for a job to cover their rent and caring for Trevor, the nine-year-old son of her drug-addicted neighbour.

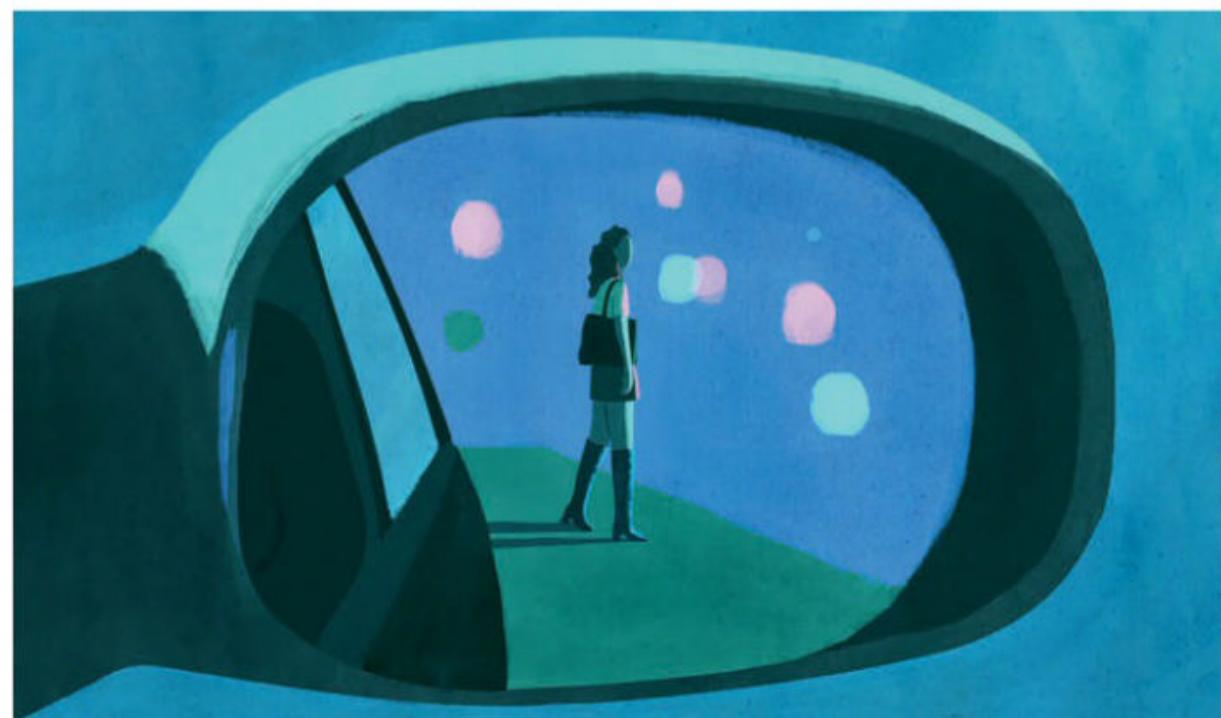
A fateful drunken encounter with a man who believes her to be a sex worker leads Kiara to resort to desperate measures to stay afloat. “It's just a body,” is the mantra she repeats to herself as she takes to the city's streets after dark. She realises that there is more to it than that when she is

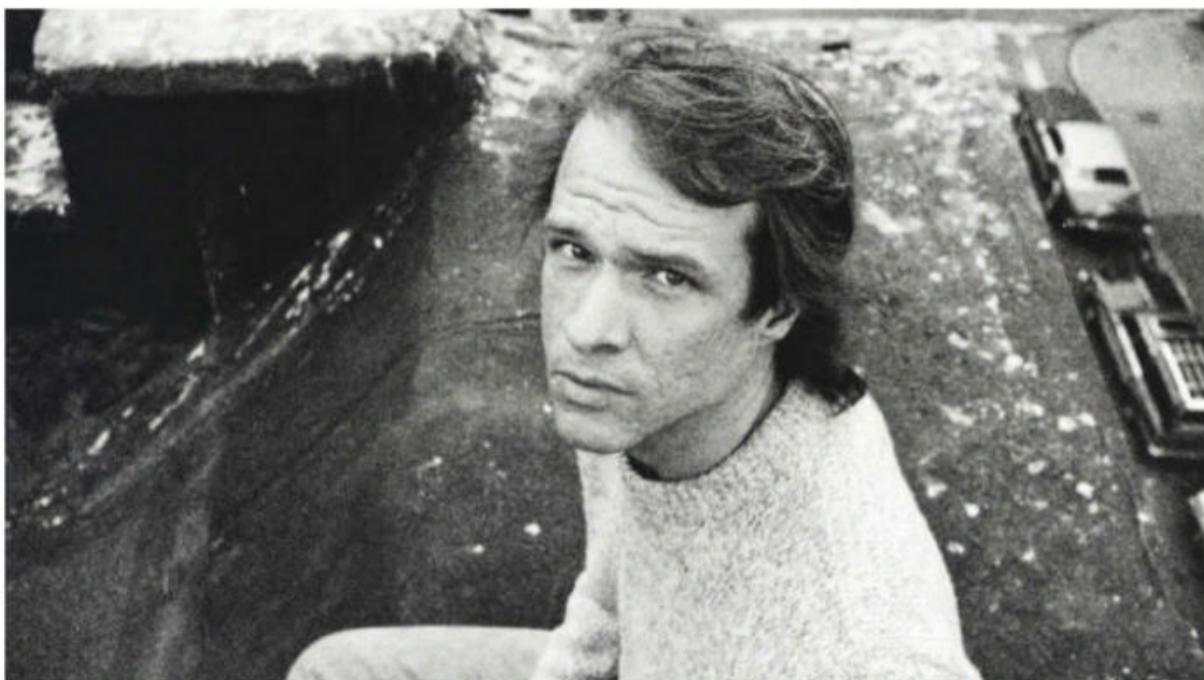
picked up by police officers and turned against her will into their personal plaything. There is the sex, she says, “and then there is the terror, the fear, the marble white of their eyes”.

