

The Economist

Twitter v Meta

The future of war: a special report

Don't blame greedflation

Achilles goes to the office

JULY 8TH–14TH 2023

FAMILIES AND FREEDOM

Why East Asia needs a social revolution



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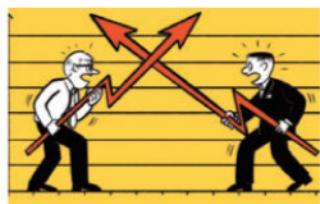
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 to take part in "a severe contest between
 intelligence, which presses forward,
 and an unworthy, timid ignorance
 obstructing our progress."

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Emmanuel Macron held a meeting with mayors from municipalities in France that were hit by a week of rioting. The violence started after police shot dead a teenager of Algerian descent for driving away from a traffic stop. The ensuing riots spread from Paris to most cities across France, even spilling over to Belgium and Switzerland. More than 4,000 rioters were arrested; their average age was just 17. The government promised to help rebuild the more than 2,000 businesses that were attacked by looters. The French president told the mayors that "We all want a lasting, republican order."

The **Wagner Group** is still actively recruiting mercenary troops to fight in Ukraine, according to press reports. That would contradict the agreement that Wagner reached with the Kremlin following a recent aborted mutiny. **Yevgeny Prigozhin**, Wagner's leader, who supposedly went to Belarus as part of the agreement, is now in St Petersburg, according to the Belarusian dictator, Alexander Lukashenko.

Russia said it shot down five drones over the suburbs of **Moscow**, the third drone attack on Russia in two months. No one was injured. Vnukovo International Airport was closed as a precaution for a short time.

NATO extended Jens Stoltenberg's term as secretary-general by a year. He was supposed to step down on October 1st, but the military alliance can't settle on an alternative for the job and have decided to stick with the continuity that Mr

Stoltenberg brings to the position. He has won widespread praise for his leadership during the war in Ukraine.

Casualty

Britain's National Health Service celebrated its 75th anniversary. The NHS is beset with problems: staff shortages, strikes and long waiting times, a bad prognosis for the septuagenarian service. Rishi Sunak, the prime minister, has set out a long-term workforce plan which aims to cure its ills. The NHS is the biggest employer in Europe, with 1.4m staff, but it is short of 112,000 workers.

Israel launched its biggest raid on a **Palestinian** city in the West Bank since 2002. During the 48-hour incursion into Jenin, 12 Palestinians (Israel says they were all militants) and one Israeli soldier were killed and dozens of Palestinians injured. The Israelis said they destroyed 30 workshops and weapons caches. Hamas, the Islamist group that runs Gaza, claimed that a car-ramming and stabbing attack in Tel Aviv in which seven Israelis were injured was in response to the raid on Jenin.

Senegal's president, Macky Sall, said he would not run for re-election next year, ending speculation that he would flout a constitutional requirement that he should serve no more than two terms. However, he repeated his argument that a tweak to the constitution allowed him a third term. Democrats in the region hope his decision will help persuade other leaders to follow suit.

Salva Kiir, who has presided over **South Sudan** amid much turmoil since its independence in 2011, said that delayed elections set for next year would go ahead and that he would run for re-election. His rival and current vice-president, Riek Machar, is expected to stand against him.

The civil war in **Sudan** showed no sign of ending, despite a string of short-lived ceasefires.

Violence persisted across the country, especially in the capital, Khartoum, and in Darfur, the long-troubled western region.

Joe Biden said he would use "every tool at our disposal" to push through a scheme for student-debt relief, after the **Supreme Court** struck down his original plan. The court made several radical decisions at the end of its term, notably scrapping the **affirmative-action policies** that have steered college admissions for decades. The court found that the policies "require stereotyping" and discriminated against Asian-Americans. It also bolstered the rights of businesses to withhold services to gay weddings on free-speech grounds.

Guatemala's constitutional court suspended the declaration of the results from an election held on June 25th. Bernardo Arévalo, the candidate of the anti-corruption Semilla party, had unexpectedly won a place in the run-off election for the presidency by coming second to Sandra Torres, a former first lady. Observers think that the country's elite is threatened by the candidacy of Mr Arévalo and is trying to nobble his chances.

Brazil's top electoral court prohibited Jair Bolsonaro, who was the country's president until last year, from running for office for eight years. The court said that before last year's election Mr Bolsonaro had undermined trust in Brazil's voting system.

Venezuela's government banned María Corina Machado, a leading challenger to the country's authoritarian president, Nicolás Maduro, from holding public office for 15 years. Ms Machado was among the favourites to be the opposition's candidate in a presidential election next year.

Wan Muhamad Noor Matha was appointed speaker of **Thailand's** parliament following May's election. Mr Wan

Noor served in a former government led by Thaksin Shinawatra, who was deposed by a military coup in 2006. It is still unclear whether Pita Limjaroenrat, from the pro-democracy Move Forward party, has enough support to become prime minister.

The International Atomic Energy Agency, a UN watchdog, approved plans to discharge contaminated water from Japan's **Fukushima nuclear plant** into the sea over the next 30-40 years. The IAEA says the plan is safe, but plenty disagree.



In **Afghanistan** the Taliban ordered beauty salons to close within a month, their latest restriction on women's rights. Most salons already operate with their windows covered to keep the morality police away.

Hong Kong offered rewards of HK\$1m (\$128,000) for information leading to the arrest of eight pro-democracy activists who had fled overseas. The dissidents are accused of various offences under a draconian national-security law that criminalises activities endangering China, regardless of where they occur. America, Australia and Britain, where the activists are thought to live, condemned the bounty scheme.

Living in a doll's house

Vietnam banned the release of "**Barbie**" because a scene from the film includes a map showing the infamous "nine-dash line". The line marks territory in the South China Sea that China claims. Other countries, such as Vietnam, think it is make-believe.

Meta unveiled **Threads**, a text-based conversation app that it is promoting as a more “friendly” social-media rival to Twitter. Threads is linked to Instagram, one of Meta’s existing social-networking sites, allowing its young base of users to switch easily between the two. With Twitter becoming ever more erratic under Elon Musk’s stewardship, Threads could be an existential threat to the platform. Some 10m people signed up to Threads in the first seven hours, according to Meta.



Apple’s stockmarket valuation closed above \$3trn for the first time. The company’s share price has risen by nearly 50% this year, as investors bet on dizzy growth in iPhone revenues. Tech stocks in general have rallied after last year’s rout. The **NASDAQ** composite has gained 32% since the start of 2023, its best first-half of a year since 1983. A handful of companies are driving the rally, notably Nvidia, which makes chips for use in artificial intelligence. Its stock is up by almost 200% this year.

Tesla’s share price is also soaring. The maker of electric cars delivered 466,000 vehicles between April and June, up by 83% from the same three months last year and a company record, and produced 480,000. Underlining the phenomenal demand for electric vehicles **BYD**, a Chinese rival to Tesla, sold 700,000 electric and plug-in hybrids in its most recent quarter, its best ever for sales.

Alef Aeronautics, a startup backed by a vc investor in Tesla and Space X, received an airworthiness certificate from the

Federal Aviation Administration for its Model A **flying car**, the first time such a vehicle has obtained US government approval to fly. Alef aims to start selling its fully electric car, which can take off and land vertically as well as drive on roads, by the end of 2025.

Political bias

A federal judge in America imposed a temporary injunction on government officials talking to social-media companies about removing content that comes under the purview of **free speech** (not including criminal or terrorist themes). The case, which has not been finally resolved, was brought by the states of Louisiana and Missouri. The judge, who was appointed by Donald Trump, said it was “telling” that it was mostly conservative views that the government sought to scrub from social platforms.

Pakistan’s KSE 100 stockmarket registered its biggest gain in 15 years, after the government secured a \$3bn short-term bail-out from the IMF. The deal gives Pakistan breathing room as it tries to avoid defaulting on debt repayments. Its foreign reserves have dwindled, leaving some businesses unable to pay for imports.

China slapped export curbs on gallium and germanium, materials that are used to manufacture **semiconductors**. The decision was taken on grounds of national security but is seen as retaliation for Western sanctions on Chinese technology. The restrictions were announced shortly before Janet Yellen, America’s treasury secretary, was due to visit China for talks.

Pan Gongsheng was named the new political chief of **China’s** central bank, and is expected to soon take over the job of governor. Mr Pan, a former senior fellow at Harvard, has been a deputy governor since 2012 and was in charge of managing the country’s vast foreign-currency reserves. Observers think it unlikely that he will change the bank’s cautious approach to economic stimulus, at least for now.

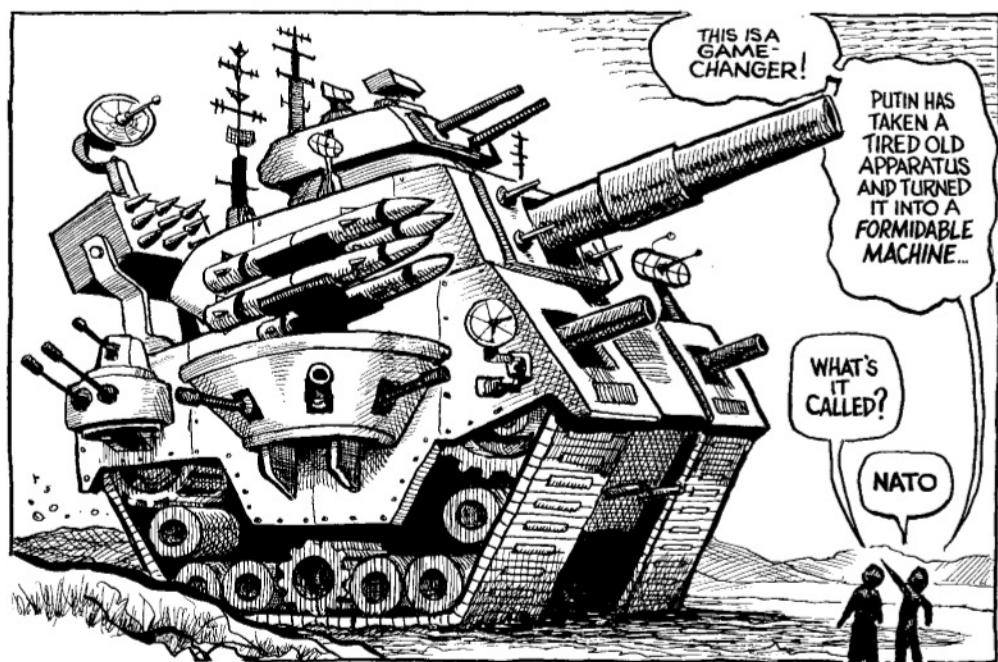
Australia’s central bank left its benchmark interest rate on hold at 4.1%, which surprised some economists. The bank raised the cash rate in June and sent out hawkish signals about further increases. At this week’s meeting the rate-setters suggested that they wanted to evaluate the effect of previous increases, but didn’t rule out more tightening in the future.

Saudi Arabia and Russia took additional steps to lower **oil supplies** in the hope of boosting prices. The Saudis are extending a cut of 1m barrels a day until the end of August and the Russians are making an additional “voluntary” reduction of 500,000 b/d. Prices didn’t rise much in response. Brent crude has been trading around \$72 to \$76 a barrel since early May.

In **India** Reliance Jio, part of the Reliance conglomerate run by Mukesh Ambani, the richest man in Asia, launched a basic internet-connected phone for 999 rupees (\$12). The cheap “feature” device will lower the cost of a 4G phone for the 250m Indians who still use 2G, enabling them to tap mobile-payment services.

The fashion for travel

Travellers to Japan may never again have to worry about packing a business suit or cocktail dress. Japan Airlines has rolled out a new service whereby passengers can **rent clothes from the airline** before they board via an app. The sets of clothing will cost up to ¥7,000 (\$49). Unfortunately for bigger customers, the clothes come mostly in only small, medium and large.



The new Asian family

Chinese, Japanese, South Koreans and Taiwanese are rejecting the Confucian family. Their leaders are lagging behind

THE CONCEPT of “Asian values”, once championed by leaders across the region, went out of vogue after the Asian financial crisis of 1997. The idea that East and South-East Asia’s disciplined governments had a unique economic edge over the decadent West suddenly seemed less compelling. Today in prosperous East Asia a different facet of those ballyhooed values is looking even more parlous. In China, Japan, South Korea and Taiwan, Asians’ supposed commitment to conservative family life is collapsing. As we report in our Asia and China sections this week, millions of young people are opting for looser, often lonelier and—in the East Asian context—less male-dominated arrangements. In a region that is home to over a fifth of humanity, the socioeconomic and demographic consequences will be vast, potentially destabilising and will shape millions of lives.

In Japan, where the shift first became evident, married couples with at least one child accounted for 42% of households in 1980, and single people 20%. That has flipped. In 2020 couples with children accounted for 25% of households, and singletons 38%. And the decline is continuing. Last year 17% of Japanese men and 15% of women aged 18–34 said they would not marry, up from 2% and 4% in the early 1980s, and China recorded its lowest-ever number of marriages, half as many as a decade ago.

In some ways young Chinese, Japanese, Taiwanese and South Koreans are following a path charted in rich countries elsewhere. Between 1960 and 2010 Europe’s marriage rate fell by half, for many of the reasons that are now driving down East Asian rates. To many people, marriage seems increasingly anachronistic and unaffordable. Across East Asia it is still widely understood in Confucian terms, as the union of a dominant man and submissive woman. In South Korea a married woman is referred to as *Jip-saram*, or “home person”, and her husband as *Bakat-yangban*, or “man outside”.

High property prices are an added disincentive to setting up a marital home. Alternative domestic arrangements are becoming more accepted; besides singleness, they include intergenerational flat-sharing and, less often, cohabiting and gay partnerships. And growing numbers of middle-class women are putting off marriage to concentrate on their careers.

Traditional values are hard on women at work, too. East Asia has some of the world’s best-educated women, yet its overall record on female empowerment is poor and in some ways worsening. On the World Economic Forum’s gender-equality ranking of 153 countries, China—where women are said to “hold up half the sky”—slipped from 63rd in 2006 to 102nd in 2022. South Korea has the widest gender pay gap in the OECD.

If most of this sounds familiar, two things make East Asia’s great social change distinct and hugely troublesome. First, the taboo against having children outside marriage remains as rigid as ever. Across the OECD, 40% of births are outside wedlock. In Japan, South Korea and Taiwan less than 5% are. (The figure in China is unavailable, revealingly, but not thought to be higher.)

The result is a plummeting fertility rate. South Korea’s, at 0.78, is the lowest recorded anywhere and Taiwan’s only slightly

higher. Japan’s and China’s are just above half the replacement rate. China’s cruel one-child policy, now replaced by panicked officials with calls to have three, exacerbated its demographic squeeze. But as the regional picture shows, it would have happened anyway. The total population of the four East Asian countries is predicted to shrink by 28% between 2020 and 2075.

The second problem is that the region’s governments are making the situation worse. None seriously broaches the only policy guaranteed to revive East Asia’s flagging demography: mass immigration. Their main response is to try to resuscitate marriage with economic perks—including tax breaks and subsidised weddings—with little success. South Korea’s president, Yoon Suk-yeol, admits that his country has, in essence, squandered 280trn won (\$215bn) on such policies. Worse, he and his counterparts in China and Japan are doubling down on the conservative approach that their citizens increasingly object to.

South Korea’s previous administration sought to extend benefits to single parents and unmarried couples. Mr Yoon, who blames the low fertility rate on feminism, has put a stop to that. Under Xi Jinping, China promises its citizens a Confucian revival and arrests gay-rights activists. Japan’s ever-ruling Liberal Democratic Party is also against reforming marriage, including by refusing to make it available to gay couples, although most voters want to see that change.

There are pockets of progress, notably in Taiwan, which recently took a more liberal course. It has legalised same-sex marriage and in May permitted gay couples to adopt children—though it is too soon to know whether these changes will show up in the statistics. But the region as a whole is stuck between modernity and tradition, suffering some of the worst effects of both. East Asians are free to disdain traditional family roles, but not to redefine them. That is why millions resort to childlessness and solitude.

Governments should try to complete this lopsided revolution. Even if social change is not entirely within their grasp, and does not happen overnight, they can at least stop resisting it. To make family life more attractive, they need to deal with its gender imbalances as well as its costs by, for example, making paternity leave routine. They should look beyond heterosexual marriage, as their citizens have, and extend legal recognition to cohabiting, gay and other non-traditional arrangements—and afford them the support married couples now enjoy, especially over child-rearing. It is self-defeating and outrageous that China prevents single women from freezing their eggs, or that Japan makes it nearly impossible for gay couples to foster children.

Let them not wed

Such policies would not fix the region’s demography. But they would have a more positive effect on it than the current ones. More important, they would leave millions freer to lead the lives they choose, especially women and gay people. East Asian governments have overseen the greatest-ever economic boom. Now they must attend to their citizens’ happiness and liberty. ■



Battlefield lessons

The future of war

A new era of high-tech war has begun. Democracies must prepare

BIG WARS are tragedies for the people and countries that fight them. They also transform how the world prepares for conflict, with momentous consequences for global security. Britain, France and Germany sent observers to the American civil war to study battles like Gettysburg. The tank duels of the Yom Kippur war in 1973 accelerated the shift of America's army from the force that lost in Vietnam to the one that thumped Iraq in 1991. That campaign, in turn, led China's leaders to rebuild the People's Liberation Army into the formidable force it is today.

The war in Ukraine is the largest in Europe since 1945. It will shape the understanding of combat for decades to come. It has shattered any illusions that modern conflict might be limited to counterinsurgency campaigns or evolve towards low-casualty struggles in cyberspace. Instead it points to a new kind of high-intensity war that combines cutting-edge tech with industrial-scale killing and munitions consumption, even as it draws in civilians, allies and private firms. You can be sure that autocratic regimes are studying how to get an edge in any coming conflict. Rather than recoiling from the death and destruction, liberal societies must recognise that wars between industrialised economies are an all-too-real prospect—and start to prepare.

As our special report explains, Ukraine's killing fields hold three big lessons. The first is that the battlefield is becoming transparent. Forget binoculars or maps; think of all-seeing sensors on satellites and fleets of drones. Cheap and ubiquitous, they yield data for processing by ever-improving algorithms that can pick out needles from haystacks: the mobile signal of a Russian general, say, or the outline of a camouflaged tank. This information can then be relayed by satellites to the lowest soldier at the front, or used to aim artillery and rockets with unprecedented precision and range.

This quality of hyper-transparency means that future wars will hinge on reconnaissance. The priorities will be to detect the enemy first, before they spot you; to blind their sensors, whether drones or satellites; and to disrupt their means of sending data across the battlefield, whether through cyber-attacks, electronic warfare or old-fashioned explosives. Troops will have to develop new ways of fighting, relying on mobility, dispersal, concealment and deception. Big armies that fail to invest in new technologies or to develop new doctrines will be overwhelmed by smaller ones that do.

Even in the age of artificial intelligence, the second lesson is that war may still involve an immense physical mass of hundreds of thousands of humans, and millions of machines and munitions. Casualties in Ukraine have been severe: the ability to see targets and hit them precisely sends the body-count soaring. To adapt, troops have shifted mountains of mud to dig trenches worthy of Verdun or Passchendaele. The consumption of munitions and equipment is staggering: Russia has fired 10m shells in a year. Ukraine loses 10,000 drones per month. It is asking its allies for old-school cluster munitions to help its counter-offensive (see Europe section).

Eventually, technology may change how this requirement for

physical "mass" is met and maintained. On June 30th General Mark Milley, America's most senior soldier, predicted that a third of advanced armed forces would be robotic in 10-15 years' time: think of pilotless air forces and crewless tanks. Yet armies need to be able to fight in this decade as well as the next one. That means replenishing stockpiles to prepare for high attrition rates, creating the industrial capacity to manufacture hardware at far greater scale and ensuring that armies have reserves of manpower. A NATO summit on July 11th and 12th will be a test of whether Western countries can continue to reinvigorate their alliance to these ends (see International section).

The third lesson—one that also applied for much of the 20th century—is that the boundary of a big war is wide and indistinct. The West's conflicts in Afghanistan and Iraq were fought by small professional armies and imposed a light burden on civilians at home (but often lots of misery on local people). In Ukraine civilians have been sucked into the war as victims—over 9,000 have died—but also participants: a provincial grandmother can help guide artillery fire through a smartphone app. And beyond the old defence-industrial complex, a new cohort of private firms has proved crucial. Ukraine's battlefield software is hosted on big tech's cloud servers abroad; Finnish firms provide targeting data and American ones satellite comms. A network of allies, with different levels of commitment, has helped supply Ukraine and enforce sanctions and an embargo on Russian trade.

New boundaries create fresh problems. The growing participation of civilians raises legal and ethical questions. Private companies located outside the physical conflict zone may be subject to virtual or armed attack. As new firms become involved, governments need to ensure that no company is a single point of failure.

No two wars are the same. A fight between India and China may take place on the rooftop of the world. A Sino-American clash over Taiwan would feature more air and naval power, long-range missiles and disruptions to trade. The mutual threat of nuclear use has probably acted to limit escalation in Ukraine: NATO has not directly engaged a nuclear-armed enemy and Russia's threats have been bluster so far. But in a fight over Taiwan, America and China would be tempted to attack each other in space, which could lead to nuclear escalation, especially if early-warning and command-and-control satellites were disabled.

Silicon Valley and the Somme

For liberal societies the temptation is to step back from the horrors of Ukraine, and from the vast cost and effort of modernising their armed forces. Yet they cannot assume that such a conflict, between large industrialised economies, will be a one-off event. An autocratic and unstable Russia may pose a threat to the West for decades to come. China's rising military clout is a destabilising factor in Asia, and a global resurgence of autocracy could make conflicts more likely. Armies that do not learn the lessons of the new kind of industrial war on display in Ukraine risk losing to those that do. ■



Economic fallacies

“Greedflation” is a nonsense idea

Corporate avarice is not the cause of the world’s inflation problems

INFLATION IS HIGH, and the search is on for the culprit. The latest in the frame in Europe is profiteering businesses. The idea that greedy companies were to blame has taken a knock in America, where corporate profits are falling even as consumer prices continue to rise too fast. But that has not stopped the notion taking hold across the Atlantic. The IMF has found that higher profits “account for almost half the increase” in the euro zone’s inflation and Christine Lagarde, the president of the European Central Bank, has at times seemed sympathetic to the argument. In Britain the government has asked regulators to look for evidence of price gouging; on July 3rd the competition watchdog added fuel to the fire with a finding that supermarkets had increased their margins on petrol between 2019 and 2022.

The “greedflation” thesis is in part a reaction against another common explanation for inflation: that it is driven by fast-growing wages. Central bankers live in fear of wage-price spirals. Last year Andrew Bailey, governor of the Bank of England, asked workers to “think and reflect” before asking for pay rises. The remark was incendiary because the inflation that has troubled the rich world since 2021 has largely left workers worse off. Wages have not driven prices up but lagged behind them.

Yet to argue that companies must therefore be to blame is to confuse cause and effect. In America the profit margins of non-financial corporations surged after vast fiscal stimulus during the pandemic, which amounted to more than 25% of GDP and included three rounds of cheques sent directly to most households. The infusion of cash into the economy—which the Federal Reserve chose not to offset with higher interest rates—set off a consumer-spending boom that overwhelmed the world’s covid-strained supply chains, disrupting other economies. With too much cash chasing too few goods, it was inevitable that companies would make more money. Then, after Russia invaded

Ukraine, companies producing energy or food also found themselves selling into a shortage. Their prices and profits shot up.

Europe’s economy has not overheated as quickly or to the same extent as America’s. But the euro zone has recently spent 3.3% of GDP subsidising energy bills and its interest rates are still too low given the underlying rate of inflation. Today it is displaying familiar symptoms: high core inflation, high profits and wages that are surging in a tight labour market (see Finance & economics section). It seems likely that profit margins there will also follow America’s downwards; analysts expect the profits of listed companies to decline this year.

Regardless, the fact that companies raise their prices in response to shortages is not only defensible but desirable. The

alternative to letting the price mechanism bring supply and demand into line is to rely on something worse, such as rationing or queues. Though there may be examples of opportunistic or anti-competitive behaviour, the effects are unlikely to have been material. British supermarkets increased their profits by 6p (\$0.08) on a litre of petrol, which today costs £1.46, but they did so at a time when the peak rate of annual fuel inflation was 129%. Properly measured, economy-wide profit margins have not surged in Britain.

Ms Lagarde has said that it would be desirable for profit margins in the euro zone to fall. She is right; such a decline would be disinflationary and would restore workers’ share of the economic pie. But that does not mean that a crackdown on corporate greed is needed. Instead, monetary and fiscal policymakers need to continue to correct the error of excessive stimulus by raising interest rates and tightening fiscal policy.

The right lesson to draw from the past two years is not that companies have got greedier, but that workers suffer when policymakers let inflation run out of control. All the more reason, in short, to care about price stability in the first place. ■



Privatised utilities

Britain’s water mess

Blame financial blunders and timid regulation, not privatisation

THE PRIVATISATION of water utilities in England and Wales, more than 30 years ago, now looks like a rip-off. Private-equity firms have loaded some water companies with debt. That helped juice their returns but left them financially fragile. While many water bosses made out like bandits, raw sewage was being dumped in rivers and on beaches. The companies, notably Thames Water, are now seen as the unacceptable face of Britain’s utility privatisations. Critics, backed by voters on the left and right, are calling for renationalisation (see Britain section).

This may be effective demagoguery, but it is wrong. In the aftermath of the water mess, consumers will end up paying

more—not because of unscrupulous water-company bosses, but because of Ofwat, the industry’s feeble, ill-advised regulator.

Two separate problems with privatised water are often mixed up. One is the fragility of some firms; the other is a lack of spending on infrastructure. The first is being talked about because Thames Water, the largest water company, is in trouble. It has £16bn (\$20bn) of debt and, as much of that is linked to inflation, faces a growing interest bill. Shareholders have coughed up only £500m of the £1.5bn it needs to turn the business around. The firm’s boss resigned on June 27th, and the government is preparing a contingency plan to take it into temporary ownership. ►

Thames Water is not alone. Private-equity investors have saddled much of the industry with debt. Last month Yorkshire Water said it had raised £500m from its owners. That came after Ofwat warned that its borrowings were greater than its assets (counting derivatives and pension obligations). At least publicly traded water companies all have lower debt levels.

It is true that dividends of £65.9bn were extracted from companies in the years between privatisation in 1989 and 2022. However, the fallout from this financial engineering lands not on current bill payers, but on the companies' bondholders. If any water companies fail, that need not affect the public, because shareholders and bondholders should pay the price. Financial ring-fencing, enforced by Ofwat, and the special administrative regime, a form of bankruptcy, should keep the water flowing. Government help may be needed, but the costs can be clawed back from bondholders through debt write-downs.

Water firms have failed before, without any calamity. Hyder, a utilities group, went bust in 2000. It had owned Welsh Water, which later left bankruptcy and now operates as a not-for-profit. And after Wessex Water's parent company, Enron, went bankrupt in 2001, the subsidiary found a new owner and continued operating. On neither occasion did the government intervene.

The second, separate, problem is the lack of investment in infrastructure. Climate change and a growing population mean that the south-east of England urgently needs more reservoirs. Across the country, water companies should be spending more

to fix leaks and fit more households with water meters. They also need to upgrade their facilities to stop sewage getting into rivers.

The blame for the lack of investment does not lie with profiteering bosses, however, but with Ofwat. In five-yearly reviews negotiated with the companies, it sets limits on price increases for consumers and on total permitted expenditure, including on investment. As local monopolies, the companies have the power to pass on the approved costs of any investment to their customers. But, anxious to keep customers' bills down, Ofwat has limited the rate of investment. The consequences are washing up on Britain's sewage-strewn beaches.

In deep water

Now it is time to spend more. The costs will fall on consumers: one way or another, if Britons want cleaner water they will have to pay for it. Private investors will demand a higher return on any funds they put in, especially if the water companies' scope to borrow is limited.

But talk of nationalisation is a distraction—and a poor use of scarce public funds. Whether water companies are owned by the state or remain in private hands, a fierce watchdog will be needed to keep the industry in line. Indeed, elected politicians would probably be even more reluctant than arms-length regulators to spend taxpayers' money or raise bills to pay for necessary investment. Those regulators will, at least, now have the cautionary tale of Ofwat's failings to guide them. ■

University admissions

Affirmative action had to go

But what comes after could be better

SHOULD CITIZENS be treated differently based on the colour of their skin? Most people would say no, but others insist that they should—if the ends are sufficiently enlightened.

Not long after America dismantled over two centuries of slavery and segregation, it embarked on a project of "affirmative action": legally sanctioned positive discrimination for African-Americans (later expanded to other "under-represented minorities") who wanted to go to selective universities. At the time, the affront to liberal norms of fairness and equality under the law was assuaged by the fact that the people who stood to benefit had been oppressed. Yet after 50 years with more racial progress than setbacks, an applicant to America's top universities with the right skin colour still has a much better chance of getting in than one with identical credentials but the wrong skin colour. On June 29th the Supreme Court ended the scheme.

It was right to do so. That is because affirmative action rested on contorted constitutional logic. It was also unpopular outside progressive circles. Worst of all, it didn't work. America's best universities have never been representative, even with race-based affirmative action. The very same universities favour the children of alumni and donors—a shadow, unjustifiable affirmative-action scheme for the white and wealthy hidden behind the prominent one for black and Hispanic applicants (many of whom were wealthy themselves).

The Supreme Court's ruling will reverberate widely, encour-

aging lawsuits to end racial preferences in other areas, such as government contracting. But the immediate impact will be on universities, and the task is to ensure that it is beneficial.

Start with the shaky legal justification for race-conscious admissions. After the civil-rights era, America began to try to live up to its constitutional promise to guarantee all its citizens due process and equal protection under the law. That is why, in 1978, the Supreme Court justified affirmative action not as reparations for a terrible past, but with the argument that diversity promotes "cross-racial understanding and the breaking down of racial stereotypes".

It was always odd that affirmative action was crafted for the benefit of black students' white peers. Nonetheless, top universities leapt on the rationale of diversity, using it to construct racially balanced classes while suggesting that these were the happy result not of quotas, which are banned, but of "race-conscious" holistic admissions schemes that treat people as individuals rather than as avatars for their racial group.

In last week's decision the court's dissenting liberal justices claimed that the new ban "will serve only to highlight the court's own impotence in the face of an America whose cries for equality resound". In fact Americans were not happy with the old policy. Even liberal Californians voted down a proposal in 2020 to reinstate affirmative action, banned in the state since 1996. Polls show that many more Americans oppose taking race into



► account for admissions than favour it. That is also true of Asian-Americans, who typically lean left but bear the heaviest cost of race-based admissions because they are deemed to be “over-represented” (despite suffering discrimination in their own right).

The court’s decision could yet become the catalyst for fairer admissions (see United States section). The extraordinary benefits that Harvard and Yale shower upon the children of alumni and donors make a mockery of meritocracy and progressivism. Those practices, the subject of a new legal challenge, should go.

Universities seeking social justice should stop using race as a proxy for disadvantage and start looking at the thing itself. Instead of giving a leg-up to members of groups that are on average badly off, they should favour individuals who are poor. One trial found that simply offering application-fee waivers to promising students from poor backgrounds dramatically increased the chance of them ending up in highly selective universities.

The best universities may seek stealthy ways to preserve racial preferences. Many are dropping requirements for standardised tests, which would make it harder to detect quiet discrimination against members of unfavoured groups who shine in them. Writing to students and alumni, Harvard quoted part of the majority opinion that opens the door to considering race if an applicant were to write about it in a submitted essay. “We will certainly comply with the Court’s decision,” it wrote, impishly.

Rather than coaxing a generation of minority students into drafting disingenuous adversity statements—and continuing to admit a vast hereditary mediocracy through the back door—universities like Harvard would do well to craft a fairer system of admissions. They should not seek to protect the monied (albeit multicoloured) monoculture that they have created. Instead they should take the chance to become the genuinely representative institutions that they claim to be. ■

Deep-sea mining

Give nodules the nod

Why the extraction of metals from the Pacific seabed must begin

BURNING FUEL to move humans and goods by road produced about 6bn tonnes of carbon dioxide in 2021, 16% of global energy-related emissions. If countries are to curb the increase in the world’s temperature, they must stop these emissions. That means building battery-powered vehicles which run on electricity rather than internal combustion. And that in turn means mining and processing metals on an unprecedented scale.

Take nickel, which is used in the part of a battery that stores energy. The International Energy Agency reckons 80m tonnes of it must be mined between now and 2040 if the world is to hit its climate targets. That is more nickel than has ever been mined, and approaches the 100m tonnes of global unmined reserves measured by the United States Geological Survey.

It is a truism among resource economists that new demand creates new reserves, as price signals spur exploration and innovation. But that takes time, and the need is urgent. Happily, there exists a vast untapped source of the metal. A stretch of seabed in the Pacific Ocean, called the Clarion-Clipperton Zone (ccz), some 4,000 metres deep, holds a staggering 340m tonnes of nickel. The trouble is that the rules covering seabed mining, which the International Seabed Authority (isa), an arm of the UN, has been working on for 29 years, have been held back by a weak bureaucracy and the questionable concerns of conservationists. On July 9th a deadline for finalising them is likely to be missed. The isa must publish the rules as soon as possible, so that mining can begin.

Nickel sits on the seabed in potato-sized lumps called nodules, bound up with cobalt, copper and manganese, which are also present in quantities more than sufficient to meet the needs of the green-energy transition. The nodules were created over millions of years as metal particles drifted down and clumped together on the sea floor. They can be vacuumed up using bus-sized robots, then pumped to a ship on the surface.

Conservationists say this process poses grave environmental risks. Carbon will be kicked out of the seabed and make its way

into the atmosphere, they argue, generating more warming; life-choking sediment plumes will be created by the collection system and hitherto untouched ccz ecosystems will be destroyed, disrupting food webs and damaging fisheries.

But on closer examination many of these arguments are spurious. When it comes to nickel, mining the ccz is greener and cleaner than mining on dry land. Research shows that the amount of carbon stored in the ccz is negligible, meaning that mining will not stir up enough of it into the atmosphere to add to warming. Nor, according to research from the Massachusetts Institute of Technology, will the sediment churned up spread as far or as thickly as claimed.

The most serious concern is the threat to diverse organisms that are unknown to science. But life in the ccz is scarce—some 270,000 tonnes of biomass would be destroyed by mining—and mostly microbial. And because the ccz is the oceanic food web’s final stop, there would be few spillovers to other ecosystems. Compare that with the situation in Indonesia, the country that dominates nickel supply and holds a fifth of all reserves (see Science section). If all those reserves were mined, at least 10m tonnes of living organisms would be destroyed (as in the ccz, mostly species unknown to science). The associated emissions would also be ten times higher.

Several isa members have called for a “precautionary pause”, claiming that too little is known about the impacts of ccz mining. This logic is backwards. Too much is known about the vital need for nickel, and the environmental destruction that is wrought by obtaining it on land, for anything other than cautious but expedited action to be a sensible path. Battery technologies that use less nickel—or even none at all—may in time reduce the need for it, but on current trends vast amounts are called for. Member states should therefore seek to finalise the rules as soon as possible, and then to monitor the impact on the ccz and surrounding ocean as mining takes place. The reward is a cooler planet that hosts a greater abundance of life. ■



A Danish political whirl

The shift by Denmark's Social Democrats towards punitive anti-immigrant policies failed to win back voters for the left, you say ("Progressive disease", June 17th). However, an analysis of the Social Democrats published by myself and a co-author in the *British Journal of Political Science* shows just the opposite. We found that parties of the left in Denmark won a majority in 2019 precisely because the Social Democrats moved to the right.

Moreover, studies which concluded that the left in Denmark did not benefit from a rightward shift on immigration have two important flaws. First, they typically focus only on the Social Democrats and not the left as a whole. Although Social Democrats who move to the right on immigration tend to lose votes to green or socialist parties, the left as a whole benefits and does end up with more votes because moving to the right also attracts supporters from anti-immigrant parties.

Second, the studies do not take into account that social democratic parties that decide to move right do so strategically to avoid defeat. This makes the strategy seem less effective than it really is. Our study sidesteps these issues. It is clear that accommodating the right on immigration does help the left.

MARTIN VINAES LARSEN
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Aarhus, Denmark

A vaping tax

Your discussion of Britain's vaping policy rightly balanced the desirability of finding an effective way for adults to quit smoking with the risk of creating an undesirable incentive for young people to start ("Fears over vapes", June 24th). Your suggestion that it would help to make disposable vapes pricier by imposing more tax is true, but for non-obvious reasons. In Britain vapes

attract only value-added tax. Policymakers are concerned that introducing an excise tax on vapes makes them more expensive and may stop adult smokers from switching over.

However, we know from the tobacco market that goods with a duty tax require much tighter sales controls and reporting. These controls would better allow the authorities to combat the irresponsible sale of illegal vapes that blight the category. As a responsible manufacturer, we support a small, volume-based vape excise on this basis.

ROSS PARKER
Director of group
corporate affairs
Imperial Brands
Bristol

Defining diasporas

Regarding the Indian diaspora ("Making it as migrants", June 17th), it is useful to make distinctions about the world's scattered communities. The classical diasporas, such as Armenian, Greek and Jewish, tend to have multi-generational distinct identities and loose networks of transnational ties among themselves. More recent émigré communities tend to be economic migrants. Colonisers and their descendants, or the enslaved and their descendants, may or may not characterise themselves as diasporas. Is Joe Biden part of the Irish diaspora? Is Barack Obama a member of the African diaspora? "Irish" and "African" can have a variety of meanings in marking identity.

So it is with Indian and Chinese communities around the world. Many are recent economic migrants. Within both, there are various sub-national, ethnic, religious, socioeconomic and other distinctions. To speak of a single Indian diaspora or Chinese diaspora, and to consider their relationships with the governments in Delhi or Beijing in monolithic terms, would be wrong.

Complicated relationships with homeland governments result in a more nuanced discourse. The waves of people

who have left Russia since the spring of 2022 may be referred to by others as migrants, émigrés, or a diaspora. But many use a different term to describe themselves, *relokanty*. They have not necessarily dispersed or emigrated, but have relocated. For now.

NAREG SEFERIAN
Fairfax, Virginia

A true test of Narendra Modi's political skills (Banyan, June 17th) would be a successful campaign to address malnutrition in India. Government surveys show that over a third of Indian children are not reaching their full growth potential, physically and mentally. The stunting rate (low height for age) for children under 5 years old was 38.4% in 2015-16 and 35.5% in 2019-21. At this slow rate of improvement India would take 40 years to catch up to China.

Dealing with malnutrition is tailor-made for a politician with Mr Modi's gifts. It requires a focus on delivery, an ability to campaign relentlessly and the skill to create a new narrative. The impact of the Make in India campaign would be much stronger if accompanied by another national push: Grown in India. DR LAWRENCE HADDAD
Executive director
Global Alliance for Improved Nutrition (GAIN)
Brighton

The woman behind the man

Your obituary of Daniel Ellsberg said that as the bombing in the Vietnam war escalated, he knew "he had to expose the lying, killing machine" (June 24th). There may have been another factor that convinced Mr Ellsberg to oppose the war, a war he once supported.

On August 30th 1972 the *New York Times* reported that Patricia Marx, Mr Ellsberg's wife, "pooh-poohed the stories that she was the major reason her husband switched from being a hawk to a dove on the Vietnam war. However, she admitted, that one of the reasons she turned down his first marriage proposal (in 1966)

was because of their differences on the war." The article went on to report that "Friends say that the Ellsbergs are an extremely close couple."

RICHARD COLMAN
Orinda, California

Movie psychology

The human psyche employs countless ways to mitigate the sting of loss, regret and humiliation. In Lexington's "Multiplexed" (June 24th) we learn that Hollywood is creating films where anything is possible and everything can be undone. Freud sums it up nicely. In "Civilisation and Its Discontents", he wrote "Life as we find it, is too hard for us; it brings us too many pains, disappointments and impossible tasks." He lists three palliative measures to make life bearable, "powerful deflections, which cause us to make light of our misery; substitute satisfactions, which diminish it; and intoxicating substances, which make us insensitive to it".

With a stiff drink in hand, watching "Spider-Verse" or any of the multiverses now available to us has the benefit of checking all three boxes.

KURT ELA
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Mostly harmless leaders

Since the fourth leader of *The Economist* is often actually the fifth (Bartleby, June 17th) might I suggest you rename it the "Mostly Harmless" leader, in honour of Douglas Adams. That is his fifth instalment in the often inaccurately named "trilogy" of Hitchhiker's Guide to the Galaxy books.

JIM MILLER
Minneapolis



Neighbourhood botch

KHORGOS, KAZAKHSTAN

China has lots of neighbours, but few friendly ones

NO COUNTRY HAS more neighbours than China, with 14 land borders. And its neighbourhood is not just crowded, but also tumultuous. There is a rogue state, North Korea; war-torn ones, such as Myanmar; ones with which it has festering territorial disputes, such as India; others with which it has overlapping maritime claims, such as Japan; and one—Taiwan—which it is constantly threatening to invade. It is a difficult group to get along with under any circumstances, but China's flawed diplomacy is making the task even harder.

For centuries Chinese leaders thought of the world as a series of concentric circles emanating from the Dragon Throne. The inner ones formed territory under the emperor's direct rule. Then came neighbouring kingdoms such as Japan, Korea and Vietnam, which acknowledged the emperor's ultimate authority by paying tribute. Outermost were foreigners whose trade with China was often seen as tribute, too.