Deprived of choices, Kiara is manipulated and misused by the very men who should protect and help her. A way out presents itself when one police officer kills himself and leaves behind a suicide note which incriminates his colleagues. She is given the opportunity to name and shame her abusers in a grand jury trial. But does she have the courage to speak out, and will her voice be heard?

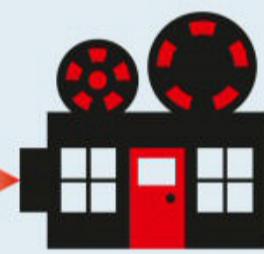
Much of the novel makes for a sobering read. However, its grittier sections are grimly captivating and throughout them Ms Mottley—who is almost 20—conveys corruption, brutality, injustice and suffering in a manner that is hard-hitting but never heavy-handed. She offsets Kiara's ordeals with moments of happiness, like the valuable time spent with Trevor or best friend Alé, and she ensures her court-case climax is a nail-biting final stretch.

Ms Mottley has a background in poetry and in 2018 she was chosen as Oakland's youth poet laureate. Some of her imagery is overblown (“her eyelashes short ghosts framing her eyes”), but more often than not it is rich and inventive. “Fear don't do nothing but paint red across the neck, tell them all how easy it is to split you open.” This is an accomplished first novel with a remarkable heroine whom the reader wills on every step of the way. ■





HOME
ENTERTAINMENT



Buddhist bubblegum

Music for procrastinators

Listen to the works of an indecisive, brilliant composer

ARTHUR RUSSELL was a perfectionist. He could never decide when something was finished. When the musician died of AIDS-related illnesses in 1992, at the age of 40, he had released only three solo albums and was barely known beyond New York's experimental arts scene. But his apartment was overflowing with stacks of boxes containing notebooks, letters, handwritten scores and nearly 1,000 tapes of recorded material. His music spanned genres as disparate as disco (under the aliases of "Dinosaur L", "Indian Ocean" and "Loose Joints"), folk, pop and country.

As a teenager he ran away from his home in Oskaloosa, a small Iowan town, after his father found drug paraphernalia in his bedroom, and the youngster ended up in a Buddhist commune in San Francisco. There he found peace for a while. He gave up drugs, enrolled in a community college to finish high school and took part in fire-walking rituals. At the commune he also studied North Indian classical music, received lessons from a member of the San Francisco Symphony Orchestra and, in between chores, practised his cello in a closet. (He loved the way the sound reverberated in a tiny space.)

He grew tired of this in time and moved to New York to focus on his music, yet the mantras he learned in the commune never left him. He was more interested in the meditative process of making music than the finished product. Repetition and echo are themes that recur in his songs. Listen to "This Is How We Walk on the Moon" for an introduction to his oeuvre.

Incompleteness is desirable, wrote Yoshida Kenko, a Japanese monk from the 14th century: "It is only a person of poor understanding who wishes to arrange things in complete sets." Musical procrastination was where Russell found his bliss. Never satisfied with his output—when praised for a song, he would immediately declare it was terrible—the composer was always changing the beat, fiddling with arrangements, seeing what would happen if he did things slightly differently. Sound was all-consuming for him, and his music has a boundless feel.

In a documentary about the musician's life released in 2008 Russell's boyfriend, Tom Lee, described how the composer liked to set his keyboard up in front of a huge fish tank in their apartment so he could hear the sound of the water while he tinkered with his work. He loved jogging with his Walkman too, music blaring as the city droned around him. Russell developed throat cancer but every evening he would sing one of his songs, "Love Comes Back", to Mr Lee. Philip Glass, a fellow composer, thought Russell could "sit down with a cello and play and sing in a way that no one else on this earth has ever done".

When melancholy strikes, pop on some headphones and listen to Russell's looping, lulling, sweet songs while you walk the streets as he once did. Start with "That's Us/Wild Combination" and be reminded, ever so gently, that "it's a big old world/With nothing in it". Your to-do list is never going to be finished. Everything is impermanent. But you may as well "push up and be part of it all". ■

Banishment

No place like home

Exiles: Three Island Journeys. By William Atkins. Faber & Faber; 320 pages; £20

OVID WAS banished to the outer reaches of the Roman Empire in 8AD for what he called *carmen et error*—a poem and a mistake. The exact nature of his transgression is disputed, but the suffering he endured hundreds of miles from Rome is not: on the shores of the Black Sea, he spent his final years writing about the pain of being separated from his beloved city.