Xi Jinping, China's present-day poten-

tate, puts a 21st-century spin on this worldview. At home he has made himself the "core" of the Communist Party and crushed dissent, especially in border areas. Globally, he has made China a more assertive power. But his efforts to bind China's neighbours more closely to it—"to warm people's hearts and enhance our affinity, charisma and influence", as he ordered officials in 2013—have not gone to plan.

Twitchy in Tokyo

Several neighbours are aligning themselves more closely with America, to counteract China's growing assertiveness. Most of those friendliest to China are unstable. Others fear its intentions. In recent votes at the UN, half of China's immediate neighbours broke ranks with it to condemn Russia's invasion of Ukraine and only five backed a statement rejecting criticism of its policies in Xinjiang. That all speaks to a weakness in Chinese foreign policy that could undermine Mr Xi's ambitions. Put

simply, can China really challenge American leadership in the world if it cannot get its own neighbours on board?

Powerful countries often try to enhance their own prosperity and security by dominating their region in economic, military, political and cultural terms. In the modern era France, Germany, Japan and Russia have all sought local hegemony by force, with devastating consequences. The European Union has expanded peacefully, but remains a marginal power on defence and security. Only America has managed to dominate its region for a long time.

That is partly owing to geography, which has helped America to keep other big powers at bay. But it has also bound itself to its neighbours through mutually beneficial arrangements, including a free-trade deal with Mexico and Canada, close defence relations with both (especially Canada) and relatively open borders. American soft power helps, too.

China's neighbourhood is far trickier. It has 22,800km of land borders, more than any other country. In addition, all eight of its maritime borders are disputed. China's neighbours include big economic and military powers, such as India and Russia, with their own regional ambitions.

China's neighbours fall into three broad camps (see map on next page): fragile or failing states (Afghanistan, Laos, Myanmar, Nepal, North Korea and Pakistan), fre-►

►nemies that have close ties but fear Chinese domination (Mongolia, Russia and Central Asian states), and places with either defence treaties with America or military ties to it (India, Japan, the Philippines, South Korea, Taiwan and Vietnam).

Chinese officials deny seeking regional hegemony. In their telling, China wants only to reclaim its rightful borders, not to expand them or dominate neighbours. They blame America for frustrating Chinese ambitions. "Western countries—led by the us—have implemented all-round containment, encirclement and suppression against us," Mr Xi complained in a speech in March.

America has indeed worked hard lately to improve ties with countries near China. Yet many of Mr Xi's problems with his neighbours date back to a time when they felt either neglected by America (during the presidency of Barack Obama) or alarmed by it (during the presidency of Donald Trump). Reservations about China stem instead from its own missteps, according to officials and academics in neighbouring countries. In particular, they cite excessive muscularity on territorial issues, haphazard or coercive economic policies and a heavy-handed approach to diplomacy that is rooted in China's imperial past and grand assumptions about its future. Most are unconvinced by China's reassurances, especially given its support for Russia's invasion of Ukraine and the implication that might is right.

For 30 years after its inconclusive war with Vietnam in 1979, China took a conciliatory approach to territorial disputes, opting for stability as it focused on economic reform. Between 1991 and 2002 it resolved disagreements about its land borders with Kazakhstan, Kyrgyzstan, Laos, Tajikistan and Vietnam. Perhaps most remarkably, in 2008, it signed the last of a series of agreements affirming Russia's control over a Ukraine-sized region annexed from China in the 19th century.

The tilt towards confrontation began before Mr Xi took power, but he has accentuated it, making territorial issues central to his pledge of "national rejuvenation". China has, without doubt, succeeded in altering the territorial status quo to its advantage in the short term. Its ships and aircraft now regularly patrol around rocky specks where its claims overlap with Japan's in the East China Sea. The seven fortified artificial islands that it built on disputed reefs in the South China Sea have enhanced its capacity to enforce its claims there. In some contested border areas, Indian troops no longer patrol.

Those gains have come at a cost, however, by alarming China's neighbours. Japan adopted a new security strategy in December which pledged a doubling of defence spending by 2027 and a new counter-

strike capability, moving away from the pacifist principles it has embraced since the second world war. Japan is also co-ordinating more closely on defence with America, including over Taiwan, and stepping up security co-operation with American allies and other Chinese neighbours.

Mr Xi's approach to the South China Sea has also triggered a change of course in the Philippines, the only formal American ally among the five countries whose claims there overlap with China's. Its previous president, Rodrigo Duterte, announced a "separation" from America in 2016, pledging to align with China's "ideological flow". But relations soured after China continued to harass Philippine ships and failed to build promised infrastructure.

Leery on Luzon

A new president, Ferdinand Marcos Jr, is now re-emphasising relations with America. In February he gave it access to four new military bases, including three in its north that could be useful in a war over Taiwan. In April the two sides held their biggest-ever joint military drills, involving 12,000 American troops. They are planning to resume joint naval patrols in the South China Sea. China, meanwhile, has warned the Philippines that it is falling "into the abyss of geopolitical strife".

Vietnam also has claims in the South China Sea and had several maritime stand-offs with China there in the 2010s. It, too, has drawn closer to America militarily. In 2018 it let an American aircraft-carrier visit one of its ports for the first time in more than 40 years. Two more have visited since, including one in June this year. America has also supplied Vietnam with defence equipment, such as aircraft, drones and coastguard cutters.

India is another neighbour reassessing ties, after a series of clashes with China on

their disputed Himalayan frontier over the past four years, one of which killed at least 20 Indian troops and four from China. That was among the deadliest such skirmishes since China won a brief border war in 1962. Bilateral trade has continued to grow (by 8.6% last year), but India has limited investment from China, banned dozens of Chinese apps and launched tax raids on several Chinese firms.

India is also now working more closely with America and its allies on defence, bilaterally and as part of the Quad, which includes America, Australia and Japan. During a state visit to Washington in June, Narendra Modi, its prime minister, signed a series of deals on the defence industry which could eventually turn India into a base for the joint manufacturing of Western-designed weapons.

China's perturbed neighbours are also collaborating more closely with one another. India has trained Vietnamese submariners, supplied Vietnam with 12 high-speed patrol boats and agreed to give it a missile corvette. India also recently sold cruise missiles to the Philippines. Japan has provided patrol craft for Vietnam and radar for the Philippines, which has also received three navy ships from South Korea since 2020 and is getting several more.

The economic picture is less clear-cut. China is an indispensable partner to all its neighbours, including those with conflicting territorial claims. Bilateral trade in goods with its 20 terrestrial and maritime neighbours was just over \$2trn in 2022, an increase of 74% over the past decade. That is more than the combined trade of America and the EU with the same countries. In poorer ones, China is also a big source of investment. A trade deal called the Regional Comprehensive Economic Partnership, which came into force in 2022 and involves China and eight of its neighbours, will fur-



ther boost cross-border commerce.

But in aggregate China's neighbours sell more to America and the EU combined than they do to China (see chart). What is more, China has an unsettling habit of using its economic clout to punish neighbours that rile it. That, too, did not start with Mr Xi. An early example came in 2010, when China banned exports of rare-earth minerals to Japan after a clash in the East China Sea. Mr Xi, however, has expanded the practice. This week he imposed new curbs on rare earths (see Business section).

Mongolia was an early target for Mr Xi. After it hosted the Dalai Lama in 2016, China held up loans and customs clearances. Mongolia has since become even more dependent on trade with China, which buys about 84% of its goods exports (mostly coal). But Mongolia's government hedges through a partnership with NATO, which is helping it build cyber-defences, train officers in English and operate in conjunction with NATO forces (Mongolian troops have served in Kosovo and Afghanistan).

The row over the Dalai Lama also reinforced anti-Chinese sentiment in a country where many resent the treatment of their ethnic kin in the Chinese region of Inner Mongolia. A ban on teaching the Mongolian language there is especially unpopular. A former Mongolian president, Tsakhiagiin Elbegdorj, has called it an "atrocity that seeks to dissolve and eliminate Mongolians as an independent ethnicity".

Bruised in Busan

But it is South Korea that stands out as an example of ill-judged Chinese arm-twisting. After Park Geun-hye became president in 2013, she sought closer ties with China, even attending a military parade in Beijing. Yet in 2017 China instituted an economic boycott after America deployed an anti-missile battery in South Korea, intended chiefly to deter North Korea, but which China also saw as a threat. Until then a regular survey by South Korea's Asan Institute that rates public views of other countries consistently gave China more than five out of ten. Last year it scored 2.7.

South Korea is now strengthening its alliance with America, and setting aside long-running differences with Japan, its former colonial ruler. The two are also joining American-led efforts to reduce China's role in their supply chains. That is creating new opportunities for others on China's periphery. Hyundai, a South Korean carmaker, said in May that it would invest \$2.5bn in India over the next decade. And Vietnam (where South Korea is already the biggest foreign investor) said in December that Samsung and LG, two South Korean electronics makers, would invest another \$6bn between them.

For China's poorer neighbours, investments in infrastructure help compensate



for its domineering ways. Success stories include a cargo rail link across Central Asia that carries 8% of China-Europe trade, a railway from China to Laos, which began passenger services in April and could boost Laotian GDP by 21% according to the World Bank, and power projects that have increased blackout-prone Pakistan's generation capacity by 8GW.

Yet such initiatives are often undermined by a tendency to over-promise and to ignore local sentiment. In Nepal, China has not completed any of its promised Belt and Road projects. Malaysia has ditched several of them, alleging that costs were inflated. Debt problems related to Belt and Road have pushed Pakistan and Laos to the brink of default. And a civil war in Myanmar has delayed several big Chinese projects and further sapped support for China, which backs the hated military junta.

China has also failed to stop shady Chinese businesses and criminal gangs from piggybacking on Belt and Road. Laos, Myanmar and the Philippines have all seen a huge influx of Chinese money and workers into gambling ventures, leading to an uptick in crime. They and other poorer neighbours still crave development assistance. But as China confronts an economic slowdown and scales back Belt and Road, many are looking to Japan, whose aid comes with less baggage.

A recent survey by Singapore's ISEAS-Yusof Ishak Institute found little faith in China among its South-East Asian neighbours. More people expressed distrust than trust of it in Malaysia, Myanmar, Vietnam and the Philippines. Japan was more trusted in all six of China's neighbours in the region and America more so in five. China also ranked below America, Australia and the EU as a place to visit or study.

Even in Kazakhstan, which does well from its ties with China, people are wary. The tension is striking at Khorgos, a border crossing with a five-square-kilometre duty-free zone spanning the frontier. Rising mirage-like from the steppe, the Chinese side features two dozen multistorey malls

selling everything from leather jackets to flat-screen televisions. It teems with Kazakh shoppers, closely watched by Chinese riot police with shields and batons. The Kazakh side, meanwhile, has only a couple of half-built low-rise malls, where customers are scarce and employees mostly Chinese.

Kanat Agibayev, a 22-year-old Kazakh law student, likes the cheap winter clothes and rucksack he just bought on China's side. But ask about Chinese investment in Kazakhstan, or a recent deal for visa-free access, and he echoes the fears of other interviewees: "We'll get swamped." Russian propaganda fans such Sinophobia. But China has contributed, too, not least with its recent detention of up to a million Chinese Muslims, including ethnic Kazakhs, in re-education camps. In 2022 a survey by Central Asia Barometer found that only 35% of Kazakhs supported Chinese involvement in energy and infrastructure projects, down from almost half in 2018.

Then there are the chest-beating declarations of China's "wolf warrior" diplomats. In April alone China's ambassador in Manila appeared to threaten Filipino workers in Taiwan and the one in Paris questioned the legitimacy of former Soviet states. A month later Mr Xi hosted five Central Asian leaders at a summit infused with imagery from the Tang Dynasty, when China ruled much of Central Asia.

"It looked like an emperor receiving tribal chieftains," says Bekzat Maqsutly, a Kazakh activist detained for planning a protest against a deal signed at the summit permitting visa-free travel between China and Kazakhstan. A Kazakh official dismisses his complaints as "irrational". Only 3,412 Chinese nationals work in Kazakhstan, government figures show. The visa deal will benefit Kazakh lorry drivers and business people as much as Chinese visitors. Even so, the official adds, Kazakhstan's future lies not in subordination to either Russia or China, but in close relations with lots of big powers, including America, Japan and the EU (Kazakhstan's biggest trade partner and foreign investor), as well as Turkey, which jointly produces weapons in Kazakhstan and is a member of NATO.

None of this means that China's neighbours are turning their backs on it. Given its economic heft, that is unthinkable. But it points to a future in which Mr Xi's hegemonic ambitions are frustrated as the more stable and dynamic countries on his borders either resist his initiatives or hedge their bets, while the most volatile ones, with the dimmest prospects, become increasingly reliant on China's support. The challenge for America and its allies is to offer China's neighbours ever more ways to hedge. For Mr Xi, the question is more existential: can China accept relations with its neighbours in which it is anything less than pre-eminent? ■



The new East Asian family

A partial revolution

CHIBA, GUANGZHOU, SEOUL AND TAOYUAN

The traditional family is fading. Alternative arrangements are fitfully emerging

XU ZAOZAO of Guangzhou was 30 years old when she broke up with her then-boyfriend in 2018. Though she felt social pressure to settle down and start a family, she did not want to put her career on hold. "In the background there's a lot of the past era's family values," she says.

She hoped to preserve her ability to have children later by freezing her eggs. But doctors at the Beijing hospital she visited refused, as Chinese law allows only married couples to do so. Instead they urged her to marry and get pregnant earlier. She sued the hospital in 2019. A court initially ruled against her, but Ms Xu (pictured on the next page) has appealed. "Should we neglect a whole generation of single women's demands just because we can't update this policy?" she asks. Her case and others involving fertility rights have galvanised support on social media from women in their late 20s or 30s.

Ms Xu's experience is illustrative of

trends evident throughout East Asia. For her parents' generation, households in China, Japan, South Korea and Taiwan largely consisted of mono-ethnic married couples with children, where men worked and women kept the home, an arrangement with its underpinnings in widely shared Confucian values. Such traditional arrangements remain extremely common. Yet across the region families are becoming far more varied. As young people delay or eschew marriage and having children, nuclear families are in decline. In Japan, where this process began earliest, couples with at least one child accounted for 42% of households in 1980, while single-person households made up just 20%. By 2020,

couples with children had fallen to 25% of households, and single people represented 38%. In East Asia today, "the diversification of household structures is the story," says Paul Chang of Harvard University.

Yet in much of East Asia, laws and social mores around marriage and family are lagging behind the new reality. Governments have responded mostly by offering financial incentives to marry and have children, in the hope of reviving the traditional family, rather than removing the obstacles that make it so hard to raise children in other settings. Many people are already trying to do so, as four path-breaking families profiled for this article demonstrate.

Family life has big implications for the region's demographic profile, and in turn, for its economic power. Ultra-low birth rates and stiff resistance to immigration produce shrinking populations: according to the United Nations, the four East Asian territories will see their combined populations shrink by 28% between 2020 and 2075. During the same period, their combined share of global GDP is projected to drop from 26.7% to 17.4%, according to Goldman Sachs, a bank.

No wonder, then, that political leaders see families as an urgent policy priority. Xi Jinping, China's leader, has promised to boost birth rates and to promote "new-era marriage culture". Kishida Fumio, Japan's ➤

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► prime minister, said its chronically low birth rate leaves it “on the brink” of societal breakdown; his government launched a new “Children and Families Agency” in April. Yoon Suk-yeol, South Korea’s president, declared his country’s birth rate a “crucial national issue” in need of an “emergency mindset”. Taiwan’s president, Tsai Ing-wen, has called its declining birth rate a “national-security problem” and pledged government support to make everyone “willing to marry, daring to have children, and happy to care for the old”.

As in much of the world, industrialisation and urbanisation in East Asia in the 20th century fuelled a shift away from extended multigenerational households towards nuclear families. At the same time, governments pushed family-planning policies that, ironically from today’s vantage, sought to reduce the number of children being born. In South Korea, men in the 1970s could receive preferences in housing lotteries and exemptions from military-reserve training if they had vasectomies. China went further, suppressing fertility through the infamous one-child policy that was implemented patchily from 1980 to 2016. (China replaced the policy with a two-child policy in 2016, then a three-child policy in 2021.)

In recent decades ever more young people across the region have married later or skipped marriage entirely. Household sizes have been falling, as nuclear families decline and single-person households increase. Ever more people are deciding not to have babies; children, once seen as essential, have become optional. Japan’s fertility rate (the number of children an average woman can expect to bear in her lifetime) began to fall in the late 1970s and hit a record low of 1.26 in 2022. China’s is under 1.2 and Taiwan’s just 0.87. South Korea’s is

the world’s lowest, at just 0.78.

Variation between families is growing in other ways. “The idea of the homogeneity of the family is being shaken,” says Nishino Michiko, a Japanese sociologist. Cohabitation before marriage, once a taboo in much of the region, has become more acceptable. Gay people and single parents demand legal rights to form families and have children (see China section). Two-income households have become more common, as have divorces and remarriages. Ageing has altered family dynamics. In Japan, where people over 65 years old account for nearly 30% of the population, a new lexicon has emerged: “80-50” and “90-60” families consist of an elderly parent living with a middle-aged child.

Taiwan has gone much further than its neighbours in redefining who can officially be considered a family. It legalised gay marriage in 2019 and in May of this year made it legal for same-sex couples to adopt children. In recent years it has also cautiously embraced a more multicultural view of the Taiwanese family. In 2022 the number of marriage migrants, mostly from China and South-East Asia, was 577,900, about 2.5% of the total population.

Growing up in Taoyuan, in Taiwan’s north-west, Tsou Chia-ching, whose father is Taiwanese and mother from the Philippines, often watched television pundits warn against giving foreign brides money or passports, lest they run away. They spoke as if the women were “objects, not humans”, says Ms Tsou, now 26. At school she did not talk about the Filipino side of her family (pictured on the previous page). Ms Tsou’s brother, ten years younger, has not experienced the discrimination she faced. “Isn’t it normal to have many classmates with parents from different countries?” he shrugs when Ms Tsou asks him what it’s like to be half-Filipino.

In some respects, these great social trends resemble those seen in rich Western countries from the 1970s onwards, a phenomenon sociologists dubbed the “second demographic transition”. But different forces are at work in East Asia, Mr Chang of Harvard argues: “The changes are driven by anxieties, social problems and social conflicts,” not the triumph of the individual. In the OECD, a club mainly of rich countries, more than 40% of children are born out of wedlock, while in Japan, South Korea and Taiwan the share is less than 5%. (China does not keep official data and makes it difficult to register and receive benefits for such children.)

Economic precarity is one reason for the decline of traditional East Asian families. While many still say they want to get married and even have multiple children, they feel they cannot afford to do so. “Marriage and family are becoming this thing you achieve if you can afford it,” says Mary



Hayato and Takafumi figuring it out

Brinton of Harvard University. But institutional and cultural rigidity are also making it difficult for young people to form families. Though women’s education levels have risen, traditional gender roles still pervade the home, where women are expected to undertake the “female tasks” of cleaning, cooking and caring for children and the elderly. Long working hours and inflexible corporate cultures make balancing work and family even harder than elsewhere. Many women are therefore rejecting marriage. Wang Feng, a demographer at the University of California Irvine, calls this East Asia’s “quiet gender revolution”.

The backlash has become most pronounced in South Korea, where some commentators speak of a “gender war”. In the summer of 2018, thousands of women took to the streets to protest against spy-cams hidden in public toilets, changing rooms, offices and shoes, with the footage then posted to the internet. That in turn spawned the “tal-corset” (free the corset) movement, which encourages women to cut their hair and bin their make-up. Women have also taken to vowing to be “bihon”, or willingly unmarried.

Lee Min-gyeong always wanted to provide for her family. Now a 30-year-old writer and activist, Ms Lee was asked when she was in primary school about her dream job. She jotted down: “head of the household”. Yet as a young woman in patriarchal South Korea, that seemed impossible. Ms Lee, who came out as lesbian in 2020, instead created a company, Guerrilla, whose mem-



The exacting Xu Zaozao

Interactive version online

For more portraits of our four featured families, see the interactive version of this article at: economist.com/asian-families

bers (pictured below) live and work together. The enterprise consists of a school that teaches women language, writing and financial management; a property business that rents out space for women; a talent-management company for female artists; and a women's shelter. Guerrilla has grown into an experimental family of seven, including Ms Lee's partner, their adopted daughter (who is just two years younger than Ms Lee), another couple, a friend and a dog. "I wanted to show the world that you don't have to be blood-related, but you can become a family just with intellectual connections," Ms Lee says.

Policymakers want today's youth to marry and procreate more. But their ideas for encouraging this consist mostly of economic incentives, such as subsidies and benefits for marriage and child-bearing. At the same time, many (almost all male) leaders are reinforcing traditionalism. Mr Xi has promoted a revival of Confucianism, which upholds traditional gender roles. The Communist Party has also censored feminist and LGBT groups and arrested some of their most prominent activists. Local party officials have given lectures on filial piety and the importance of family.

Under Mr Yoon's progressive predecessor, Moon Jae-in, South Korea's Ministry of Gender Equality and Family extended its definition of a "family" eligible to receive social benefits beyond married heterosexual couples to unmarried couples, single parents and same-sex couples. Mr Yoon has walked those steps back and vowed to abolish the ministry. He blames feminism for the country's low birth rate.

Japanese family law is similarly outdated. Married couples cannot keep separate surnames, a practice the ruling Liberal Democratic Party (LDP) has refused to change. (Women are the ones who change

their names in 95% of cases.) Though many municipalities have pushed ahead and offered symbolic "partnership" certificates for same-sex couples, the national government has balked at legalising gay marriage. The LDP instead passed a bill last month that offers gay people toothless protection against "unfair discrimination", with no mention of marriage rights.

This will offer little succour to couples like Igarashi Hayato and Kanno Takafumi of Chiba, near Tokyo. The two men have long wanted children, but Japanese law has made it difficult, as gay couples are often barred from adopting, or using donor eggs or sperm. Mr Igarashi and Mr Kanno (pictured on previous page) came up with a highly unusual solution. They agreed to have two children together with a lesbian couple, with the women raising the first and the men the second. In order to ensure their family is recognised as a legal unit, Mr Igarashi will adopt the child as a single father, and also adopt Mr Kanno as a second son. "I guess politicians think there's only one form of family," Mr Igarashi laments. "They can't imagine an alternative—they can't imagine people like us exist and live in Japan."

In many ways, public opinion has advanced further than political leaders. Polls show a majority of Japanese, including most LDP voters, support both legalising gay marriage and allowing couples to have separate surnames. And although China's central authorities are promoting a return to traditional gender roles, younger Chinese are increasingly open to wider roles for the genders and vocal about the importance of gender equality. Recent incidents involving mistreatment of women in China have caused widespread public anger. They include the case of a trafficked bride found chained by the neck in a rural man's

shed last year, and an incident caught on video of men beating women who refused their advances at a restaurant.

Clinging to rigid family structures will intensify the demographic crunch, while constraining people's ability to lead free and happy lives. Wiser policies would seek to reflect the actual changing reality of East Asian families. "We need more flexible types of arrangements," says Shirahase Sawako of the University of Tokyo. "If you rigidly design structures they degrade." In particular, new structures must tackle the growing tension between well-educated, empowered women and the patriarchal social mores that still shape both private and public life in East Asia. Until that happens, women will continue pushing against the traditional roles of wife and mother. At best, they will thereby redefine what a family looks like. Too often, they will abandon the idea of family altogether. ■

Internet blackouts

Blocked and reported!

MUMBAI

India, an aspiring digital superpower, keeps shutting down the internet

ON JULY 1ST Elon Musk caused a stir by limiting the number of tweets visible to Twitter users in a single day. Perhaps he was inspired by the High Court of Karnataka, a big south-Indian state, which the day before had issued its own argument for restricting tweets. On June 30th the court ruled against Twitter in a case challenging the constitutionality of an Indian government demand, in 2022, to block content and several accounts critical of it. The court fined Twitter 5m rupees (\$61,000) for failing to comply with that demand.

Twitter is just one bit of the internet India's leaders wish to subdue. For the past five years India has led the world in internet shutdowns, according to Access Now, a New York-based advocacy group. Last year the second-highest number of internet disruptions, 22, was recorded in Ukraine, many of them related to the war there. In India, there were 84.

The majority of India's internet shutdowns are imposed in restive areas such as Jammu & Kashmir, which accounted for more than half of last year's stoppages. The small north-eastern state of Manipur, which has been riven with ethnic violence since early May, is entering its third straight month of internet blackout. The state government, run by the Bharatiya Janata Party (BJP), which also controls India's central government, says the shutdown is necessary for "preventing any disturbanc-



Min-gyeong and her fellow insurgents

es of peace and public order"—and hang the consequences for Manipuris. "Trying to halt misinformation by blacking out the entire information flow is a fool's bargain," warned the *Times of India* newspaper.

State governments run by other parties also block internet access. It is a "non-partisan issue", says Tanmay Singh of the Internet Freedom Foundation, a digital-rights organisation. India's parliament is nonetheless concerned. A report by a parliamentary committee called shutdowns "without any empirical study to prove the effectiveness...a matter of great concern".

Thwarting insurgency and stifling government critics are not the only reasons for the blackouts. According to a new report by Human Rights Watch (HRW), an NGO, almost a third of the disruptions it counted between 2020 and 2022 were intended to prevent cheating in school exams or entry tests for government jobs.

The effects of the shutdowns will be increasingly damaging. India is growing ever more dependent on the internet for everyday life. Its digital utilities, or "digital public infrastructure", provide the foundation for payments, identification and ac-

cess to government services. Tens of millions use online education services. Middle-class Indians rely on apps for taxis, groceries and food delivery, all of which come to a halt without internet access. Welfare provision, too, relies on online authentication. As a woman from Rajasthan told HRW: "When the internet is shut down, I have no work, do not get paid, cannot withdraw any money from my account, and cannot even get food rations." The "digital India" touted by the BJP government is a fine idea. But not if tetchy politicians keep switching it off. ■

Banyan If the dead could only speak

Sri Lanka is uncovering mass graves but not the grisly truth of its civil war

AS DARK CLOUDS of economic crisis, political chaos and mass protest loomed over Sri Lanka a year ago, optimists saw one silver lining. So incompetent and corrupt was the soon-to-collapse government of President Gotabaya Rajapaksa, it had united the country in anger, crossing the ethnic divide that had blighted its post-independence history. But hopes that this might lead to a lasting rapprochement between the island's Tamil, and largely Hindu, minority and its Sinhalese Buddhist majority have proved to be short-lived.

This is illustrated by the fragile state of the latest effort at communal bridge-building. In May Sri Lanka's current government, run by Ranil Wickremesinghe, opted to form a South African-style "Truth and Reconciliation Commission" (TRC) to look at the history of Sri Lanka's civil war. It started 40 years ago this month and ended in May 2009, with a slaughter of thousands of Tamil civilians on a bloody beach during the Sri Lankan army's final victorious assault. The vexed and unimpressive efforts of other Asian countries to confront the darker chapters of their recent pasts suggested Sri Lanka's would not go well. That looks increasingly likely.

Mr Wickremesinghe has said that legislation to establish the commission will be approved by parliament by August, though many details of the commission, including its proposed membership and terms, have not been made public. But Tamil leaders who have seen draft proposals say they do not include any plan to hold those guilty of crimes to account. That is predictable. The "South African model" of truth and reconciliation generally includes an amnesty for perpetrators—an attraction in countries such as Sri Lanka where many officials

accused of crimes are still serving.

Yet the particular horrors of its civil war, and the terrible scars it has left on Sri Lanka's divided society, cannot easily be glossed over. This was underlined last month in a report by local NGOs on efforts to deal with one of the war's grimmest legacies: a large number of mass graves dotted around the country's lush forests and paddy-fields. A small fraction—about 20—have been uncovered and hundreds of bodies dug up. The report documents so many failings in the way exhumations were conducted and potential criminal investigations handled that they look less like a process of unearthing the truth than an attempt to rebury it deeper than ever.

In a television interview last month, Mr Wickremesinghe insisted that his efforts to bring the war's bitter truths to light will succeed where previous ones failed: "No one can say it is a cover-up because we will have foreign observers." Yet many critics of his efforts already say they will refuse to engage with the TRC because they see it as just another way to sidestep long-standing demands for an

international inquiry into the conduct of the war, and for punishment for war criminals. As Nada al-Nashif, the UN's deputy high commissioner for human rights, put it at a session on Sri Lanka in Geneva last month: "Accountability remains the fundamental gap in attempts to deal with the past."

The South African model is not the only option. An alternative is offered by Nepal, which is also grappling with the consequences of a civil war—in its case a ten-year Maoist insurgency that ended in 2006. The peace agreement that ended its conflict promised both "reconciliation" and "justice". More than 60,000 complaints have been lodged with its TRC concerning alleged human-rights violations and breaches of international law, leading to a few prosecutions. A bill now in Nepal's parliament would strengthen the TRC with a special court.

At the other extreme is Indonesia. For nearly 60 years it has stifled discussion of the national trauma that surrounded the birth of the 32-year Suharto dictatorship in 1966, during which hundreds of thousands were killed in massacres of suspected communists. Only in 2016 did a public debate on the violence begin. Now President Joko Widodo has announced a programme of reparations for victims of Suharto-era and later human-rights abuses (up to 2003), including the mass killings of 1965-66.

Whatever materialises from that effort will be far too late for the victims and their families. And most of the perpetrators will be dead or otherwise beyond justice. It is the kind of outcome Sri Lanka's government seems to aspire to. It should aim higher. As Ms al-Nashif put it: "As long as impunity prevails, Sri Lanka will achieve neither genuine reconciliation nor sustainable peace."





Business and the Communist Party

Firm control

The party is tightening its grip in private enterprises, to the dismay of foreign investors

IT WAS A chilly afternoon in early February. In Yingshang, a town in the central province of Anhui, local bosses of more than 100 big private firms kept their jackets on as they took their seats behind rows of desks in a Communist Party meeting room. Three officials, flanked by red flags, sat on the dais before them to explain some new procedures. The businessmen were there to learn how to rewrite their company charters to specify a role for the party.

The officials were from Yingshang's Administration for Market Regulation, which handles company registrations. It also supervises party committees inside private firms. Over the past two decades the party has been trying to ensure that as many businesses as possible have a party organisation embedded within. Since he took power in 2012, Xi Jinping has been ramping

up this effort. By 2015 state-owned enterprises (soes) were being pushed to enshrine a leading role for the party in their charters. Pressure has since been growing on private firms, too. Some foreign-invested companies have also been feeling the heat. In boardrooms and on factory floors, the party is gaining muscle.

It was already strong before this intrusion began. In a one-party state, ruling-party officials naturally hold sway. Woe betide any private boss who crosses them (as

several who run big tech firms have been reminded in the past few years). Everyone knows that a person's position in the party is more important than their government role. A mayor is always subordinate to the local party secretary. No head of a ministry sits in the party's supreme decision-making body, the Politburo Standing Committee, which has seven members, nor even in the Politburo, which has 24.

Sometimes it is difficult for an outsider to discern the way the party exerts power: it is omnipresent, but often hard to see. Take the Beijing-based Asian Infrastructure Investment Bank (AIIB), a multilateral institution founded in 2016 by China, its biggest shareholder. Party regulations require that wherever three or more employees in a workplace are party members, they must set up a party branch. One with seven or more members should appoint a party secretary. The AIIB has no declared party structure. But its president, Jin Liqun, is a member and it is safe to assume that many of his Chinese colleagues are, too.

Last month Bob Pickard, a Canadian working in Beijing as the AIIB's communications chief, resigned from the bank, saying that it was "dominated" by party people (the bank's charter says its decisions will ➤

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► not be influenced by the “political character” of any of its members). Canada, which is a member, announced it was freezing its ties with the bank pending an investigation of Mr Pickard’s allegations, which have been denied by China. It may be difficult to prove the party’s role. “It’s tough to connect the dots between them,” Mr Pickard says of former AIIB workmates whom he suspected of being party members. “But it’s clear that there’s a subterranean, or informal, or opaque situation where this group exercises power. As a collective? That needs to be demonstrated.”

In other kinds of workplace, however, the party wants a conspicuous role. Gone are the days when party branches were often shy about operating openly in non-state entities such as private firms and NGOs. Now branches are coming out from “behind the curtain”, as party literature puts it. And the party is becoming much more assertive about making sure that these branches get more than just a say in organising entertainment for workers.

In the rewriting of charters, SOEs have blazed the trail. All of those controlled by the central government have done so to clarify the party’s dominant position. As required, they have also arranged for the company party secretary to hold the simultaneous position of chairman of the board (if this wasn’t the case already).

Some foreign-invested firms in joint ventures with SOEs have come under pressure to follow suit. In 2017 the European Union Chamber of Commerce in Beijing called this a matter of “great concern” that could have “serious consequences for the independent decision-making ability” of these companies. But a Western lawyer involved in such cases says requests by SOE partners for party-related stipulations in joint-venture charters have since become “regular practice”. There is, she says, “no way to say no”. A foreign businessman says an SOE partner at his firm has recently become more insistent that the party chief be consulted about big decisions.

As the meeting in Yingshang suggests, the private sector is now increasingly in the party’s sights. Participants were told that the charter-rewriting effort was aimed at “upholding and strengthening the party’s all-round leadership of private enterprises”. The revised articles should set out staffing for the party branch, pledge funding for it and embed the party in the “corporate governance structure”, says an account by Yingshang’s party authorities.

Language used by the party to describe how it should operate in SOEs is now often applied to private firms. “Two-way entry and cross appointment” is one such phrase. It means, in essence, that the company’s management and the party branch’s leadership team should be merged.

That may avoid conflict between the

two structures, but it also gives the party a big say over appointments. For a start, it only works if all of the most senior managers are party members. Unlike in SOEs, this is often not the case in private firms. Local officials routinely extol the system, even if they do not order its adoption. By 2021 in the city of Chengde, the bosses of nearly a quarter of private firms were also party chiefs, according to state media. Officials like to talk about the creation among private firms of a “modern enterprise system with Chinese characteristics”. This is another term borrowed from SOEs. It means giving a central role to Communists.

Ensuring that only those trusted by the party get the top jobs is clearly one of the party’s aims. In 2020 Ye Qing, a vice-chairman of the (party-controlled) All-China Federation of Industry and Commerce, said that, as part of building a modern enterprise system, party branches in private firms should be given “guiding power” over personnel decisions. Human-resources departments should be under party control, he said. A book about party-building in private firms, published in 2010 by the party’s own personnel department, made the purpose clear: “The non-state economy is taking up an ever bigger share of the national economy...If party organisations don’t go and control it, other political forces will exploit [our] weakness.”

It is sometimes unclear, however, how much difference party structures, as distinct from the party’s power generally, make to the way firms operate. Company bosses have always had to cosy up to party officials to get business done. Employees who are party members may enjoy some clout, but they can still be fired. Their loyalty is often more to the business than to the party branch (which, in disputes between workers and management, often prefers to side with the latter). The party talks of “hidden” members in firms: people who prefer not to reveal their party identity or get involved in party affairs because they want to avoid hassle and distraction from work. In a paper published in 2021, Daniel Koss of Harvard University says the party worries about some of its branches becoming “clanified”, meaning dominated by bosses’ relatives who happen to be party members in the same company.

Such problems, however, will not deter the party from trying to boost its presence. In the Tianjin Economic-Technological Development Area, a business enclave southeast of Beijing, almost all private firms with more than 100 employees have written the party into their charters in the past three years, the zone’s management says. It adds that more than 150 firms there, including foreign ones, have staged events to celebrate the party’s presence within their workforces. There will be plenty more such revelry as the party marches forward. ■



Hong Kong

Scrutiny on the bounty

HONG KONG

The police in Hong Kong put a price on the heads of democracy activists

WHEN CHINA foisted its suffocating national-security law on Hong Kong on July 1st 2020—the 23rd anniversary of its handover from Britain—one gleeful official called it a “birthday present”. Days after this year’s anniversary came another surprise. On July 3rd Hong Kong police offered a reward of HK\$1m (\$128,000) for information leading to the arrest of any of eight pro-democracy activists and former lawmakers who had fled to the West.

The eight are accused of various offences under the security law, including inciting secession and colluding with foreign powers. They are now thought to be living in America, Australia and Britain. At least one, Nathan Law in Britain (pictured), has been granted asylum. Another, Kevin Yam, is an Australian citizen.

Most have proved pesky critics of the government while they have been in exile. Steve Li, the police superintendent who unveiled the bounty scheme, noted that some had called for sanctions on Hong Kong. Such campaigning may be legal in the countries the activists now call home, but one of the many controversial aspects of the national-security law is its extra-territoriality. Hong Kong claims the right to prosecute not only those who are charged within its own territory, but also anybody in any country—of any nationality—it deems to have broken its security law.

Those with a bounty on their head may not feel in particularly fresh peril. Mr Yam ►

▶ says, "I will live my life as I always do." Anna Kwok, who runs a non-profit in America called the Hong Kong Democracy Council, told *The Economist* that she and her fellow exiles already avoid places that have extradition treaties with Hong Kong or China. After hearing that her name was on the list, Ms Kwok reiterated her demand that John Lee, Hong Kong's chief executive, be barred from attending the summit of Asia-Pacific Economic Co-operation, or APEC, to be held in San Francisco in November.

The activists' adopted countries show no signs of forsaking them. America, Australia and Britain condemned Hong Kong's move and expressed their support for free speech. Even Mr Li seemed unconvinced about the prospects of his scheme. "If they don't return, we won't be able to arrest them, that's a fact," he said, though he insisted the offer of a reward might prove useful if they ever try to sneak back into Hong Kong. Mr Lee appealed, rather desperately, for the absconders to "hand themselves in as soon as possible".

The furore comes at a time when Hong Kong is trying to rehabilitate its global reputation. After a brutal 2022, when harsh covid restrictions contributed to a recession and prompted an exodus of residents, the government is trying to woo back tourists and businesses. In April it launched a campaign called "Happy Hong Kong". Given that effort, and the likely ineffectiveness of the bounties, many observers are wondering why the government is targeting the activists in such a way.

It's performative "moustache twirling", says Alvin Cheung of Queen's University Faculty of Law in Canada. Hong Kong's government is exasperated with Western criticism of the security law, under which more than 260 people have been arrested, including four on July 5th for allegedly supporting people overseas who "endanger national security". Last month members of the European Parliament called for sanctions on Hong Kong officials over the "deterioration of fundamental freedoms" in the city. Britain has accepted nearly 150,000 visa applications from Hong Kongers under a special scheme since the security law was introduced.

The bounties, then, may be seen as a peacockish riposte to the West—and a public demonstration of Hong Kong's fealty to the government in Beijing. They also serve to highlight the nature of Hong Kong's "dual state", says Mr Cheung. On one level the bureaucracy and judiciary abide by a legal system that is well codified and equitably administered. But, he says, there is now a second, overarching "prerogative state" that operates with few legal restraints. That is handy for keeping troublemakers in check. For international types who once favoured Hong Kong for its stability and rule of law, it is a worry. ■

Family life

Glorious mamas

Influencers are challenging the stigma associated with single mothers

AT THE AGE of 29 Gavin Ye decided that she wanted to become a mother, but not a wife. She travelled to America and Russia for in vitro fertilisation (rvf) and gave birth to two daughters. Ms Ye—also known by her Chinese name, Ye Haiyang—now has more than 7.3m followers on Douyin (Chinese TikTok). She posts videos of life with her girls, interspersing occasional advertisements for her skincare company. She dresses in menswear and sports a crew cut. "The powerful aura of a man, the gentleness of a woman, the responsibility of a father, the greatness of a mother—you have it all," wrote one admirer on Douyin.

Ms Ye's fans admire not only her wealth and beautiful children, but also her promotion of single parenting. An increasing number of Chinese women are pushing for more control over family-planning decisions and redefining norms (see Asia section). Ms Ye's channel is one of dozens on Douyin where single mothers share tips about reproductive technology such as IVF and messages about female independence.

That may cause some discomfort in a society where traditional households are still the norm and single mothers receive unequal access to government benefits. But faced with a declining population, the state is loosening up. Since 2022, four provinces have officially begun allowing children born out of wedlock to be registered with the government.

Others are also doing so. "They won't promote it loudly because it conflicts with their social values," says Jing, a 33-year-old who is single and living in Shanghai. She expects no trouble registering her son, who is due next month.

Jing has faced other challenges, though. A year ago she decided that she did not have enough time to find a partner and still be a young and energetic mother. "So I should just have a child first," she decided. But single women are not allowed to use sperm banks or freeze their eggs. So Jing asked a friend, whom she does not intend to marry, to have sex. Her mother and peers have been supportive. Her conservative father took some convincing. Jing says her mother kept telling him, "Times are different. She is not accidentally pregnant. She chose this. She is a glorious mama!"

That puts Jing in the minority. Survey data suggest that most single mothers in China are either divorced or widowed. Many are working-class or poor. Messages about economic self-sufficiency resonate with them, but they acknowledge differences with some of the influencers on Douyin. A divorced single mother in Hubei tells *The Economist* that few of the women around her are interested in marriage—and neither is she at the moment. Working, cleaning, cooking and raising her son takes up most of her energy. "Not everyone can be a superwoman like Ye Haiyang," she says.



Embracing the future

Chaguan | The message to the global south

China tells developing countries that “universal values” are a form of racism



TO TURN ON its head a cliché of China analysis, Communist Party leaders may soon learn that behind tempting opportunities, a potential crisis lurks. With each month that the war in Ukraine grinds on, officials in Beijing see new chances to rally and lead an anti-Western bloc formed of low- and middle-income countries. These states blame America and its allies for prolonging the conflict, which is causing energy and food prices to soar worldwide. China's actions carry risks, for it has no interest in burning all bridges with the West. Still, officials seem unable to resist.

The temptations were on display at the World Peace Forum, a foreign-policy gathering held in Beijing from July 1st to 3rd. Since the war began, Chinese analysts have been surprised by the resentment that many poor countries express towards the governments in America, Europe and elsewhere in the West for treating Ukraine's invasion as one of the worst emergencies of the century. African leaders, among others, have accused Americans and Europeans of double standards for seeming to care so much about Ukrainian suffering and admitting refugees from Ukraine into their homes, while ignoring miseries caused by wars, famines and other disasters in the developing world. "We never knew that the rest of the world would be so indifferent to this war in Ukraine," says a scholar from China's national-security establishment, predicting that the conflict will accelerate the coming of an Asian century. "This is a blow to Western centrality to the world order."

China still seeks good relations with at least some parts of the West, or at least those countries (including in Europe) with technologies, know-how and investments needed to complete China's rise. Yet time and again at the forum, Western backers of Ukraine's self-defence were called heartless for prolonging the war, rather than seeking a swift ceasefire. The recently retired Chinese ambassador in Washington, Cui Tiankai, accused some people of wanting a certain country (meaning Ukraine) to fight to its last man or woman, "which sounds to me like genocide". Speakers accused America and rich-world allies of hegemonic arrogance, selfishness, hypocrisy and "civilisational superiority" for daring to pass judgment and impose sanctions on Russia, or indeed any regime not run on liberal, democratic lines.

Talk of civilisations is no accident. President Xi Jinping recent-

ly unveiled a Global Civilisation Initiative. That builds on his argument that China's growing strength and prosperity demonstrate that "modernisation does not equal Westernisation". Under Mr Xi, Chinese officials and state media have taken to arguing that a declining West's insistence on defending an "international rules-based order" amounts to a form of chauvinism. Chinese officials and scholars compare Western governments fussing about multi-party elections, independent courts or free speech to missionaries, as if the West is telling faraway peoples which god to worship.

China is now applying that argument—in effect, that "universal values" are a form of racism—to the war in Ukraine. At the forum Chinese officials praised countries of the "global south", meaning Africa, Asia and Latin America, for assertively questioning an international order crafted in 1945 by the winners of the second world war—before, they claim, most modern states even existed. They were echoed by speakers from the developing world, among them Dilma Rousseff, a former president of Brazil. She now runs the Shanghai-based New Development Bank, a multinational lender founded by the BRICS grouping of Brazil, Russia, India, China and South Africa. Accusing America and "the global north" of hoarding wealth and of seeking to contain such rivals as China, Ms Rousseff condemned Western powers for dismissing diversity and trying to impose one model of democracy. "If you don't accept this imposed value system, you will be punished accordingly, or face measures such as war, coups or sanctions," she charged.

Repeatedly, discussions drifted from diplomatic theory to expressions of cultural solidarity. The former ambassador, Mr Cui, welcomed a recent peace mission to Ukraine and Russia by the president of South Africa and other African leaders. On that trip, African politicians emphasised the pain caused by high food prices and called for early talks. Ukraine's president, Volodymyr Zelensky, told the envoys that negotiating while Russia occupies his country would lead to freezing the war in place. The Russian leader, Vladimir Putin, told the Africans that their plan ignored realities on the ground. In Beijing, Mr Cui lamented that the African delegation was not "treated in a fair or appreciative way".

Crushing dissent is despotism, not a cultural trait

In a speech, the minister in charge of the Communist Party's international department, Liu Jianchao, asserted that Chinese civilisation had upheld a "way of peace" for 5,000 years. Nodding to poor-world concerns, Mr Liu observed that *he*, the Chinese character for peace, is formed of ideograms depicting rice stalks and a mouth. China sees peace as inseparable from food security, development and communication, he averred. China's vice-president, Han Zheng, told the forum that peace is in China's DNA. For all the party's warm words about seeking "harmony not uniformity", its vision of peace puts order and state power first, at the expense of individual rights. Instead of values that liberal democracies call "universal", Mr Han spoke of the need for "universal security".

Rich-world democracies should not underestimate the appeal of China's arguments. In part, the West is paying the price for ignoring international rules when it suited, during decades of dominance. As in 1945, universal values need defending from first principles. Transparent rule, free speech and independent courts are not, in truth, tenets of some alien, Western religion. Accountable governance is like clean water: a public good that all deserve to enjoy. Liberal democracies are entitled to notice China leading the fight against such rights. Even as it denounces the West for dividing the world into blocs, China is making that very move. ■



The Supreme Court's latest term

Right at the end

NEW YORK

Landmark 6-3 decisions overshadow a smattering of liberal wins

IN MAY, AT the cusp of the Supreme Court's busy season, Justice Elena Kagan heaped praise on John Roberts, the chief justice, as he received an award. Her "great, good friend" is "incapable of writing a bad sentence", she said. "His writing has deep intelligence, crystal clarity, grace, humour, an understated style." Five weeks later, dissenting from the court's decision to nullify President Joe Biden's plan to relieve borrowers of a chunk of student debt, she sang a different song. The chief justice's majority opinion "from the first page to the last...departs from the demands of judicial restraint". It fails, she wrote on the final day of the term, to represent "a court acting like a court". Far from understated, Chief Justice Roberts's opinion "overreached".

The critique was not "personal", Justice Kagan emphasised. Yet the heavy charge that her colleague had used judicial power illegitimately captured the atmosphere of a year that was only marginally less dramatic than the previous one—when the Supreme Court expanded gun rights and overruled *Roe v Wade*.

By the numbers, the term that ended on

June 30th looked more moderate than the one that ended a year before. There were only five ideological splits with all six Republican-appointed justices on one side and all three Democratic appointees on the other. Last year, there were 14.

The most liberal justices—Ketanji Brown Jackson and Sonia Sotomayor—were in the majority more often than Samuel Alito and Clarence Thomas, their most conservative brethren (both of whom have faced accusations of ethical lapses for accepting gifts from billionaires). In June the

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liberal justices found two or more conservative justices to join them in stemming an erosion of voting rights, averting a challenge to the Indian Child Welfare Act, shooting down a red-state attack on Mr Biden's immigration policies and rejecting a fringe democracy-bending idea called the independent state legislature theory.

But none of these wins—as those verbs suggest—advanced a progressive goal. Each amounted to a successful defence against lawsuits aiming to roll back civil-rights protections or hobble a Democratic president. So, though significant (and in *Allen v Milligan*, a surprise, holding that Alabama legislators had drawn a racially discriminatory electoral map), these rulings were not celebrated by liberals, who have come to see the Court as a conservative instrument, as victories.

By contrast, a flurry of 6-3 rulings that were cheered by conservatives came in the final days of June. In *Students for Fair Admissions v Harvard*, the six-justice supermajority ended race-based affirmative action in university admissions that had stood for 45 years. In *Biden v Nebraska*, it scrapped Mr Biden's plan to bring debt relief to 43m student borrowers. And in *303 Creative v Elenis*, it gave a Christian web designer the green light to make wedding websites for straight couples only—and to flag on her own site that she shuns same-sex weddings.

Written by Justice Neil Gorsuch, *303 Creative* demonstrates the court's rightward shift since 2018, when it last encoun-

tered a dispute over the First Amendment and LGBT rights. In *Masterpiece Cakeshop v Colorado Civil Rights Commission*, the court sided with a Christian baker who had declined to create a wedding cake for two men. But Justice Anthony Kennedy's majority opinion struggled with the competing principles at play even as it found that the baker had been treated disrespectfully. He rued the idea (now a constitutional right) that businesses could "put up signs saying 'no goods or services will be sold if they will be used for gay marriages'." Such a declaration of intolerance, he warned—in contrast to Justice Gorsuch's apparent empathy for the designer—"would impose a serious stigma on gay persons".

Weighing outcomes of argued cases goes only part of the way toward grasping the extent of the court's ideological divide. Every year, thousands of votes are placed behind the scenes responding to emergency requests and deciding which cases the justices will hear. Since the death of Ruth Bader Ginsburg in 2020, the liberal justices' agenda-setting power has waned along with their sway in the big cases.

In the latest term the three Democratic appointees publicly dissented five times from their colleagues' vote not to take up a case. In October they wanted to reverse a decision against a black man sentenced to death by jurors for killing his estranged wife (who was white), his son and her daughter from another relationship. Three members of the all-white jury "expressed firm opposition to interracial marriage and procreation" (by failing to strike them, Justice Sonia Sotomayor wrote, his lawyer may have violated his Sixth Amendment right to effective counsel). In April the troika dissented from the decision not to consider the case of a death-row inmate whose guilt was in question because another person confessed to the crime. It takes four votes to bring a case onto the court's docket; the three liberals fell one vote short in these and three other instances.

More fraught quarrels await when the next term begins in October. At least four cases exploring the power and the contours of administrative agencies are on the docket, including questions about the future of the Consumer Financial Protection Bureau, and whether *Chevron v NRDC*, a ruling from 1984 instructing judges to defer to most government-agency decisions, should be overruled. Controversies also loom over whether the First Amendment prevents public officials from blocking people on social media and whether employers transferring workers for discriminatory reasons violate Title VII of the Civil Rights Act. A big gun-rights case is up for review, too, asking whether a federal ban on firearms for domestic abusers squares with the court's recently bolstered view of the Second Amendment. ■

Ball games

Wickett sick

CHICAGO
Can Americans be won over by Major League Cricket?

OVER two decades ago, Bill Bryson, a writer from Iowa, wrote of cricket that the English did not invent it "as a way of making all other human endeavours look interesting and lively; that was merely an unintended side effect." The world's second-most-watched sport, he said, "is the only sport in which spectators burn as many calories as players" (clearly Mr Bryson never watched a darts match, or saw Ben Stokes bat). His description of play compared it to a form of baseball, only with more absurd dress and far slower.

In so far as Americans think about cricket at all, most still imagine it how Mr Bryson did. Yet the first international cricket match took place between the United States and Canada in 1844, and before the civil war the sport was more popular in America than baseball. In more recent years the sport has quietly been gaining adherents.

On July 13th the first professional American cricket league will start play, for a 19-match tournament, hosted primarily at a former baseball stadium in Dallas. Six teams, representing five large American cities and Texas, will compete in "Major League Cricket" (MLC). They will play the Twenty20, or T20, format of the game, invented in 2003 as a faster version (by comparison, the current matches between England and Australia can each last for a gripping five days). Professionals from all over the world are being flown in. The plan, says Tom Dunmore, the league's spokesman, is that this will eventually evolve into a full-blown regular competition.

The impetus behind this push, inevitably, is the rising number of immigrants in America from cricket-playing countries—in particular from the Indian subcontinent. The investors in MLC include high-profile Indian-Americans, such as Satya Nadella, the CEO of Microsoft. They must reckon that their fellow countrymen provide a ready market for cricket. The evidence of America's extensive amateur leagues suggest they might be right. Chicago's "Premier League" already features ten full teams who play a dozen matches a week. There are over 2,000 players on the books, of whom nearly 300 have the surname "Patel."

The investors in MLC hope that cricket could draw in new fans too. It helps that cricket has evolved to become more American. A T20 match lasts around three hours; less than a baseball game, and the ball is in fact in play more. Mr Dunmore says the matches in Dallas will be an "all-American extravaganza, with fireworks and big hitting", intended to keep audiences entertained. The league has brought on baseball social-media influencers to sell the sport to their fans. It might seem improbable. But it was not long ago that soccer too was seen as a niche sport in America. Nowadays, your British correspondent gets asked almost daily which English Premier League team he supports.

Strike one





Moms for Liberty

MAGA mummies

PHILADELPHIA

Presidential candidates canoodle with ultra-conservative mothers

ACCORDING TO Catalina Stubbe, under the guise of sex education Florida schools are teaching boys to masturbate. This may be the result of demonic forces she saw at work in her own child's classroom. When her seven-year-old's maths homework repeatedly featured the number 666 (interpreted by some to signal the devil) she knew there were leftists behind it. Ms Stubbe is not only the parent of a schoolchild in Florida. She is the national director of Hispanic outreach for Moms for Liberty, a parents'-rights group made up of self-proclaimed "joyful warriors" who refuse to "co-parent with the government".

Born out of the pandemic anti-mask movement, the organisation now boasts 120,000 members. Its enthusiasts attend school-board meetings across 45 states to get books containing obscene images, critical race theory (CRT) or gender ideology stripped from library shelves. On June 29th hundreds of "mama bears" gathered in Philadelphia, where the Declaration of Independence was written and thus American liberty was born, to mobilise to protect their cubs from the "k-12 cartel".

The country's top Republicans came to court them. Five presidential candidates, including the front-runners, Donald Trump and Ron DeSantis, spoke at the four-day event. Vivek Ramaswamy, a businessman-turned-politician, vowed to defund the Department of Education and Mr Trump promised to let parents fire principals. All committed to battling the "indoc-

trination" of children.

Their ringing endorsements came after Moms for Liberty was dubbed an anti-government extremist group by the Southern Poverty Law Centre (SPLC), a non-profit civil-rights organisation, in June. It gives the designation to groups that traffic in conspiracy theories and believe the government is tyrannical. After a year's monitoring it characterised Moms for Liberty's work as a crusade to "dismantle public schools" and promote anti-LGBTQ curriculums while accusing the left of "grooming" children. Much of what is documented in the report, however, looks more like fairly regular right-wing organising. Nikki Haley, chasing a long-shot presidential nomination, tweeted: "If @Moms4Liberty is a 'hate group,' add me to the list".

Maternal instincts

The Moms scoff at the label and say they simply aim to depoliticise classrooms and protect children from age-inappropriate content. But last year an Arkansas Mom was investigated for threatening to gun down local librarians, and in June an Indiana chapter quoted Adolf Hitler in its newsletter. National leaders say that the quote, "He alone, who owns the youth, GAINS the future", was not meant to praise Hitler but rather to warn against "monsters" who control classrooms (a photo of Joe Biden ran with the message). Liberals called them "Klanched Parenthood" and "Moms of the Third Reich". Tia Bess, Moms

for Liberty's director of engagement, who is black and gay, points to her involvement as evidence that the group has "zero racism or homophobia".

Moms for Liberty's rapid ascent into the heart of Republican politics proves it hit a nerve. Since Glenn Youngkin campaigned against CRT and covid-19 school closures in his bid for Virginia's governorship in 2021, debates over schooling have ignited conservatives. Savvy networking and organising made Moms for Liberty the new face of the cause: that one of the group's founders is married to the chairman of Florida's Republican Party no doubt helped woo Mr DeSantis, who is among the Moms' heftiest backers. Funding from conservative outfits like the Leadership Institute and the Heritage Foundation solidified it as a key part of the new-right machine.

As your correspondent waded through the Philadelphia hotel lobby where the Moms' annual summit took place—the organisers refused to give her press credentials and cancelled scheduled interviews at the last minute—a woman in a suit who claimed to be a detective approached and demanded to see her driver's licence and to know her street address. When asked why, the woman said she needed to check that your correspondent "wasn't Antifa" (a left-wing anti-fascist group and a bogeyman of the right). Some prodding confirmed that the woman was indeed a plain-clothes cop, who had voted for Mr Trump, found journalists dubious and believed that "not all Proud Boys are extremists", referring to an exclusively male white-nationalist group with a reputation for misogyny and a propensity for violence.

Moms for Liberty ran a training session in Philadelphia titled "(wo)manhandling the media", warning members that "the media is not [their] friend". That approach has helped it get its message to the masses. A new poll from *The Economist/YouGov* shows that 47% of Americans have an opinion of Moms for Liberty, whether favourable and unfavourable, which is not bad for an upstart social movement.

The movement might not be as electorally significant as that number suggests, though. An analysis by TargetSmart, a Democratic data firm, attributes Mr Youngkin's win not to anxious parents but to a "silver surge" in turnout among elderly Republican-leaning voters. A CBS News poll from 2022 found that 85% of Americans oppose banning books that contain political ideas they disagree with, and this past spring less than one-third of the school-board candidates Moms for Liberty endorsed won seats.

Whipping up maternal fervour may help Republican politicians in the primaries. But come the general election in 2024, an allegiance to Moms for Liberty could become more of a liability. ■

Computing

Quant, um?

CHICAGO

The Windy City hopes to become a world centre for quantum research

TO A CASUAL visitor, the basement of the William Eckhardt Research Centre, at the University of Chicago, might appear nothing special. Whereas the upper floors of the building are a postmodern tower of angled glass, underground the walls are bare-white MDF. Yet to David Awschalom, one of America's leading molecular physicists, and the director of the Chicago Quantum Exchange, it is down here, three storeys below ground, that is the most exciting part of the architecture. The parts upstairs "were made to be beautiful", he says. "This was made to be functional." There is almost perfect silence, except for the quiet hum of the air-conditioning. Three feet of concrete absorb even the tiniest of vibrations caused by, say, a truck passing nearby, without affecting the instruments.

Such precision is necessary, because it is in the labs on these floors where students try to measure the movement of individual molecules. A fibre-optic line connects the building directly to Argonne National Laboratory, a government facility 20 miles away in the south-western suburbs of Chicago. Through it, scientists experiment with sending signals by the means of entangled quarks—particles that make up the protons and neutrons in the nuclei of atoms. That is just one part of a world-leading research cluster taking root in Chicago into quantum technology, attempting to apply the confusing nature of atoms to practical use in communications and computing. Roughly two-fifths of federal funding into quantum research is spent in Illinois, and four of the country's ten quantum labs are in the state.

It is still unclear whether quantum technology will ever amount to much. And a lot of the cutting-edge action in the field is happening in the private sector (in firms such as Google, IBM and Intel, and startups like IonQ) rather than in government-funded labs. But if the technology does take off, the Windy City hopes to be at the forefront of it.

Chicago's strength in quantum research in part goes back to its days at the centre of research into the nuclear industry. Argonne National Lab opened in 1946 as a hub for research into nuclear power. Today, Illinois generates more electricity from nuclear power than any other state. According to Mr Awschalom, however, it was visionary thinking by Robert Zimmer, a former president of the University of Chi-

NEW YORK
The developer who helped save New York City and later kept the subway on track

SUBWAY CARS were blanketed with graffiti inside and out when Richard Ravitch, who died on June 25th, became the head of the Metropolitan Transportation Authority (MTA) in 1979. Years of low investment meant the subway's infrastructure was falling apart. Maintenance was deferred for months, if not years. The MTA's workers had not had a pay rise in five years. The agency was deep in the red.

When the governor at the time, Hugh Carey, asked Mr Ravitch to become head of the MTA, which operates the subway, along with commuter lines, buses and some tunnels and bridges, he told the governor he was crazy to even ask. In his 2014 memoir Mr Ravitch wrote that "no one in his right mind would want to manage a system in the MTA's condition." But subway lines are the arteries of New York City. So Mr Ravitch, a regular rider, took the job, and arranged \$8bn in in-

vestment using long-term financing to rebuild the system.

Luckily for New York, Mr Ravitch took a lot of tough jobs. In 1975, shortly after banks said they would no longer lend to the Urban Development Corp, a state authority, Carey appointed Mr Ravitch as its head. He kept it out of bankruptcy. Then he helped keep New York City from insolvency after it had been shut out of the bond market. Mr Ravitch helped create a financial-control board, which stabilised the city's finances for decades, including after the September 11th attacks and the 2007-08 recession.

Not only did he have the expertise to navigate municipal and state finance, he could get people in a room to talk. Often that room was in his apartment late at night and the talk, while eating a Chinese takeaway, was with a union leader or a mayor. Or it was the head of a bank getting a 5am tour of an MTA facility.

In 2009 he was asked by Governor David Paterson to be his lieutenant, to help the state deal with the aftermath of the recession, particularly a looming \$9bn budget deficit. He later said of the time that "it was, without a doubt, the most useless experience of my life." Undeterred, he also advised Detroit and Puerto Rico during their financial crises.

He spoke bluntly in a gravelly voice and did not suffer fools or threats. Sam Roberts of the *New York Times* recently told WNYC, a public-radio station, that Donald Trump once threatened to get Mr Ravitch fired if he did not get Mr Trump a tax break. Mr Ravitch replied: "I'm going to get you arrested unless you leave my office now." Mr Ravitch was confident that New York City would bounce back after covid-19. This time, making it happen will fall to someone else.



Ravitch in his happy place

cago, that was responsible the city's more recent quantum leap.

A little over a decade ago, Mr Awschalom says, he was drawn back to Chicago from California when Mr Zimmer agreed to dip into the university's endowment to fund a quantum-engineering programme. "I said I have to hire a dozen of faculty, build buildings, build laboratories, and he said, we will do it," recalls Mr Awschalom. Hence the building of the lab, which cost \$300m, as well as the hiring of staff.

What does it add up to? Quantum technology is still at an early stage. In the labs, postgraduate students work mostly on

pure fundamental research—for example, examining how molecules of different materials, from diamond to silicon, can be manipulated at a quantum level. But applied, such research could unlock potentially transformative technology. For example, a computer that can use qubits, the quantum equivalent of a binary "bit" in a normal computer, could be hundreds of orders of magnitude more effective at some calculations than a binary computer.

Unsurprisingly, resources are pouring into the sector to try to apply this research. The university has partnerships with dozens of firms, such as Toshiba, which helps ➤

▶ run the communications experiment, and Google and IBM, which it announced projects with at the G7 in Hiroshima in May. But the military applications, as well as the competition with China to lead in strategic technologies, may help to explain why the government in particular is so keen to bolster quantum research. A quantum computer could potentially crack much of the encryption used on the internet. In December, Joe Biden signed a law requiring the government to research acquiring information technology resistant to quantum code-cracking. China has invested heavily in quantum computing too.

Many in Chicagoland hope that a quantum boom could be a boon for the wider region. Penny Pritzker, a tech investor (and sister of J.B. Pritzker, Illinois's billionaire

governor), says she is "bullish on the future of Chicago's tech leadership" in part because of quantum technology. Her brother has pointed to quantum startups moving to Chicago as evidence that Illinois can become "the Silicon Valley of the Midwest". In Mr Awschalom's telling, quantum computing could be used for projects that still befuddle conventional computers, such as discovering new drugs or solving complex optimisation problems, such as running electricity grids. The advent of modern computing has transformed the entire world—but nowhere more than it has California, where most of the innovations originally happened. Perhaps Illinois can achieve the same. But it will be a long time before the technology becomes as ubiquitous as silicon chips. ■

Hispanic Americans in the years immediately after the bans than would otherwise have been the case. The number of black and Hispanic students admitted to California's two most coveted public campuses—University of California, Los Angeles and University of California, Berkeley—dropped by around 40% (the Hispanic share has since recovered strongly).

Students of colour who were turned away by the best universities often wound up attending second-tier institutions. This displaced some applicants who ended up attending third-tier campuses—and so on down the college spectrum. In California, Hispanics who went to less-prestigious public campuses as a result of this "cascade" became a bit less likely to graduate, according to a study by Zachary Bleemer of Yale University. Lower-tier colleges were perhaps less able to afford the kinds of support the students needed to succeed. Mr Bleemer calculates that Hispanic students who applied to the University of California system in the years immediately after the shift went on to earn about 5% less in their early careers than would have been the case had affirmative action remained legal.

What will now happen in other states—and in America's highly selective private non-profit universities, which until now have not been affected by state bans—depends in part on whether universities concoct alternative ways to enroll underrepresented minorities. Many bright students say they value diversity on campus. The Supreme Court's ruling will make this aim more difficult, but is unlikely to end it. "The ruling is impacting a policy, not the underlying principle of what drives our work," says Matthew Hyde, dean of admissions at Trinity College, a selective liberal-arts college in Connecticut. "We're still going to drive to craft dynamic, diverse communities of young people."

Elite universities will probably start by redoubling efforts to get black, Hispanic

Selecting students

A new era for universities

WASHINGTON, DC

How the Supreme Court's ban on affirmative action could lead to more enlightened college-entrance policies

FOR MORE than 50 years admissions officers at some of America's swankiest universities have given a leg up to black, Hispanic and Native American students whose achievements in secondary school might not, on their own, have won them a place. On June 29th the Supreme Court declared this practice unconstitutional, ruling in a decision authored by John Roberts, the chief justice, that neither public nor private universities may use race as a factor when deciding which students to admit. The judgment by the conservative court could cause a swift, sharp drop in the number of students from these minority groups who go to America's best campuses. But it could also spur changes that make university admissions more progressive.

Since their birth in the 1960s, race-conscious admissions policies had survived a number of challenges at the Supreme Court. The ruling that has finally eliminated them arose from a pair of cases first brought in 2014 by Students for Fair Admissions, an organisation founded by Edward Blum, a long-time opponent of racial preferences, against Harvard University and the University of North Carolina at Chapel Hill. By a vote of 6-3, the court agreed that systematic considerations of race in admissions decisions violate the Equal Protection Clause of the 14th Amendment. The decision does not apply to military academies. Chief Justice Roberts floated this carve-out in the oral hearings in response to an argument from the solicitor-general that, in the context of military training, ra-

cial diversity is a matter of national security. Nor does the ruling eliminate every last consideration of race. It allows admissions committees to take notice of students who, in essays or interviews, explain how their racial identity affects their lives.

Experience in the nine states that currently forbid affirmative action in public colleges provides some clues as to what might now happen nationally. These bans, starting in the late 1990s, have not much altered the total number of students who enter higher education. But they have changed where they study. A survey of selective universities in six states found that they enrolled roughly 20% fewer black and



Signs, sealed, delivered

▶ and Native American students to apply in the first place. Low application volumes are the biggest direct obstacle to their enrolment. That these youngsters are less likely than white and Asian ones to have top grades is only part of the explanation: they also believe they have a smaller chance of getting in, and they are more likely to be put off by the eye-watering sticker prices of the elite universities. The ban on affirmative action may weigh down application rates further. That is what happened in California, where youngsters assumed they were less likely to be accepted or to fit in.

Public universities could also experiment with “top percent” schemes of the kind that legislators in Texas devised after banning race-conscious admissions in the 1990s. Its public universities began granting students who graduated in the top 10% of their high-school class automatic entry. The theory is that this can give bright kids who excel in underperforming schools, whatever their background, the same chance of going to a leading public university as children with more advantages.

A third idea is to ramp up wealth-based affirmative action, which remains legal. Youngsters from the poorest fifth of households make up 17% of all high-school graduates but only 8% of entrants to the 200 or so most-selective colleges; those odds are as bad as for any racial group. Granting some degree of advantage to clever-but-impecunious applicants would boost diversity more than doing nothing, while also providing opportunity to the least privileged white and Asian kids.

Creating a class

To make a good go of that, elite universities would probably have to ditch practices which presently favour applicants who are white and rich. These include galling favouritism for children of alumni (“legacy” applicants make up around 16% of Harvard’s class of 2025), and handing places to mediocre applicants who are fairly good at sport. It is “insane” that these persist even as universities promise to boost social mobility, says Richard Kahlenberg, an academic and proponent of class-conscious admissions. He is hopeful that the Supreme Court’s ruling will help create more progressive admissions systems. “That’s the paradox here,” says Mr Kahlenberg. “A conservative Supreme Court decision curtailing the ability of universities to use race in admissions will, over time, create the conditions under which a number of liberal public policies will be adopted.”

In theory some combination of these strategies—outreach, top-percent plans and preferences for the poor—could enable America’s elite universities to enrol a cohort that is about as diverse as at present, according to simulations by George-

town University and Stanford University.

But achieving this on a national scale would require university bosses to give these plays a huge push. And admitting more poor students over wealthy ones would also require universities to stomach lower income from tuition fees. A recent study of 19 universities in states that have banned affirmative action found that the race-neutral admissions policies that have replaced it have largely not been as effective at welcoming African-American and Hispanic students. In lots of these universities, the share of students who are drawn from these minorities has climbed back up from the lows it fell to immediately after bans were put in place. But some of that may be because of demographic changes which mean that there are many more Afri-

can-American and Hispanic pupils in high schools.

The truth is that in recent years few elite universities have had much success improving the representation of disadvantaged minorities—even when they have used race-conscious admissions. These days black, Hispanic and Native American students make up 20% of all entrants to selective universities, according to researchers at Georgetown’s Centre on Education and the Workforce. Yet they are 40% of all high-school graduates. This gap has actually widened in the past two decades, even though campuses have been growing gradually more diverse. Focusing on the root causes of this unfairness—not least lousy and segregated k-12 schooling—has never seemed more urgent. ■

Experiments Monkeying around

Why America has a shortage of lab monkeys

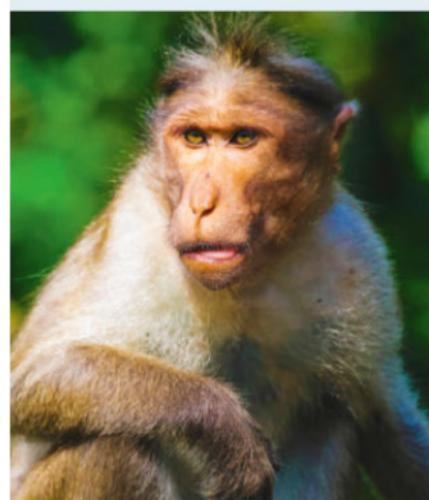
AMERICAN AUTHORITIES arrested Amasphal Kry, an official in Cambodia’s forestry administration, last November when he was heading to an international meeting about trade regulations for endangered species in Panama. Prosecutors accused him of conspiring with a smuggling ring. The contraband: monkeys, specifically long-tailed macaques. His gang allegedly grabbed wild macaques in Cambodia’s national parks and bribed officials to label them as captive-bred. Fake papers allowed Vanny Bio Research, a Cambodian pharma company, to ship these unfortunate primates to America for use in research. Mr Kry is facing trial in Florida’s Southern District Court.

The federal government funds seven

National Primate Research Centres (NPRCs), which house in total around 20,000 primates, macaques but also baboons and marmosets. These centres then award primates to labs across America. NPRCs have fulfilled only a third of requests for untested-on macaques in 2021 and prices have soared. Before the covid-19 pandemic a rhesus macaque cost \$8,000; by 2022 they had hit \$24,000. Another species, long-tail macaques, is probably per pound currently the most expensive traded wildlife, says Lisa Jones-Engel, a science adviser at PETA, an animal-rights group.

Getting lab monkeys from abroad became harder during the pandemic. Chinese authorities banned the export of all primates in early 2020. The Chinese government wanted to suppress the country’s wildlife trade, which is thought to encourage the transmission of pathogens—like sars-cov-2—from animals to humans. Chinese labs also need monkeys to achieve the Communist Party’s goal of China becoming a world leader in neuroscience by 2025.

That forced American companies to rely on less scrupulous South-East Asian suppliers. Many scientists believe poaching is endemic across Cambodia. In February, the Department of Justice subpoenaed Charles River over 1,000 juvenile macaques the pharmaceutical company had bought from Cambodia; the DoJ suspected they were caught in the wild then exported. These primates are now in Texas and Maryland but also in limbo: they cannot be tested on, nor can they be flown back to Cambodia.



No way to treat a fellow primate

**Brazil**

Dumping the tropical Trump

What will happen to *bolsonarismo* now that its founder has been banned from running for office?

ON JUNE 30TH Brazil's highest electoral court barred Jair Bolsonaro, who was the country's president until the end of 2022, from holding public office for eight years. A populist of the far right who had little respect for democracy, he has now been cast out of electoral politics for undermining public trust in the integrity of Brazil's voting system.

In July last year he invited dozens of foreign diplomats to the presidential palace to watch a slide show in which he asserted that Brazil's voting machines were unreliable. Mr Bolsonaro repeatedly made the same baseless claim during the presidential campaign, which he lost narrowly to Luiz Inácio Lula da Silva, a left-winger. The pow-wow with diplomats was broadcast live on public television and social media. Mr Bolsonaro denies wrongdoing, saying that the meeting served no electoral purpose. But a majority of electoral-court justices ruled that he had abused his powers and misused state media.

Their decision removes from active politics a figure who in the past five years has disrupted and redefined it. An obscure

congressman but a social-media virtuoso, Mr Bolsonaro became a standard-bearer for Brazilians enraged by corruption, hostile to the left, supportive of traditional family values or nostalgic for the military dictatorship of 1964-85. He was the surprise winner of the presidential election in 2018. In office he attacked the press and the judiciary, spread falsehoods about the covid-19 pandemic, in which 700,000 Brazilians died, and encouraged deforestation in the Amazon. He revels in the epithet "Trump of the tropics". On January 8th this year supporters of Mr Bolsonaro who believed his claim that he had won the election stormed Congress, the Supreme Court and the presidential palace.

What happens now to *bolsonarismo*, when its leader cannot be on a presidential ballot until 2030 at the earliest, is a crucial question for Brazil. His movement may not

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need him to survive. Some of the attitudes he represents will remain prominent in political competition, becoming a crucial element in a right-of-centre force that had little importance until Mr Bolsonaro came along. But it's possible that under other leaders it will moderate, becoming less of a threat to democratic norms and institutions than its founder was.

If that is what happens, Brazil will have ended an episode of right-wing populism more easily than the United States has done. There are at least three reasons why it might. First, Brazil's courts are nimbler. The power of its electoral tribunal is unparalleled in the democratic world, says James Gardner of the University at Buffalo in New York state. Whereas in most countries administrative agencies organise elections and separate courts try violations of electoral law, Brazil's tribunal does both. That speeds up decisions and makes appeals difficult. (Mr Bolsonaro is expected to appeal against his political ban at the Supreme Court but is unlikely to succeed, in part because the membership of the two courts overlaps.)

Second, unlike the United States Brazil has a recent history of removing presidents from office and imprisoning former presidents. Lula himself spent 19 months in jail on corruption charges before his conviction was overturned in 2021. Brazil's constitution says that candidates who misuse their power and resources can be made temporarily ineligible for office. A law from 2010 bars from running for office ➤

▶ temporarily people convicted of crimes by a panel of judges. The United States has no such prohibitions at the federal level.

Finally, Mr Bolsonaro does not have the sort of backing from a political party that Donald Trump enjoys. Mr Trump can credibly threaten to blow up the Republican Party by running as an independent and thus bring it to heel, says Filipe Campante of Johns Hopkins University. Brazil has many more parties than does the United States (19 are represented in Congress). Mr Bolsonaro has belonged to at least nine. Legislators who share his ideology are not always loyal to him, preferring pork to principle. They have voted for some of Lula's most important economic initiatives.

Another reason for Mr Bolsonaro's subdued exit may be that he lacks Mr Trump's survival instinct. In an interview days before the ruling, a journalist from *Folha de S. Paulo*, a newspaper, asked him how he felt about the trial. "What can I do about it?" he shrugged. Soon after his election loss Mr Bolsonaro decamped to Florida, where he remained for three months. Since returning to Brazil in March, he has been conspicuously absent from politics. He has not ruled out returning to the United States, where, he boasted, a real-estate company had offered him a job as its pitchman.

His supporters, so far at least, seem equally deflated. Few *bolsonaristas* came out to protest against the court's decision. The army, which played a prominent role in Mr Bolsonaro's government, has shown little inclination to defend him. As he was slandering the electoral system, the United States warned Brazil's army that military co-operation would suffer if it did not respect the election result, according to the *Financial Times*. (Brazil gets equipment and training from the American army.) Brazil's army thought: "let's leave all the problems with him" and stay in the barracks, says Emilio Peluso of the Federal University of Minas Gerais.

Yet Mr Bolsonaro's ideas are not going away. A recent poll showed that a quarter of the electorate call themselves *bolsonaristas*, compared with 29% who back Lula's Workers' Party. Some polls show that young voters disapprove of Lula more than older ones. During Mr Bolsonaro's ascent politicians representing the interests of agribusiness, gun owners and evangelical churches increased their representation in Congress. Today the agribusiness lobby has 347 of the 594 seats in both houses, up from 280 in 2018. His military-tinged authoritarianism may not outlast him, but conservative social mores and pressure to exploit the Amazon rainforest will continue to have political force.

What effect that has will depend in part on who, if anyone, inherits his movement. Two relatively moderate governors seem to be the strongest candidates. Tarcísio de

Freitas, the governor of the state of São Paulo, Brazil's largest and richest, is today the most popular politician of the right. Mr de Freitas, who was infrastructure minister in Mr Bolsonaro's government, is a half-hearted disciple. In December he said he was not a "*bolsonarista* at root" and was seen joking around with Alexandre de Moraes, the electoral court's president. He even praised Lula for his fast response to deadly floods in São Paulo in February. Mr de Freitas has good relations with business and is seen as a competent manager and skilful political operator. Although some *bolsonaristas* regard him as a traitor, the ex-president is more emollient. In the *Folha* interview, Mr Bolsonaro called Mr de Freitas an "excellent manager".

Another possible heir is Romeu Zema, the Thatcherite governor of Minas Gerais, a rich south-eastern state. Mr Zema, a scion of a family with a retail empire, rose to power during the anti-establishment wave in 2018. Without ever having held public office he defeated two experienced politicians to win the governorship. He supported Mr Bolsonaro in both 2018 and 2022, but was quick to recognise Lula's victory. Mr Zema may have stronger reasons than Mr de Freitas to run for the presidency next time: term limits prevent him from running for governor of Minas again.

There are less reassuring possibilities. Even barred from office Mr Bolsonaro could remain a disruptive force and the de facto leader of the opposition. Whether that happens may depend in part on the course of numerous other investigations. The electoral court alone is considering 15 other cases of alleged campaign violations. Other courts are looking into questions such as whether he falsified covid-19 vaccination records for members of his family and inner circle; failed to declare millions of dollars worth of diamonds given to his wife by the government of Saudi Arabia; and incited the mob on January 8th. He denies wrongdoing.

A younger disrupter could take his place. Nikolas Ferreira, a 27-year-old congressman, gun enthusiast and social-media celebrity, could be a contender. In last year's election he won more votes than any other congressional candidate. Mr Bolsonaro has hinted that his wife could become his political heir. Meanwhile two of his sons are in the legislature.

Whether *bolsonarismo* in its most virulent form remains a threat to Brazil's stability will depend largely on luck and the conduct of the current government. If the economy stagnates or another huge corruption scandal emerges, Mr Bolsonaro himself could return to full political strength, thinks Bruna Santos of the Brazil Institute of the Wilson Centre, a think-tank in Washington. He need not be on the ballot to be a menace to his country. ■



Peru

Little boy blues

LIMA

This year's El Niño will hit Peru especially hard

WINTERS IN LIMA, Peru's capital, are dreary. By now the city is normally enveloped in a cold mist. This year, though, daytime temperatures are around 21°C (70°F). Ice-cream sellers are still doing brisk business at Lima's beaches. "Will there be a winter this year?" ask headlines in local newspapers.

Probably not. Forecasters expect much of Peru to remain warm this year. The eastern Pacific is getting hotter, especially off the coast of South America. On July 4th the World Meteorological Organisation announced the onset for the first time in seven years of El Niño, a warming in the Pacific that affects global weather. Near Peru, a "coastal El Niño" started in March. Sea-surface temperatures have been more than 2.3°C above normal in recent weeks, twice as much as in other parts of the Pacific. This comes after three straight years of La Niña cooling events, which may have helped trap heat below the ocean's surface.

Not all Peruvians are enjoying the change as much as the frolickers on Lima's beaches. This year the warming Pacific brought a cyclone for the first time in more than two decades. Downpours flooded neighbourhoods in cities on the northern coast. In the regions of La Libertad and Lambayeque the amount of rainfall at three measuring stations broke records in March. In the Andes mountains landslides stranded towns. At least 99 Peruvians died and 50,000 lost their homes.

Then came the worst outbreak of dengue in Peru's history. Puddles, pools and emergency drinking-water stores provided ▶

► breeding grounds for the mosquitoes that spread dengue, which can cause internal bleeding and organ failure. More than 160,000 people have been infected and at least 213 have died so far. The outbreak has overwhelmed poorly equipped hospitals. At least 25 children reportedly died because the hospitals could not provide paediatric intensive care. A wetter, warmer Peru is likely to bring more mosquitoes, and so more dengue.

El Niño (the little boy) got its name in the 17th century from Peruvian fishermen who noticed warmer water and smaller catches, normally around Christmas time. It has been disrupting life along the coast for millennia. Some pre-Columbian people in what is now northern Peru coped by settling on higher ground. Their irrigation systems made use of floodwaters during the wet years while storing water for use during droughts.

Present-day Peruvians seem less adaptable. Although it is illegal to build homes and businesses on flood plains and in the path of seasonal rivers, they do so anyway. Elected officials look the other way. After flooding caused by the coastal El Niño of 2017 the government launched a \$7bn programme worth 3% of GDP, later doubled, to rebuild and provide protection. Even so, many of the same areas were flooded again. The local press reported that only a fraction of the money was spent on flood prevention, and that regional authorities failed to use all of the money available. "We had six years to prepare and we did nothing," says Patricio Valderrama-Murillo, a geoscientist and El Niño expert, "not even basic things like installing drainage systems in cities flooded again and again."

El Niño is hurting the economy. This year's flooding destroyed irrigation canals and could bring locusts, rats and plant diseases to farm regions, authorities warn. Warm water will drive away anchovies, the raw material of Peru's massive fishmeal industry. The central bank's governor expects that El Niño will reduce GDP growth by 0.5 percentage points this year and by 0.6 points in 2024.