As the ancient world's best-known deportee, Ovid is often invoked by those who write about displacement. They look at his outpouring of nostalgia—in its original meaning of homesickness—and his descriptions of sadness. He wrote in one letter, for example, about feeling dismembered by exile, seeing himself as a metaphorical Mettus. (The character in Virgil's "Aeneid" was torn apart by chariots after betraying Rome.) "A part of me", he wrote, "seemed wrenched from my body."

Given Ovid's status as a famous exile, it is unsurprising that William Atkins's new book about the subject makes good use of him. In "Exiles: Three Island Journeys", the author takes the Roman poet as his "guiding spirit". But while his literary forebear will be known to many readers, the same cannot be said for the three people whose footsteps he decides to retrace.

The trio were all sent to remote islands in the late 19th century by different imperial powers. Louise Michel was exiled to New Caledonia in the Pacific for her role in the short-lived Paris Commune, an insurrection brutally quashed in 1871. Dinuzulu ka-Cetswayo, a young Zulu king deemed a threat to British colonial interests, was dispatched almost two decades later to St Helena, the South Atlantic outpost where Napoleon Bonaparte had been held. And Lev Shternberg, a Ukrainian-born anti-tsarist who had previously languished in jail in Odessa, was shipped to Sakhalin, an island off the east coast of Siberia.

Although life in these far-flung places was supposed to cure them of their perceived troublesomeness, it actually did little to dampen their resolve. On her return to France, Michel resumed campaigning and writing and was detained again for her commitment to revolutionary ideals. Dinuzulu, back near his ancestral homeland, reinvigorated his people's desire to oppose colonialism. As a result, he was sent into exile once more, dying in 1913 at a farm in ▶▶

► the Transvaal, a province of South Africa.

Mr Atkins visits New Caledonia, St Helena and Sakhalin on his travels, weaving together a layered portrait of the exiles' personalities, back stories and interests. He shows that, like Ovid, they contended with sorrow and heartache. But they also found new hobbies to pass the time: Michel became an enthusiastic botanist, Dinuzulu learned the piano and Shternberg began to study indigenous cultures.

With a discerning eye, the author gives sharp—and gracefully written—observations about his own experiences, includ-

ing asides on dreary Sakhalin villages and disillusioned British expats on St Helena. As his trip to New Caledonia coincides with an independence referendum, he also provides a gripping account of the antagonism between the indigenous Kanaks and French settlers, tensions that would have been recognisable to Michel, an ally of the locals, roughly 150 years earlier.

Unlike her two fellow 19th-century deportees, Michel grew fond of her surroundings in exile. She looked back warmly on her life in New Caledonia, once referring to the Pacific island in her correspondence as

"home". It is this word that Mr Atkins's brilliant travelogue deftly explores, teasing out the nuances of what he describes as "the conflict between leaving and staying that seems to animate the world". In his reflections on belonging, the author himself feels the tension between remaining and going because his father's illness worsens during his travels. Such grief adds to the emotional depth of his study into dislocation and loss. "One reason stories of exile move us", he suggests, "is that they seem to acknowledge the unhealable ruptures in our own lives." ■

Johnson Family matters

Compared with other languages, English has a paucity of terms for kinfolk

“MERRY CHRISTMAS from the Family”, a country song by Robert Earl Keen released in 1994, tells the tale of a sprawling festive get-together, replete with champagne punch, carol-singing and turkey. Many listeners will recognise the chaos the narrator describes; even more than that, they may identify with his struggle to recall how he is related to the various guests. “Fred and Rita drove from Harlingen,” Mr Keen croons. “Can’t remember how I’m kin to them.”

That may have something to do with the English language. It is often joked that anyone around your age is a “cousin”, regardless of actual relation, and anyone older is an “uncle” or “aunt”. English is rather bare in its terms for family members. Other languages pay far more attention to the details.

Take “brother” and “sister”. Societies that value age-order highly often have different terms for older brother, older sister, younger brother and younger sister. These are *ge*, *jie*, *di* and *mei* in Mandarin (usually doubled in speech, as in *didi*), or *ani*, *ane*, *ototo*, *imoto* in Japanese. Though generic alternatives exist for certain situations (like the abstract concept of “siblings”), not specifying a specific person’s seniority in these languages would be odd.

Then take marriage relations. English just adds the rather cold *-in-law* to refer to a relationship through a spouse. French has the rather warmer *beau-* or *belle-* (*belle-mère* for mother-in-law, *beau-frère* for brother-in-law, and so on), but at least it means “beautiful” rather than implying a bureaucratic shackle.

Other European languages have distinct words for the many different relatives by marriage. A Spanish-learner must memorise *cuñado/cuñada*, *yerno*, *nuera*, and *suegro/suegra* for brother-/

sister-, son-, daughter- and father-/mother-in-law (the terms are similar in Portuguese). Spanish even distinguishes *cuñado* (brother-in-law by blood relation to your spouse) from *concuñado*, your spouse’s sibling’s husband—something like “co-brother-in-law”. It also has the term *cuñadismo*, brother-in-law-ism, or talking about things you know little about as though you were an authority—the phrase is akin to “mansplaining” in English.