El Niño events probably cost more and have longer-lasting effects than have previously been estimated, especially for coastal tropical countries like Peru, according to a recent study by academics at Dartmouth College in New Hampshire, published in *Science*, a journal. Because of El Niño events in 1982-83 and 1997-98, Peru's GDP in 2003 was 10% lower than it would have been, the authors found.

Peru's rainy season, when the damage from El Niño is likely to be greatest, resumes in five months. That gives the government time to take measures to protect lives and infrastructure. It will have to do much more to avert future disasters. Lima's care-free beaches are also an alarm. ■

Cuba

The worms return

The government finds new ways to tap the diaspora for cash

SOON AFTER the Cuban revolution in 1959 Fidel Castro, its leader, began damning people who fled as *gusanos* (worms). The name came from the cylindrical bags into which the emigrants stuffed their belongings. In the four decades that followed the revolution more than 1m Cubans left the country. Castro was not entirely sorry to see them go. Better for malcontents to leave the island than to make trouble at home, he reckoned. These days *gusanos* send back to Cuba some \$2bn-3bn in cash a year, 2-3% of GDP. But the government has punished exiles. It has allowed only those with Cuban passports to visit the island and has charged high fees to let them keep those documents.

The exodus has grown recently as living conditions have worsened and political repression continues. Last year emigration hit a record. The US Customs and Border Protection agency estimates that more than 306,000 Cubans—more than 2% of Cuba's population—crossed the United States' southern border in 2022. Cuba's government has now decided to be nicer to *gusanos*. On July 1st its foreign ministry adopted rules that make it easier and cheaper for Cubans abroad to return. It extended from six to ten years the validity of their passports and cut in half the renewal fee for Cubans living in the United States (to \$180). It has scrapped a passport-maintenance fee, which was payable every two years.

Cuba is changing these rules because its economy is in dire shape. The pandemic, combined with restrictions im-

posed by the United States on travel and remittances, has shrunk receipts of foreign currency. The number of tourists is a quarter of what it was in 2019. A decline in foreign countries' demand for Cuban doctors and nurses has reduced the island's income. Energy shortages have hurt domestic production. The government has not liberalised foreign trade and entrepreneurship enough to speed up growth, expected to be just 1.5% this year. Prices of goods on the black market have soared. Last week the peso's black-market exchange rate hit 200 to the dollar, matching an all-time low.

And so the government is seeking ways to tap the diaspora, which includes 3m people in the United States, for extra cash. According to the Havana Consulting Group in Miami, the 113,000 Cubans who visited the island between January and April this year spent more than the 500,000 Canadians who came in the same period. Cubans rent cars and spend freely in restaurants and shops and on beach holidays with family members living on the island. They also bring medicines, bathroom staples like toothpaste and appliances Cubans can't buy at home. Alongside the new migration rules, the government is relaxing restrictions on imports of these products. It would "rather stimulate the existence of an informal market" than liberate the private sector, says Emilio Morales, head of the Havana Consulting Group.

Cubans will be glad of the extra toothpaste. But *gusanos* cannot cure the economy or provide freedom.



They'd like to be in America



Water palaver

Circling the drain

How to make sense of the mess in Britain's water utilities

THE ANNUAL Henley Regatta, a rowing competition, is a fine example of genteel Englishness. Spectators in blazers and boat-club ties sip on Pimms as they watch rowers race on a stretch of the River Thames. Before this year's event, which began on July 2nd, there was an unwelcome guest: a conservation charity reported high levels of E-coli and other bacterial markers of human faeces in the river. This was the result, it said, of sewage pollution.

The news was one more blow to embattled Thames Water, which has enjoyed a local monopoly over providing water and managing sewage in the river's drainage basin since the utility was privatised in 1989. That dominant market position has not stopped Thames from being plunged into turmoil and facing questions over its solvency. Its troubles came to public attention when the chief executive, Sarah Bentley, unexpectedly resigned on June 27th, two years into an eight-year turnaround plan. The company's shareholders, mostly pension funds, have ponied up only £500m of the £1.5bn that the company seeks to change its fortunes. A spell of tem-

porary nationalisation may be needed.

The proximate cause is inflation. Thames Water has vast debts, partly the legacy of a leveraged buy-out backed by Macquarie, a bank, in 2006. It has since been sold to new owners, mostly those pension funds. Much of the interest on this £14bn debt is linked to the retail price index (RPI), a measure of inflation. The water regulator Ofwat, however, only lets water companies raise bills based on the consumer price index adjusted for housing costs (CPIH). As a result there is a persistent "wedge" between the two measures, with the RPI almost always higher than

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CPIH. The inflationary shock has driven this gap to historic highs. An estimate from Thames's parent group suggests that a one percentage point increase in inflation would cut company profits by £911m; in 2022 it made an operating profit of £322m.

Thames Water is just the most vulnerable of ten big private water companies in England and Wales. (The state provides water in Northern Ireland and Scotland.) According to Ofwat, Thames has debt equal to 80.6% of its regulated capital value, its measure of the company's worth, compared with an industry-wide average of 68.5%. Only three companies including Wales's Dwr Cymru, a not-for-profit, have debt below the 60% level that Ofwat recommends as the upper limit. On June 29th Yorkshire Water, another highly indebted company, said it had raised £500m from shareholders.

The crisis is the worst faced by the large water companies since privatisation began. At launch, the companies had no debt—government wrote off £13bn (in today's money) that the Regional Water Authorities had owed the Treasury in 1989. Now the debt pile is over £60bn, slightly less than the £65.9bn the owners have taken in dividends since privatisation. The companies, too, potentially face a vast bill for cleaning up rivers, beaches and other bathing places: raw sewage is repeatedly dumped into them during storms. This week Thames Water was fined £3.3m for polluting two rivers in 2017.

Understandably the prospect of swim-►

►ming (or rowing) in sewage while shareholders and chief executives enjoy handsome rewards provokes widespread public anger. Left-wing activists and politicians have called for renationalisation (even a majority of Conservative voters say they like the idea) and pointed out that returns to investors since privatisation have largely come from loading up the company's balance-sheets with debt rather than from efficiency gains. Meanwhile the companies since the 1990s have failed to cut leaks by much.

The regulator deserves much of the ire. Without the competitive pressure of a market, it must prevent monopolies from gouging consumers. Water companies present business plans to Ofwat every five years for an estimated amount of expenditure needed to improve the system. The regulator often negotiates them down to set the spending allowance and then, based on how it thinks the company should fund itself, sets limits on the cost of capital. From this arcane procedure the regulator produces price controls. Keeping spending down, and therefore investment, has meant smaller bills.

Ofwat is now fretting about financial stability and is likely to set stricter requirements for debt-financing in its next funding round. Shareholders extracting dividends through unsustainable borrowing is bad news for the bondholders, but not necessarily for Britons as a whole. Bondholders may suffer: any water company that fails should face normal bankruptcy procedure, which means wiping out equity holders and awarding the operating company's bondholders with whatever the firm is worth when it passes into new hands. Those lenders, too, should bear any costs of keeping the water flowing. Reducing the value of debt held by bondholders would make it easier to attract new capital.

Finding a longer-term fix for the water system is more daunting. As Margaret Thatcher said in 1988, in a debate on water privatisation, "if we want environmental improvement, it will cost money." Britons, few of whom consider the costs of supplying and taking away water, may decide improvements are not worth it: analysis by the Storm Overflow Discharges Taskforce, a group of conservationists, consumers, the agriculture department, the Environment Agency and water industry bodies, concluded in 2021 that investment to prevent sewage discharges was not worth the tens of billions of pounds it would cost.

Paying for it, one way or another

Investment to keep the water flowing, however, is needed. Climate change and population growth are putting pressure on the water supply. Britain has not built a new reservoir since the early 1990s and relies on temporary measures, such as hose-

pipe bans, to limit demand. Too much water is still lost to leaky pipes and Britons use more water than their peers, such as the Dutch. That is partly because only 60% have water meters to monitor usage.

That means bills will have to rise. The National Infrastructure Commission, an advisory body, estimates that an extra £20bn will be needed between now and 2050 to keep water flowing; preventing sewage discharge would come with an even higher cost. Nationalisation would just transfer this obligation to the state. Private investors, meanwhile, will demand a return to stump up the funding. Equity finance generally comes with a higher cost than debt. Expect ongoing arguments and protests over water to prove far less genteel than the Henley Regatta. ■

Education policy

Class struggle

Labour's cabinet would be the most state-educated since at least 1945

IF THE LABOUR PARTY wins the next election, its government will be notable in one respect. Our review of the shadow cabinet's biographies suggests that four people, or 13%, of its 31 members attended independent schools. Barring a big reshuffle, that would make it the cabinet with the most state-educated members since at least 1945. Rishi Sunak's first cabinet in October 2022 was 61% privately educated, based on a tally by the Sutton Trust, an educational charity. Sir Tony Blair's first cabinet was 32%, while Harold Wilson's was 35% and Clement Attlee's 25%. Under 7% of



Sir Keir takes aim at private schools

pupils are taught privately.

Labour is proud of its status. Sir Keir Starmer's team often tell of how inspiring teachers got them from tough schools to ancient universities. Rachel Reeves, the shadow chancellor and a former junior chess champion, talks of the snobbery she met while at Cator Park, a threadbare girl's comprehensive in London. In his autobiography, *Wes Streeting*, the shadow health secretary, recounts that his school—Westminster City—was dubbed "shitty city", in which "bullies had free rein to level unprovoked abuse, wallops and kicks." They would bring a hard-nosed purpose to government. In a speech on July 6th (as we published this), Sir Keir was set to invoke the meritocratic spirit of the 1970s, and vow to break the "class ceiling". He aims to decouple the link between the (eventual) earnings of children and their parents.

Private education has become a handy foe. Whereas Sir Tony (educated at Fettes, Scotland's poshest school) made the sector work harder for tax breaks, Sir Keir will abolish them. Whether the policy would raise the £1.7bn Labour claims is hotly contested, as no one knows if enrolments would fall. Bridget Phillipson, the shadow education secretary, argues the sector has already priced itself out of reach of the middle classes. Born to a poor Gateshead mother and educated at Oxford, she obtained messages in which private-school lobbyists dubbed her "very chippy".

Yet elsewhere Labour's policy is shaping up to be less radical than the rhetoric. It has no plans to rethink how schools are structured—a big reform of the Blair era. It will review the curriculum, but won't touch maths and literacy where Tory reforms seem to be paying off. Rather Labour plans to offer more of the trimmings in which independent schools excel: arts provision, better IT lessons, and the practice of "oracy"—a trendy neologism for articulate speech. That is the pet cause of Peter Hyman, an adviser to Sir Tony and then Sir Keir, who also ran an east London school.

Labour senses the Tories are ceding education as an electoral issue. Mr Sunak wants to expand maths provision, but many of his MPs discuss schools only in the context of battling wokery. The rhetoric masks a more fundamental choice. In the New Labour era, spending on schools grew on average by 5% in real terms per year. Tight budgets since mean that per-pupil spending in 2024 is forecast to be no higher than it was in 2010. Thus the gap between state and private has widened dramatically: spending per pupil in private schools is now almost double that of state schools, up from just 40% more in 2010. Ms Reeves is promising little extra cash now. How far she would favour schools over other demands will be the true test of Labour ambition. ■

Bagehot | Borat's Britain

Low expectations turn the basics of life into blessed luxuries



EVEN BY THE standards of Britain's odd love-affair with the National Health Service (NHS), the organisation's 75th anniversary celebrations were weird. At a special service at Westminster Abbey on July 5th, the NHS's George Cross award (Britain's highest civilian accolade for gallantry, no less) was solemnly paraded. The prime minister and leader of the opposition gave readings. "The home of God is among mortals," said Sir Keir Starmer, the Labour leader, quoting Revelations in homage to an organisation that removes kidney stones. The Dean of Westminster declared that "The NHS sets before us all the better angels of our nature."

It was a bizarre spectacle. The NHS is distinctly average. "It is neither leader nor laggard," according to the King's Fund, a health think-tank. It is relatively cheap and efficient but still bad at tackling diseases such as cancer; life-expectancy in Britain continues to lag behind that in other rich countries. And yet on its birthday, politicians, royals and 1,500 NHS wallahs crowded into a church to praise it as a remarkable achievement.

Making sense of Britain's peculiar attitude to the NHS is, however, easy. Just watch "Borat: Cultural Learnings of America for Make Benefit Glorious Nation of Kazakhstan". In the 2006 mockumentary, a reporter from a fictionalised Kazakhstan is sent to America. On his tour, the lovable bigot is blown away by everyday items. Upon entering his hotel room, he rolls on the bed in wonder, before laying eyes on a fantastic invention he is seeing for the first time: "Ohh la la! King in the castle. I have a chair, I have a chair!" A similar sensation overcomes Britons when it comes to their health-care system.

Britain has low expectations. Treating a bare necessity as wanton decadence is common. Bog-standard housing developments are described as "luxury". A redbrick, four-bed house in Lichfield, a cathedral city in the Midlands, is by no definition luxurious. Yet it is marketed that way and costs £400,000. Britain does not build luxury homes, it builds expensive ones.

Part of this is blissful ignorance. Britons sometimes seem unaware of how poor the country's housing stock is compared with elsewhere. Damp is treated as a fact of life. Double-glazing is still listed as a selling-point rather than a given on the same level as "four walls" and "roof". Britons resemble Borat entering a lift in a

hotel and immediately unpacking, thinking it is his room for the night. When the bellboy explains Borat's error, the Kazakh is affronted: "I will not move to a smaller room."

When Britain does look abroad, it often peers in the wrong direction. To gauge the NHS, Britons put it against a cartoonish version of the American system, which manages to be expensive and inequitable, rather than myriad alternatives on offer in Europe. Comparing one poor system with another helps no one and leaves the person doing it resembling Borat showing off a decrepit VCR.

Borat-like wonder at the everyday has afflicted British politics, too. After the tenure of the haphazard Boris Johnson, Rishi Sunak is lauded for the basics, such as actually reading his papers. Brexit, meanwhile, has lowered the bar of statesmanship to a surreal degree. Mr Sunak displayed political nous when renegotiating a deal with the European Union over Northern Ireland. Yet even this was fundamentally about the right to trade within a single state. The result was the peculiar sight of the prime minister boasting about being able to send seed potatoes across the Irish Sea. It conjured the patriotic lyrics of the fictional Kazakh anthem: "Kazakhstan, home of Tinshein swimming pool/Filtration system a marvel to behold/It remove 80% of human solid waste."

Minor pleasures are treated as big sins. An avocado, a fruit that costs about 75p (\$0.95), is a byword for irresponsible consumerism, despite having a smaller carbon footprint than most meat. As Britain has become hotter—last summer peaked at 40°C—air-conditioning units have become more common. "Let's not pretend this new trend is anything other than extravagance," moaned a miserable op-ed in the *Guardian*, a newspaper, whining about both the expense and the emissions. And so comfort in a heatwave becomes decadence that would make Borat's eyes bulge.

Britain suffers from a form of "negative solidarity", argued Mark Fisher, a leftie critic: if one person suffers, so must others. For instance, Britain's state pension is not particularly high by European standards (although the fact all pensioners qualify for it is generous). But it still stokes resentment among youngsters. Likewise, oldies seem to care little that real wages have barely risen since 2008; by comparison, earnings in America and Europe have grown at a healthier clip. It is a worldview straight from Borat, who introduces his hated neighbour: "I get a window from a glass, he must get a window from a glass. I get a step, he must get a step. I get a clock radio, he cannot afford. Great success!"

Boratitude

Low expectations can hamper a nation. It is difficult to reform a health service if its birthday is greeted with celebrations usually reserved for a Neapolitan saint. Thankfully, cracks in the delusion have emerged. Britons may love their health-care system to a preposterous degree, but they are unhappy with its current service (although not to the point where they would countenance charging people for using it). Younger Britons who suffer most from dismal housing are increasingly angry about it. Outlandish boasts from Conservative ministers are no longer swallowed by voters, who increasingly want rid of them.

To truly rid itself of Boratitude, Britain must study all its peers more closely. British health care comes across as slightly Soviet if compared with, say, Denmark rather than America. Likewise, a glance at wages in America would hammer home just how lousy wage growth has been. A documentary could be made explaining these differences. "Cultural Learnings of America and Europe for Make Benefit Glorious Nation of Britain" has a certain ring. ■



Ypres with AI

The war in Ukraine shows how technology has changed the battlefield. But mass still counts, argues Shashank Joshi

IN THE 1970S Soviet generals realised that America, with its lead in microelectronics, was racing ahead in the development of long-range precision weapons, sensors (such as satellites) to spot targets, and networks to connect the two. They gave this a grand name: the “reconnaissance-strike complex”. Operation Desert Storm, America’s swift and easy triumph over Iraq in 1991, seemed to offer further proof of the concept. Why duke it out over trenches when you could paralyse the enemy with pinpoint strikes on command posts and logistics deep behind the front lines? American thinkers hailed a “revolution in military affairs”, or RMA.

Even hard-nosed armies like the Israeli Defence Forces agreed. “Future wars, its senior commanders believed, would no longer include major manoeuvres of massed formations,” wrote Eado Hecht, a lecturer at Israel’s staff college. “The conquering of territory was deemed irrelevant and even...counter-productive.” Azerbaijan’s victory over Armenia in 2020 seemed to confirm the dominance of precision weapons over ground forces. “We have to recognise that the old concepts of fighting big tank battles on the European landmass are over,” said Boris Johnson, Britain’s prime minister, in November 2021. “There are other, better things we should be investing in [such as] cyber—this is how warfare in the future is going to be.” Three months later Russia invaded Ukraine.

The ensuing war has been a lesson in old-style attrition: an industrial-scale contest of manpower, steel and explosives. Russia is thought to have had over 200,000 casualties, killed and wounded. That is four times the number of Soviet casualties in Afghanistan, a war that lasted for a decade. It is two and a half British armies. More than 20,000 Russians died between December 2022 and

April 2023 alone, say American sources, most of them in or around Bakhmut, a previously inconsequential town in eastern Ukraine. Not since Iran’s ruinous siege of Basra in 1987 has an army expended so much, in such a short time, for so little.

Ukraine, too, has bled badly. Leaked American intelligence reports in late February suggest that it has suffered over 100,000 casualties itself, including more than 15,000 killed. The pre-war armies of both Russia and Ukraine have been annihilated and created anew, filled out with conscripts and volunteers with little or no military experience. Many of those in the vanguard of Ukraine’s current counter-offensive will have had just a few weeks of training. Some European countries, like Finland, would be able to mobilise many troops in short order, if put in a similar situation. Most, having abandoned conscription, would not.

Comparisons with the first world war are overheated: Britain alone fired over 200,000 shells a day in the week before the Somme offensive in 1916, compared with Ukrainian estimates of 60,000 at Russia’s peak rate of fire last summer. But ammunition consumption has far outstripped both pre-war expectations (causing artillery barrels to melt) and production capacity, exposing gaping holes in the West’s industry. “Munitions are like cement,” writes Jonathan Caverley of the US Naval War College. “Consumers do not always need them but require massive amounts when they do.” Ukraine’s counter-offensive would be impossible without an influx of shells from South Korea.

This orgy of indecisive human and material destruction over a trench-scarred landscape is not what military technologists had in mind when they talked up the RMA. The war’s quintessential ➤

► weapon, artillery, would be familiar to a Napoleonic soldier. "What blunted the Russians north of Kyiv," says Jack Watling of the Royal United Services Institute (RUSI), a think-tank, "was two brigades of artillery firing all their barrels every day." Ukraine serves as a rejoinder to the idea that technology always trumps mass: that quality can replace quantity. General Sir Patrick Sanders, head of the British army, put it acerbically last year: "You can't cyber your way across a river."

But the paradox of the war is that mass and technology are intimately bound together. Even the artillery war shows this. Weeks before the invasion, America sent Ukraine Excalibur shells. Inside each was a small, rugged chip that could receive GPS signals from America's constellation of navigation satellites. Whereas Russia often relied on barrages over a wide area, Ukrainian gunners could be more precise. Such rounds were "disproportionately effective", noted a study published by Mr Watling and his colleagues at RUSI, drawing on data from Ukraine's general staff. Not only did they take out targets more reliably; they reduced the number of shells needed, lowering the logistical burden (shells are heavy).

Enter the drones

Drones are at the heart of precision fire. The idea of correcting shellfire by aerial observation dates from the American civil war, when balloons were used for the job, notes Richard Barrows, a retired British general. Drones which returned film by parachute were employed from the 1970s, he says. By the 1980s these could send back data in real time, if the drone remained in the right line of sight. Now the skies are thick with them: during the battle for Bakhmut there were 50 up at any one time. Around 86% of all Ukrainian targets are derived from drones, says T.J. Holland, the top enlisted soldier in America's XVIII Airborne Corps.

In the first six months of the war, Russian artillery units that had their own drones, rather than relying on those from headquarters, could strike targets within three to five minutes of detecting them. Those without drones took around half an hour—with lower accuracy. The drones are essentially disposable: around 90% of those used by the Ukrainian armed forces between February and July 2022 were destroyed, according to RUSI. The average life expectancy of a fixed-wing drone was approximately six flights; that of a simpler quadcopter a paltry three. A more recent study says Ukraine is losing 10,000 per month.

For years, the West's armies have aspired to a way of war in which a cornucopia of "sensors" (video cameras, thermal imagers, radio antennae and so on) would detect targets, pass data to the best-placed "shooter", whether a howitzer, missile or warship, and create a "kill chain"—or, to use a newer buzzword, a "kill web"—of

unprecedented speed and efficiency. This was the vision of the Soviet reconnaissance-strike complex and the RMA: a transparent and semi-automatic battlefield. Ukraine is not yet that. But it is a test bed for the technology, and a tantalising glimpse of the possible.

Consider a drone filming a Russian position. If the operator spots a Russian tank, he can manually mark its location on Kropyva, a Ukrainian-built app, sharing its position with every artillery battery in the area. That system, sometimes dubbed Uber for artillery, has brought engagement times down from tens of minutes to a couple, often the difference between success and failure. Such digital links between sensors and shooters are being refined further.

Drones are collecting vast amounts of video footage, running to petabytes per hour. They cannot send it all back: there is not enough bandwidth, and communications are often jammed. The work must be done "on the edge", meaning on the drone itself. An increasing number of Ukraine's drones have "fairly rudimentary AI capability" aboard, says a European general. Small, low-powered chips can work out whether an object below is a T-72 or a T-90 tank, a job that could once have been done only on a distant cloud server. The drone can transmit a few kilobytes of essential information—say, the type of target and its co-ordinates—even if its communications are intermittent.

This digitisation of hardware reflects a collision of old and new ways of war. Much kit Ukraine has received is vintage, such as American howitzers or Soviet missile launchers designed before the Cuban missile crisis, or is stripped of sensitive components. Ukraine is pioneering "the ability to turn it from a dumb piece of cold-war metal into something that's genuinely networked and part of this algorithmic warfare," says a foreign adviser in Kyiv. "It is maddening," noted James Heappey, a junior British defence minister, that "I am providing to the Ukrainians...capability that we're still years away from getting in the British armed forces."

Information is everywhere. Ukraine's access to Starlink, a constellation of satellites in low-Earth orbit launched by Elon Musk's SpaceX, an American firm, means that the lowliest soldiers have connectivity and intelligence that might once have been confined to brigade commanders. No complex equipment is required. In the corner of a smart Kyiv restaurant, a Ukrainian soldier flips open a Macbook and shows this correspondent a live feed of the battlefield, complete with Russian jets on the move.

The Delta app, developed by tech-savvy volunteers, combines everything from drone feeds to information gleaned from Russian social media. It is integrated with America's National Geospatial-Intelligence Agency, so users can pull up images from commercial satellites (though not the most sensitive ones). This allows data streams to be combined in clever ways. A battalion might use American radio-frequency satellites to detect emissions from a Russian radar in a general area, and then send a cheap Chinese-made drone on a one-way mission to pinpoint its location.

At the tactical level, Russia has waged a form of networked warfare. After a sluggish start, it now uses computerised command and control to knit together drones and artillery batteries. It also has good human intelligence (ie, spies) and satellites of its own. But the war has shown that intelligence is not enough: you also have to use it well. Russia's air force failed to pick off Ukraine's air defences in the first days of fighting not just because of poor training and preparation, but because it took two days, and sometimes longer, for Russian military intelligence to send target information to a command centre in Moscow and onwards to warplanes. The targets were typically long gone by then. Even now, 16 months ►

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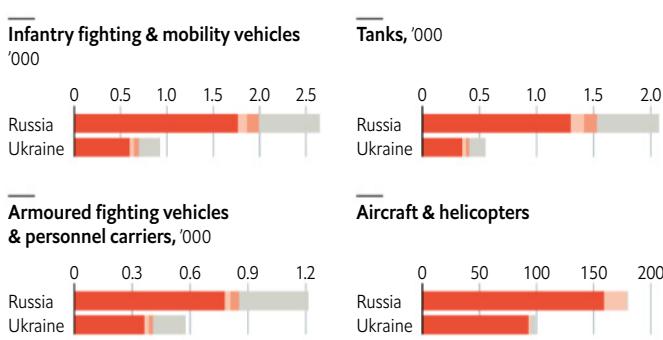
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Material damage

Equipment losses, Feb 24th 2022-Jun 29th 2023



Source: Oryx

► on, the Russian army struggles to find and strike moving targets.

Ukrainian planners, in contrast, waged “data-driven combat” at a level of “speed and precision that NATO has not yet achieved”, concludes report by Nico Lange, a former chief of staff at Germany’s defence ministry. Sometimes that has been down to tools like Kropyva and Delta. Firms such as Palantir, an American tech company, have used cutting-edge AI to help Ukraine find high-value targets. But data-driven warfare can be quietly prosaic, too. A Ukrainian police officer explains that last year his units were locating Russian troops simply by intercepting 1,000 conversations a day (the figure is now higher). If they found a general, the details were shared in an ad hoc WhatsApp group. “We were connected to the people who were literally bombing.”

This speed and precision has consequences for tactics. “We’re going to fight under constant observation and in constant contact,” says General James Rainey, head of the US Army’s Futures Command. “There is no break. There is no sanctuary.” One response is to resort to century-old methods. Trenches and fortifications run for hundreds of kilometres across eastern Ukraine. Camouflage is another tactic, though it is getting harder as sensors are combined: a thermal blanket might confound an infrared camera, but radar satellites will pick up subtle tyre tracks leading to a concealed position. The best way of surviving, says RUSI, is simply to disperse and move more quickly than the enemy can spot you. Even Ukrainian special forces operating in small teams can be found by Russian drones if they stay in one place for too long.

This jeopardy is reflected in a curiously sparse battlefield. In Ukraine some 350,000 Russian troops are arrayed on a front line stretching 1,200km (750 miles)—around 300 men per km and, at times last year, less than half that. That is around a tenth of the average for the same area in the second world war, notes Christopher Lawrence, head of the Dupuy Institute, which collects such data. Battalions of several hundred men fill areas that would once have been covered by brigades of a few thousand.

In theory, says Mr Lawrence, this seems a ripe environment for attackers. Thin front lines are easier to break through. And new sensors, more accurate munitions and better digital networks make it easier to find and strike targets. The catch is that attackers must concentrate their forces to pierce well-defended front lines, as Ukraine is now trying to do with its counter-offensive. And such concentrations can be detected and struck—not always, but more often than in the past. “At this time,” concludes Frank Hoffman of the National Defence University in Washington, “a shift in favour of the defender is evident in ground warfare just as it was in the days of Helmuth von Moltke the Elder, when the firepower revolution of the late 19th century made massed formations and manoeuvre prohibitively difficult.”

The result is a paradox. Precision warfare can counter some advantages of mass: Ukraine was outnumbered 12 to one north of Kyiv. It can also complement mass. Software-based targeting saves around 15–30% in shells, according to sources familiar with the data. But what precision cannot do, says Michael Kofman of the Centre for Naval Analyses (CNA), a think-tank, is substitute for mass. The idea behind the Soviet reconnaissance-strike complex or America’s RMA was to win by paralysing the enemy, not wearing him down. But there seems to be no escape from attrition. War on the cheap is an illusion. Many people expected Russia’s invasion to be “a second Desert Storm”, says Andrew Krepinevich, an American defence official who pioneered the idea of the RMA in the 1990s. “What we got was a second Iran-Iraq war.”

This special report focuses on the military lessons, especially for the West, from the war. These include logistics, civil defence and naval warfare. Russia, too, is learning lessons. The place to begin, however, is with a technology that threatens to blunt some of the advantages of drones and precision: electronic warfare. ■

Electronic warfare

The new battle of the beams

Jamming is knocking drones and missiles out of the sky

WHEN UKRAINIAN gunners began firing Excalibur precision-guided shells early in the war they were cock-a-hoop. Ordinary shells required many rounds to hit their targets, even if you knew precisely what you were aiming at. Excalibur, guided by GPS, appeared to be a silver bullet: one shot, one strike. But in March 2023 something changed. Excalibur shells began falling out of the sky or failing to destroy their targets. And not just one: weeks went by without registering a successful hit. It was an unsettling reminder of how the electronic war in Ukraine has profoundly affected the visible one.

If modern warfare rests on three pillars—ever-more powerful sensors to detect targets, increasingly precise munitions to hit them, and networks that connect the two—electronic warfare can chip away at each. Excaliburs were probably dropping like flies because Russia was turning on powerful jammers that disrupted the GPS signals guiding them to their targets or, more likely, the radar fuse that tells them when to explode. They were not the only weapons to be discombobulated in this way.

Leaked Pentagon documents from the spring show that four ►



Wielding Excalibur

► out of nine Ukrainian air strikes with American-supplied JDAM-ER bombs may have missed their targets because of Russian GPS jamming. “[Russian] jammers are a high priority,” read one slide, “and we will continue to...recommend that those jammers are disrupted/destroyed...to the maximum extent possible.” GMLRS, the precision-guided rockets fired by American HIMARS launchers, have also increasingly missed targets or failed to achieve their desired effects. The airwaves in Kyiv and Moscow are thick with jamming as both sides seek to deflect drones and missiles.

This sort of electronic warfare (EW, in the lingo) is not new. It probably began in 1904 during the Russo-Japanese war. Although the shells of that era were dumb—the radar proximity fuze was 40 years away and GPS satellites more than 70—the age of radio had arrived. An enterprising Russian radio operator in Port Arthur drowned out transmissions from a Japanese warship that was helping correct naval gunfire. During the second world war, the so-called battle of the beams saw Britain jam and deceive radio signals used by German bombers to navigate to their targets. And as air power grew in importance through the cold war, finding and jamming the emissions of air-defence radars became vital.

Russia was long believed to excel at this. It invested heavily in new EW vehicles a decade ago and battle-tested many in Ukraine in 2014 and then Syria in 2015, often causing disruption to civilian airliners. But its latest invasion of Ukraine offers a more mixed picture. Russian EW was “highly effective” in some areas, concludes the RUSI think-tank. Ukrainian jets initially found that their communications, navigation and radar were all disrupted and in some cases knocked out. The disruption to Excalibur has disturbed some Western officials. But Russia’s land and maritime capabilities have been “lacklustre”, argues Thomas Withington, an expert analyst of EW. “Our [pre-war] assessment of Russian EW capability was at the pessimistic end of the range,” agrees Edward Stringer, a retired air marshal in Britain’s Royal Air Force. “Russian EW is eminently beatable.”

It may not always feel like that to a drone operator. Ukraine sometimes loses as many as 10,000 drones in a single month. Around half of those losses are directly caused by electronic attack, according to Andriy (not his real name), a senior officer in Ukraine’s general staff. Jamming often blocks the control signals used to fly a drone remotely or the communication link needed to send data. Operators can get round this by telling a drone to fly a preset route and downloading data when it returns, but that delays targeting by hours. And it does not resolve the core problem: that most drones are lost when their GPS signal is disrupted, causing them to wander off.

This creates a stark trade-off for defenders. Military drones (and missiles) can be fitted with special receivers that read “M-code” signals from American GPS satellites. Those signals are higher powered than civilian GPS and encrypted, making them both easier to pick up and harder to jam—about eight times harder, says Dana Goward, president of the Resilient Navigation and Timing Foundation, a non-profit in Virginia. But M-code receivers are subject to export controls and pricier. Electronic shielding costs money and adds weight. Ukraine’s drone fleet is mostly cheap to the point of being easily disposable.

That is changing, albeit slowly. Ukrainian officials hope to phase out the Chinese DJI consumer drones that are ubiquitous on both sides of the front line in favour of more professional platforms. “One of the takeaways from Ukraine is that having any unencrypted radio link is no longer a choice,” says Mr Withington. “If you’re NATO, you need to encrypt everything.”

Ukraine sometimes loses as many as 2,000 drones in a single week

Even then, M-code would offer only “marginal” benefit, cautions Mr Goward, because the technology is now nearly two decades old and GPS signals are inherently weak.

Being weak is not the same as being unusable. Western armies have long worried that Russia’s electronic blitz might counter their technological advantage. “Electronic warfare is the great leveller,” wrote Major-General Charles Collins, assistant chief of the general staff in the British army, in a recent paper. “By depriving forces of connectivity, it drives armies back to the 20th century.” Yet that has not proved true in Ukraine.

In truth, jamming is imperfect and intermittent. One reason is that EW systems are scarce. Russia has been forced to keep some at home to protect cities and bases. Another is that using them comes at a price. Big jammers emit a powerful signal, making them conspicuous targets. Russia has had to pull many of its best ones farther to the rear, says one official. This leaves gaps to exploit. America is providing Ukraine with cuts, or maps, of electromagnetic activity—essentially, the location of jamming and the frequencies used—32 times a day, says T.J. Holland of America’s XVIII Corps. That is a boon to Ukrainian drone operators.

Jamming the jammers

It is not the case that EW has cut off all communications, either. Russia has failed to knock out the Starlink terminals that give Ukraine’s army near-universal internet access via communication satellites. One reason is that a Starlink beam is extremely narrow—you have to get within 100-200 metres to spot it, says Andriy. Russian EW vehicles also seem incapable of jamming Starlink radio frequencies or the SINCGARS tactical radios that America has supplied to Ukraine, says Mr Withington.

If Russian EW has frequently fallen short, at times it has also been too powerful for its own good. A paper by Justin Bronk and his colleagues at RUSI describes “serious electronic fratricide”. Two days into the invasion, Russia had to scale down ground-based jamming because it was hindering the Russian army’s own communications. That is one reason why Ukrainian air-defence radars could be turned back on, causing Russian warplanes to be downed in significant numbers by March 2022. Moreover, Russian jets flying in pairs found that EW pods on one interfered with the other’s radar. In effect, they could choose between jamming incoming missiles or having a functioning radar.

There are other ways to defeat EW. Drones that have GPS jammed can resort to terrain matching: comparing images of the ground below to a stored map. The technique dates to the 1950s and is used by many cruise missiles, like America’s Tomahawk. But modern algorithms and computing power allow it to be done with remarkable precision, at lower cost and on a tiny chip.

GPS can also be supplemented with signals from communications satellites in low orbit (like Starlink), ground-based transmission sites (like Russia’s Loran system) and even magnetic-field navigation, suggests Mr Goward. And as weapons increasingly morph into explosive computers, the line between EW and cyber-attacks is blurring. Andriy, the Ukrainian officer, says Ukraine often inserts malicious code into Russian drones mid-flight.

EW is ultimately a game of cat and mouse. Russia and Ukraine both seek “electromagnetic supremacy”, says Mr Withington, but neither can achieve it for good. “Control will ebb and flow throughout the battle.” Jammers will find a way through; defenders will eventually plug the gap. America helped fix the problems with JDAM-ER by ensuring that the bombs acquired a good GPS signal before leaving the plane, according to leaked documents. Excalibur is now hitting its targets again, says a Western official. “In EW, things change very fast,” says Andriy. But the battle must be waged. “In this war, we see that if you do not dominate this domain, you will not be effective in other domains.” ■

Military logistics

The sinews of war

Russia's invasion shows how war can hinge on logistics

THE ISRAELI historian Martin van Creveld called armies “ambulant cities”. Keeping hundreds of thousands of armed men fuelled, fed and equipped is a Herculean effort. Sending them to war without regard for such things can go badly wrong. Russia’s invasion of Ukraine in February 2022 offers a cautionary tale. In the first days of the war Russian troops flooded south from Belarus with inadequate food, fuel or ammunition. Military convoys clogged up the roads to Kyiv—including a remarkable 60km (37 miles) traffic jam north of the capital. Ukrainian drones, special forces and artillery tormented the slow-moving invaders. Unarmoured fuel trucks and other logistics vehicles were especially juicy targets. In a battle south of Chernihiv, says a general, “They thought they had us surrounded...we just cut off all the logistics for them and that’s it.” The unit was destroyed with artillery.

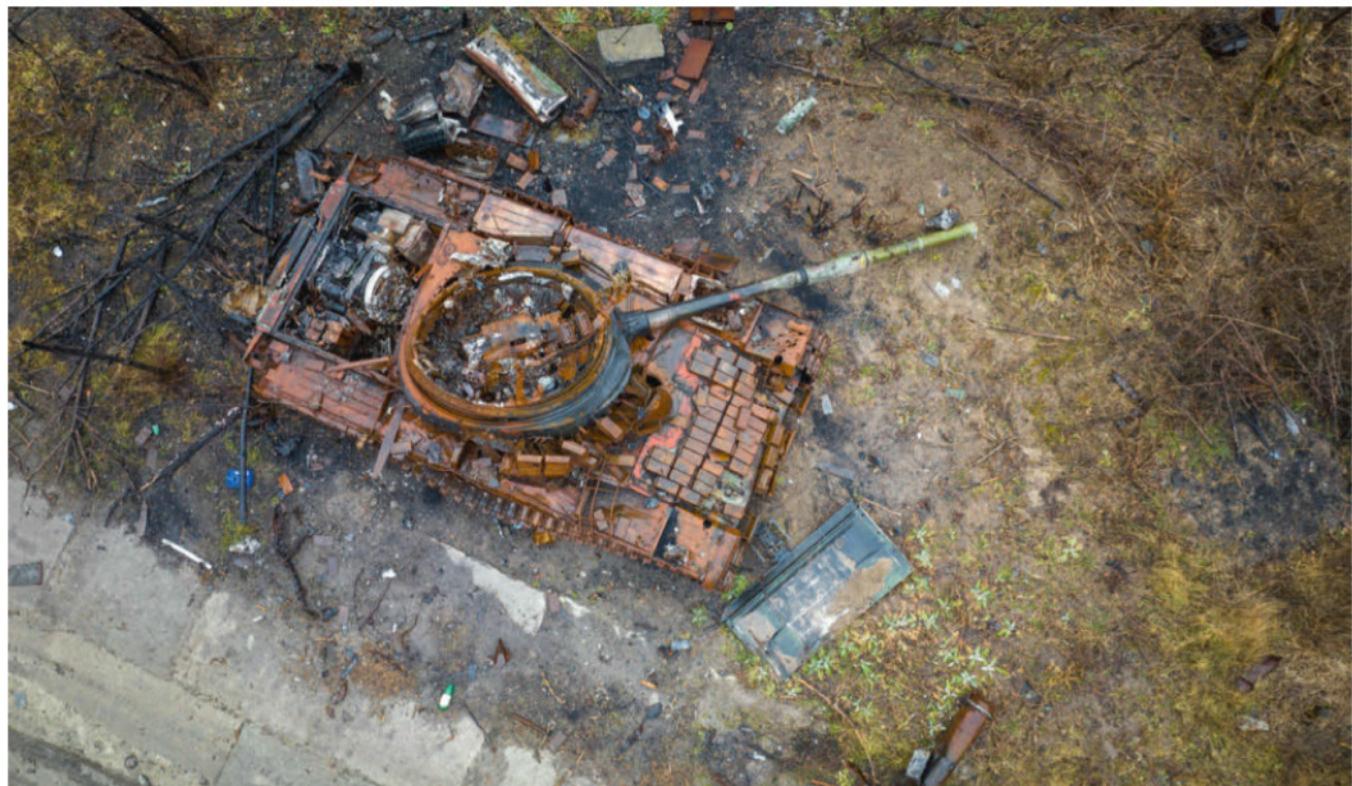
Such foul-ups revealed deeper problems. All modern armies use two approaches to logistics, explains Ronald Ti, a military logistian at King’s College London: “pull” logistics, which involve responding flexibly to consumption and demand signals by units in the field, and “push” logistics, in which ammo and material are dispatched based on predetermined rates of use. Russia relies on the second, says Dr Ti, largely because of a Soviet legacy of top-down command and a lack of modern supply-chain management.

That works well if consumption is stable. It rarely is—as the first days of the war in Ukraine showed.

Western armies tend to have high “tooth-to-tail” ratios, with as many as ten support personnel for every combat soldier. Russia has fewer. Like the Soviet Union, it relies on moving fuel by pipeline and other material by rail. That can be highly efficient: Russia’s army managed to shift and fire a cumulative total of 700,000 tonnes of shells and rockets in the first five months of the war. But it ties the army to railheads and large depots nearby. That has turned out to be a problem. In the spring of 2022 Russian shellfire was grinding down Ukraine’s army in the eastern Donbas. Russian guns out-pounded Ukrainian batteries by three to one. That changed when Ukraine acquired American HIMARS launchers and European systems capable of firing rockets precisely over 70km. Suddenly it could hit Russian fuel depots and ammo dumps well behind the front lines. Many had not budged since 2014.

The ensuing bonfire of supplies starved Russian guns of ammo. It forced Russia to switch from big, centralised depots to smaller, dispersed ones farther from the front. The longer distances to haul heavy shells, plus a paucity of trucks, pallets and logisticians, threw grit into the wheels of Russia’s military machine. Ukrainian officials say this paved the way for successful offensives in Kherson and Kharkiv. Nico Lange, a former German defence official, says that a Ukrainian soldier chalked up this success to understanding Russia’s logistical weaknesses: “It’s basically like fighting ourselves from ten to 15 years ago.”

Ukraine is not immune to such problems. Many of its arms depots were blown up in the years before the war in suspected Russian sabotage. Others have been struck since. Its army also relies on railways. But its supply lines have proved more reliable, agile and resilient—helped by the fact that it is fighting on its own soil. Mr Lange points out that Ukraine’s rail-based logistics depend on ➤



Once a tank

▶ domestic steel and metal industries, which provide a ready stock of parts and tools, and a rapid repair capacity. Old locomotives and transport cars have been pulled out of storage. "It is probably no exaggeration to state that no European NATO state today would be capable of military logistical achievements like those of Ukraine during this war," he concludes.

One lesson is that logistics are too important to be left to the generals. Some 30 flights a day land in Rzeszow, in eastern Poland, carrying military aid for Ukraine. It is sent on overland to depots around the country, where military units get it to the front line. This has been a joint effort by the state, private sector and civil society, says a Ukrainian minister closely involved. About 90% of it is financed by the private sector, he says, with money and vehicles coming from agricultural firms, energy companies with petrol stations, and banks. Close co-operation with Poland means that paperwork at the border for arms shipments takes minutes—a degree of frictionless cross-border military movement that would be the envy of many NATO members.

The problem is keeping the weapons going once they arrive. Steven Anderson, a retired American general who oversaw logistics in Iraq, says that the "operational readiness rate" for equipment there was 95%. Anything below 90% would get a commander pulled up in front of bosses. In Ukraine anecdotal data suggests it is only around 50%, he says. "Half of what we give them is broken at any given time and they're struggling mightily." For much of the war, Ukraine's exhausted artillery pieces have been sent to eastern Europe to fix. Since the autumn, more can be repaired in Kryvyi Rih, an industrial city near the southern front. But its capacity is limited. Mr Anderson complains that less than 4% of American aid has been allocated to support and maintenance.

The rush to improvise

One result is improvisation. A scramble for spares is part of every war. During the Falklands war Britain raided aviation museums around the world for refuelling probes for Vulcan bombers. Ukraine's challenge is acute: it operates what is probably the most diverse arsenal of artillery and armour anywhere. Each system requires different ammo, spare parts and skills. And each is working more intensively than its manufacturers expected. Repair kits designed for moderate use have proved completely unsuitable for barrel-melting, gun-shaking barrages.

That is forcing Ukraine to pioneer new forms of wartime sustainment. Ukrainian volunteers are 3D-printing spare parts in buildings a few hours' drive from the front. Key to this is decentralisation. Individual brigades often find their own parts rather than asking the general staff's logistics command. "They just go to the garage," says one source familiar with the underground supply chain, "and say: I need this piece. Can you do it?" Separately, America's Airborne XVIII Corps is using algorithms to estimate the barrel life of Ukrainian howitzers, when they need spare parts and when fresh munitions must be pushed to the front.

America has grown used to sustaining wars thousands of miles away with scant threats to ships, planes and trucks carrying supplies to ports, airfields and depots. Those days are over. "Decades of wargaming, analysis, and empirical evidence suggest that attacking [American] logistical dependencies...is the most effective way of fighting the United States," concludes Chris Dougherty, a former Pentagon planner, in a paper. Chinese attacks on logistics have "paralysed" American forces in war games, he says. He urges the Pentagon to shift money from combat forces to logistics. Armies need to position more stocks forward and "live off the land" to acquire fuel, lubricants, food and spare parts locally. Troops must fight on their own for weeks with minimal support, he adds. Logistics have long had "second-class status", he says, despite a "starring role" in military history. Ukraine shows that anew. ■

Total war

The home front

Technology is pulling civilians deeper into the war

EARLY IN THE war 20 Russian fuel tankers rolled into Sedivn, a small town in Chernihiv province, north of Kyiv. "The locals called us," says Major-General Viktor Nikolyuk, commander of Ukrainian forces in the north, "and said: what should we do?" His answer was simple: "Drain them." Locals on horses and tractors, carrying bottles, barrels and teapots, siphoned off fuel with the cry of *Slava Ukraini*—glory to Ukraine. The general could hardly believe it when another round of tankers appeared shortly afterwards. Those, too, were relieved of their cargo.

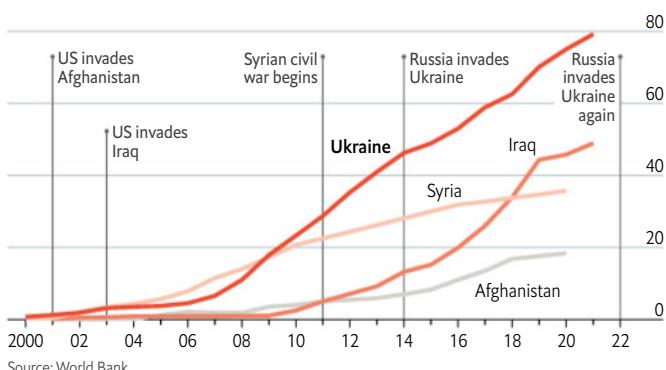
Small wars are fought by a country's armed forces. Total wars are waged by entire nations. Civilians have played a huge role in the defence of Ukraine. When Ukrposhta, Ukraine's national postal agency, held a competition to design a stamp, the winning entry depicted a tractor towing away a captured Russian tank—one of the war's most iconic images. When Kyiv was under threat, civilians mixed Molotov cocktails to hurl at invading armoured vehicles. Volunteers have raised money for vehicles and drones. The Serhiy Prytula Foundation, a civilian charity, even bought a satellite for the army. "Kyiv has placed cross-society resistance at the heart of its national defence," writes Hanna Shelest of Ukrainian Prism, a think-tank.

Not uncommonly for total wars, the civilian-military distinction has broken down. "A huge role was played by the local population," says General Nikolyuk. Locals hid mobile phones from Russian troops and revealed the location of their equipment by dropping virtual pins on Google Maps (a dedicated government app, eVorog, now offers a way for civilians to pass on intelligence). Colonel Oleh Shevchuk, commander of Ukraine's 43rd artillery brigade, and Serhiy Ogerenko, his chief of staff, speaking to *Ukrainska Pravda*, a newspaper, say civilians helped correct artillery fire, even using their own commercial drones.

Colonel Shevchuk says that, if his men knew that Russians were near a particular village but were unsure precisely where, they would open Google Maps, find a local shop and cold-call it. "Good evening, we are from Ukraine! Do you have any *kaptaps* [Russians] about? Yes. Where? Where? Behind Grandma Hanna's" ➤

The online front

Internet users, % of population



▶ house. Which house is that? Well, everyone knows her! So you talk to people a little bit and work out where everything is." On one occasion, he says, a petrol-station owner offered the password to its surveillance camera, giving the army a live view of a Chechen column heading for Kyiv.

Digitally enabled popular resistance on this scale would have been largely impossible 15 years ago. Jack McDonald of King's College London points out that, when America invaded Afghanistan in 2001, less than 1% of the local population had access to the internet. In Syria in 2011, when a civil war was already under way and mobile-phone footage of combat became widespread, the rate was still only 22%. When Russia invaded Ukraine in 2014 it had reached 46%. When it did it again last year the figure had shot up to almost 80%. "What you're seeing in Ukraine," he says, "is what's going to be standard."

This connectivity and the proliferation of smartphones that rely on it has accelerated and transformed an older form of civilian-military collaboration, familiar from the resistance networks of occupied France in the second world war. For some time, says General Sir Jim Hockenhull, Britain's chief of defence intelligence at the outset of the invasion, armies tried to make every soldier and platform a sensor. "What's happened is that so many people have become sensors." The result, he says, is a crowd-sourced "civilian sensor network" that has proved "really, really important".

The civilian network is not just for sensing. On February 26th, two days into the war, Mykhailo Fedorov, Ukraine's deputy minister, publicly appealed to volunteers to conduct cyber-attacks against Russian businesses and government departments. The result was the IT Army of Ukraine, a group of nearly 200,000 volunteer hackers. Mr Fedorov asked hackers to target Russian state agencies, state-owned firms and banks.

Civilian involvement extends beyond Ukraine's borders. By providing connectivity through its Starlink satellites, SpaceX has become an integral part of the Ukrainian army's kill chain. Satellites operated by ICEYE, a Finnish firm, provide detailed radar images of Russian military positions. Ukraine's Delta app, essentially a live map which fuses military intelligence from different sources, is hosted on cloud servers abroad, points out Keir Giles of Chatham House, a think-tank.

Who is fighting whom?

This growing "civilianisation of the digital battlefield", as Kubo Macak, a legal adviser at the International Committee of the Red Cross (ICRC), calls it, has legal consequences. ICEYE satellites may be legitimate military objectives, legal experts say. Since Delta is facilitating combat operations, Russia would consider its cloud servers abroad to be "valuable targets", suggests Mr Giles. The IT Army's activities have prompted serious misgivings among scholars of international law and cyberspace.

A core principle of international humanitarian law is that armed forces must discriminate between combatants and non-combatants. But if civilians are building drones, hauling military gear over the border from Poland, reporting on troop movements through apps and correcting artillery fire over video chat, do they become legitimate military targets? The Geneva Conventions lay down that civilians

lose protection "for such time as they take a direct part in hostilities". But what this means is hotly disputed.

The ICRC says direct participation must involve actions that deliberately affect military operations in favour of one side. That is a high bar. Experts agree that civilians who just answer questions do not meet the threshold. Colonel Shevchuk's phone calls would not automatically implicate those who pick up. Moreover, most intelligence passed on by apps is "too general or insignificant to meet the threshold of harm criterion," argues Mr Macak. A civilian would have to gather and transmit information "as part of a co-ordinated operation for the purposes of a specific attack". But flying a drone to correct shellfire would surely qualify.

One lesson is that connectivity is increasingly a vital military resource. The Taliban long ago tore down mobile-phone towers to stop Afghan villagers sending tip-offs to security forces. Mexican drug cartels now use signal-jamming equipment. General Nikolyuk says that civilian assistance was less forthcoming in Kharkiv and Donetsk in the east because Russia had disrupted mobile-phone networks in those areas.

All this presupposes that armies are making good-faith efforts to discriminate between civilians and soldiers—that they care about the laws of war. If Ukrainian civilians have so often been willing to jeopardise their status as non-combatants, it may be because Russia's army has shown scant regard for such niceties. General Nikolyuk recalls Russian troops establishing a headquarters in a school in Yahidne, a village south of Chernihiv. Hundreds of locals were imprisoned in the basement. On another occasion in nearby Lukashivka, he says Russian soldiers, spotting a Ukrainian drone, forced women and children to walk down the street as human shields. "What do you do in such cases? You bite your fists with impotence and that's it." ■



Naval warfare

Oceans are now battlefields

Ukraine has repelled the Black Sea Fleet. But naval drones may not be enough to defeat it

“**L**ARGER FLEETS win,” says Rear Admiral James Parkin, the Royal Navy’s director of development. Out of 28 maritime battles, he says, all but three were won by the bigger fleet. When Russia invaded Ukraine last year it had around 20 warships in the Black Sea. Ukraine’s navy barely existed. On day one, it scuttled its sole frigate—a rusty Soviet-era cruiser on which this correspondent once hitched a ride to Odessa—to stop it falling into Russian hands. Yet the war at sea, like the one on land, has confounded expectations. “After the war we will certainly write a textbook,” says Vice-Admiral Oleksiy Neizhpapa, Ukraine’s navy chief. “And we’ll send it to all the NATO military academies.”

The inflection point came on April 14th 2022, when Ukraine sank the *Moskva*, a Russian cruiser, the largest loss of a warship since the Falklands war in 1982. The Black Sea Fleet promptly moved back and is still 100-150 nautical miles off the Ukrainian coast, says Admiral Neizhpapa. That has lifted the threat of an amphibious assault on Odessa: anti-tank obstacles that once guarded roads have been pushed aside and soldiers sent to other parts of the front. And it paved the way for a deal in July whereby Russia agreed to let Ukraine keep exporting grain. This helps not only Ukraine, 70% of whose pre-war trade went through the Black Sea, but also grain-importing countries of the global south.

There was nothing revolutionary about the *Moskva* operation. “To me, it shows the importance of proper land-based anti-ship missiles, sea mines and good intelligence,” says Niklas Granholm of FOI, Sweden’s defence research agency, “all put together in a coherent operational concept.” Luck played a role: atmospheric conditions might have let Ukraine’s radars see unusually far. So did Russia’s ineptitude. Just as its massive tank losses were down to poor tactics, not technological change making armour obsolete, so the *Moskva* is a cautionary tale of getting the basics right.

Being hit is one thing; failing to control the subsequent fire is ➤

Slow learners

Russia is also absorbing lessons from the war

EVERYONE IS LEARNING from the war, including Russia. A paper by Jack Watling and Nick Reynolds of RUSI shows how its tactics have improved. The authors have published detailed studies of the war that are read avidly by the West’s armed forces and defence ministries. Their report draws on interviews with Ukraine’s general staff and its brigades.

Consider infantry tactics. Russia now sends small packets of “disposable” infantry, a handful of men at a time, often under the influence of amphetamines, to “skirmish...until killed”, exposing Ukrainian positions. Larger groups of better-trained assault infantry then move in, backed by armour, mortars and artillery. If a position is taken, it is fortified within 12 hours. “The...speed with which Russian infantry dig, and the scale at which they improve their fighting positions, is noteworthy,” say Mr Watling and Mr Reynolds. Russian engineers have built fortifications and bridges and laid minefields.

Russian gunnery is improving. Drones can be connected to artillery batteries via the Strelets computer system, letting Ukrainian targets be struck within minutes of detection. One tactic, say the authors, “is for the Russians to withdraw from a position that is being assaulted and then saturate it with fire once Ukrainian troops attempt to occupy it.” Such “fire pockets” are one of the biggest risks to Ukraine’s counter-offensive. Russian

tanks also make better use of camouflage. They fight at dusk and dawn when their temperature signature is less obvious. Russia’s reactive armour, which explodes outward, has “proven highly effective”, with some tanks surviving multiple hits.

Russian air defences, much derided on social media, are increasingly connected, allowing them to share data on incoming threats. They are shooting down a signif-

icant proportion of strikes by GMLRS—the GPS-guided rockets, fired from American HIMARS launchers—that played havoc with Russian headquarters last year. Russia has been pulling command-and-control centres farther back, dispersing and hardening them and wiring physical cables to brigades closer to the front. Meanwhile Russia’s air force, an irrelevance for much of the war, is making more use of glide bombs, in which a guidance kit is fitted to older “dumb” munitions. That poses a growing threat to Ukrainian troops moving south.

Early in the war one masked Ukrainian soldier gained fame when he said: “We’re lucky they’re so fucking stupid.” Russia’s army is beset by problems, including poor recruitment and a lack of modern equipment. Its elite units have been decimated. It is unlikely to have serious offensive capability for the rest of this year. The recent short-lived mutiny of Yevgeny Prigozhin’s Wagner mercenaries will not have boosted morale. Yet the army remains a formidable obstacle. “There is evidence of a centralised process for identifying shortcomings in employment and the development of mitigations,” conclude the RUSI authors. Major-General Viktor Nikolyuk, in charge of army training for Ukraine, says: “It is impossible to say that the enemy does not know how to fight. We learned a lot from them, too, [on] tactics.”



Ready, steady, shoot

► another. "Damage control remains a key metric against which professional naval standards should be assessed," concludes Alessio Patalano of King's College London. "On the day of the sinking I was confronted by army colleagues: this must surely be the end of the idea of building big warships?" recalls Rune Andersen, chief of the Norwegian navy. "I said no: it's the end of having a 40-year-old warship which hasn't been updated and without trained crews." A newer warship with better air defences and a sharper crew might have parried the Ukrainian missiles.

The maritime contest is in stalemate. Ukraine has achieved "sea denial" near its coast, stopping Russian ships coming close. But Russian warplanes roam freely, preventing Ukrainian naval vessels from coming out. The result is a "grey area" of 25,000 square kilometres in the north-west Black Sea in which neither side can "move freely", says Admiral Neizhpapa. Russia's Black Sea Fleet squats in relative safety, imposing a distant blockade and frequently lobbing Kalibr cruise missiles at Ukraine. Ukraine has good intelligence on the fleet's movements thanks to America and Britain, which are fusing data from satellites and surveillance aircraft. But it lacks missiles with sufficient range to hit what it sees. That has forced it to turn to other means.

A striking feature of the war has been Ukraine's use of uncrewed surface vessels (usvs), essentially drone boats, to reach Russian-controlled territory. In October and November these were deployed alongside aerial drones to attack Sevastopol, headquarters of the Russian Black Sea Fleet, and an oil depot in Novorossiysk, a Russian port. Other attacks have followed, including an apparently successful hit on an intelligence ship near the Bosphorus on May 24th. These carry on a long tradition of naval raiding.

Iran-backed Houthi rebels used a usv to strike a Saudi frigate in 2017. America tried drone boats as early as the 1940s. But modern electronics, powerful artificial intelligence and ubiquitous satellite communications—in Ukraine's case via Starlink—have made possible sleek usvs that are less conspicuous on radar and have the ability to navigate over long distances and find targets. Ukraine cannot match the Black Sea Fleet on equal terms. But it can chip away at its ports and logistics.

"Drones are very important elements of our warfare right now," says Admiral Neizhpapa. "The warfare of the future is a warfare of drones." He adds that Ukraine is learning by doing. "No other country has as much experience using naval drones." Whether that will be enough to break Russia's blockade is another question. A raid on Sevastopol in March seems to have been repelled, with one usv blocked by a boom and two others destroyed by machineguns. Not every usv will get through. But the technology is proving itself on another, murkier front of the naval war.

On September 26th 2022 explosions ripped through the Nord Stream 1 and 2 gas pipelines from Russia to Germany via the Baltic Sea. The culprits remain unknown. But the incidents underscored the vulnerability of underwater infrastructure to sabotage. Russian reconnaissance of cables and pipelines is decades old, well-resourced and growing in intensity, according to

A striking feature of the war has been Ukraine's use of uncrewed surface vessels

American and European security officials.

In April a Scandinavian documentary unveiled details of a fleet of Russian ships, disguised as fishing trawlers and research vessels, operating in the North Sea. One of those ships, the *Admiral Vladimirs*, was tracked near seven wind farms off the British and Dutch coasts during a single trip. When journalists approached, they were greeted by masked gunmen.

Protecting every inch of cable or pipeline is impossible, concede naval officials. But drones are part of the answer. After the Nord Stream attacks, European governments urgently wanted to map out potential threats. Admiral Andersen says Norway reached out to private companies working offshore in activities such as oil and gas. "We found an industry with a huge sense of responsibility and a willingness to contribute."

Within days he had 600 advanced undersea drones, some remotely operated and others autonomous. Working with Britain, Denmark, Germany and the Netherlands, these scanned "every inch" of gas infrastructure over 9,000 square kilometres, before moving on to power and data cables. The project showed how technology that once seeped from the military into the civilian world can now move in the other direction. On February 15th NATO established a new critical undersea infrastructure co-ordination cell to encourage such defensive co-operation.

Offence is another matter. The paradox is that the countries helping Ukraine to build such systems—often in deep secrecy—and providing it with the intelligence necessary to use them effectively, such as up-to-date maps of Russian jamming, are themselves constrained in their ability to develop the same technology at home. "The things that a British company funded by British taxpayers' money and cohered by British military officers can do in Ukraine I cannot do in the UK because peacetime regulations forbid it," laments Admiral Parkin.

European maritime authorities do not want drones wandering off course into civilian waters. That prevents navies from training and experimenting as boldly as they might. Pity the ambitious admiral. "We're at a bit of a moment in uncrewed surface vessels in particular which is equivalent to the man with a red flag walking in front of a motor car." ■





Best practice

Baptism by fire

Ukraine is teaching armies to think, train and plan differently

SALISBURY PLAIN in England is a far cry from Zaporizhia. But—briefly—Russians are here. A battalion from the British Army's parachute regiment plays Task Force Hannibal, a unit that mimics Russian doctrine. They face battalions from the Royal Irish and Gurkha regiments. The "Storm Wessex" exercise imitates conditions in Ukraine: precise firepower, the "pervasive stare" of sensors and jamming galore. The visual and electronic signatures of each unit are shown to commanders. In the control centre, a satellite image shows the radar-reflecting corrugated-iron roof of a defensive position: the lesson, it is better to use wood. Engine exhausts are covered to hide from infrared cameras. Voices are hushed to evade acoustic sensors.

Soldiers learn by failing. In round one a battlegroup uses high-frequency radio. The source is located and wiped out. In round two troops communicate securely. Hannibal sends a drone to investigate. The group's camouflage is sub-par and it is destroyed again. In round three the group is quiet, concealed and its sentry shoots down the drone. That is a mistake: Hannibal rains fire on its last recorded position. By round five the defenders have wised up to use decoy electronic emitters. "By doing this," says an officer, "our young leaders are learning in a much more visceral way."

Western armies are busily identifying what lessons they can find from Ukraine. Every two weeks the British army collects data from the battlefield and from Wiesbaden in Germany, a hub for supporting Ukraine. A "Russia-Ukraine Insights Hub" led by Rear Admiral Andrew Betton has written a highly classified 70-page report. "It's reinforcing some age-old lessons," says the rear admiral. "Resilience is one of the core strands that comes out of our work: the resilience of your military, the resilience of your industrial base, but fundamentally the resilience of your society."

It is still early to draw firm conclusions. The urban grind of

Bakhmut differs from armoured thrusts. Tactics that work one month fail the next, as people adapt. And a war on the European steppe between two Soviet-legacy armies differs from a future air and sea war in the Pacific. But some principles are emerging.

First, the modern battlefield can be an unsparing place. Modern sensors can see things with unprecedented fidelity. Modern munitions can hit them with unprecedented precision. Artificial intelligence, whether on board a drone or in a corps HQ, fuelled by torrents of data, can identify and prioritise targets with unprecedented speed and subtlety. But Western armies are not optimised to master these technologies. America's years-long procurement cycle is "fine for tanks or helicopters", says T.J. Holland of America's XVIII Corps, but "too slow to keep up with the pace of cyber".

Need to keep moving

Second, armies that want to survive must disperse, hide and keep on the move. Camouflage and deception are back in vogue. Headquarters must shrink in size, frequently change location and mask their radio emissions. "I haven't met a soldier who hasn't learned something from our Ukrainian partners," says Major-General Chris Barry, director of the British Army's land-warfare centre. "The way they dig their positions...it drives [our] standards up." One official notes that Ukrainian troops, having learned the hard way to minimise electronic signatures, do not switch their mobile phones on even in the English countryside.

Fitness still matters. The need for "constant movement" will be brutal on troops, observes General James Rainey of the US Army's Futures Command: "What are the effects on the humans operating at that kind of tempo?" An attack that would once have required a three-to-one numerical advantage over the defender might now require nine-to-one, he says, for soldiers will not have time to rest.

Third, technology is pushing firepower and intelligence further down the chain of command. A platoon with access to Ukraine's Delta app, loitering munitions and Starlink terminals can see and strike targets that would once have been the preserve of higher echelons. "This journey of combining arms is getting lower and lower," says General Barry, pointing to Russia's failure to seize an airfield north of Kyiv on the war's first day. "The defining act at Hostomel, the destruction of the first aircraft that really unpicked the Russian assault, was probably done by an individual with a phone, a Stinger [missile] and a drone."

This has many implications. It will complicate logistics: how do you push food, ammo and medical care to a larger number of smaller units that are increasingly spread out? It will change recruitment and training: soldiers need more initiative, technical knowledge and skill. It is also an opportunity. Armies once had to concentrate forces in one place to achieve mass. Now they can deliver the same effect in a decentralised way. The US Marine Corps, which is pushing precision weapons down to squads of 13 people, is reorganising itself on these principles.

There is a fourth lesson, too. Technology can make war more efficient. But if both sides have the technology, even a highly efficient war is likely to involve enormous costs in blood, metal and treasure. Armies without the size and depth to absorb losses and remain viable on the battlefield may find that no amount of digital wizardry or tactical nous can save them. ■

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**Middle East diplomacy**

The prince's price for peace

DUBAI

A Saudi-Israeli deal would require a steep price from America

FEW QUESTIONS in the Middle East evoke such dread as “why aren’t you married?” It signals a judgmental grilling. Anyone can play interrogator: parents, taxi drivers—even an American president.

Saudi Arabia and Israel have been carrying on their relationship in secret for a decade. Joe Biden wants them to make it official. For the Saudis this is an inopportune moment. Israel has a hard-right government. The Arab League this month accused it of “war crimes” for an army raid into Jenin (see next article).

Yet the Biden administration wants to broker a deal by the end of the year whereby the two countries establish formal relations. In recent weeks the president’s aides have flown to the kingdom to ask Muhammad bin Salman, the powerful crown prince, what it would take to tie the knot.

The prince had a ready answer. He wants a large dowry from the Americans: weapons, a security pact, and help with the kingdom’s fledgling nuclear programme (uranium, not gold, is the metal of love). It would be less a Saudi-Israeli pact, in other words, than a Saudi-American one.

Supporters say it is worth the price to usher in a new era for the Middle East. Yet the Saudis’ demands undercut those lofty arguments. They have an honest view of normalisation: as a transactional security pact, not a transformational one.

During its first 72 years as a state, Israel established official ties with only two Arab countries: Egypt and Jordan. Over four months in 2020, it added four more—Bahrain, Morocco, Sudan and the United Arab Emirates (UAE)—via the Abraham accords. Donald Trump made it a priority to expand Israel’s relationships in the region, and so has his successor.

For a time, a favourite diplomatic parlour game was to guess which Arab states might come next. Saudi Arabia always

seemed like the big prize. It is the region’s largest economy, its diplomatic heavyweight and the birthplace of Islam.

Such talk has cooled since December, though, when Binyamin Netanyahu returned to power in Israel. Though the accords remain intact, the public ardour of Israel’s new Arab friends has cooled. In public, Saudi officials are still coy about normalisation. But in recent months many experts have become convinced there is a real chance for a deal.

There are other subtle hints. The kingdom has long insisted that it could recognise Israel only if Israel accepts the Arab Peace Initiative, a plan endorsed by the Arab League in 2002 that offered normal ties in exchange for the creation of a Palestinian state.

Yet Faisal bin Farhan, the Saudi foreign minister, made no mention of it last month at a press conference in Riyadh alongside his American counterpart. Instead he spoke of needing a “pathway to peace” for Palestinians: without it, he said, “any normalisation will have limited benefits”. The rhetorical shift was not lost on listeners in Washington.

Instead of making demands of Israel, the Saudis are now making them of America. They want a stronger defence pact, something that would bind America to protect the kingdom. They want easier access to American weapons. And they want American help to set up a civilian nuclear programme, which would include facilities to enrich uranium inside the kingdom.►

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► It is not unprecedented to ask for sweeteners: America has always helped cement Arab-Israeli treaties. It has sent Egypt more than \$50bn in military aid since the country made peace with Israel in 1979. Mr Trump promised a sale of F-35 fighter jets to entice the UAE into the Abraham accords (though America has yet to deliver them).

The Saudi demands go far beyond money or weapons, however—and are unlikely to be met. A formal defence treaty would have to be ratified by a Senate that rarely ratifies anything these days. Arms deals often require approval from Congress and lawmakers from both parties are wary of sending weapons to Saudi Arabia.

A nuclear programme would be more controversial still. The Saudis could follow the path of the UAE, which swore off enriching its own uranium to secure access to American technology. Insisting on their own enrichment capacity—at a time when Iran has enriched uranium to nearly weapons-grade—would raise fears of a regional arms race. Even in a bitterly divided Washington, both Democrats and Republicans could probably agree that nuclear proliferation is bad.

This points to a bigger problem with the hasty push for a deal. American supporters of an agreement make several arguments in favour. One is that it could cement an alliance against Iran, a nemesis to Israel and Saudi Arabia. The Saudi army is not known for its prowess, however. Israel would not want to rely on it in a conflict, and the Saudis, who signed a reconciliation deal with Iran in March, would probably prefer to sit one out anyway.

Equally unrealistic is the idea that it would compel the Saudis to distance themselves from China and Russia. The kingdom, like other Gulf states, wants to avoid picking sides in the great-power competition. It is not about to abandon America—but nor will it turn down lucrative ties with China, or its oil partnership with Russia.

A more plausible argument, on the face of it, is that Saudi recognition of Israel could convince other Arab states to do so. But public opinion probably rules it out in countries like Algeria, Lebanon and Tunisia. And the emirs of Kuwait and Qatar would be loth to follow their neighbour.

For decades, many Western diplomats saw the Israeli-Palestinian conflict as the region's main problem. The Arab spring proved such thinking facile. Decades of awful, authoritarian governance plunged the Middle East into violent upheaval, with Israel playing hardly any role in it.

The push for a Saudi-Israeli deal risks repeating that flawed thinking, only in reverse. Boosters say it would be transformative—yet many of its purported benefits seem far-fetched. That does not make it an unworthy goal. But America will have to decide whether it is worth the price. ■

The West Bank

Yet another battle for Jenin

JENIN

Israel's latest big incursion has ended but the raid will not stop the violence

THE ISRAELI operation in Jenin was in its final hours on the afternoon of July 4th as a small armoured convoy traversed the wreckage in the town's main square, avoiding Palestinian ambulances hurrying back and forth. Nearly 1,000 Israeli special forces had entered the previous morning, covered by drone strikes, in pursuit of some 300 militants of Kata'ib Jenin (the Jenin Brigades) who for nearly two years have controlled Jenin's refugee camp. Twelve Palestinians (Israel says they were militants) and an Israeli soldier were killed. Dozens of Palestinians were wounded and captured. The Israelis say 30 workshops and weapons caches have been destroyed.

But the Palestinians' resistance did not disappear. As your correspondent drove into Jenin with an Israeli unit, an improvised explosive device (IED) detonated beneath the lead vehicle, which just made it to makeshift headquarters on the edge of the camp. In the streets youngsters pelted the convoy with rocks and paint-bombs, while shots were sporadically fired at it from afar. By the morning of July 5th the Israelis had left, ending a 48-hour operation, the biggest raid on a Palestinian city in the occupied West Bank since 2002. But Brigadier General Avi Bluth, head of Israel's forces there, has little doubt that the militants will soon be back.

Jenin camp is one of the Palestinians' oldest. Around 18,000 people are crammed into less than half a square kilometre. The town has one of the highest unemployment rates in the West Bank; much of its



Gone but not forgotten

residents' income is from day-labourers working in Israel. For two years it has posed a severe headache to Israeli security forces and to those of the toothless Palestinian Authority based in Ramallah, just north of Jerusalem. The Palestinian security forces are unlikely to re-establish their writ in Jenin for the foreseeable future.

Jenin has long been a symbol of deadly terror for Israelis and diehard resistance for Palestinians, who abhor Israel's military occupation of the West Bank and generally despise the corrupt and sclerotic rule of Mahmoud Abbas, the 87-year-old Palestinian president who is regarded by them as a proxy for Israel. Hamas, an Islamist group that runs Gaza, said a car-ramming and stabbing attack on July 4th in Tel Aviv was in revenge for the raid on Jenin.

Since spring last year, militants based in Jenin have carried out a string of attacks, including one in Tel Aviv last April in which three Israelis were shot dead in the main nightlife district. In response Israeli security forces have made regular raids on Jenin to kill or capture important figures in the brigades. But, as a senior Israeli officer recently admitted: "The fact they are not part of any established network or organisation has made it very difficult to root them out." The brigades are made up of young men, some affiliated to various Palestinian factions and others to none of them. They have made IEDs that can disable Israeli armoured vehicles. They have also tried to build rockets to hit villages in Israel proper. Their growing firepower was one reason for the latest incursion.

Israel's generals reckon the latest operation may suffice for the time being. But the Israeli far right are demanding more and wider operations, including against the restive West Bank city of Nablus. Jewish settlers in the West Bank and their influential backers in the cabinet of Benjamin Netanyahu, the prime minister, played a part in encouraging the latest attack on Jenin.

Israel has been here before. In April 2002, after a series of suicide-bombings in Israel during the second *intifada*, an uprising that lasted from 2000 to 2005, the Israeli army battled for 11 days to control the Jenin refugee camp, where many of those bombings had originated. More than 50 Palestinians and 23 Israeli soldiers were killed. Armoured bulldozers razed much of the camp. This time, largely due to better intelligence and aerial surveillance, the incursion was shorter and less destructive. But future battles for Jenin surely await.

The violence has not yet spread to other parts of the West Bank. But even if the incursion does not cause it to escalate, the anger of young Palestinians will only grow in the absence of a serious process towards statehood or equality. As sophisticated and powerful as Israel's army is, it can only buy temporary respite. ■

Nigeria's new president

Fast mover

ABUJA

Bola Tinubu has taken some impressive early decisions

DURING HIS inaugural speech on May 29th in Abuja, the capital, President Bola Tinubu shocked and delighted reform-minded Nigerians by veering off-script to announce an end to subsidising petroleum products, which for decades has drained the treasury of revenues from the country's most valuable natural resource. Since then, he has continued to shake the establishment with a string of night-time press statements which heralded the firing of his central-bank governor, the top brass of the army and the heads of several key government agencies, including the police, the customs service and the financial-crimes commission.

His biggest scalp was that of the central banker, Godwin Emefiele, whom the secret police detained—so far without charge—on June 9th. Mr Tinubu explained that “the financial system [had been] rotten” under the supervision of Mr Emefiele, who had held the job for the past nine years.

Many Nigerians blame Mr Emefiele for Nigeria's economic woes. Since he took office Nigeria has twice fallen into recession. Annual inflation recently hit 22%, the highest for 18 years. The central bank has been accused of profligacy by lending the government \$53bn in recent years. Last year debt servicing alone chewed up a grim 96% of government revenues.

Moreover, some of the ousted governor's other policies were abject failures, such as his sudden plan to redesign some banknotes and scrap the old ones, leading to severe shortages of cash needed by Nigerians for day-to-day living. He was also blamed for overseeing Nigeria's multiple foreign-exchange rates, which boosted the black market and deterred foreign trade. Mr Tinubu has ordered the immediate reunification of the rates. Their confusing multiplicity contributed to the dramatic decline of foreign direct investment in Nigeria in the past few years.

Whether Mr Emefiele's arrest is lawful is another matter. Nigeria's government has often taken a shoot-first-ask-questions-later approach to such matters. A court is expected to determine the constitutionality of the detention by July 13th. Mr Emefiele's friends say he is an innocent man being scapegoated.

Mr Tinubu's speedy appointments on the security side are intended to help curb terrorism in the country's northeast and the scourge of kidnapping in the north-

Senegal

A step back from the brink

DAKAR

In the end, President Macky Sall sets a good example for the region

“**M**Y LONG AND carefully considered decision is not to be a candidate in the next election,” declared Senegal's president on July 3rd. That ended years of speculation over whether Macky Sall would seek a constitution-bending third term in next year's election. It also assuaged fears of more bloody clashes if he did. Alioune Tine of Afrikajom Centre, a think-tank in Dakar, the capital, echoed the feelings of many Senegalese democrats: “It's a great feeling of deliverance.”

Violent protests against Mr Sall began in March 2021 when Ousmane Sonko, a prominent opposition leader, was accused of rape and later arrested. Many protesters believed that Mr Sall was targeting political rivals and wanted to run for a third term. Last month protests spiralled after Mr Sonko was sentenced to two years in prison for “corruption of youth”, which almost certainly rules him out of the election. At least 37 people have been killed in protests since 2021, many of them shot by security forces, says Amnesty International, a rights group. The fate of Mr Sonko, who is not

yet behind bars, could cause ructions. But Mr Sall's decision greatly reduces the risk of violence.

It also gives a much-needed fillip to democracy in the region. Three nearby countries—Burkina Faso, Guinea and Mali—are run by soldiers. In Ivory Coast, west Africa's other Francophone pillar, President Alassane Ouattara is serving a third term based on a dubious twist of the constitution. Indeed, of all mainland Francophone Africa's countries, arguably only Senegal can boast that it is genuinely democratic. It has largely free elections, a record of transferring power between opposing parties, and (still) resilient constitutional limits.

A bevy of global bigwigs was quick to laud the decision. António Guterres, the UN head, wrote of his “deep appreciation for President Macky Sall and the statesmanship he has shown”. Many Senegalese are less gushing. “It's not him that decided to leave, it's the population that decided for him,” says Ousmane Diouf, an ex-soldier, alluding to the protests.

Plenty of locals believe Mr Sall should never have needed to make his declaration. “You do two terms and leave. That's how it is,” says Souleymane, a 27-year-old watchman. Mr Sall has only ever presided under a constitution that sets the limit at two terms. Yet he has implausibly claimed—and did so again in his speech—that he was permitted to stand for a third term, arguing that a tweak to the constitution in 2016 to reduce terms from seven years to five had reset the count on the number of mandates.

Aged 61, Mr Sall will now be in high demand for everything from peacemaking to lucrative global directorships. And he will be a favourite for the prize of \$5m that Mo Ibrahim, a Sudanese-British telecoms tycoon, awards to an Africa leader who has demonstrated good governance—and respect for term limits. There are worse fates.



Cross my heart, I'm a Jeffersonian

west, as well as violence elsewhere. SBM, an intelligence outfit based in Lagos, the commercial capital, estimates that between July 2021 and June 2022, 3,420 people, including hundreds of schoolchildren, were kidnapped. Mr Tinubu has appointed Nuhu Ribadu, an ex-policeman who once headed the financial-crimes commission, as his new security adviser.

Busy Mr Tinubu has evidently managed to find time to attend to less pressing mat-

ters. He has renamed no fewer than 15 airports dotted around the country to honour notable Nigerians with local connections, including Muhammadu Buhari, his dozier predecessor. The main airport in Lagos, where Mr Tinubu made his reputation as a punchy governor, is still named after a previous president, General Murtala Muhammed, who was assassinated in 1976. Nigerians are hoping for livelier yet safer leadership under their new man. ■

Sudan's civil war

Genocide threatens Darfur again

Civil war in Sudan is spreading menacingly to the country's fringes

FIRST THE attackers besieged the city, burning the main market and preventing food and medical supplies from getting in. Then the militiamen proceeded methodically to destroy anything—hospitals, schools, electricity and telecoms—which the people of el-Geneina, in West Darfur, might need to survive. “It was routinised and systematic,” says Nathaniel Raymond, a conflict monitor at Yale University. On June 14th West Darfur’s governor appealed for foreign intervention to stop what he termed “a genocide”. The next day he was murdered in what Mr Raymond calls an “isis-style totemic killing”, referring to the jihadists who single out leading opponents for assassination across the Middle East and Africa. In the next 48 hours thousands of el-Geneina’s civilians fled or were killed. Aid-workers, visiting later, described the city as a ghost town.

Since the battle for el-Geneina began in April, soon after the start of Sudan’s wider civil war, some 180,000 civilians in the area have escaped to Chad. Most of them are Masalit, a black African tribe which has long predominated in the west of Sudan’s enormous Darfur region. Satellite imagery suggests that a vast area of the city has been destroyed or damaged by fire, with between 1,100 and 5,000 civilians perishing. So far this is probably the highest death toll of the war in one area, including Khartoum, the capital, which is still the conflict’s core. Refugees from el-Geneina tell of armed Arab militiamen going from door to door, shooting young men dead on the spot. On the road west to Chad (see map), gun-toting militiamen at makeshift checkpoints have robbed and shot civilians fleeing from the mayhem.

Sudan’s civil war consists of several overlapping conflicts. The main one is still focused on Khartoum, where two armed factions vie for control of the whole country. The regular army under Sudan’s de facto president, General Abdel Fattah al-Burhan, is fighting against the paramilitary Rapid Support Forces (RSF), led by Muhammad Hamdan Dagalo, better known as Hemedti. This main conflict, which began in mid-April, has already uprooted millions and laid waste much of the capital.

The war in Darfur, by contrast, has raged and sputtered for 20 years. It began in 2003 with an armed rebellion by neglected and aggrieved African tribes, such as the Masalit, against the Arab-dominated

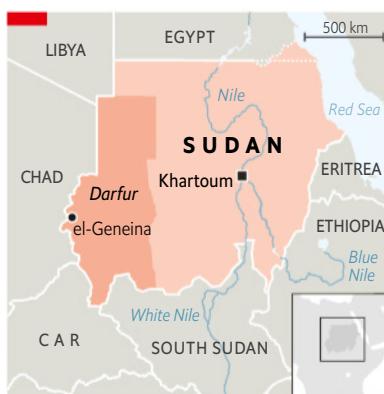
government of Omar al-Bashir, then Sudan’s dictator. In response he armed nomadic Arab cattle-herders as his proxies, unleashing them on the black African farmers with such ferocity that in 2010 he was indicted by the International Criminal Court (icc) on charges of genocide. In the first five years of the conflict, some 300,000 people may have died, with as many as 2.7m driven from their homes.

These marauding, government-backed Arab militias, notorious for raping women and ransacking villages, came to be known as the Janjaweed: devils on horseback, led by Mr Dagalo. With Mr Bashir’s blessing, he eventually turned the Janjaweed into the RSF, which became a multinational business empire with links to the United Arab Emirates and Russia’s Wagner Group. Now he aspires to rule Sudan.