Things get much more complicated from there. Arabic accounts for which side of the family the speaker’s uncles and aunts come from: an *amm* or *amma* is an uncle or aunt on your father’s side, while a *khal* or *khala* is on your mother’s. But those who marry into the family do not marry into those titles. Your *amm*’s wife does not become your *amma*, but is called a *zawjat al-amm*, “uncle’s wife”, lest you should forget which of the pair is your father’s sibling. The same goes for cousins, who have no distinct term, but are the son or daughter (*ibn* or *ibna*) of your *amm*, *amma*, *khal* or *khala*, as the case may be.

Chinese makes many of the same

distinctions. But its system is even more complex, as in many cases it requires the speaker to remember whether a relative is older or younger than they are, whether relatives of their parents are older or younger than they, and so forth. There are many armchair theories about the relationship between language and culture that do not hold up to scrutiny. The East Asian languages’ focus on seniority, however, is quite plausibly related to the importance Confucianism places on the virtue of respecting your elders and forebears.

Finally, it is a curious fact that English lacks a word to describe the crucial relationship between the parents of a married couple. Hebrew and Yiddish, though, have *mehutanim* and *machatunim*, and Spanish offers *consuegros* for this critical relationship. Anglophones, meanwhile, are forced to say something awkward like “my son’s wife’s parents”.

The focus that some cultures put on labelling every possible relation with a distinct term does not mean that those who lack those terms do not pay heed to familial networks. Every English-speaking family seems to have at least one armchair genealogist who can tell you that Henry Ford was a great-great-great uncle or fourth cousin five times removed. But each family also has members who couldn’t care less, waving a hand and saying “uncle” or “cousin”.

All languages permit you to describe relationships in any amount of detail your listener would like. But those that require highly specific labels for kinfolk, forcing you to recall the details every time you speak, surely etch those facts deep in the mind. That makes an Arabic singer much less likely to croon “can’t remember how I’m kin to them” than an American one.