Those deadly droughts

Darfur’s war in the 2000s was dubbed the 21st century’s first genocide. It may also have been the world’s first climate-change war. Resource-rich but drought-prone, the region’s land had long been contested, as desertification spread and rainfall dwindled. But it took the Arab-supremacist policies of Mr Bashir and his Islamist allies to make Darfur explode. Hopes for a durable peace rose there in 2019 when Mr Bashir’s regime fell and a democratic transition seemed to beckon. A peace deal in 2020 brought Darfuri rebel leaders into a power-sharing government in Khartoum, promising fairer access to resources and the return of land to those who had been driven away. By 2021 a hybrid force of UN and African Union peacekeepers, deployed in 2007, had pulled out.

But none of those responsible for Dar-



fur’s initial catastrophe—not just Mr Bashir but also the two generals now battling to succeed him—was brought to justice. Many of Darfur’s Arab tribes, as well as their black compatriots, still felt excluded. Violence by Arabs against returning Africans, including the Masalit, soon spread again. Almost as soon as the peacekeepers left, fighting resumed, forcing more than 400,000 people from their homes.

As the war between the army and the paramilitary RSF intensified, so did fighting between the Janjaweed and their opponents in Darfur. Aid-workers fear the carnage may already be on a par with the early 2000s. “This is the worst war I’ve seen in 20 years as an aid-worker,” says Justine Muzik of Solidarités International, a France-based humanitarian charity, who was in el-Geneina in late June. Videos on social media show fighters voicing ethnic slurs and boasting of turning the area Arab. Volker Perthes, the UN’s special representative in Sudan, describes the war in West Darfur as “ethnic cleansing, grand scale”.

Today’s Janjaweed are using “tactics, techniques and procedures” identical to those in the 2000s, says Mr Raymond. But whereas they were then on horses and lightly armed, “now they are on the back of pickup trucks, moving very fast, using deadly weapons,” says a UN worker. Eye-witnesses describe soldiers in RSF uniforms arming the Janjaweed before they jointly attacked towns like el-Geneina.

The RSF says it is not involved in what it shrugs off as local tribal conflicts. But it can be hard to distinguish its fighters from the Janjaweed. Moreover, el-Geneina is a key staging post for supplying the RSF in its bid to conquer all of Sudan. Kholood Khair of Insight Strategy Partners, a Sudanese think-tank, says Mr Dagalo is getting arms, fuel and mercenaries from neighbouring Libya and the Central African Republic. Access through Chad would be vital, too.

The army’s contingents in Darfur are outgunned and outnumbered so cannot defend the Darfuris from the predations of the RSF or its allied militias, as they are tied up battling for Khartoum. In several Darfur towns they are said to have withdrawn to barracks, enabling the RSF to take over.

At present the region’s non-Arabs cannot expect an international response along the lines of 2007. “This time there is no international clamour about the war in either Khartoum or Darfur,” says Gayle Smith, a former director for Africa on America’s National Security Council. In some places truces have been arranged by activists and religious leaders. In el-Geneina an edgy calm prevails. But fearful residents are still fleeing the city, with furniture and belongings piled high. “They’re trying to save everything they can,” says Ms Muzik. Darfur’s—and Sudan’s—long nightmare is far from over. ■



Russia, Europe and Ukraine

Vladimir Putin's useful idiots

BERLIN

Too many European politicians are failing to confront Russia

IN EARLY MAY Russia's ambassador to Germany threw a party to honour Soviet victory in the second world war. Guests at the embassy, a Stalin-era colossus that occupies more German territory than the nearby parliament building, included a host of dignitaries. The last boss of communist East Germany, Egon Krenz, now 86, mingled under the chandeliers with Gerhard Schröder, chancellor of united Germany from 1998 to 2005 (and, more recently, a lobbyist for Russian energy firms). Tino Chrupalla, co-leader of Alternative for Germany (AfD), a far-right party, sported a tie in the colours of the Russian Federation.

The event earned a bit of scorn in the German press, but little other notice. Sixteen months into Russia's war on Ukraine public opinion in Germany, as across Europe, overwhelmingly views Russia as an aggressor to be shunned, and Ukraine as a defender deserving help. The purveyors of Russian influence now stand diminished. Mr Schröder, for instance, chaired the board of the now-closed Nord Stream pipelines that addicted Germany to Russian gas. Last summer Russia shut the

pipes, which mysterious saboteurs then blew up. The ex-chancellor has been bumped from clubs, disinvited from his Social Democratic Party's functions (though he remains a party member), and stripped of government-provided office facilities. As for Mr Chrupalla, the AfD leader's cosiness with Russia did not just annoy German tabloids. Leaked messages reveal dismay among his own party's MPs.

Yet even if Russia's effort to project persuasive power across Europe has not quite succeeded, neither has it completely failed. A subculture of what Germans dismiss as *Putinversteher*—sympathisers who “understand” the Russian leader Vladimir Putin—thrives outside the mainstream. Throughout Europe their whispering

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forms a leitmotif in the rumble of complaint about seemingly unrelated troubles such as inflation, crumbling public services, overbearing regulations and fears of immigration. The grumblers have only just begun to challenge the scale of their governments' generosity to Ukraine, which by February this year amounted to more than €60bn (\$65bn) in economic and military aid from Brussels and the EU's individual members (and €70bn if Britain is added, a sum roughly equal to America's contribution). If Ukraine's fight goes on too long or goes wrong, there are plenty waiting in the wings to take up the blame game.

Europe's “useful idiots”, a cold-war term for unwitting allies of communism, span a wide spectrum. In politics, parties on both the far right and far left disagree on much; over Ukraine these extremes have often converged in demanding an instant “peace” that would in effect reward Russian aggression with land. In the media and academe, intellectuals still seem happy to ignore evidence of Russia's imperial intent and its drift into criminality, and to bemoan European entanglement in what they parse as a proxy war between America and Russia, or perhaps, speculating more grandly still, between America and China. And in the world of business, despite multiple rounds of Western sanctions, Russia still has plenty of “friends” too.

Mr Putin's enablers include several European governments. Viktor Orban, the prime minister of Hungary since 2010, has been the most obvious. The populist ➤

► strongman has repeatedly criticised Western support for Ukraine and continued Hungary's imports of Russian gas. His government also refuses to allow the transit of weapons given to Ukraine by Hungary's fellow members of NATO and the EU. Next-door **Austria** has, more quietly but equally profitably, largely sat out the struggle, too, citing its non-membership of NATO and self-appointed role as a bridge between East and West, offering little aid to Ukraine even as its trade with Russia has surged.

Greece, another EU member, is complying with the EU's sanctions, but has balked at tightening any further those on shipping Russian oil, perhaps because Greek firms happen to pocket so much from the trade. Only recently and under heavy American pressure did **Cyprus**, an offshore financial haven, shut down some 4,000 local bank accounts held by Russians. Facing less pressure, non-EU countries such as **Turkey** and **Serbia** don't even bother to disguise the lucrative back-door service they provide to Russia.

Some countries have twisted seemingly noble intentions into policies that warm Mr Putin's heart. Citing its vaunted neutrality, **Switzerland** has wielded arcane local laws to block the supply of arms to Ukraine, including 96 mothballed Leopard tanks sitting in Italy that happen to belong to a private Swiss firm. Scoring repeated own goals with freedom-of-speech principles, police in **Sweden** have permitted public burnings of the Koran. This has hugely irked Muslim-majority Turkey, which wields a veto over Sweden's bid to join NATO. And Mr Putin has gleefully trolled the Swedes. On a trip to Dagestan before the Eid holiday at the end of June, he had himself filmed tenderly holding a Koran, as he explained that under Russian law it is a crime to desecrate holy things.

Yet even solid-looking bricks in the would-be European wall of support for Ukraine can crumble. **Slovakia**, for instance, has been a vital conduit for Western aid and recently pledged its fleet of 13 Soviet-era Mig-29 fighter jets to the Ukrainian air force. But polls show that the party of Robert Fico, a Russophile leftist who has blamed "Ukrainian fascists" for provoking Mr Putin, looks likely to win national elections scheduled for September.

France is a linchpin of both NATO and the EU. But a French parliamentary panel recently scolded Marine Le Pen, the closest challenger to President Emmanuel Macron in last year's election, for parroting Russian propaganda following its annexation of Crimea in 2014. Ms Le Pen strenuously denies that her defence of Mr Putin had anything to do with the €9m in loans her party received that year from Russian-controlled banks. She has condemned Russia's invasion of Ukraine, but last October, seven months into the war, she declared that

sanctions on Russia were not working.

In **Italy**, although the hard-right prime minister, Giorgia Meloni, is a strong supporter of Ukraine, Matteo Salvini, who leads the second-biggest party in her coalition, is another opponent of sanctions and, at least up until the invasion, was a declared fan of Mr Putin's.

Germany, like France, seems a strong pillar. Yet the AfD, bluntly described by the head of the country's internal intelligence agency as a propagator of Russian narratives, has been surging in the polls. It is now in a dead tie for second place with the ruling Social Democrats. At the opposite political pole Sahra Wagenknecht, a tele-geneic leftist and at-all-costs peacenik, says pollsters tell her she could win 19-30% of a German national vote. Although public support for helping Ukraine remains strong, the trend is drifting downwards.

Useful-idiot narratives are surprisingly resilient. Their main points—that NATO "provoked" Russia's repeated attacks on and eventual invasion of Ukraine, that Ukraine is an artificial entity created on land that is rightfully Russia's, and that America pours oil on this fire to sell weapons and sustain its global hegemony—echo in various ways. One is what Italians call *benaltrismo* or whataboutery: NATO attacked Serbia in 1999 and Libya in 2011, plus America invaded Iraq and Afghanistan, so what's the big deal if Russia misbehaves? Another variety is *dietrismo*, the notion that there must be some "inside" story behind events. Writing in the *New Left Review*, Wolfgang Streeck, a German sociologist, posits that the hidden purpose of the crisis is to set the stage for putting a fearful EU under the thumb of a pumped-up NATO.

What seems to link Europe's far right, far left and "intellectual" opposition to Western policy is something simpler, however. It is a hoary, cold-war-style anti-Americanism. The East German-born Mr Chrupalla, for instance, insists the Amis have profited from Ukraine's war by forcing Germany to switch from piped Russian natural gas to costlier liquified gas shipped from America. This is a trap, he hints, because imported American energy is so much more expensive that German manufacturers will have to shift production to America. Ms Wagenknecht, his left-wing rival, believes America forced the war on Russia by attempting to pull Ukraine into its "sphere of influence".

At a recent political rally near Berlin Olaf Scholz, Germany's chancellor, found himself heckled by a chorus of beefy peace-niks shouting "Warmonger!" Normally polite, soft-spoken and unflappable, Mr Scholz roared back into the microphone that it was Mr Putin who wanted to destroy and conquer Ukraine. "If you loudmouths had even a little bit of brain, you would know the real warmonger!" ■

Ukraine

Bomblets away

Ukraine wants American cluster bombs—quickly

AMERICA AND its allies have constantly debated whether to send Ukraine the next big thing: first artillery, then tanks and after that jets. Each taboo has crumbled in turn. But as Ukraine's counter-offensive approaches its second month, with progress still slow, a few weapons remain on its wish-list. One is the 150km-range Ground Launched Small Diameter Bomb (GLSDB), which America has pledged but not yet dispatched. The second is the 300km-range ATACMS missile, which America remains wary of supplying. The third may be the most important: the humble cluster bomb.

Cluster munitions are "area effect" weapons which release a larger number of smaller bomblets. They were developed in the second world war to hit multiple targets dispersed over a wide area, particularly infantry and soft-skinned vehicles. The development of shaped charges, which channel explosive energy in a particular direction, allowed later cluster munitions to destroy armour, too. Ukraine has asked America to supply dual-purpose improved conventional munitions (DPICM), a class of cluster munition that could be fired from howitzers or from the HIMARS rocket launchers that Ukraine has been receiving for around a year.

America itself has not used cluster bombs in action since the first weeks of the Iraq war in 2003. But even those countries that disavow their use recognise that they can be potent weapons. In an article for the ►





Linger evill

► *British Army Review* published in 2019, a British brigadier noted that American DPICMS had “saved the day time and again” by breaking up big enemy formations during division-level exercises. “They were, and are, a game-changer.”

Ben Hodges, a former commander of the US Army in Europe, says that cluster munitions could suppress Russian fire from trenches and artillery, giving Ukraine more time to clear a path through mine-fields, which are proving to be a serious problem. There are other advantages, too. The area effect means that cluster bombs can be fired more quickly than ordinary high-explosive rounds, since the attacker needs less precise intelligence on the target, allowing the gun to scoot away faster. The supply of DPICMS would also ease pressure on ordinary artillery shells, which are in short supply, and on the over-worked barrels that fire them. “I cannot see how momentum can be maintained without them,” says a Western official.

There is a catch. The Convention on Cluster Munitions, finalised in 2008, bans the use, transfer, production and stockpiling of the weapons. Neither America, Ukraine nor Russia is a signatory to the convention, but 25 out of the 31 NATO allies are. America has not thus far provided DPICMS, says the Pentagon’s Laura Cooper, for two reasons: “existing congressional restrictions...and concerns about allied unity”. Germany is blocking Estonia’s proposed transfer of old German cluster munitions.

The convention itself reflects humanitarian concerns. Bomblets, by design, disperse over a wide area, with unexploded ones posing a risk to civilians long after a war is over. Israel’s use of the weapons in 2006 may have contaminated 13 square miles of Lebanese territory, including a huge amount of arable land. Bomblets can also pose a problem for friendly forces:

they killed 22 American personnel in Iraq in 1991, during the first Gulf war, slowing an advance on Kuwait airport. “There are much better options than saturating your country with de facto landmines,” argues Marc Garlasco, a military adviser at PAX, a Dutch peace-promoting NGO. “These will kill and maim your soldiers and civilians for decades.” They are “heinous weapons”, agrees Mary Wareham of Human Rights Watch (HRW), another NGO.

Ukrainians retort that they are the ones best placed to judge the trade-off between firepower today and civilian harm on their territory tomorrow. They insist that they would carefully map where the munitions are used, abstain from firing them in urban areas and commit to a post-war demining programme. In any case, any taboo over using cluster bombs has already been broken: both Ukraine and Russia have already fired Soviet-era ones at scale, according to data collected by HRW, and Ukraine is also firing some supplied by Turkey. As of April, over 174,000 square kilometres of territory was contaminated with explosive objects.

Proponents also insist that the weapons are not as hazardous as they once were. Around 2.5% to 5% of the bomblets in America’s older DPICMS fail to explode, remaining a potential danger to civilians for years to come, says an American artillery expert. Officials claim the dud rate for newer ones is around 1.2%, though live-fire testing has cast doubt on that figure. The equivalent rate for the Soviet-type cluster munitions already scattered over Ukraine is probably an order of magnitude higher, says the expert, worsened by poor maintenance. “You’d be shocked at the level of corrosion and disrepair,” says the expert. Whatever America decides—it is thought to be leaning towards a delivery—Ukraine will be dealing with unexploded ordinance for decades to come. ■

The Baltic states

NATO’s worried star pupils

TALLINN AND VILNIUS

Estonia, Latvia and Lithuania fear the alliance is still complacent

VILNIUS, THE newly sparkling but also quaintly baroque capital of Lithuania, sits in a hot spot. Less than an hour’s drive to the east sprawls the Russian satrapy of Belarus, home now not just to Russian tactical nuclear weapons but soon, perhaps, to a large, seasoned Russian mercenary army under restaurateur-cum-rebel-warlord Yevgeny Prigozhin. Just 150km to the west, bristling with combat planes, missiles and warships, lies the Russian enclave of Kaliningrad. Closer than either, for older Lithuanians, linger memories of decades under Russian rule when their country, along with its two Baltic sisters, Estonia and Latvia, formed unwilling “republics” within the Soviet Union. Russia’s grinding war against nearby Ukraine, yet another former colony, brings those memories alive for younger people, too.

But as Vilnius braces for a NATO summit on July 11th and 12th (see International section) that will temporarily swell its population with thousands of soldiers, police, officials and journalists as well as 31 heads of state or government, it is not physical danger that makes locals nervous. The fear across the three Baltic states, perhaps the alliance’s most enthusiastic members, is that their bigger partners will fail to rise to the occasion. “We have proved that we can stay united in the face of a huge challenge, and we have been strong in support of Ukraine,” says Gabrielius Landsbergis, Lithuania’s foreign minister. “But now is the time to seal this politically, and really strengthen the alliance.”

The anxiety is understandable. Historical experience, plus proximity to a belligerent Russian regime under Vladimir Putin, ➤



▶ put the Baltics far ahead of the curve on Ukraine. Instead of waiting for Russia's full-scale invasion to act, the Baltic trio took sharp note of looming dangers way back in 2014 when Mr Putin made his first grabs at Ukraine's Crimea and Donbas regions. Lithuania and, later, Latvia reintroduced conscription. Lithuania doubled and then tripled defence spending. All three un-hitched themselves from Russian energy supplies. They successfully lobbied for bigger allies to pre-position small numbers of troops and supplies on their territory.

Yet their calls for stronger military deterrents, as well as for measures to protect European economies, were largely ignored in Berlin, Brussels and Paris. When Russian tanks rolled towards Kyiv in February 2022 there was little surprise in the Baltics, but rather a glum pride in being right. "We went from neurotics to experts overnight," sighs Mihkel Tikk, who directs Estonia's cyber-defence. Now that the rest of NATO has woken up to the danger, however, satisfaction in the Baltics is tempered by fear that bigger powers will waste the opportunity to put Russia back in its bottle not just temporarily, but for good.

In the short term there is little doubt what people in the Baltic states most want: all three of their parliaments recently voted overwhelmingly for NATO to include Ukraine as a member. But those votes were symbolic. Although the alliance offered Ukraine a path to membership at a summit in Bucharest way back in 2008, even gung-ho Baltic officials admit it is hard to see how a country at war and under partial occupation can join NATO without instantly drawing its allies into direct combat with a nuclear-armed Russia. The best they expect from a summit declaration on this score is a more explicit commitment to Ukraine's security, and a more specific promise of eventual membership. It would be nice to have dates and waypoints, says Lithuania's Mr Landsbergis.

Further disappointment may be in store if Turkey continues to block NATO membership for Sweden, and if other countries fail to agree that a commitment to spend 2% of their GDP on defence should become a baseline figure and not just a widely ignored target. Estonia is already spending close to 3%, but despite excellent training and high morale its forces remain tiny. A recent promise by Germany's defence minister, Boris Pistorius, to turn a small, rotating German force stationed in Lithuania into a permanent 4,000-strong brigade, has been widely welcomed.

Privately, however, officers in the region express scepticism that such a deployment will happen soon, or even prove very effective. The massively destructive style of Russia's Ukraine invasion suggests that small states on its periphery need not just defence, but deterrence. "A reinforce-

ment strategy is helpful, but what we really need is a capacity to inflict strategic paralysis at depth," says an Estonian field commander. "My capability is only at 50km range. It's not enough—the Russians don't care how many men they lose, it can be 3:1 and they will still win."

Baltic officials warn against complacency on the part of NATO. "The Russians can take a lot of punishment and just wait, like the Taliban," says Marko Mihkelson, chair of the foreign-affairs committee in Estonia's parliament. Don't forget that Russia's aim was not Ukraine, but to alter Europe's security architecture, says a top Baltic diplomat. "They wanted to create a buffer between themselves and Europe, and that buffer would be us." ■

Sweden's economy

Europe's worst performer

STOCKHOLM

Can Sweden avoid a recession?

RESTAURANTS AND bars were teeming and hotels were fully booked in Stockholm in the week before *Midsommar* on June 24th, when Sweden celebrated the summer solstice. The Swedish capital did not give the impression of a country on the brink of a recession. The happy splashing out on wining and dining was doubtless related to the beautiful weather and catch-up consumption after the pandemic, but it is unlikely to last throughout the year. Many Swedish households are in dire financial straits thanks to an inflation-induced erosion of real wages not seen for 30 years. Forecasts are gloomy, with the European Commission predicting in May that Sweden would be the worst performer of all European economies in 2023, with a 0.5% contraction this year, though other forecasts are marginally less dire.

When the roof falls in

Sweden, house prices

% change on a year earlier



Sweden's economy runs on two tracks, says Danske Bank, a Copenhagen-based bank, which actually thinks the economy will grow slightly this year. Consumers and the housing market are dragging the economy down; but the business sector and the labour market are both proving more resilient. Retail sales fell by 11.6% in March compared with the same month last year, according to Statistics Sweden, owing to soaring inflation, which in May was at an annual rate of 9.7%. And as Sweden's central bank has raised interest rates, borrowing costs have increased, which in turn has caused a fall in house prices (see chart) that is faster than almost anywhere else in Europe. In the last quarter of 2022 they fell more than 10% year-on-year, according to Nordic Credit Rating, a Stockholm-based agency. Nordea Bank reckons they will drop by 20% from peak to trough.

The country's biggest landlord, Samhällsbyggnadsbolaget i Norden (SBB), is on the brink of bankruptcy as it struggles to refinance its debt. Its bonds are rated as junk by S&P and Fitch, two credit-rating agencies. Hedge funds are shorting the shares of several debt-laden Swedish real-estate groups, and SBB in particular. The firm recently replaced Ilija Batljan, its founder, as CEO and is considering all strategic options, including an outright sale.

The economy's second track is in better shape, as the business sector and employment are both holding up. Boosted by the weak krona, Swedish exports have grown strongly since the pandemic, and companies continue to invest in machinery, equipment and research. Construction is stable in spite of the slump in the housing market, because of the government's investment in infrastructure. The jobless rate at 7.9% is tolerable.

The worst finally seems to be over, with retail sales and consumer confidence indicating that consumption has bottomed out. House prices may stabilise. "But inflation is still very high and the krona is very weak," says Michael Grahn of Danske Bank. That's why Riksbank, the central bank, raised rates, for the seventh consecutive time, by 0.25% on June 29th to 3.75% and is expected to increase rates by another 0.25% in September.

Mr Grahn and most of his peers predict that Sweden will muddle through and is not heading for a replay of the very painful recession in the early 1990s when another property bubble burst. Niklas Wykman, the financial-markets minister, recently told journalists that the state has the tools to stop a property-market plunge from dragging down the entire country. Sweden's public finances are sound and its banks are, so far, stable and profitable. By the celebrations of *Midsommar* in 2024 Sweden is likely to be in better shape, if only slightly. ■

Charlemagne | The burning of the banlieues

France is not America, but it is not Britain or Germany either



IN 1995 A raw monochrome drama gripped cinema-goers and shook France. Mathieu Kassovitz's "La Haine" (Hatred), a stylised film about youth, masculinity, guns, friendship and police brutality, awakened the beautiful quarters of Paris to life in the angular high-rise *banlieues* that ring its cities. More recently Ladj Ly's "Les Misérables" calmly and forcefully exposed the anger and anguish among a younger generation of boys growing up in those peripheral estates. Successive French film-makers have put their finger on the rage that can at times set the *banlieues* ablaze. It happened in 2005. Now it has happened again. Yet after all these years France still seems at a loss to understand why.

A single shot fired by a traffic policeman on June 27th pierced the chest of a teenager at the wheel of a car, and set off a week of violence, arson and looting. In some ways it is simpler to say what this eruption was not about. Two previous waves of rioting under Emmanuel Macron, the French president, carried clear policy demands: one was a protest at an increase in the carbon tax on motor fuel (2018), the other at a rise in the pension age (2023). Anger was firmly focused on the president. Today's rioting was neither aimed at Mr Macron, nor politically organised.

The far left puts the violence down to wilful government neglect. France's *banlieues* concentrate poverty, ill-staffed schools and gang rule in remote city fringes: a grim realisation of life on society's periphery. Yet billions of public money has gone into renovating high-rise estates. Metro lines and tramways have been extended to city outskirts, apprenticeships expanded, primary-class sizes halved. Nanterre, where the 17-year-old, Nahel, was shot, is on a direct underground line to central Paris. There, by the Pablo Picasso estate where he grew up, on a street lined with the grey charred carcasses of torched and overturned cars, lies a post office and a public library; over the road, a sports ground and leafy park.

The far right blames the rioting on immigration and, said Marine Le Pen, a "problem of police authority". The rioters, so a statement by two right-wing police unions claimed, were nothing less than "savage hordes". No matter that Nahel was a French citizen, who grew up in France. Nor that less than one in ten of those arrested for violence or looting was foreign. Nor that their average age was 17. This was a French generation born after the riots of

2005, scarred by covid-19 lockdowns, and turbo-charged by TikTok and Snapchat. "The youngsters we are seeing are not praying to Allah, but to Nike," wrote Hakim El Karoui, an analyst.

What then was the rioting about? The people who live on the estates of Nanterre repeatedly bring up one complaint: not about jobs nor poverty, nor the mayor, nor Mr Macron, but the excessive use of force by the police, and the sense that residents are singled out for police checks. "Officers need to be trained so that, when there are police checks, they don't put the life of an under-aged boy in danger," said Souleymane. "I'm convinced that the police stop us because of how we look," added Khadija. Hamid was blunter: "The police are racist."

France does not like to think it has a policing problem, even as complaints about the disproportionate use of rubber bullets, tear gas and stun grenades pile up. Mercifully, there are far fewer fatal police shootings in France relative to its population than in America. The public prosecutor swiftly charged the policeman who shot Nahel with voluntary homicide. Yet police killings are still more common than in Britain or Germany. In 2022 there were 13 fatal shootings by traffic police, a record. Repression and hostility reinforce each other. The linked question of racial profiling is hard to demonstrate, as France bans ethnic statistics. But an official survey in 2017 suggested that four in five young men "perceived as Arab or black" had been stopped by the police in the previous five years; for the general population the share was below one in five.

In France, born of revolution, the blazing urban fire carries a symbolic echo. In 1871 the Communards burned down the palaces of Paris. *Pétroleuses*, or female arsonists, became notorious. But there is something about the weapon of choice for today's rioters—the torching of cars and public buildings—that is more of an unstructured howl of defiance, a self-destructive show of power against the forces of law and order. Self-destructive, because the victims were the owners of cars, users of buses and pupils of schools that were torched, who live in those neighbourhoods. Even drug-dealers noted that it was bad for business.

So far not so good

Mr Macron knows that further rioting cannot be prevented only by further repression. He is treading a fine line between expressions of empathy (the shooting of Nahel, he said, was "unforgivable") and of firmness (the violence, he added, was "unjustifiable"). Paradoxically, the president had just spent three days in Marseille, trying to improve life in rough neighbourhoods. Part of his original pitch for the presidency in 2017 was a promise that where you lived should not determine your life chances. A revival of this spirit, as well as a long hard look at policing, are urgently needed.

In the short run, the tragedy and drama of the past week have weakened Mr Macron, just at a moment when he had begun to recover from months of debilitating pension protests. Abroad, it forced him to cancel a state visit to Germany; a previous state visit, by King Charles III to France, was also cancelled due to (pension) riots. At home, Mr Macron's centrist minority government is already squeezed between extremes on the left and the right.

In the long run, the rioting is likely to polarise French politics even further. Above all, four years before a presidential election at which Mr Macron constitutionally cannot stand, it will reinforce Ms Le Pen. As the president tries to pick himself up once again, it is this prospect, as well as a credible response to the rioting, that ought to focus minds. As the famous opening narration of "La Haine" put it: "How you fall does not matter; it's how you land." ■



How to defend Europe

Shaping up and tooling up

BRUSSELS

NATO's new defence plans look set to be approved at a forthcoming summit

WHEN THE boxer Mike Tyson was asked ahead of a fight whether he was concerned about an opponent's plan, he was blunt: "Everybody has a plan 'til they get punched in the mouth." With NATO it has been the other way around. For 42 years the alliance prepared for conventional and nuclear war with the Soviet Union and its allies. In 1991 the Warsaw Pact fell apart and the plans fell into abeyance. Now Russia's invasion of Ukraine highlights the need for new strategies.

On July 11th and 12th leaders will gather in Vilnius, the capital of Lithuania, for NATO's annual summit. They are expected to approve the alliance's first comprehensive defence plans since the cold war. "It's the most dramatic change...since the fall of the Berlin Wall," says Matthew Van Wagenen, an American general in the Supreme Headquarters Allied Powers Europe (SHAPE). The question is whether the allies can live up to their ambition.

There is much to discuss in Vilnius. Jens Stoltenberg, the secretary-general of NATO, has just had his term extended for another year (the allies could not agree on a candidate to replace him). Ukraine wants an invitation to join the alliance after the war; in the meantime it expects detailed and substantial guarantees of long-term aid. A sticking-point will be Turkey's continuing veto of Sweden's accession to NATO. Another will be the alliance's relationship with Asia. The allies agree that China is having an ever-larger impact on European security—not least through its deepening relationship with Russia—but a row over whether to open a NATO office in Tokyo reveals splits over how to respond.

Despite all this, it is the planned overhaul of NATO's military machinery that is the most consequential item on the agenda. The architect of the defence reforms is Chris Cavoli, an American general who serves as Supreme Allied Commander

Europe (SACEUR). His job was first held by Dwight Eisenhower—whose globe still sits in General Cavoli's office in the Belgian city of Mons. General Cavoli, a Russian speaker educated at Princeton and Yale, is widely considered to be one of the most impressive officers of his generation. His plans run to 4,000 (classified) pages.

The centrepiece is a trio of regional plans: one for the north, covering the Atlantic and European Arctic; one for the centre, which addresses the Baltic and central Europe down to the Alps; and a southern plan for the Mediterranean and Black Sea. There are sub-plans for space, cyber operations and special forces. Russia, unsurprisingly, is the focus, but not exclusively so: the southern plan, on Turkey's insistence, splits its attention evenly between the threat from Russia and from terrorist groups.

The first and most important purpose of the documents is deterrence. "The key for NATO war plans has always been that Moscow knows there are NATO war plans," says Tim Sayle, a historian of the alliance at the University of Toronto.

That said, the plans also provide clear guidance for every armed force in Europe and North America about how to act should conflict erupt. "As a young sub-lieutenant, I knew precisely where my artillery battery was going to go—which ➤

► town," says General Darryl Williams, commander of the US Army in Europe, reflecting on his deployment to West Germany in 1983. "We look forward to a time here, very quickly, where we'll be able to get that kind of clarity again." Later this year, General Cavoli will allocate specific countries to specific roles or parts of the front. Battalions and brigades can get to know their patch in advance, whether that is a Norwegian island or a stretch of the Carpathians.

Mission accepted

Knowing one's task is not the same as being able to carry it out, of course. Another hope is that the plans will prompt reform and increase accountability. During the cold war SHAPE had a large staff that could continually test how ready national forces were for combat. This team dwindled but is growing once more: "SACEUR has now got a big stick to beat nations with," says a European official. At last year's NATO summit in Madrid the allies agreed they would collectively keep over 100,000 troops ready to deploy in less than ten days, and another 200,000 on a month's readiness—a far larger number of high-readiness troops than before. Just as important is that allies will now "declare" to General Cavoli which units are available at any time.

In recent weeks America, Germany and Britain have all practised how they could quickly scale up their battalion-sized deployments in Poland, Lithuania and Estonia into brigade-sized formations. Italy will probably soon run a similar test in Bulgaria. The aim of this is to assure the Baltic states, and to demonstrate to Russia, that these armies are agile enough to reinforce NATO's eastern front more quickly than Russia can mobilise for an attack. This month Germany, whose armed forces have been in poor shape over the past decade, went further. It promised that it would eventually station a whole brigade on Lithuanian soil—an unprecedented commitment. NATO exercises are also becoming more demanding: they are "more or less rehearsals", says one official. The largest in decades, Steadfast Jupiter, should take place later this year.

NATO's new plans will not only keep armies on their toes, but also set priorities for procurement and investment. Collective defence of the continent requires heavy weaponry: jets, tanks and artillery. But for years following the attacks on September 11th, 2001 the allies were fighting guerrilla wars in Afghanistan and Iraq that demanded somewhat different kinds of kit: mine-resistant vehicles, transport helicopters and light infantry. NATO did not impose any discipline on what its members purchased: "We have had no requirements on the nations that have really been enforced over the last 30 years," says General Van Wagener. The aim is now to bring de-

mand and supply into line again through a mechanism known as the "force structure requirement"—essentially, General Cavoli's list of what is needed if his military strategy is to work as it is intended to do.

A NATO bigwig points to five immediate priorities: combat-capable ground forces, particularly heavy armoured brigades; integrated air- and missile-defence systems capable of protecting units on the move; long-range firepower such as artillery and rocket launchers; digital networks that allow data to move around the battlefield and back to headquarters quickly and securely; and logistics to shunt large armies across Europe while keeping them adequately supplied.

This list largely reflects needs that have been identified while observing the war in Ukraine: old-fashioned artillery has inflicted the majority of casualties; manoeuvring without armour has proven extremely costly. The problem is that the majority of European armies fare woefully on most of these measures (notwithstanding pockets of excellence, such as Finland's artillery-rich army of conscripts).

A paper published by the International Institute for Strategic Studies (IISS), a think-tank in London, concludes that the number of combat battalions in some of NATO's largest armies barely changed between 2015 and 2023, despite the growing threat from Russia. France and Germany have each added one battalion's worth of forces, a piddling amount, and even Poland has added only two. Britain has lost five over that period. "Most...nations now

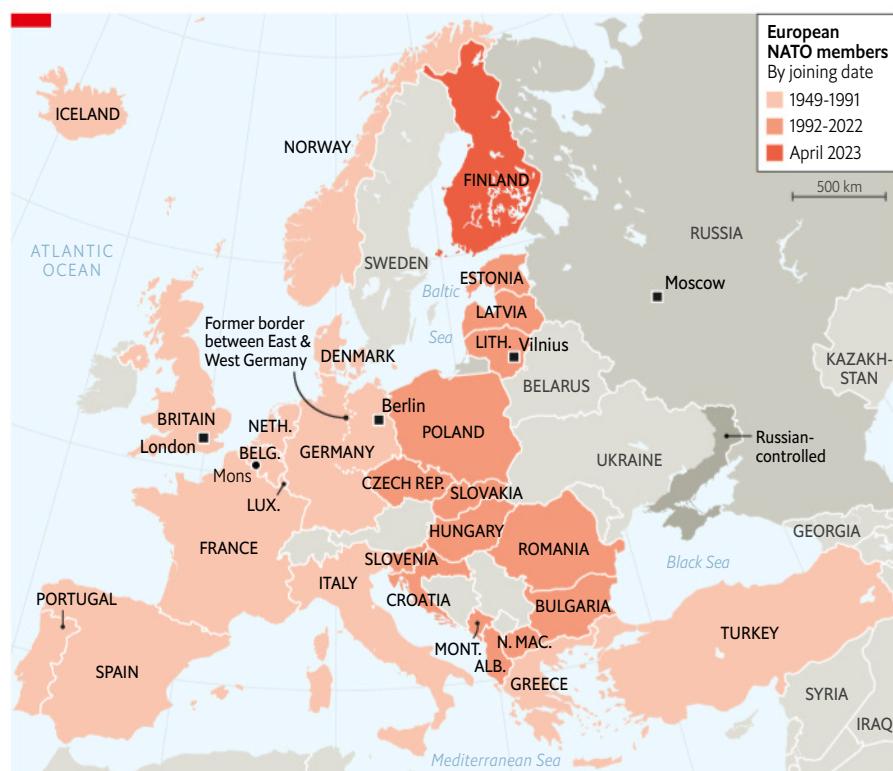
can only field one full-strength brigade," laments a senior NATO general—a number that would dismay any cold-war general transplanted to the present. The same is true of naval forces. Commodore Carsten Fjord-Larsen of the Danish navy laments that in 2002 his navy fielded 34 combat units. The figure is now down to five.

Ammunition holdings are a serious problem. Britain "has probably not got a sufficient stockpile for a heavy armoured brigade to fight an intense war", says Ben Barry, a retired brigadier now at the IISS and a co-author of the report. In private, British generals agree. Ukraine's offensive compounds the problem: every ten days that country is chewing through as many shells as America produces in a month. Countries are having to choose between keeping Ukraine solvent and maintaining their own reserves.

The right kit

There are also other holes. NATO has around ten corps headquarters but most are lacking in artillery, air-defence and helicopter brigades to support the divisions under their command, says Mr Barry. "The corps commander hasn't got any troops he can use to shape the deep battle."

Such calculations highlight Europe's dependency on America. The Pentagon puts others to shame by positioning 22 battalion-equivalents in Europe, mostly under V Corps in Poland. That is up from six in 2015; it is roughly the same number that Britain has in total. Will it last? "The inconvenient truth for Europe is that what's cur-►



rently in V Corps reflects a lot of reinforcement that took place last year," says Mr Barry. "But the overall direction of travel of us deployments is away from Europe towards the Indo-Pacific." If a crisis were to erupt in Taiwan, Europe could find itself rather worryingly exposed.

And yet the new plans also draw America and Europe closer in important ways. "Not many people really get this," says the NATO bigwig, "but America is coming back into the NATO planning system in a big way." For the past 20 years, he says, the United States European Command (EUCOM) in Stuttgart in Germany—America's military command for the continent—largely kept to itself, scribbling defence plans at a time when European armed forces were doing little detailed planning of their own. NATO's new plans are aligned with American thinking. In many ways they are products of it (General Cavoli is commander of both EUCOM and NATO). That suggests America is plugging back in—despite political jitters over the possible re-election of Donald Trump next year.

Broader reforms being carried out on NATO's command structure exemplify similar dynamics. SHAPE's very headquarters is being transformed, says General Van Wagenen: the second floor has been "gutted" to put in a new operations centre. A new land command to handle NATO operations north of the Alps could have been hosted by Poland or Germany, both of which were interested in the job; instead the US Army is taking on that task itself. The new command will be in General Williams' headquarters in Wiesbaden. Paradoxically, given fears of American abandonment, some Europeans fret that American generals are taking over. "Yes," retorts the bigwig, "they're taking the lead because they intend to fight here: that's quite good news if you're European."

Of maps and machinery

The new reforms are profoundly shaped by the way the alliance's membership has changed over the past 30 years. In 1989, before the fall of the Berlin Wall, NATO's border with the Warsaw Pact was essentially the inner-German border—1,380km in length, almost all of it heavily militarised—plus a small area in northern Norway. By 2004, when the Baltic states joined NATO, its border with Russia was only 800km long. But when Finland joined on April 4th this year, that more than doubled at a stroke (see map). General Cavoli's canvas stretches from the freezing cold of the Arctic to the baking heat of Anatolia.

In 1989 "everybody had fixed positions", says General Van Wagenen. Armies were larger, on both sides, and troops were packed densely along the front lines. Now smaller armies are stretched across a far larger front. "You have to have more agile



forces," says the general. "A new alert system aims to sharpen NATO's intelligence machinery, so that elements of its new plans can be activated swiftly in response to early signs of trouble, such as Russian troop movements.

Finland's accession brings new opportunities, too. Its highly professional and well-equipped army, which can mobilise huge numbers of conscripts quickly, is likely to drive up standards in the alliance, says one official. Its membership "tidies up that Nordic and Baltic geography very nicely," says another, with Russia's route out of the Gulf of Finland and into the Baltic Sea increasingly constrained by NATO states (more so if Sweden joins, too). "It poses far more challenges to Russia than to NATO," adds the official. In March American reconnaissance aircraft began flying over Finland, something that would have been outlandish 18 months ago.

If NATO has an ambitious agenda, the biggest question is how to afford it. "We are champions in announcing things," says a German NATO commander, "not in implementing." At a summit in Wales in 2014, following Russia's first invasion of Ukraine, allies promised to "move towards" the NATO target of spending 2% of GDP by 2024. Only three allies met the target then. Now seven do (see chart). Germany will get there next year, France in 2025. But most lag far behind. In Vilnius the allies are expected to set a new defence-investment pledge. The 2% target may become a floor, rather than a target. Eastern allies—such as Poland, which may spend a whopping 4% of its GDP on defence this year, and Estonia, which says it will get to 3%—are keen on this. But raising the target would only highlight the chasm that already exists between hopes and reality.

Ben Wallace, Britain's defence secretary, says that some countries "really don't

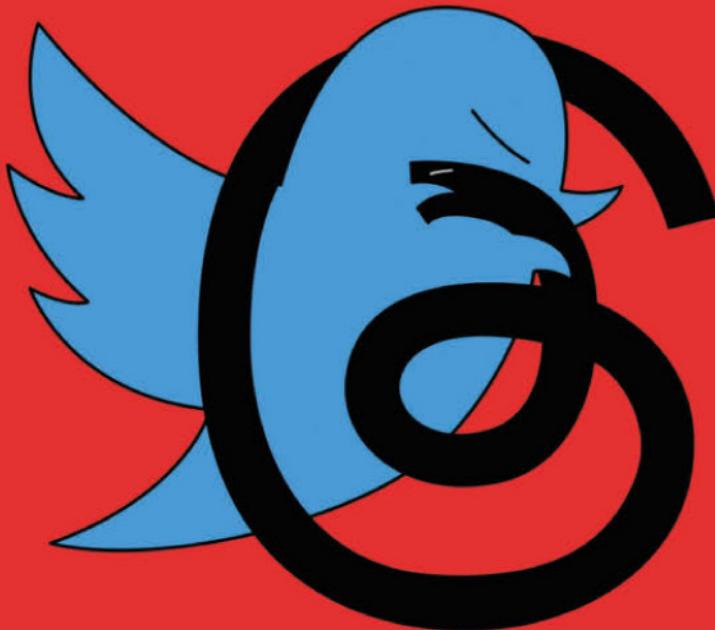
want to do 2%"—Canada is the largest example—and that others will peak at 2% without being able to sustain it. "There is some backsliding going on," he warns. "In real terms we [Europe] invest less in defence now than we did in 2021," complains Kusti Salm, the top civil servant in Estonia's defence ministry. NATO's new plans will give national army chiefs and defence ministers more leverage with finance ministers: failure to meet the spending target will no longer be just a source of embarrassment at each annual summit, liable to provoke a gentle dressing-down from Mr Stoltenberg, but may also leave a tangible hole in the continent's war plans. "It changes the entire discussion around defence spending," says Mr Sayle, "or at least it did in the cold war."