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Economic data

	Gross domestic product			Consumer prices		Unemployment rate		Current-account balance		Budget balance		Interest rates		Currency units	
	% change on year ago latest	quarter*	2022†	% change on year ago latest	2022†	%		% of GDP, 2022†	% of GDP, 2022†		% of GDP, 2022†	10-yr gov't bonds latest, %	change on year ago, bp	per \$ Jun 1st	% change on year ago
United States	3.5	Q1	-1.5	2.3	8.3	Apr	7.7	3.6	Apr	-4.2	-5.8	2.9	132	-	-4.6
China	4.8	Q1	5.3	5.0	2.1	Apr	2.2	6.1	Apr‡§	2.3	-6.2	2.5	§§	-36.0	6.69
Japan	0.2	Q1	-1.0	2.8	2.4	Apr	1.8	2.5	Apr	1.3	-6.1	nil	-8.0	130	-15.8
Britain	8.7	Q1	3.0	3.9	9.0	Apr	6.7	3.7	Feb††	-3.2	-5.3	2.0	111	0.80	-11.2
Canada	2.9	Q1	3.1	3.8	6.8	Apr	5.7	5.2	Apr	1.2	-3.6	2.9	141	1.26	-4.8
Euro area	5.1	Q1	1.1	3.2	8.1	May	5.2	6.8	Apr	2.4	-4.1	1.2	136	0.94	-12.8
Austria	5.5	Q4	-2.0	2.6	8.0	May	6.5	4.4	Apr	-1.3	-4.4	1.8	169	0.94	-12.8
Belgium	4.9	Q1	2.2	2.0	9.0	May	9.2	5.7	Apr	-1.3	-3.8	1.7	163	0.94	-12.8
France	4.5	Q1	-0.8	2.7	5.2	May	5.4	7.2	Apr	-1.2	-5.7	1.6	138	0.94	-12.8
Germany	3.8	Q1	0.9	1.6	7.9	May	6.8	3.0	Apr	5.9	-2.9	1.2	136	0.94	-12.8
Greece	7.4	Q4	1.7	3.0	10.2	Apr	6.6	12.7	Apr	-5.1	-4.9	3.7	284	0.94	-12.8
Italy	6.2	Q1	0.5	2.0	6.9	May	6.3	8.4	Apr	1.5	-5.9	3.2	229	0.94	-12.8
Netherlands	7.0	Q1	0.1	2.4	9.6	Apr	10.4	3.2	Apr	8.5	-3.0	1.5	150	0.94	-12.8
Spain	5.5	Q4	1.3	4.0	8.7	May	7.2	13.3	Apr	0.8	-5.7	2.2	169	0.94	-12.8
Czech Republic	5.1	Q1	3.7	2.2	14.2	Apr	11.9	2.4	Apr‡	-2.5	-4.8	4.7	294	23.2	-10.5
Denmark	6.6	Q1	-0.4	2.1	6.7	Apr	6.9	2.4	Apr	8.2	1.0	1.5	140	6.97	-12.9
Norway	4.8	Q1	-3.8	3.3	5.4	Apr	3.6	2.9	Mar‡‡	9.2	2.6	1.4	76.0	9.44	-12.2
Poland	9.4	Q1	10.4	4.5	13.9	May	10.1	5.2	Apr§	-2.2	-3.7	6.5	463	4.31	-15.6
Russia	3.5	Q1	na	-10.0	17.8	Apr	18.0	4.0	Apr§	5.6	-4.5	9.2	197	64.0	14.9
Sweden	3.1	Q1	-3.2	2.4	6.4	Apr	5.1	8.2	Apr§	4.1	0.4	1.6	110	9.82	-16.0
Switzerland	4.4	Q1	1.9	2.4	2.5	Apr	2.5	2.2	Apr	6.3	nil	0.9	101	0.96	-6.2
Turkey	7.3	Q1	4.9	3.0	70.0	Apr	62.2	11.4	Mar§	-4.2	-3.6	21.5	366	16.4	-48.0
Australia	3.3	Q1	3.1	3.2	5.1	Q1	4.5	3.9	Apr	1.8	-3.1	3.4	183	1.39	-7.2
Hong Kong	-4.0	Q1	-11.4	0.8	1.3	Apr	4.1	5.4	Apr‡‡	0.3	-6.7	2.8	158	7.85	-1.1
India	4.1	Q1	1.9	7.2	7.8	Apr	6.0	7.1	May	-1.4	-6.4	7.4	138	77.5	-6.0
Indonesia	5.0	Q1	na	5.2	3.5	Apr	4.2	5.8	Q1§	0.3	-4.8	7.0	60.0	14,581	-2.1
Malaysia	5.0	Q1	na	5.0	2.3	Apr	3.0	4.1	Mar§	2.8	-6.2	4.2	97.0	4.38	-5.7
Pakistan	6.2	2022**	na	2.7	13.8	May	13.0	6.3	2021	-5.3	-7.0	12.6	†††	295	198
Philippines	8.3	Q1	7.8	7.1	4.9	Apr	4.7	6.4	Q1§	-3.0	-7.7	6.6	262	52.5	-9.0
Singapore	3.7	Q1	2.8	3.6	5.4	Apr	4.9	2.2	Q1	17.4	-0.9	2.8	126	1.37	-3.6
South Korea	3.1	Q1	3.0	2.7	4.8	Apr	4.0	3.0	Apr§	3.3	-2.0	3.3	114	1,237	-10.6
Taiwan	3.1	Q1	4.3	4.5	3.4	Apr	3.8	3.7	Apr	13.9	-1.2	1.2	78.0	29.3	-5.6
Thailand	2.2	Q1	4.7	2.9	4.6	Apr	5.0	1.5	Dec§	0.1	-4.8	2.9	126	34.3	-9.3
Argentina	8.6	Q4	6.3	4.2	58.0	Apr	60.1	7.0	Q4§	0.8	-4.3	na	na	120	-21.3
Brazil	1.6	Q4	2.2	1.3	12.1	Apr	10.4	10.5	Apr§‡‡	nil	-6.7	12.6	341	4.79	7.5
Chile	7.2	Q1	-3.0	2.1	10.5	Apr	10.2	7.7	Apr§‡‡	-4.5	-3.4	6.3	247	825	-12.8
Colombia	8.2	Q1	4.0	4.2	9.2	Apr	9.8	11.2	Apr§	-3.6	-4.8	10.6	346	3,795	-3.4
Mexico	1.8	Q1	4.1	1.9	7.7	Apr	7.5	3.1	Apr	-0.9	-3.5	8.6	205	19.7	0.7
Peru	3.8	Q1	8.1	2.5	8.1	May	7.1	7.4	Apr§	-3.3	-2.5	7.4	261	3.72	2.7
Egypt	8.3	Q4	na	5.2	13.1	Apr	12.7	7.2	Q1§	-5.8	-6.0	na	na	18.6	-15.7
Israel	9.6	Q1	-1.6	4.1	4.0	Apr	4.0	3.5	Apr	3.0	-2.0	2.7	147	3.34	-3.0
Saudi Arabia	3.2	2021	na	7.5	2.3	Apr	2.5	6.9	Q4	14.9	10.1	na	na	3.75	nil
South Africa	1.7	Q4	4.7	1.9	6.0	Apr	5.8	34.5	Q1§	-1.6	-6.1	9.9	96.0	15.6	-11.5

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. Source: Haver Analytics

Markets

		Index Jun 1st	one week	% change on: Dec 31st 2021
In local currency				
United States	S&P 500	4,101.2	3.1	-14.0
United States	NAScomp	11,994.5	4.9	-23.3
China	Shanghai Comp	3,182.2	2.4	-12.6
China	Shenzhen Comp	2,012.7	3.5	-20.5
Japan	Nikkei 225	27,457.9	2.9	-4.6
Japan	Topix	1,938.6	3.3	-2.7
Britain	FTSE 100	7,533.0	0.1	2.0
Canada	S&P TSX	20,713.7	1.6	-2.4
Euro area	EURO STOXX 50	3,759.5	2.2	-12.5
France	CAC 40	6,418.9	1.9	-10.3
Germany	DAX*	14,340.5	2.4	-9.7
Italy	FTSE/MIB	24,283.6	0.1	-11.2
Netherlands	AEX	701.2	2.5	-12.1
Spain	IBEX 35	8,747.2	-0.1	0.4
Poland	WIG	57,025.5	1.5	-17.7
Russia	RTS, \$ terms	1,222.2	-1.4	-23.4
Switzerland	SMI	11,494.1	nil	-10.7
Turkey	BIST	2,568.8	6.2	38.3
Australia	All Ord.	7,462.9	1.0	-4.1
Hong Kong	Hang Seng	21,294.9	5.6	-9.0
India	BSE	55,381.2	3.0	-4.9
Indonesia	IDX	7,149.0	3.9	8.6
Malaysia	KLSE	1,553.4	1.2	-0.9