One catch is that Russia's invasion of Ukraine, while catalysing reforms, has also cast doubt on whether the threat it poses to NATO members is as great as was previously thought. Russia's armed forces have proved less capable than most experts and officials had expected. Its army has had perhaps 60,000 men killed, including many of the most professional men and officers. Huge amounts of equipment have been destroyed, including over 1,300 tanks. Some European generals reckon this takes the pressure off: they think it will take Russia a decade to reconstitute.

The bear and its wounds

General Cavoli frequently rebuts this idea. In April he told America's Congress that the Russian army, though "degenerated somewhat", was larger than at the outset of war. Russia's air force was largely intact, he said, with over 1,000 fighters and bombers, as was the navy. Russia's submarine force remains a particular concern. This is not simply an American view. Russia is developing "frightening underwater capabilities", warns a German naval officer, pointing to threats to undersea infrastructure such as pipelines and cables. "They are way ahead of NATO in this." An Estonian field commander notes that, at every level of command, "Russian officers are gaining experience we don't have."

NATO's own assessments suggest that Russia could rebuild its forces in as little as three to seven years. That is less time than it will take to recapitalise and re-equip Europe's hollowed-out armed forces; to rebuild defence industries capable of meeting wartime demand for shells and weapons; and to revive cold-war military skills such as river crossings and division-level command. Eastern allies are not inclined to assume that Russia will dally. And Ukraine's future is far from assured; its counter-offensive has so far proceeded more slowly than planned. "This month in 2023", says Mr Salm, "is the most decisive moment for our generation." ■



Elon Musk v Mark Zuckerberg

Social-media smackdown

With Threads, Meta hopes to capitalise on Twitter's travails

IN ONE CORNER is Mark Zuckerberg: 39 years old, five foot seven inches and, if his selfies are to be believed, a wizard at jiu-jitsu. In the other corner stands Elon Musk: 13 years older, six inches taller and considerably heavier, with a special move known as the walrus ("I just lie on top of my opponent & do nothing"). The two billionaires have agreed to a cage fight, with Mr Musk saying on June 29th that it might take place at the Roman Colosseum.

The rumble in Rome may not happen. Neither the Italian government nor Mr Musk's mother seems keen. But the new-media moguls are also limbering up for a more consequential fight. On July 5th Meta, Mr Zuckerberg's firm, added a new app to its social-media empire. Threads, a text-based network, looks a lot like Twitter, the app Mr Musk bought last October for \$44bn. An almighty social-media smackdown is about to begin.

Mr Musk's tenure at Twitter has been bruising for many parties. About 80% of the nearly 8,000 employees he inherited

have been laid off, to cut costs. Amid a glitchy service, users have started to drift away, believes eMarketer, a research firm (see chart on next page). The introduction on July 1st of a paywall, limiting the number of tweets that can be seen by those who do not cough up \$8 a month, may repel more. Advertisers have fled: Twitter's ad sales this year will be 28% lower than last, forecasts eMarketer. In May Fidelity, a financial-services firm, estimated that the company had lost about two-thirds of its value since Mr Musk agreed to buy it.

From this chaos, the clearest winner is Mr Zuckerberg. By 2021 his business had become synonymous with misinforma-

tion and bile. He then irked investors by using his all-powerful position at the firm to pour billions into the metaverse, an unproven passion project that looks years away from making money. On July 4th two years ago he drew ridicule after posting a video of himself vaingloriously surfing a hydrofoil holding an American flag. No one in Silicon Valley was more polarising.

Today Mr Musk's erratic handling of Twitter makes Mr Zuckerberg's stewardship of Meta look like a model of good corporate governance. And although Twitter's new freewheeling approach to content moderation has delighted some conservatives—including Ron DeSantis, governor of Florida, who launched his presidential bid in a glitch-filled live audio session on the app—liberals find it increasingly hard to stomach. Mr Musk remains more popular than Mr Zuckerberg among Americans (who also fancy his odds in the cage), according to polls from YouGov. But as the controversies at Twitter rumble on, and as politicians turn their fire on another social app, the Chinese-owned TikTok, Mr Zuckerberg's approval rating is now the highest it has been in over three years.

Meta eyes another, commercial victory. Various startups have tried to capitalise on Twitter's travails, with little success. Mastodon, a decentralised social network with a single employee, said that by November it had added more than 2m members since the Twitter deal closed. But people found it ➤

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fiddly; by June it had 61% fewer users than at its November peak, estimates Sensor Tower, another data firm. Truth Social, Donald Trump's conservative social network, has failed to gain traction, especially since Mr Musk steered Twitter rightwards. The latest pretender, Bluesky, faces the same struggle to achieve critical mass.

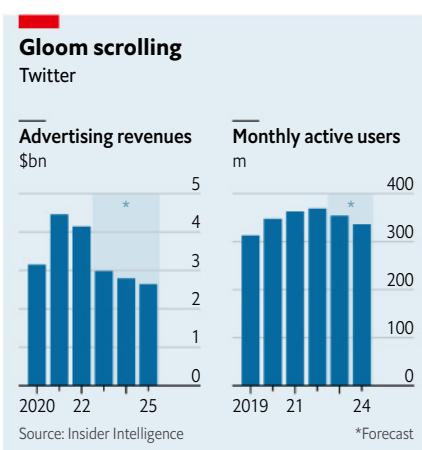
Meta's effort, Threads, has a better shot. Cloning rivals is what Meta does best. In 2016, as Snapchat's disappearing "stories" became popular, Mr Zuckerberg unveiled Instagram Stories, a similar product which helped to keep Instagram on top. Last year, as TikTok's short videos became a threat, Meta rolled out Reels, a near-identical format that lives within Instagram and Facebook. In April Mr Zuckerberg said Reels had helped to increase the time spent on Instagram by nearly a quarter.

Threads also has a head start. Unlike Reels, it is its own app. But it lets Instagrammers use their existing login details and follow all the same people with one click. Some 87% of Twitter users already use Instagram, according to DataReportal, a research firm; they now have a near-frictionless alternative to Twitter. Will they switch? For some, it may be enough to have a network that is "sanely run", as Meta's chief product officer put it recently. Mr Musk may have provided a shove to the others by announcing a payroll days before Threads' launch.

By Meta's standards, Twitter's business is tiny, with one-eighth as many users as Facebook, the world's largest social network. In 2021 Twitter's revenue was \$5.1bn, against Meta's \$116bn. And those meagre earnings bring big problems. Few platforms attract as many angry oddballs as Twitter. Lately Meta has shied away from promoting news, which brings political controversy and seems not to delight users. News is a big part of what Twitter does.

Why, then, does Mr Zuckerberg think Threads is worth the headache? One reason is advertising. Twitter has never made much money out of its users because it knows little about them. Between half and two-thirds of those who read tweets are not logged in, estimates Simon Kemp of DataReportal. Many registered users are "lurkers", who view others' feeds but seldom engage. Meta, which knows a lot about its users from its other apps, can hit them with well-targeted ads in Threads from day one. And the brand-focused adverts that work best on Twitter would complement the direct-response ads that Facebook and Instagram specialise in.

Meta's other possible motive relates to artificial intelligence (AI). Models behind human-sounding apps like ChatGPT place a premium on big troves of text. Online forums like Reddit are scrambling to monetise the billions of words that they hold. Mr Musk has said that Twitter's payroll is a re-



sponse to "EXTREME levels of data scraping" by AI firms. In setting up a text-based network alongside the visual feeds of Facebook and Instagram, Meta gets a source of rich language data. Threads is much more than an ad platform, says Mr Kemp. "Zuck is playing the AI content-feeding game." Whether Meta licensed the data to others or used it in its own AI projects, it would be a new growth story to tell investors.

Launching a social network is hard. Even with its 3.8bn existing users Meta has had its share of failures: Facebook Dating remains unloved and the company's gaming and shopping initiatives have yet to take off. But as Twitter bleeds users and advertisers, and as Mr Musk's management continues on its eccentric path, the opportunity is becoming bigger. Regardless of who prevails in the cage, Mr Zuckerberg may come away with the spoils. ■

The chip war

Full metal straitjacket

SHANGHAI

China brings out the big guns

IN THE TECH battle between America and China, the Western power has been more aggressive of late. Last year President Joe Biden's administration laid out harsh restrictions limiting Chinese artificial-intelligence (AI) companies' access to American technology. America has also been coaxing allies to follow its lead. On June 30th the Netherlands, under pressure from the White House, announced that it would restrict the sales of some chipmaking equipment to China: ASML, a Dutch maker of the world's most advanced lithography machines, will from now on sell Chinese customers only low-yield devices for etching cutting-edge chips. On July 4th the *Wall Street Journal* reported that the American

government may be preparing to curb Chinese use of American cloud-computing services, which enable Chinese AI firms to circumvent America's earlier sanctions by taking advantage of the cloud provider's high-end processors without owning chips of their own.

China's communist authorities had so far responded to this barrage of tuts with a single, relatively meagre tit: in May it barred some Chinese companies from using memory chips made by Micron, a company from Idaho. But on July 3rd it brought out a bigger gun, saying that it would impose export controls on gallium and germanium, two metals used in high-end semiconductors.

The new export controls will come into effect on August 1st. Unlike the Micron ban, which has little impact beyond one American chipmaker's top line, restrictions on the sale of chip metals could reverberate across the global chip industry. China supplies about 80% of the world's gallium and germanium. America may source as much as 50% of its germanium supply from China, according to Jefferies, an investment bank.

An all-out ban could disrupt the production of a wide range of existing products, including chips, screens, fibre-optic gear and solar panels. It may also stymie the development of next-generation technologies. Chipmakers hope gradually to replace the silicon used in most processors with gallium nitride or silicon carbide, both of which can handle higher voltages. Gallium and germanium may also be useful in electric vehicles, nuclear energy and other devices, including weapons.

The Chinese move comes at a delicate moment in Sino-American relations. Despite their respective tech manoeuvres, in recent months both sides have also been talking of stabilising relations. Janet Yellen, America's treasury secretary, was expected to arrive in Beijing for talks as we published this. The visit follows a meeting in Washington in May between China's and America's commerce secretaries, and a trip to China in late June by Antony Blinken, America's secretary of state, in which he briefly met Xi Jinping, China's leader, and other senior officials.

China hawks in Washington may argue that China's bite is weaker than its bark. Like some of the American restrictions, China's new rules would require exporters to seek government approval and export licences. The Chinese government may well grant these quite freely: after all, a total prohibition would hurt Chinese exporters, who sell a lot of germanium and gallium to American customers. But Mr Biden should make no mistake. China is showing that it will not roll over—and that it can strike back. Expect an increasingly evenly balanced tit-for-tat. ■

Clean energy

The long hydrogen sunrise

PORT ARTHUR AND PUERTOLLANO

Can a viable industry emerge from the hydrogen shakeout?

HYDROGEN IS THE most abundant element in the universe and a vast source of clean fuel. For investors, it is an equally rich source of hype. As parts of the world get a bit more serious about tackling climate change, hydrogen has emerged as a big part of global decarbonisation efforts. Over 1,000 hydrogen projects are under way worldwide, with more than 350 announced in the past year alone (see map on next page). They could result in some \$320bn-worth of investments by 2030.

Venture capitalists and buy-out barons poured nearly \$8bn into hydrogen ventures last year, up from just over \$2bn in 2020 (see chart 1). Public markets, too, are getting in on the action. On July 7th, after we published this, Thyssenkrupp Nucera, a pioneering maker of electrolyzers, giant machines used to strip hydrogen from oxygen in water, was expected to list in an initial public offering that could value the firm at nearly \$3bn. The IPO is backed by a Saudi sovereign-wealth fund and BNP Paribas, a French bank.

All this frenetic activity is prompting worries of an H₂ bubble akin to an earlier one in the 2000s, which ended in tears for the investors who had ploughed money into such projects. Signs of excess are certainly there. An index of listed hydrogen firms has underperformed America's S&P 500 blue-chip benchmark over the past year, while displaying a volatility worthy of the gas (see chart 2). ITM Power, a long-standing British electrolyser-maker, ousted its boss last September after repeatedly failing to meet promises for expansion. In October the founder of Nikola, an American startup developing hydrogen-powered

lorries, was convicted for misleading investors. Even prominent hydrogen boosters acknowledge that things have become frothy. Olivier Mussat, boss of Atome, a British firm planning to make fertiliser from hydrogen produced using excess hydroelectric power in Paraguay, worries that "a lot of people have been selling 'hopium'."

In fact, the problem with today's boom may be not that there is too much money chasing hydrogen but too little. Deep decarbonisation requires much bigger investments. The International Energy Agency, an official forecaster, reckons that clean hydrogen should comprise roughly a tenth of final energy use by 2050, up from a thimbleful today. To achieve net-zero carbon emissions by 2050, another \$380bn will need to be invested in hydrogen by the end of this decade, on top of the \$320bn announced so far.

H to grow

Happily for the planet, there are reasons to think that this investment cycle may be different, even if some investors get their fingers burned. Unlike 20 years ago, when the hype came from enthusiasm for cars fuelled by hydrogen, this time the focus is on emissions-intensive industries such as cement or long-haul transport, which are difficult to decarbonise by electrification alone. Governments, especially those elected by increasingly climate-conscious Western societies, are trying to help lift the industry into existence with generous subsidies. And market forces are blowing away some of the hydrogen froth without snuffing out the business as a whole. David Giordano of BlackRock, an asset manager with big hydrogen bets, says that the hydrogen business is ripe for "a useful correction".

The reason a clean-hydrogen industry is taking so long to get off the ground has to do with another aspect of the element's chemistry. Because it is highly reactive, it scarcely exists on Earth in its free state and is instead bound up in molecules with other elements, chiefly carbon (in natural gas and other hydrocarbons) and oxygen (in water). Extracting the stuff from those molecules requires energy and can itself emit carbon—either because stripping hydrogen from hydrocarbons leaves carbon behind or because hydrocarbons are burned to power the splitting process. Today huge quantities of dirty hydrogen are produced from natural gas, primarily

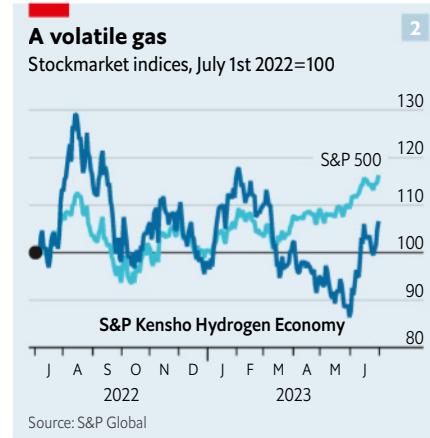
for use in making ammonia, a compound of hydrogen and nitrogen that is the main ingredient in artificial fertilisers.

To clean things up, any carbon released in making hydrogen from hydrocarbons would need to be mopped up and stored. If done right, with tight emissions controls, this "blue" hydrogen, as energy nerds call it, would dramatically reduce CO₂ emissions (though not eliminate them). The environmentally superior alternative is to crack water into hydrogen and oxygen using electricity that is carbon-free, from either renewable sources ("green" hydrogen, in the sector's colour-coded lingo) or nuclear power ("pink" hydrogen).

Cleaning things up is, though, costly—and getting more so as rising interest rates raise capital-intensive hydrogen projects' costs. The difficulties in sourcing critical minerals and other vital components have led many firms to fall behind on expanding capacity. Getting enough renewable power is another bottleneck. Benoît Potier, chairman of Air Liquide, a French industrial-gas giant, says his firm's planned 200 megawatt (MW) mega-project for making green hydrogen in Normandy is all set to go but cannot secure a large-enough power-purchase agreement for renewables (though a pink version may go ahead by tapping into France's plentiful nuclear power).

Bernd Heid, a hydrogen consultant at McKinsey, reckons that "optimism bias" had led promoters to issue over-enthusiastic production targets based on a cost of capital of 8-10%, which now looks rosy. Rising capital costs have prompted Mr Heid to revise the unsubsidised production costs for making hydrogen from renewables upwards by \$2 since last year, to between \$4.50 and \$7 per kilogram.

Still, if the industry is encouraged to grow rapidly, Mr Heid's fresh forecast predicts that a kilogram of blue or green hydrogen can be made for between \$2.50 and \$3.50 without subsidy by 2030 (see chart 3 on next page). That is beginning to look competitive with the stuff derived from natural gas, which is today made profitably ➤



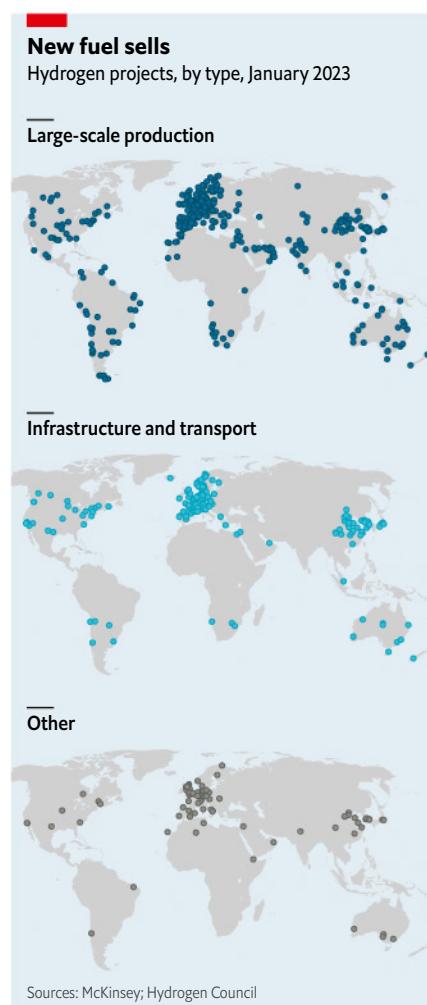
► at a cost of less than \$2 per kilogram—especially if governments get more serious about pricing carbon properly.

And rapid growth is a distinct possibility. Esben Hegnsholt of BCG, another consultancy, expects the manufacture of electrolyzers, fuel cells (which combine hydrogen and oxygen to produce electricity and water vapour) and other hydrogen-economy gear to mature quickly. Companies are finding ways around supply bottlenecks. America's Plug Power, an integrated firm that makes clean hydrogen, electrolyzers and fuel cells, has entered a partnership with Johnson Matthey, a British chemicals and green-tech firm with access to the rare metals required for hydrogen production in electrolyzers and for electricity production using fuel cells.

This is helping viable clean-hydrogen projects come on line. In Port Arthur, Texas, Air Products, another industrial-gas firm, is turning the previously dirty hydrogen used at a big refinery run by Valero into blue hydrogen, with the captured CO₂ fed into a pipeline for sale to industrial customers. In Puertollano, an hour by train from Madrid, Iberdrola, a Spanish energy giant, runs a 20MW electrolyser, one of the world's biggest machines of its kind, using power from its local solar farm. A fertiliser plant next door pays for the clean hydrogen, which replaces the dirtier kind it previously used to make ammonia. Accelera, the clean-energy division of America's Cummins, a maker of conventional engines, operates a 20MW renewables-powered hydrogen facility in Quebec. Amy Davis, Accelera's boss, reports that customers with net-zero commitments are willing to pay more for clean hydrogen.

Valero and Iberdrola are illustrative of the industry's newfound level-headedness. It is increasingly clear that hydrogen makes much more sense in some areas than others. RMI, an American think-tank, calculates the emission-reduction potential of low-carbon hydrogen in a variety of sectors and finds that electrification is a much better choice in passenger cars, which fuelled the brief hydrogen boom 20 years ago, or home heating. A review of 32 studies published in the journal *Joule* also found that heating homes with hydrogen is less efficient and more resource-intensive than using electrical heat pumps.

Instead, argues Martin Tengler of BloombergNEF, a research firm, the right place to start is by supplying clean hydrogen to sectors that already use dirty hydrogen today, such as in ammonia for fertiliser, methanol for the chemicals industry and oil refining. Perhaps 100m tonnes a year of it is made today from fossil fuels for this purpose. Next, it makes sense to promote hydrogen in areas where few decarbonisation alternatives exist, like steel-making, shipping and long-term energy



storage (where batteries' tendency to lose charge makes them less useful)—not least because deep-pocketed incumbents in those industries also bring talent, money and business skills that the hydrogen economy needs. In May Felipe Arbelaez of BP, an oil giant pushing into hydrogen, told the World Hydrogen Summit in Rotterdam that the sector's efforts should first go after industrial applications, which he

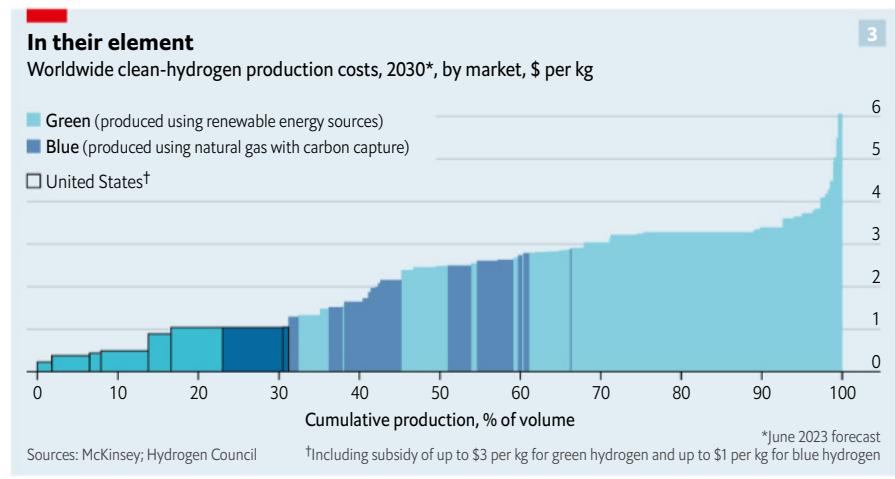
said were "much easier than, say, using hydrogen for heating homes".

This fresh realism comes against the backdrop of another positive trend. Hydrogen is receiving strong policy support in rich countries. Europe took an early lead in kick-starting the industry. The EU's latest climate package promotes the use of hydrogen in hard-to-decarbonise industries. Its plans to more than halve greenhouse-gas emissions by 2030 include ambitious targets for hydrogen produced using renewable energy.

America, for its part, is splurging billions of dollars on subsidies. President Joe Biden's administration is drawing up the final eligibility criteria for a handout of up to \$3 per kilogram for clean hydrogen. Combined with America's bountiful reserves of renewable energy and cheap natural gas, that means the country could become a low-carbon hydrogen production and export powerhouse. A handful of other countries with similar competitive advantages, from Australia and Norway to Chile and Saudi Arabia, are also promoting the industry. In March Air Products and ACWA Power, a Saudi utility, finalised an \$8.5bn deal for a mega-project in Saudi Arabia to make hydrogen-related fuels.

Slowly but unsurely

A lot of things still have to go right for the hydrogen business to live up to its perennial potential. European industry bosses already grumble that the new EU rules are too cumbersome and too hung up on green hydrogen. If written too strictly, the upcoming American eligibility criteria could throttle investment and, worries Andy Marsh, Plug Power's chief executive, hinder the hydrogen industry for years. If handed out too freely, meanwhile, for example by allowing unlimited amounts of fossil-intensive grid electricity to power electrolyzers, subsidies could do more harm than good. Analysis from Princeton University suggests that hydrogen made from water with dirty power could gener-



► ate more greenhouse gases than hydrogen made directly from fossil fuels.

If the policymakers and investors are not careful, billions of dollars may yet end up in dead-end applications. Despite a recent turn to electric vehicles, Toyota has not pulled the plug on passenger cars equipped with hydrogen fuel cells, which look unlikely to be competitive with battery-powered wheels. Siemens Energy, a German engineering giant, plans to start making electrolyzers at a big new factory in Berlin soon but for now workers are still mostly assembling conventional turbines

capable of being modified to burn hydrogen instead of natural gas. The domestic gas industry has persuaded the British government to encourage trials of hydrogen for home heating, prompting one lobbyist to crow: "Christmas has arrived early, hydrogen friends!" Money spent on dubious applications leaves less for the vital ones in genuine need of support. A leading hydrogen advocate in Washington whispers: "It really makes me nervous that business models that don't serve a greater purpose may get funding and win out."

Karim Amin of Siemens Energy defends

his firm's strategy of selling hydrogen-burning turbines as a useful step in the transition to cleaner energy. But he accepts that "of course there are better ways of using hydrogen than burning it in a gas turbine". Policymakers, too, are displaying a welcome dose of realism. After a recent u-turn, for instance, the German government will now allow imports by pipeline of blue hydrogen made from natural gas in Norway. "This is a real dawn for hydrogen," sums up Mr Hegnsholt of BCG, hopefully—even if, "like the sunrise, it will take longer than people think." ■

Bartleby Achilles goes to the office

How white-collar warriors gear up for the day

"THE ILIAD" is a story of glory and gods, revenge and mercy, death and immortality. Squint hard enough and it is also a workplace saga. The epic kicks off with a big row between a pair of co-workers called Agamemnon and Achilles. The gods are the senior leadership team, descending from on high to cause complete chaos. For most of the book Achilles, a prototype of the talented jerk, is on strike. This is a big problem for the Greek management team, who have lost their best performer. A delegation from HR fails to win Achilles over. Eventually, however, he returns to the office, and all is well (Trojans may disagree).

The parallels between the 21st-century workplace and "The Iliad" are admittedly inexact. There are fewer swords and spears glinting in the rosy-fingered dawn today; there is a bit less brain matter on the floor. But to see the modern connections to Homer's epic, look at Achilles's preparations to go back to work.

"Now I shall arm myself for war," he says in Book 19. The arming of Achilles is the forebear of gearing-up scenes ever since, from Chaucer to Rambo. But it also has echoes of current daily rituals. Achilles puts on bronze greaves and shining breastplates; employees choose clothes that they don't wear at the weekend. Achilles puts on his golden-plumed helmet; commuters don their Bose headphones. The Homeric hero takes up a shield forged by Hephaestus, the god of fire. The office worker stuffs a laptop and charger into a rucksack.

Most of this white-collar arming takes place inside the home, but not all. It also happens en route to the battlefield, as compact bags emerge and make-up is applied on the Tube. Sometimes the transformation takes place in the office itself. Trainers are swapped for heels. Lycra-

clad colleagues disappear from view and emerge in something less off-putting.

Battle may be close but it does not arrive instantly, whether you are the king of the Myrmidons or Barry from accounts. Both have thresholds to cross before the real action begins. In Homer's epic, Achilles has been sitting out the war in an encampment; his appearance on the seashore is when the Greeks learn that he is going to rejoin the fray. There is a feast before the fighting starts (Achilles refuses to eat; perhaps there wasn't a vegan option). Once armed, he gets on his chariot and goes to the front "resplendent as the sun-god Hyperion".

For remote workers the gap between their personal and professional lives may be narrow: the walk from the fridge to the living room (and back again, and back again). That is a problem. Entering the workplace means putting on a different persona as well as different clothes—you, but with added self-control. The transition is easier to make when there are clear boundaries separating home and work.

Office-goers have many more thresh-

olds to cross. They emerge onto the street in the morning and make the journey towards their desks. They enter a café for their morning coffee; carrying a cup and walking briskly is the simplest way to let fellow citizens know you are gainfully employed. At some point they will have their first encounter with a fellow employee. If they are very unfortunate, this meeting will occur at the start of the commute and involve excruciating small talk on public transport for 40 minutes. Normally, it will just mean that the office is close.

Workers must then make their entry into the office itself. There are security guards to greet, passes to swipe and lift buttons to press. Visitors to the office will participate in an extra arming scene at this point, in which they sign their names illegibly into a register and are given a lanyard. Hyperion, indeed.

The moment for action is now imminent. Outside the walls of Troy, Achilles springs forward like "a fierce lion"; a cycle of carnage begins that will end with the death of Hector. The white-collar worker must make final preparations for the day ahead, too. The rucksack comes off, and the computer switches on. The salaried hero springs forward, jaws foaming, to take a last bite of croissant; crumbs fleck the keyboard and the carpet. The password is entered, the loading wheel spins, the heart rate remains exactly the same. It's time.

Homer would never have made a name for himself with an office-based epic: death and glory guarantee a more dramatic narrative than email and meetings. But when you put on your work clothes, change into your professional self and pitilessly strike your first key, you are more than just a foot-soldier. You are a tiny Achilles.



Schumpeter | A Lego-lover's guide to AI

How to transform companies, brick by pixel, for the digital age



IN LONDON'S DESIGN MUSEUM, an exhibition currently on display by Ai Weiwei, a Chinese artist, includes a 15-metre-long work called "Water Lilies #1" based on the triptych by Claude Monet. Look closely and it is made of 650,000 Lego bricks—which integrates Monet's impressionism into what Mr Ai calls a "digitised and pixelated language". That is a good analogy for Lego itself. The Danish toymaker is on a long-term mission to digitise and pixelate its own fount of human creativity: the plastic brick.

Three digital experts from McKinsey, a management consultancy, profile Lego's transformation as part of their new book, "Rewired", which outlines the dos and don'ts for businesses rebuilding themselves for the age of digitisation. Beware: the language of digital transformation is treachery to common English. It sounds more like corporate yoga than a marathon of software development. Executives need to be aligned. Teams are pods. Be agile. Define your downward-facing domains. McKinsey, drawing lessons from 200 firms, provides clarity despite the mumbo jumbo. But to make it easier on the ear, Schumpeter will use Lego as a guide to help illustrate some of McKinsey's insights. Call it the yellow-brick road to generative artificial intelligence (AI).

First, it is a long hard road, littered with failures. Lego is a rare success story. Its journey started in 2003 with a near-death experience when, amid the rise of video-gaming, it panicked and went on a madcap innovation spree that almost bankrupted it. To fix one of the main problems, chaos in the supply chain, it introduced a single enterprise-software system globally. The system survives to this day, scaling up as Lego expands into new markets, such as China, new formats, such as e-commerce, and new factory locations, such as America and Vietnam. To prepare for a world of pixelated play, Lego launched digital games on the "Star Wars" theme and developed franchises of its own, such as Ninjago and Chima, with video games, films and TV shows that turned into hits.

In 2019 Lego launched a new five-year transformation drive aimed at adapting to a world of direct-to-consumer sales, online versus big-box retailing, and digital play in the screen age. The timing was inspired. It started shortly before the world went into lockdown as a result of the covid-19 pandemic, when having a digital strategy became a matter of life and death. It quickly produced

results. Although it is hard to strip out the exact contribution of digitisation, since 2018 Lego's sales have almost doubled, to more than \$9bn, outpacing those of Mattel and Hasbro, its main rivals. In 2022 visits to its online portal rose by 38%. It has teamed up with Epic, a video-gaming firm, to explore the metaverse.

Yet the journey is still a hard one. The difficulties include moving from a system where success is measured by sales store-by-store to one judged by how good the company is at selling online across the globe, how it is ranked on Google and Amazon, and how effective its software is. The McKinsey authors emphasise such challenges on the first page. In a recent McKinsey survey, they say, about 90% of companies had some kind of digital strategy, but they captured less than a third of the revenue gains they had anticipated. Moreover, the success rate is more uneven within industries than it is between them. The best retailer may be more digitally productive than an average high-tech firm, and the worst retailer may be as bad as the worst government entity.

To make a success of it requires learning the second lesson: what McKinsey calls having a top-down strategy and a road map (or in Lego terms, a clear instruction manual). For Lego, it helped that the family-owned business had long had a command-and-control approach to management. Its digital strategy involved a single plan, created by a 100-strong executive team and approved by the board, that encompassed the whole organisation. McKinsey notes that when transformations stall, it is often because executives talk past each other, have pet projects, spread investments too thin or have "more pilots than there are on an aircraft-carrier", as Rodney Zemmel, one of the authors, puts it. It also needs to be ambitious enough to generate momentum, with financial results measured constantly. McKinsey's rule of thumb is that a digital transformation should aim to increase earnings before interest, tax, depreciation and amortisation by 20% or more.

Third comes the question of whether to build a new digital infrastructure or buy it. The answer is mostly to build. Rather like Lego's eight-studded bricks—six of which can be combined 915m ways—there are many software applications on the market that can be combined to create proprietary systems. But the job of orchestrating them should not be outsourced. Take Lego: it started its latest digital transformation with engineers making up less than 30% of staff. Since then it has increased the number of systems and software engineers by 150%. Mr Zemmel notes that five years ago, the trend was to hire from Silicon Valley. That was "a good way to change the company dress code, but not a great way to change the company culture". Since then more companies have been retraining their existing tech workers and embedding them throughout the organisations in more front-line roles.

The gen-AI Weiwei way

Some of these lessons apply to generative AI. Mr Zemmel says it is relatively easy to launch pilots with the technology, such as the humanlike ChatGPT. The problem is embedding the AI models across the organisation in a safe, unbiased way. It needs a top-down strategy. As for building or buying, Mr Zemmel says it may be a "waste of time" to build proprietary models when the software industry is doing that anyway. The key is to work in-house on the things that give you a decisive advantage in the market. For Lego, AI is still in the future, though some of its brick enthusiasts are already using ChatGPT-like programs to come up with new ways of building things. Mostly they fail, but one day anyone may be able to create a Monet. The yellow-brick road is unending. ■



World economy

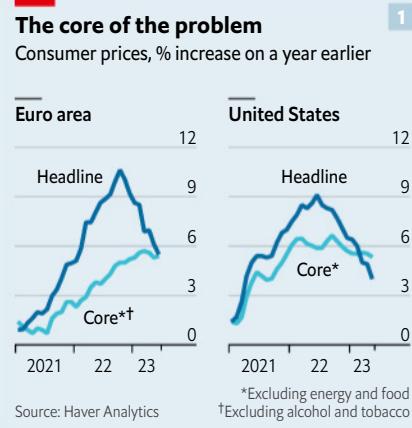
Inflation wars

Economists furiously debate the causes of rising prices—and how to quell them

FOR AS LONG as inflation has been high economists have fought about where it came from and what must be done to bring it down. Since central bankers have raised interest rates and headline inflation is falling, this debate may seem increasingly academic. In fact, it is increasingly important. Inflation is falling mostly because energy prices are down, a trend that will not last for ever. Underlying or “core” inflation is more stubborn (see chart 1). History suggests that even a small amount of sticky underlying inflation is hard to dislodge.

So the chiefs of the world’s most important central banks are now warning that their job is far from done. “Getting inflation back down to 2% has a long way to go,” said Jerome Powell, chairman of the Federal Reserve, on June 29th. “We cannot waver, and we cannot declare victory,” Christine Lagarde, president of the European Central Bank, told a meeting of policymakers in Portugal just two days earlier. Andrew Bailey, governor of the Bank of England, recently said that interest rates will probably stay higher than markets expect.

This means that there will be no let-up in the economists’ wars. The first front is partly ideological, and concerns who should shoulder the blame for rising prices. An unconventional but popular theory suggests greedy firms are at fault. This idea first emerged in America in mid-2021, when profit margins for non-financial



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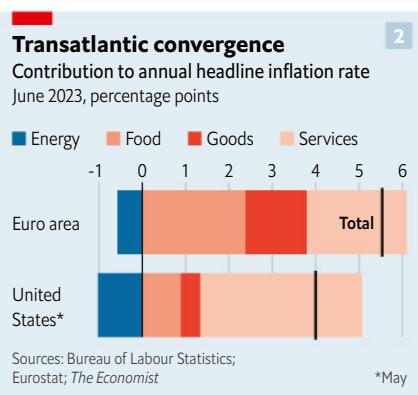
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companies were unusually strong and inflation was taking off. It is now gaining a second wind, propelled by the IMF, which recently found that rising profits “account for almost half the increase” in euro-zone inflation over the past two years. Ms Lagarde appears to be entertaining the thesis, too, telling the European Parliament that “certain sectors” had “taken advantage” of the economic turmoil, and that “it’s important that competition authorities could actually look at those behaviours.”

Greedflation is a comforting idea for left-leaning types who feel that blame for inflation is too often pinned on workers. Yet it would be strange to think firms suddenly became greedier, making prices accelerate. Inflation is caused by demand exceeding supply—something that offers plentiful profit opportunities. The greedflation thesis thus “muddles inflation’s symptoms with its cause”, according to Neil Shearing of Capital Economics, a consultancy. Wages have tended to play catch-up with prices, not vice versa, because, as the IMF’s economists note, “wages are slower than prices to react to shocks”. That is a crucial lesson from today’s inflationary episode for those who always view economic stimulus as being pro-worker.

The second front in the inflation wars concerns geography. America’s inflation was at first more home-grown than the euro zone’s. Uncle Sam spent 26% of GDP on fiscal stimulus during covid-19, compared with 8-15% in Europe’s big economies. And ➤



▶ Europe faced a worse energy shock than America after Russia invaded Ukraine, both because of its dependence on Russian natural gas and the greater share of income that is spent on energy. A recent paper by Pierre-Olivier Gourinchas, chief economist at the IMF, and colleagues attributes just 6% of the euro zone's underlying inflation surge to economic overheating, compared with 80% of America's.

This implies that Europe can get away with looser policy. The 3% of GDP of extra fiscal stimulus the euro zone has recently unleashed by subsidising energy bills, the authors find, has not contributed to overheating, and by reducing measured energy prices may even have stopped an inflationary mindset from taking hold. (The authors caution that things might have been different had energy prices not fallen, reducing the subsidy.) Interest rates are lower in Europe, too. Financial markets expect them to peak at around 4% in the euro zone, compared with 5.5% in America.

Despite all this, inflation problems on each side of the Atlantic actually seem to be becoming more alike over time. In both places, inflation is increasingly driven by the price of local services, rather than food and energy (see chart 2). The pattern suggests that price rises in both places are being driven by strong domestic spending. Calculated on a comparable basis, core inflation is higher in the euro zone. So is wage growth. According to trackers produced by Goldman Sachs, a bank, wages are growing at an annualised pace of 4-4.5% in America, and nearly 5.5% in the euro area.

Hence the importance of a final front: the labour market. Even if profit margins fall, central banks cannot hit their 2% inflation targets on a sustained basis without the demand for and supply of workers coming into better balance. Last year economists debated whether in America this required a higher unemployment rate. Chris Waller of the Fed said no: it was plausible job vacancies, which had been unusually high, could fall instead. Olivier Blanchard, Alex Domash and Lawrence Summers were more pessimistic. In past economic cycles, they pointed out, vacancies fell only as un-

employment rose. Since then Mr Waller's vision has in part materialised. Vacancies have fallen enough that, according to Goldman, the rebalancing of the labour market is three-quarters complete. Unemployment remains remarkably low, at 3.7%.

Yet the process seems to have stalled of late (fresh data were due to be released as we published this article). Mr Blanchard and Ben Bernanke, a former Fed chairman, recently estimated that, given the most recent relationship between vacancies and joblessness, getting inflation to the Fed's target would require the unemployment rate to exceed 4.3% for "a period of time". Luca Gagliardone and Mark Gertler, two economists, reckon that unemployment might rise to 5.5% in 2024, resulting in inflation dropping to 3% in a year and then falling towards 2% "at a very slow pace".

Rises in unemployment of such a size are not enormous, but in the past have typically been associated with recessions. Meanwhile, in the euro zone, vacancies have not been particularly elevated relative to unemployment, making the route to a painless disinflation even more difficult to foresee. It is this front of the inflation wars which is most finely poised—and where the stakes are highest. ■

Hikelandia revisited

After the summit

The world's most dogged central bankers are finally seeing success

OVER THE past year we have examined the economic fortunes of Hikelandia. In this group of eight countries—Brazil, Chile, Hungary, New Zealand, Norway, Peru, Poland and South Korea—central banks have fought inflation with unparalleled aggression. Hikelandia started raising interest rates a whole year before America's Fed-



eral Reserve, putting it well ahead of the curve. Since then its average policy rate has risen by more than seven percentage points, compared with around five for the Fed. Yet for months Hikelandia's central bankers had little joy: inflation kept rising.

Now, at long last, that is changing. Although Hikelandia's "core" inflation, a measure that strips out volatile prices such as for food and energy, is still too high, at around 9% year on year, it is on the way down, in part because higher rates are starting to bite (see chart). Hikelandia's experience offers a glimmer of hope for other inflation-fighting central banks.

Wage inflation is moderating across the land. In Chile, for example, pay growth is down a little from the outrageously high 11% year-on-year rate reached in January. This, in turn, is helping cut measures of inflationary pressure. In October South Korea's inflation rate in the labour-intensive service sector was 4.2% year on year; it has since fallen to 3.3%. Poland's has slipped from 13.4% in December to 12.3%.

Inflation expectations are also dropping, influenced by falling energy and food prices. The average Brazilian expects inflation of 4% over the next year, down from 6% for much of 2022. Kiwis reckon inflation in five years' time will be around 1%, half their forecast in December.