Commodities

The Economist commodity-price index				% change on month	% change on year
2015=100	May 24th	May 31st*			
Dollar Index					
All Items	180.8	183.2	-2.4		-3.0
Food	165.1	166.4	3.0		20.4
Industrials					
All	195.4	198.8	-6.2		-15.8
Non-food agriculturals	175.9	175.7	-7.8		6.0
Metals	201.2	205.7	-5.8		-19.9
Sterling Index					
All items	220.3	221.8	-3.1		9.1
Euro Index					
All items	186.9	189.7	-3.9		10.9
Gold					
\$ per oz	1,866.3	1,845.1	-1.7		-2.8
Brent					

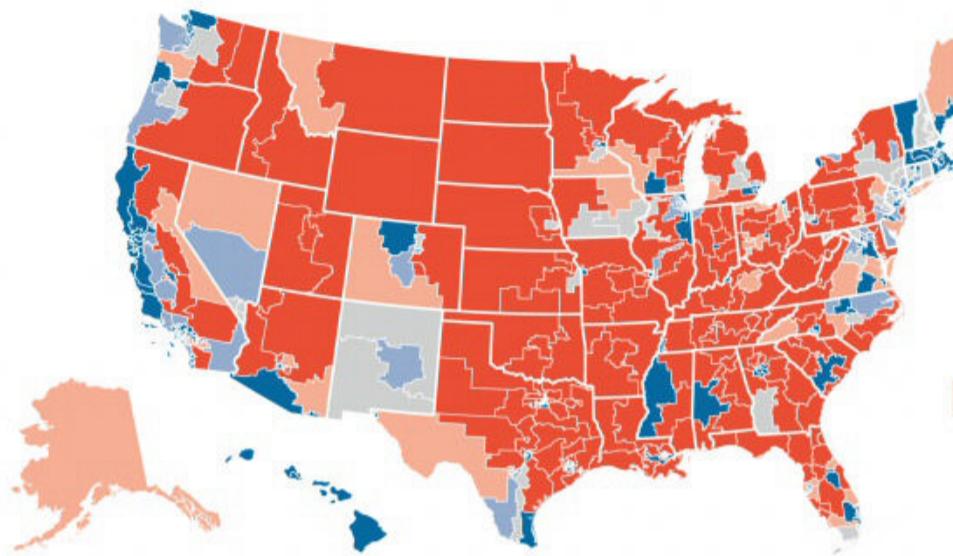
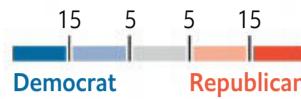
Sources: Bloomberg; CME Group; Cotlook; Refinitiv Datastream; Fastmarkets; FT; ICCO; ICO; ISO; Live Rice Index; LME; NZ Wool Services; Thompson Lloyd & Ewart; Urner Barry; WSL. *Provisional

Investment grade	157	120
High-yield	438	332

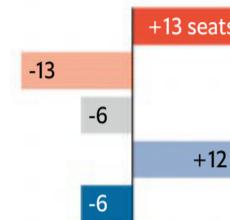
Sources: Refinitiv Datastream; Standard & Poor's Global Fixed Income Research. *Total return index.

→ Redistricting has produced a slightly fairer map, but the new boundaries still give the Republicans a large edge

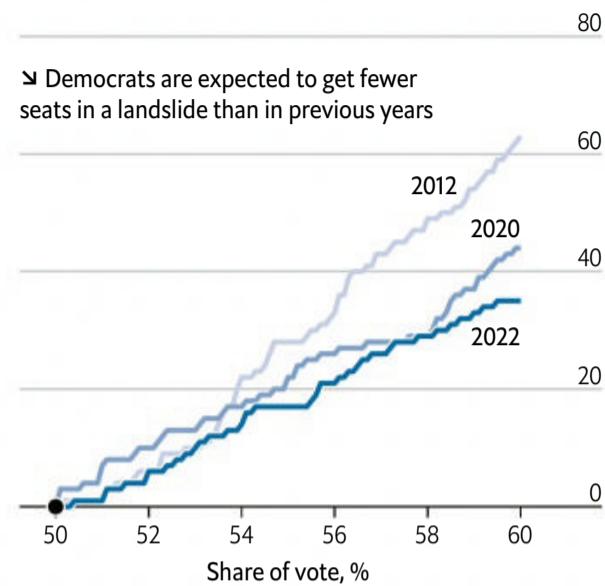
Predicted vote margin*, % points
Congressional districts, 2022



Change, 2020-22

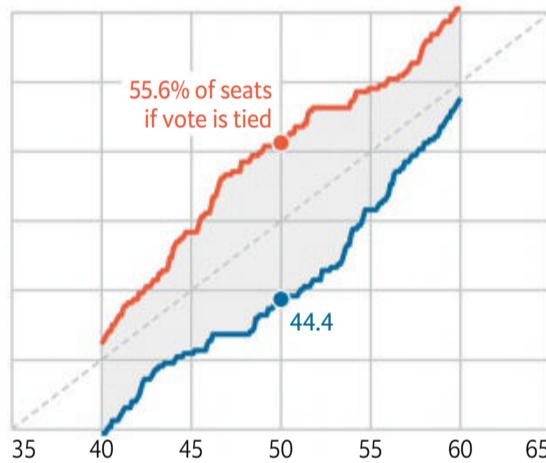


Predicted Democratic seats, change from baseline
Baseline=seats won if the popular vote is tied

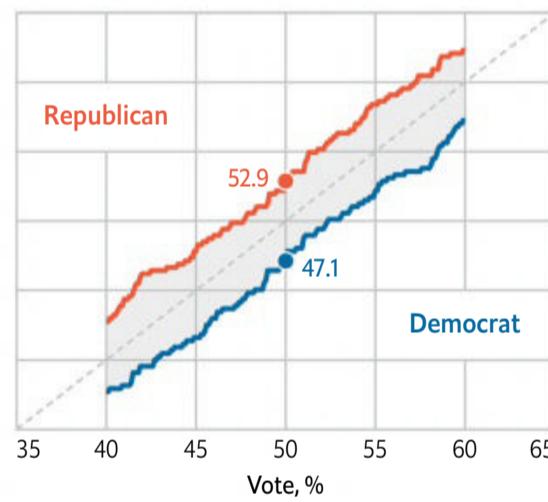


Share of vote v predicted share of seats, %

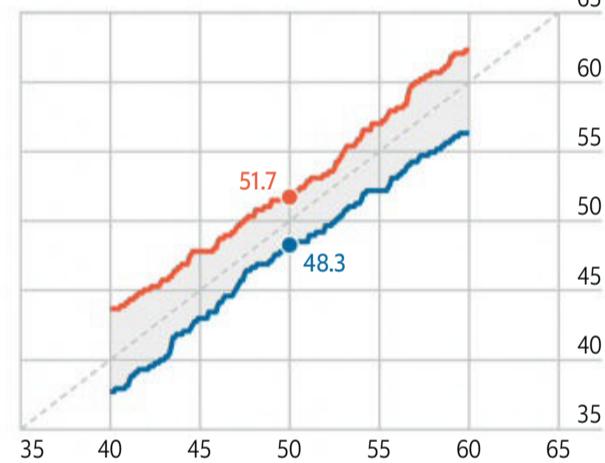
2012 Republican gerrymandering produced bias in their favour



2020 Court decisions reduced but did not eliminate the Republicans' advantage



2022 Democrats need 52% of votes to control the House



*Weighted average vote margin in last two presidential elections
Sources: FiveThirtyEight; *The Economist*

Beating the bounds

Congressional races are about to become even less competitive

SOME OF THE earliest employees of the United States government were statisticians. Their methods may have been primitive by today's standards, but the so-called enumerators were bound by the constitution once a decade to record where each person in the country lived. These tallies are used to draw the boundaries of the districts represented by each member of the House of Representatives. State politicians, who are charged with redistricting, typically try to draw maps that benefit their own side, within limits set out by state constitutions and federal judges. The maps must divide the population roughly equally, must not split up racial minorities unnecessarily and not be excessively funny

shapes. Aside from that, anything goes.

A year after they received the enumerators' latest counts, officials in each state have now completed this decade's round of redistricting. The last cycle, in 2010-2012, came at a low point for Democrats. With Republicans riding high in state legislatures, they drew maps that heavily favoured their own side. The new boundaries were supposed to be better for the Democrats than the last set, since this latest round of redistricting happened after a good 2020 for the party. Some election-watchers predicted that pro-Democratic gerrymanders would even things out, eliminating the bias of the chamber altogether before November's mid-terms.

In the end the new maps will still be lopsided, but are less biased towards Republicans than they were after the 2010 census. According to *The Economist*'s analysis of results for the presidential elections since 2008, compiled by FiveThirtyEight, a data-journalism website, Republicans could have held onto the majority of seats in the House in 2012 while losing the popu-

lar vote by 4.3 percentage points. In fact, Republicans did win a hefty majority in 2012 while losing the popular vote by one point. This November, Republicans could pull off the same feat while losing by as much as 2.5 points. Any less, and Democrats are favoured to hold their majority.

Less biased maps are an improvement. But partisan mapmakers have also managed to make members of Congress even safer than they were already. The number of truly competitive seats—defined as those where Democrats or Republicans have won by fewer than five points relative to the national popular vote over the previous two election cycles—will fall from 46 to 40 out of a total of 435. (That is already down from 54 in 2010.) Put another way, less than 10% of seats will be competitive in November. Republicans have accomplished this by giving up some ground in competitive seats in exchange for shoring up their margins in friendlier areas. For nine in ten members of the House of Representatives, the primary is the only election they need to worry about. ■



To ride, to win

Lester Piggott, the greatest Flat-racing jockey of the 20th century, died on May 29th, aged 86

THE CHEEKIEST thing Lester Piggott ever did in racing happened during the Grand Prix de Deauville in 1979. A bit over a furlong from the finish he dropped his whip, so he did what he had to, and stole another. His right hand went out, as he drew alongside at full gallop, towards the left hand of Michel Lequeux, and plucked his whip away. Thus armed, he whipped a path to the finish line.

This combination, exquisite balance and ruthless will, typified his whole career. He won 4,493 races in Britain, including 30 Classics. Among them were eight St Legers, six Oaks, five 2,000 Guineas, two 1,000 Guineas; and, nine times, the Epsom Derby, then the world's foremost race on the flat. When he won it first, in 1954 on *Never Say Die*, he was just 18; when he reached his ninth, in 1983, he set a record that still stands. At Royal Ascot, usually in front of the queen, he rode 116 winners. All these were on the flat, but he excelled at hurdles too, winning 20 from 56 rides. Eleven times he was Champion Jockey, with the most wins in a season.

Racing pundits said he thought like a horse, and there was some truth in that. He knew how horses felt. As an only child, and partially deaf, he had found it hard from childhood to make friends and get on with people. As an adult he was mostly silent, "Old Stoneface" as some called him, but he could mumble a good riposte if he wanted to. And with horses he had an understanding. He had grown up with them, his family involved in racing and training on both his father's and his mother's side, and at seven had been lifted onto his first racehorse to feel the raw quivering power of it. He could be almost eloquent as he described the secret of his riding: how, because a horse could not change the centre of gravity that lay behind its shoulders, he would adjust his own centre of gravity at every second and with every stride.

To achieve that he first starved his body, keeping it roughly two stone below his natural ten-stone weight: dry toast for breakfast, scraps of protein, no carbs, until his frame, tall for a jockey, was

lean as a rake. Then he hit on the idea, when he was still a schoolboy racer, of shortening his stirrups and perching high above the saddle, almost bent in two. There, even at speed, he could keep his balance like a circus rider. Most other jockeys tried to copy him, but he was the first. Having mastered that extraordinary technique, he would then "encourage" a horse, as he thought of it, by laying on the whip in the last stages with a ferocity that could shock spectators, as when he bludgeoned his mount Roberto past *Rheingold* to win the Derby by a short head in 1972.

Yet it did not always work. Despite his 1979 whip-stealing he came second in that race, later relegated to third, to his disgust. You went out to win. That philosophy was his father's, whom he trotted after round the stables in the same flat cap and jacket: win, win, win. He won his first real race at 12, at Haydock Park, and was set like an arrow from then on. As a teenager he was often penalised for bumping other riders; he cut them up, they cut him up back. There were fewer cameras in those days. At Royal Ascot in 1954, when he was 18, he was suspended by the Jockey Club for reckless riding ("nothing really"). He was also ordered to leave his father's stable and serve his apprenticeship somewhere else.

This made no difference to his attitude. He was never a complacent stable jockey, content to do what trainers or owners wanted. He knew horses, and a rider like him did not need instructions. His best seasons were with Noel Murless, a royal trainer, in the late 1950s and Vincent O'Brien in the 1970s, but he left both in bitterness and, each time, went freelance. For him the only point of a stable connection was to find and ride the fastest horse. If that horse threw him, as one did at Longchamp, giving him a hairline skull fracture and headaches for years, he would be back riding, and winning, much sooner than doctors recommended.

About his mounts he was not sentimental. "He's a good horse" was his highest praise. Even the famous cruising *Nijinsky*, on which he won the Derby in 1970, "never felt as good to ride as he was". He liked *Petite Etoile*, a grey filly, for her flying speed as she won two Coronation Cups; *The Minstrel*, a brave little chestnut, because he triumphed in the Derby with no fear of the whip. On the gallops, rather than carefully assessing how much exercise the horses needed, he just wanted to test their best speed. When an exceptional mount appeared, he insisted on riding it in the next big race—no matter whether it was being kept for another jockey, or not. "Jocking off" was his speciality, and he felt no compunction about picking up the phone to plead his case to the owner.

In search of wins he travelled round the country, from racecourse to racecourse, riding through muck and rain, to win the Champion Jockey title, even though he got nothing for it. It peeved him intensely that in 1963 he lost the title by one race, on the last day of the season, to the great Australian jockey Scobie Breasley, and he made sure he won it for the next eight years. Money, though, was also an obsession. His mother had stressed the importance of getting cash and hanging on to it. If anyone asked him for any, he liked to joke that they were talking into his deaf ear. He gambled, too, and in 1985, after he had retired to be a trainer, he was found to have evaded tax for a decade and a half, which earned him a sentence of three years in jail.

It was all a great waste of time, he thought. The greatest waste was that, adding prison to retirement, he was out of the saddle for almost five years. Meanwhile, the racing world had expanded to take in America and even Hong Kong. He had bristled at the arrival in England of Steve Cauthen from the States in 1979, though he came to respect him. And in 1990 he staged his own remarkable comeback in the Breeders' Cup Mile at Belmont Park, New York.

He was 54, 42 years older than when he had lifted his first cup at Haydock. For a while, on Royal Academy, he dawdled at the back of the field. Then he picked up speed and finished, by a neck, ahead of everyone else. Confident as ever, plucking the sting of age and disgrace, he won, as he had to. He said it was the most satisfying ride he had ever had. ■

Retail reimagined: shaping the future of shopping

June 16th 2022
9am PST / 12pm EST / 5pm BST



Join Economist Impact for this one-hour virtual event and hear how retailers are rising to meet the challenge of new customer expectations following the covid-19 pandemic, pioneering new business models and turning the new reality to their advantage through automation and digitalisation.



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