Norway is the only member of Hikelandia that seems to be making no progress. In May core prices unexpectedly rose by 6.7% year on year, a new high. A weaker krone is raising the cost of imports. Strong domestic demand is playing a role, too. In June the central bank surprised markets in an attempt to cool things down, raising the policy rate by 0.5 percentage points.

Outside Oslo, the mood music in Hikelandia's central banks has changed. Officials are still talking tough, of course. South Korea's rate-setters insist that they will maintain hawkish policy for a "considerable time". Brazil's monetary-policy committee worries about "a larger or more persistent de-anchoring of long-term inflation expectations". Yet this hides the fact that Hikelandia's central banks have largely stopped raising rates. Chile's bank believes inflationary risks "have been balancing out". Hungary's rate-setters expect that "disinflation will continue to accelerate".

Success has come at a cost, though. In 2021 the world economy and Hikelandia grew at the same speed. Now, global growth is 2.5% at an annualised rate, and Hikelandia is stagnating. The unemployment rate has risen by close to a percentage point from a recent low in Chile, and is inching up in Brazil and New Zealand. At least for a while, Hikelandia's policymakers will probably see a slower economy as a price worth paying. Inflation will have to fall an awfully long way before we start calling these countries "Cutlandia". ■



Commodity prices

Copper comes a cropper

The king of green-transition metals is unexpectedly getting cheaper

IN LATE JUNE Robert Friedland, the bombastic boss of Ivanhoe, a Canadian miner, warned that the world was running the risk of a "train wreck", when a crunch in copper supply would derail the energy transition. The metal is used in everything from wiring to wind turbines—and green mandates in America, Asia and Europe will soon demand many more of these. The price of copper, Mr Friedland suggested, could jump ten-fold in response.

Right now, however, the train is not so much derailed as chugging along happily. Having peaked at \$10,700 a tonne in March last year, copper prices at the London Metal Exchange have dropped by around 10% since January, to \$8,300 a tonne. Spot prices remain on par with or higher than those

for delivery in three months, suggesting that investors do not expect them to bounce back soon. What is going on?

Because of its range of uses, which include construction, electronics and weaponry, copper prices indicate the health of the global economy, earning the metal the nickname "Dr Copper". Worries about the economy may therefore be making investors gloomy about copper's prospects. The post-covid rebound in China, which consumes as much as 55% of global supply, is already fading. Growth is also flagging in the West as rising interest rates bite.

Yet the lack-of-demand story does not fully explain the price fall. Despite the country's construction slump, China is using 5% more copper this year than last,

possibly because the metal—used to form cladding, pipes and roofs—tends to track building completions, which have held up, rather than housing starts. A 7% jump in the making of cooling units in anticipation of a hot summer also supports demand.

If copper markets are decidedly cool, then, it is also because supply has risen. Over the winter a series of disruptions—from protests in Peru to floods in Indonesia—dented global production. Now these problems are easing. As a result, smelters are feeling confident enough to charge miners higher fees, indicating no shortage of raw materials (see chart 1).

At the same time, financial investors are snubbing copper. As interest rates rise, they prefer to hold cash-generating assets rather than commodities, which yield nothing. For much of this year "non-commercial" net positioning on copper-futures markets has been in the red, implying that more investors are betting prices will fall than recover (see chart 2). Yet today's prices remain \$2,500 a tonne above production costs at the marginal mine, notes Robert Edwards of CRU, a consultancy. This implies that the recent correction has taken froth out of the market, rather than pushed prices too low, suggesting they could stay subdued for a while.

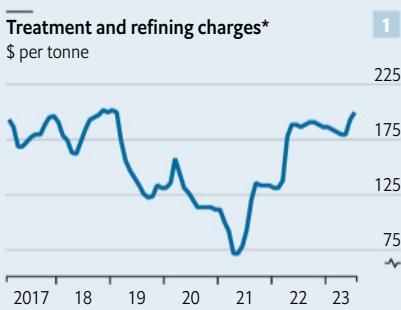
As the energy transition speeds up, it should give a jolt to demand. Sales of electric vehicles (EVs), which are already rising, are expected to ramp up significantly in the coming years, and each unit contains three to four times more copper than its petrol-powered peer. Even in a scenario where the transition happens slowly, the International Energy Agency (IEA), an official forecaster, estimates that copper demand from green uses, propelled by the EV boom and undersea cabling for wind farms, will nearly double by 2040.

Supply may struggle to keep up. The average age of the world's ten biggest mines is 64, which is forcing miners to dig deep for ores of ever lower quality, making each new tonne of refined copper costlier to produce. New mines are scarce. Assuming all certain and probable projects go ahead, McKinsey, a consultancy, forecasts that supply will hit 30m tonnes by 2031, 7m tonnes short of estimated demand.

A severe crunch like that envisioned by Mr Friedland could still be avoided. Most forecasting models, including the IEA's, expect copper demand outside clean-energy uses to remain stable. Tom Price and Ben Davis of Liberum Capital, an investment bank, reckon this is unlikely, because China's long building boom has probably ended. Pricey copper will also prompt substitution: some EVs already use aluminium wiring. And McKinsey points out that new tech—if it achieves its potential—could close much of the supply gap this decade. There is time to avoid a train wreck. ■

In the red

United States, copper



Sources: Asian Metal; Bloomberg; Liberum



Personal finance

Party cooler

HONG KONG

Being a Chinese communist is not as good for your portfolio as it used to be

CHINA'S COMMUNISTS see themselves as a "vanguard party", full of dedicated social warriors. Less than 9% of the country's adult population are members, according to figures released on June 30th. Gaining entry can take years. Even Xi Jinping, the party's boss, was not admitted until his tenth attempt. Aspiring members are often made to attend ideology classes, take written tests, submit "thought reports", demonstrate their worthiness through community service and survive an interview by a panel of members. Is it worth the bother?

The answer might seem obvious. "Virtually every influential position in China is held by a party member," as Bruce Dickson of George Washington University has noted. Leaks like the Panama papers have revealed the offshore riches accumulated by the families of party leaders. And Chinese social media will occasionally erupt over indiscreet displays of wealth or privilege by members, like the boss of a PetroChina subsidiary, spotted strolling through a Chengdu shopping district in June holding hands with a fashionable younger employee who was not his wife. Yet changes in the party and the economy may be eroding the material benefits of membership.

Party members can be found at every rung of the economic ladder. Of the poorest tenth of Chinese households, about 14% contain a party member, according to the China Household Finance Survey by Southwestern University of Finance and Economics. A third of members are farmers and workers (down from two-thirds in 1994). Since becoming head of the party in 2012, Mr Xi has urged cadres to adhere to a less hedonistic lifestyle. "Incorruptibility

is a blessing and greed is a curse," he advised in a recent speech.

In work published in 2019, Plamen Nikolov of Binghamton University and co-authors calculate a 20% wage premium for members over similar workers. One reason, according to other research, may be that card-carrying communists are more likely to get jobs in state-owned enterprises (SOEs) and official institutions. Figures released in May show urban SOEs last year paid 89% more than private firms in cities. This gap has grown during Mr Xi's reign.

But as any well-trained communist knows, true economic clout derives not from labour but capital. So how does party membership affect the assets people own, such as their stocks, bonds and property?

Recent research by Matteo Targa of DIW Berlin and Li Yang of the Paris School of Economics reaches a surprising conclusion. The two economists look at the urban wealth distribution, as documented by the China Household Finance Survey. In each wealth bracket, some fraction of households include party members. If the fraction were to increase by one percentage point, what would happen to that bracket's wealth? Messrs Targa and Li calculate that at the lower rungs of the wealth distribution, party membership makes a substantial difference. At the tenth percentile, for example, a one-percentage-point increase in party-membership rates would increase wealth by almost 0.9% (see chart). But the higher up you go, the weaker the financial rewards seemingly offered by membership. For households at the 93rd percentile and beyond, party membership makes no discernible difference at all.

One reason for this divergence is property. Among the middle and upper echelons of Chinese society, almost everybody now owns a flat, whether they are a member of the party or not. And so everyone in these wealth brackets has benefited from the long real-estate boom that ended in 2021. Home ownership is, unsurprisingly, patchier among people on the lower rungs of the ladder. For these households, party membership may be a decisive factor governing whether or not they own a flat.

In the five years since the household-finance survey was carried out, home-ownership rates in China have risen further. House prices have also recently fallen in cities, narrowing the gap between the propertied classes and everyone else. Both of these trends probably mean that becoming a communist confers less of a material benefit than it did five years ago, let alone 20 years back. Thanks to these economic forces, Mr Xi may get the more ascetic cadres for which he has been looking. His purges and rectification campaigns have abolished some of the perks of party membership. His mishandling of China's property market may have helped, too. ■

Investment banking

Smaller apple

NEW YORK

Wall Street unwinds its hiring binge

IT IS EASY now to point to phenomena that were features of the zero-interest-rate age. Ape JPEGs selling for millions of dollars; algorithms pricing and buying homes; 20-something tech workers making "day in the life" TikToks that consisted entirely of them making snacks. Record-breaking profits at investment banks appear to be another relic of the golden age. Workers hired to meet roaring demand have been left twiddling their thumbs. Now they are being shown the door.

Ahead of releasing their second-quarter earnings, institutions on Wall Street are trimming staff. Goldman Sachs culled 3,200 in the first quarter; on May 30th reports suggested the bank was letting go of another 250—this time mostly from among senior ranks. Morgan Stanley fired 3,000 or so in the second quarter. Bank of America has cut 4,000 and Citigroup 5,000. Lay-offs are also plaguing less glamorous bits of finance. Accenture and KPMG have both swung the axe.

This matters not only for the poor souls handed their belongings in a cardboard box, but for the city of New York. Just as tech lay-offs have hurt San Francisco, so finance lay-offs will hurt the Big Apple. According to Enrico Moretti, an economist at the University of California, Berkeley, each of the "knowledge jobs" that make cities like New York and San Francisco successful in turn supports another five service roles—some high-paying (like lawyers), others less so (like baristas). Even if there are not additional firings, Wall Street's retrenchment will take a toll. According to New York's state comptroller, the average bonus pool shrank by one-fifth in the last

The poor get richer

China, change in household wealth caused by a one %-point increase in the CCP-membership rate
2017



Source: Matteo Targa, DIW Berlin, and Li Yang, Paris School of Economics

It begins

Number of employees, Dec 31st 2010=100



▶ financial year, the biggest drop since the global financial crisis of 2007-09.

Although banks did not balloon quite as much as tech firms during the covid-19 pandemic, when online activity surged and working patterns seemed ready to change for good, the axe is cutting almost as deep in places. Meta's workforce nearly doubled in size between 2019 and 2022; the firm has since let go about half of new additions. Goldman's workforce expanded by just over one-quarter between the end of 2019 and the end of 2022, from around 38,000 to just over 48,000. By laying off

some 3,450 people the firm has unwound one-third of this increase.

Other banks have been a little slower to scale back. At Morgan Stanley, where employment also leapt by one-third over the same period, just one-eighth of the increase has been unwound. It is a similar story at Citigroup. There have yet to be major lay-offs at JPMorgan Chase, the king of Wall Street. Altogether, job losses might slow New York's economy a tad—perhaps the market for TriBeCa lofts will cool—but they will hardly prove a fatal blow to a city of its size and vitality.

Yet perhaps there is further for the story to run. Tech-industry lay-offs got going in earnest in 2022, when almost 165,000 jobs were lost. They are now coming thick and fast. Since the start of the year, more than 210,000 jobs have been cut. History suggests that firing seasons build momentum. It took years for banks to downsize in the wake of the global financial crisis. Just as with the tech companies, lay-offs would need to be several times bigger to return financial firms to their pre-pandemic sizes. Although banks are trimming the fat, they do not yet look lean. ■

Buttonwood Once you pop

The everything bubble is back. Can anything burst it?

FOR A CERTAIN type of investor, last year came as a relief. True, the losses were grim. But at least markets were starting to make sense. Over the previous decade, central banks had pumped out floods of new money to buy bonds. Interest rates were kept unnaturally low, or even negative. The result was an “everything bubble”, a speculative mania in which valuations surged everywhere from stocks to housing to baffling crypto assets. It was never going to end well, and in 2022 it didn't: inflation killed off cheap money; the everything bubble popped; asset prices plunged. Some were even approaching rationality. A return to reassuringly dull investing—based on fundamentals, not hype—beckoned.

If this sounds familiar, and you were one of these relieved investors, you may have found yourself wrong-footed by developments over the past few months. It is not just stockmarkets, though both in America and globally they have risen to within striking distance of all-time highs. It is that risky assets across the board have proved astonishingly resilient to seemingly disastrous news. An index of American high-yield (or “junk”) bonds compiled by Bank of America suffered a peak-to-trough loss of 15% in 2022. It has since recovered half that loss. So has a similar index for junk bonds in Europe. The housing slump already shows signs of petering out, even though global prices have fallen by just 3% from their peak, or 8-10% adjusting for inflation, after a boom in which they rose at their fastest rate ever.

The biggest surprise is how well even more speculative assets have held up. Bitcoin—once an emblem of the cheap-money era, seen by many as a digital token with no intrinsic value—has proved indestructible. Anyone who

bought it before 2021 and held on is once again sitting on a profit, albeit just a fraction of that which they could have booked two years ago. Even sales of non-fungible tokens, records that represent pieces of digital media, were 70 times higher in 2022 than in 2020, at \$1.5bn.

In other words, the everything bubble in risky assets seems to have survived the return of inflation, rising interest rates, war in Europe and the threat of recession. Can anything pop it?

One oft-mentioned candidate is liquidity, which is being drained from the financial system. The main exit pipes run to the Federal Reserve and America's Treasury department. The Fed is sucking out \$95bn a month by allowing some of its portfolio of Treasuries and mortgage-backed securities to mature without reinvesting the proceeds. The Treasury, by one estimate, must sell \$1tn of new debt in the summer to rebuild its cash buffers after Washington's debt-ceiling stand-off.

Most obviously, this depresses Treasury prices by increasing supply and removing the Fed as a monthly buyer. (Tellingly,

government bonds are the one asset class to have barely recovered from last year's shellacking.) By raising “safe” Treasury yields, this makes riskier assets relatively less attractive. It also means that more investors end up holding Treasuries than otherwise would have been the case, reducing their appetite to buy riskier assets, even if prices fall. The likelihood of a crash, and of it being severe, is therefore creeping up.

Such a crash is certainly not what markets are betting on. In fact, the vix, a measure of expected stock-price volatility, often dubbed Wall Street's “fear gauge”, has this year fallen to its lowest since before the covid-19 pandemic. Yet analysts at UBS, a Swiss bank, point out that this is less reassuring than it might appear at first glance. They find that the vix has fallen mainly because correlations between stocks are unusually low, meaning their movements cancel each other out. Should they start moving in lockstep, volatility could suddenly jump, which is what has tended to happen after past spells of low correlation.

Meanwhile, as in any bubble, asset valuations have become maddeningly hard to justify. America's stockmarket, where the earnings yield of the S&P 500 index of major firms is now roughly level with the Fed's risk-free rate, is the most audacious example. But it is not alone. The UBS team analysed prices across credit, commodities, stocks and currencies, backing out an implicit assumption that the world economy would grow at 3.6% per year. That is a little more than its long-term growth rate, and around double its present one. Time to bet on a correction? Tempting, but perhaps more foolish than brave. Based on recent experience, everything bubbles can survive for an awfully long time.



Free exchange | Stuffed like Turkey

Erdoganomics is spreading across the world, threatening trouble



TURKEY'S ECONOMY does not obviously inspire emulation. Over the past five years it has been battered by soaring annual inflation, which hit 86% in October. The central bank is fresh out of foreign reserves, having spent most of them propping up the lira, also to little avail: last month the currency plummeted to an all-time low against the dollar. To make matters worse, Recep Tayyip Erdogan, Turkey's president, is about to make good on some expensive promises following an unexpected election victory in May. The bill will probably plunge the government, which had been reasonably fiscally sensible until now, deep into the red.

This chaos reflects the upside-down monetary policy pursued by Mr Erdogan. He insists that lowering interest rates is the key to fighting inflation, rather than tightening the screws, which is the solution favoured by generations of orthodox economists. To explain how this could be the case, Turkish officials invoke names ranging from Irving Fisher (an economist, and the finance ministry's preferred guru) to God (Mr Erdogan's policymaker of choice).

Since the election Turkey's monetary policy has become a little more reasonable, as interest rates have been raised. This has not stopped Mr Erdogan's ideas catching on in the finance ministries of the developing world. "I truly wonder whether classical theories are the way to continue," muses Ken Ofori-Atta, Ghana's finance minister, who is one of several African ministers pondering such ideas. "We have to get rates low and growth going," shrugged another at a recent summit on green finance in Paris. In the past month, officials in Brazil and Pakistan have expressed similar sentiments. Rather than looking at sky-high inflation, a floundering currency or fleeing investors, these ministers focus on Turkey's GDP growth, which has been remarkably resilient, reaching 5.6% last year. They are sceptical of warnings that such a state of affairs is unsustainable, owing to stalling productivity, which ultimately determines long-run growth, and depleted foreign reserves.

Some reasons for supporting ultra-loose policy when inflation is out of control are much older than Turkey's experiment. Inflation eats away at the value of official debts, which weigh down developing countries. Letting prices run wild is an appealing option when a government has borrowed too much, even if it is also the surest path to hyperinflation and a currency crash.

Other reasons are newer and come from Mr Erdogan. The Turkish president insists that in emerging markets, loose policy helps quell inflation. For countries that want firms to have access to cheap credit, in order to stimulate industrial growth, this is an appealing idea. One argument put forward is that less expensive borrowing will mean lower consumer prices. Another is that it will boost exports, which may replenish foreign reserves. The problem with both arguments is that the economic activity boosted by low rates also buoys wages and makes firms optimistic about future prices, entrenching inflation. Low rates on government bonds also send foreign investors fleeing, whacking the currency.

It is nevertheless true that monetary policy works differently in emerging economies. Foreign investment matters more for market rates; aggregate demand matters less. In a recent paper Gita Gopinath, the IMF's chief economist, and co-authors find that emerging markets' policy rates have next to no impact on their real economies. Looking at 77 developing countries since 1990, the researchers find that, just as in advanced economies, central banks raise the domestic rate at which they lend to local banks when inflation gets going. Unlike in advanced economies, banks do not pass the rate change on to government and household borrowers.

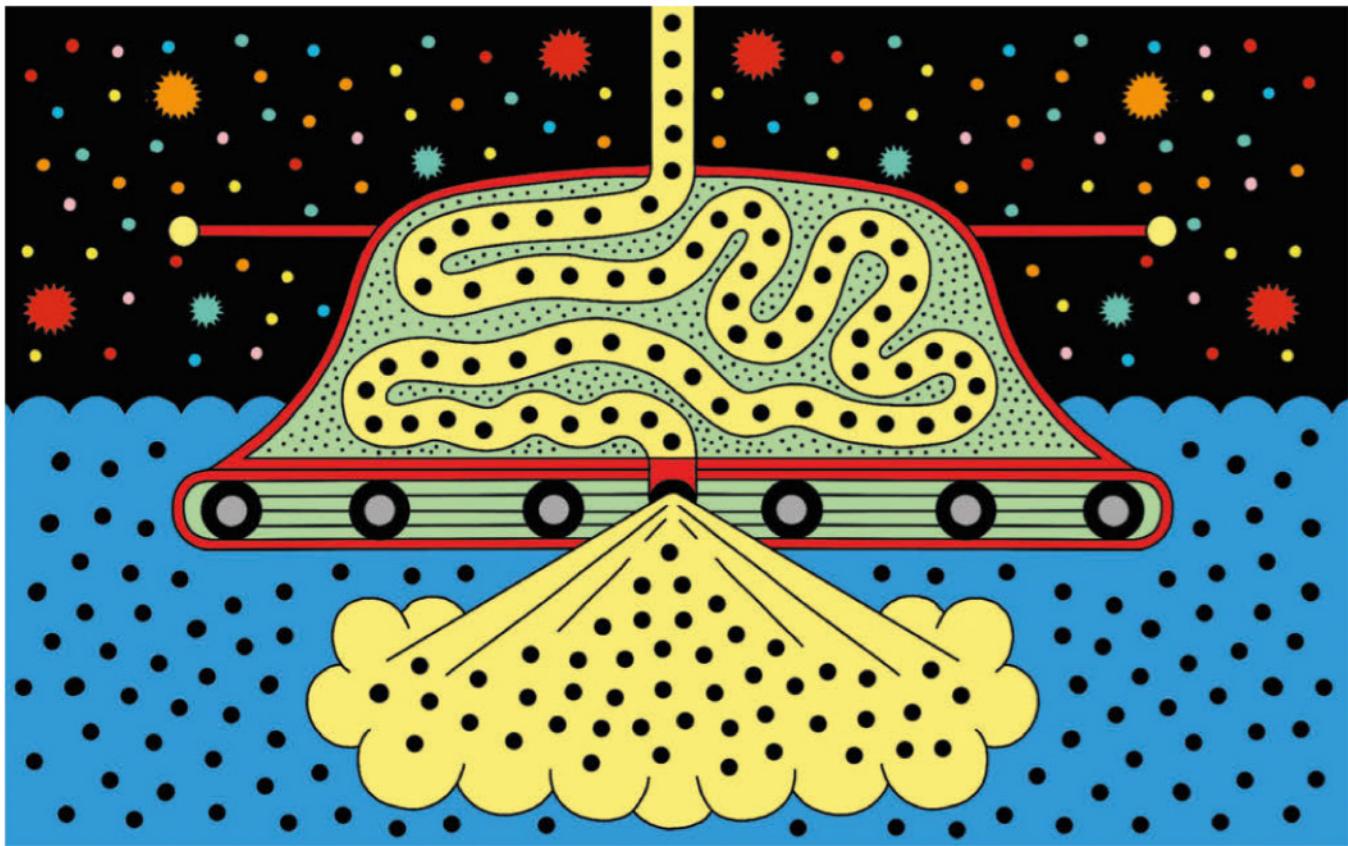
To understand why, consider how banks borrow. Emerging-market financial institutions struggle to find funds at home, since few households save and there are not many big firms. Instead, they turn to international markets. Counterintuitively, the risk premium demanded by foreign financiers tends to fall when inflation is rising, since at such times economic growth tends to be strong. This balances out the impact of central-bank rate rises.

Nor are international markets the only force with which policy must contend. Poor countries are also home to big informal sectors, where firms do not borrow from banks. The UN and IMF reckon that over 60% of the developing world's workforce, and more than a third of its GDP, is off the books. Although informal lenders eventually match banks' interest rates, this takes time. And informal labour markets are flexible, meaning workers' pay rather than employment adjusts when rates rise. According to the Bank for International Settlements, a club of central banks, this means emerging economies take longer to feel the pinch of higher rates.

Murky markets

Informal finance gives people an escape from the banking system. Your columnist was recently in Ghana, where she was told by an informal lender, who takes luxury cars as collateral, that business has boomed since the country's latest debt restructuring, which wiped out much of the government's domestic borrowing and almost took the banking industry with it. Unsurprisingly, trust in formal banks is low. The boss of one of the Accra's biggest banks says other firms are safeguarding against the fallout from another similar episode by stockpiling dollars off the books.

The problem comes with assuming Mr Erdogan's policies will help. If high rates are diluted by foreign lenders and informal borrowers, so are low ones. Ms Gopinath's research is reason to doubt ultra-doveish monetary policy can produce growth, but it does not support the idea that it can cut inflation, either, contra Mr Erdogan. If she is correct, officials need to focus on cutting the risk premium on foreign borrowing to strengthen the impact of monetary policy on the economy. To do this, they must convince investors to take them seriously, which means keeping deficits in check and finances stable, not jumping on the bandwagon of outlandish theories. Mr Erdogan's experiment is best left in its trial phase. ■



Deep sea mining

Raiding Davy Jones's locker

Deep-sea mining may be the least damaging way to satisfy the world's growing hunger for vital battery metals

PUSHED BY THE threat of climate change, rich countries are embarking on a grand electrification project. Britain, France and Norway, among others, plan to ban the sale of new internal-combustion cars. Even where bans are not on the statute books, electric-car sales are growing rapidly. Power grids are changing too, as wind turbines and solar panels displace fossil-fuelled power plants. The International Energy Agency (IEA) reckons the world will add as much renewable power in the coming five years as it did in the past 20.

All that means batteries, and lots of them—both to propel the cars and to store energy from intermittent renewable power stations. Demand for the minerals from which those batteries are made is soaring. Nickel in particular is in short supply. The element is used in the cathodes of high-quality electric-car batteries to boost capacity and cut weight. The IEA calculates that, if it is to meet its decarbonisation goals, the world will need to be producing

6.3m tonnes of nickel a year by 2040, roughly double what it managed in 2022. That adds up to some 80m tonnes of nickel in total between now and then.

Over the past five years most of the growth in demand has been met by Indonesia, which has been bulldozing rainforests to get at the ore beneath. In 2017 the country produced just 17% of the world's nickel, according to CRU, a metals research firm. Today it is responsible for around half, or 1.6m tonnes a year, and that number is rising. CRU thinks Indonesia will account for 85% of production growth between now and 2027. Even so, that is unlikely to be enough to meet rising demand.

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- 66 The limits of mountains
- 67 Who wants a mammoth burger?

And as Indonesian nickel production increases, it is expected to replace palm-oil production as the primary cause of deforestation in the country (see next story).

But there is an alternative. A patch of Pacific Ocean seabed called the Clarion-Clipperton Zone (ccz) is dotted with trillions of potato-sized lumps of nickel, cobalt, manganese and copper, all of which are of interest to battery-makers (see map). Collectively the nodules hold an estimated 340m tonnes of nickel alone—more than three times the United States Geological Survey's estimate of the world's land-based reserves. Companies have been keen to mine them for several years. With the coming expiry, on July 9th, of an international bureaucratic deadline, that prospect looks more likely than ever.

It's better down where it's wetter

That date marks two years since the island nation of Nauru, on behalf of a mining company it sponsors called The Metals Company (TMC), told the International Seabed Authority (ISA), an appendage of the United Nations, that it wanted to mine a part of the ccz to which it has been granted access. That triggered a requirement for the ISA to complete rules on commercial use of the deposits. If those regulations are not ready by July 9th—and it seems they will not be—then the ISA is required to "consider and provisionally approve" ↗

► TMC's application. (The firm itself says it hopes to wait until rules can be agreed.)

TMC's plan is about as straightforward as underwater mining can be. Its first target is a patch of the ccz called NORI-D, which covers about 2.5m hectares of ocean floor (an area about 20% bigger than Wales). Gerard Barron, TMC's boss, estimates there are about 3.8m tonnes of nickel in the area. Since the nodules are simply sitting on the bottom of the ocean, the firm plans to send a large robot to the seabed to hoover them up. The gathered nodules will then be sucked up to a support ship on the surface through a high-tech pipe, similar to ones used in the oil-and-gas industry. Mr Barron says that his firm can break even on nodule collection at nickel prices as low as \$6,000 per tonne; nickel currently sells for about \$22,000 per tonne.

The support ship will wash off any sediment, then offload the nodules to a second ship which will ferry them back to shore for processing. The surplus sediment, meanwhile, will be released back into the sea at a depth of around 1,500 metres, far below most ocean life. And TMC is not the only firm interested. A Belgian firm called Global Sea Mineral Resources—a subsidiary of Deme, a dredging giant—is also keen, and has tested a sea-floor robot and riser system similar to TMC's. Three Chinese firms—Beijing Pioneer, China Merchants and China Minmetals—are circling too, though they are reckoned to be further behind technologically.

As with mining on land, taking nickel from the sea will damage the surrounding ecosystem. Although the ccz is deep, dark and cold, it is not lifeless. TMC's robot will destroy many organisms it drives across, as well as any that live on the nodules it collects. It will also kick up plumes of sediment, some of which will drift onto nearby organisms and kill them (though research suggests the plumes tend not to rise more than two metres above the seabed).

Adrian Glover, a marine biologist at the Natural History Museum in London, points out that, because life evolved first in the oceans and only later moved to the land, the majority of the genetic diversity on the planet is still found underwater. Although the deep-ocean floor is dark and nutrient-poor, it nevertheless supports thousands of unique species. Most are microbes, but there are also worms, sponges and other invertebrates. The diversity of life is "very high", says Dr Glover.

Yet in several respects, mining the seabed has a smaller environmental footprint than mining in Indonesia. The harsh deep-sea environment means that, although its inhabitants may be highly diverse, they are not very abundant. A paper published in *Nature* in 2016 found that a given square metre of ccz supports between one and two living organisms, weighing a couple of



grams at most. A square metre of Indonesian rainforest, by contrast, contains about 30,000 grams of plant biomass alone, and plenty more if you weigh up primates, birds, reptiles and insects too.

But it is not enough to simply weigh the biomass in each ecosystem. The amount of nickel that can be produced per hectare is also relevant. The 2.5m hectares of seabed that TMC hopes to exploit is expected to yield about 3.8m tonnes of nickel, or about 1.5 tonnes per hectare.

Getting hard numbers for land-based mining is tricky, for the firms that do it are less transparent than those hoping to mine the seabed. But investigative reporting from the Pulitzer Centre, a non-profit media outlet, suggests each hectare of rainforest on Sulawesi, the Indonesian island at the centre of the country's nickel industry, will produce around 675 tonnes of nickel. (One reason land deposits produce so much more nickel, despite the lower quality of the ore, is because the ore extends far beneath the surface, whereas nodules exist only on the seabed.)

All that makes a very rough comparison possible. Around 13 kilograms of biomass would be lost for every tonne of ccz nickel mined. Each tonne mined on Sulawesi would destroy around 450kg of plants alone—plus an unknown amount of animal biomass, too.

Pick your poison

There are other environmental arguments in favour of mining the seabed. The nodules contain much higher concentrations of metal than deposits on land, which means less energy is required to process them. Peter Tom Jones, the director of the KU Leuven Institute for Sustainable Metals and Materials, in Belgium, reckons that processing the nodules will produce about 40% less greenhouse-gas emissions than those from terrestrial ore.

And because the nodules must be taken away for processing anyway, companies like TMC can be encouraged to choose places where energy comes with low emissions. Indonesian nickel ore, in contrast, is uneconomic unless it is processed near where it was mined. That almost always means using electricity from coal plants or

diesel generators. Alex Laugherne, an analyst at CRU, reckons Indonesian nickel production emits about 60 tonnes of carbon dioxide for each tonne of nickel. An audit of TMC's plans carried out by Benchmark Minerals Intelligence, a firm based in London, found that each tonne of nickel harvested from the seabed would produce about six tonnes of CO₂.

In any case, metal collected from the seabed is unlikely to entirely replace that mined from the rainforest. Battery production is growing so fast that nickel will probably be dug up from wherever it can be found. But if the ocean nodules can be brought to market affordably, the sheer volume of metal available may start to ease the pressure on Indonesian forests. The arguments are unlikely to stay theoretical for long. Mr Barron of TMC aims to start producing nickel and other metals from the seabed by the end of next year. ■

Mining nickel on land

The nickel pickle

SINGAPORE

New technology may boost Indonesia's dominance of a vital metal

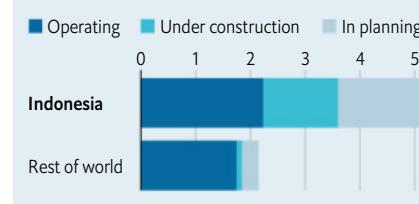
Each year scientists discover an average of five new bird species. In 2013, on a trip to a remote set of islands in Indonesia, researchers found ten in six weeks—the biggest haul in more than a century. The region in question, known as Wallacea after Alfred Russel Wallace, a 19th-century naturalist, is one of the world's biodiversity hotspots. Its rainforests host creatures found nowhere else, such as the maleo, an endangered bird that uses sunlit beaches and geothermal heat to keep its eggs warm rather than incubating them itself.

But Wallacea's environment is rich in more than wildlife. Logging, clearance for agriculture and, more recently, the growth of palm-oil plantations have seen huge areas of forest chopped down since the middle of the 20th century.

Now a new resource boom is under way. Indonesia is already the world's biggest

A green gold rush?

Nickel production capacity, 2023 forecast, tonnes m



► producer of nickel, a metal that is—among other uses—vital for building high-performance batteries. Demand for those is expected to increase hugely as demand for electric cars ramps up. Helped by new technologies for extracting nickel from the soil, Indonesia is planning big production increases (see chart). Macquarie Group, an Australian financial firm, thinks that by 2025 the country could supply 60% of the world's nickel, up from around half today.

Most of the world's nickel, including that mined in Indonesia, comes from laterite ores. These, in turn, come in two sorts, limonite and saprolite. Saprolite, which contains higher concentrations of nickel, is well-suited for processing in a device known as a rotary kiln electric furnace (RKEF). This melts the ore at more than 1,500°C, producing a compound of nickel and iron called nickel pig iron (NPI), much of which is in turn used to produce stainless steel. But by injecting sulphur into the NPI to displace the iron, a higher-purity product, nickel matte, can be produced that is suitable for batteries.

That approach has two drawbacks. The first is that it is energy-intensive. In Indonesia, that energy usually comes from coal-fired power stations built near the mines. Coal is cheap and reliable, but produces plenty of greenhouse gases. With Western electric-car makers such as Tesla keen to tout the green credentials of their products, that is a big concern.

The more fundamental problem is that much of Indonesia's saprolite has already been dug up and exported, mostly to China. In 2020 Indonesia imposed an export ban on what is left. But most of the country's remaining nickel is locked up in deposits of limonite, which are not suitable for the RKEF process.

For decades, mining firms have experimented with an alternative called high pressure acid leaching (HPAL). Instead of melting the ore, it is put in a pressure cooker-like machine and mixed with sulphuric acid, which strips the nickel out. The method works with limonite, and can directly produce the high-purity nickel needed in batteries. But it has been hard to master, with pilot plants costing far more than planned and operating well under their supposed capacity.

Recently, though, that seems to have changed. Three HPAL plants have started up in Indonesia since 2021. Another seven (including five in Sulawesi) are under development, according to the Indonesian Nickel Miners Association. Most are built with Chinese technology. Two of the three operating plants are based on designs from China Enfi Engineering Corporation, a subsidiary of the China Metallurgical Group Corporation that operates an HPAL plant in Papua New Guinea.

Besides their ability to process limo-

nite, HPAL plants are greener too—at least in some ways. Without the need for high temperatures, they use much less energy than RKEF plants, and so produce less carbon. But the process also produces a great deal of toxic slurry. Known as "tailings" in mining jargon, these are difficult and expensive to dispose of safely.

There are three ways to dispose of HPAL waste: pump it into the sea (which the Indonesian government bans), store it in dams or dry the waste and stack it. For now, Indonesia's HPAL plants dry-stack their tailings. But this requires lots of land. Given the amount of nickel the country is forecast to produce, the plants will eventually run out of room. Firms may opt to build tailings dams instead—although Indonesia's vulnerability to earthquakes and heavy rain will make that tricky.

Even if the waste is stored properly, deforested mining land erodes rapidly, espe-

cially given the intensity of the tropical rains. Run-off from mines can contaminate rivers and lakes. As of 2022, the Indonesian government has granted over 1m hectares of mining concessions, according to the Indonesian Forum for the Environment, a charity. Almost three-quarters are in the country's dwindling forested areas.

Exactly how big the environmental impact will prove to be is hard to know. Very few Indonesian nickel miners make public disclosures. And while carbon emissions can, in principle at least, be counted, lost biodiversity is harder to measure. Pressure to stay as green as possible may come from further up the supply chain. From 2024, battery manufacturers in the European Union, one of the world's biggest markets, will have to disclose the carbon footprints of their batteries. But battling climate change, it seems, will be bad news for Indonesia's remaining rainforests. ■

Geology

When mountains reach peak peak

A gigantic landslide illustrates the limits to how high mountains can get

IN GEOLOGY, UNLIKE business, nothing is too big to fail. Mountains offer the most spectacular example. Pushed up by the crumpling of Earth's crust following the collision of tectonic plates, they could in theory keep rising almost indefinitely. In practice, they do not. A suite of geological processes—including the grinding of glaciers, the gentle impact of rain, and forcible cracking by freezing and thawing of

water—erode them down to size.

In a paper published in *Nature* Jérôme Lavé, a geologist at the University of Lorraine, describes another, much more spectacular mechanism. Dr Lavé has collected evidence suggesting that, in around 1190, an enormous landslide slashed perhaps 500 metres from the height of Annapurna IV, a mountain in the Himalayas that stands about 7,500 metres high today. If he is right, it would be one of the biggest landslips ever recorded. The falling mountain top would have displaced up to 27 cubic kilometres of rock—roughly enough to bury the entirety of Manhattan to about the height of the Empire State Building.

As the rubble crashed down, the energy released would have been equivalent to around six times that of the Tsar Bomba, the biggest nuclear weapon ever detonated. "I don't think I could imagine what it would sound like," says Ann Rowan, a geologist at the University of Bergen who was not involved in Dr Lavé's work.

Dr Lavé's suspicions were aroused while doing fieldwork in the Ganga plain in Nepal in 2012. He noticed that the ground beneath his feet had an unusual composition. A 50-metre core drilled out of the rock showed an average concentration of limestone of around 10%. But for one 4-metre stretch the concentration rose to nearly 50%, "which is enormous, and completely abnormal", he says. ►



Not what it used to be

This suggested that the rocks in question had made their way to the Ganga plain from the Annapurna massif, hundreds of kilometres away. That, in turn, hinted at a massive landslide in the (geologically) recent past. After examining satellite images of the massif, and taking a helicopter ride to have a look for himself, Dr Lavé spotted a large rubble field which looked like it could have been caused by the same event. So he visited the site the following year, becoming only the second geologist known to have done so, and took some samples. Examining the surrounding cliffs for signs of a collapse, he noticed that a peak known as Annapurna IV offered a relatively smooth, steep face which seemed to fit.

Back home, he sent samples from the rubble field, the rock core and others from the path the landslide might have taken for dating. Should their ages roughly correspond, that would suggest they were linked to the same event. By measuring the abundance of chlorine-36 (a radioactive isotope which accumulates in surface rocks and decays once they are buried), and carbon-14 (another which accumulates in living matter and decays after death), his colleagues dated the samples to the late 12th century, and to within a couple of decades of each other. That is within the accuracy limits of the dating techniques themselves.

Besides shedding light on a previously unknown cataclysm, Dr Lavé's work could plug a gap in the dominant explanation for why mountains stop growing, which is known as the "glacial buzzsaw" hypothesis. Under this model, it is glaciers, which are extremely effective at carving scoops out of mountains, that are mostly responsible for curbing their growth.

The problem with that theory, says Dr Rowan, is that there are some peaks that manage to escape the erosive effect of glaciers, and then grow so steeply that glaciers can no longer stick to their sides. "The question is," she asks, "what stops these mountains getting bigger?"

Landslides could well be one answer. While the exact trigger for the Annapurna landslide is unknown, Dr Lavé's idea is that, with nothing to shave rock off their tips, very high mountains simply keep growing until their weight is too much for their lower slopes—which do still experience erosion—to support.

Working out exactly how and when the tipping point is reached will require examining other such rockslides. Unfortunately, due to the actions of both glaciers and swollen rivers during the monsoon season, the rubble from the Annapurna landslide is vanishing fast. Dr Lavé reckons that only about 10% of the dislodged material now remains in place. Older rockslides, assuming there were any, may already be impossible to reconstruct. ■

Applied biology

The Fred Flintstone diet

A Belgian company wants to create woolly-mammoth burgers

JUST A STRAND of Elvis's hair would do. Pluck out his DNA and it could be copied millions of times using a technique called the polymerase chain reaction (PCR). That was the business plan pitched in the 1990s by Kary Mullis, an American biologist. Mullis had helped develop PCR in the 1980s; in 1993 he shared a Nobel prize. "StarGene", as his company was known, hoped to make money by selling jewellery stuffed with celebrity DNA.

The idea never quite worked out. But that has not stopped a slew of newer firms also hoping to mine gold from dead individuals—or even entire species. Paleo, for instance, is a Belgian startup that creates synthetic proteins for the artificial-meat business. Driven in part by a "childhood fascination with prehistory", Hermes Sanctorum, the company's CEO, is keen to expand the business into making woolly-mammoth burgers.

Working with the Centre for Palaeogenetics in Sweden, the firm has obtained fragments of DNA from mammoth teeth found in the Siberian permafrost that are up to 1.2m years old. These fragments were combined with DNA from Asian and African elephants, the mammoth's nearest living relatives, to reconstruct what the firm hopes is the mammoth version of the gene that encodes myoglobin, a protein that helps give meat its rich taste and vibrant red colour.

That gene was inserted into the DNA of yeast, which duly began turning out mammoth myoglobin. The protein was

mixed with binders such as potato starch, oil, salt and other flavours so that it resembled the taste and texture of a burger. Paleo's patent claims the myoglobin causes a range of chemical reactions between other ingredients in the burger, producing flavours that are obtainable in no other way. Mr Sanctorum, for his part, says mammoth burgers taste "more intense" than beef. The firm raised €12m (\$13.1m) in its first funding round in February, and hints its mammoth meat will be publicly available soon. Several vegan-burger makers and an ice-age theme park are reportedly interested.

Paleo is not the only company exploring mammoth meat. Vow, an Australian company, says it has made a volleyball-sized lump of the stuff by injecting engineered mammoth myoglobin into lab-grown stem cells derived from sheep. Geltor, a startup that has raised more than \$100m, opted for a different extinct, elephantine species. It took sequenced mastodon DNA and used it to produce collagen, a protein found in skin and tendons. The stuff was eventually turned into gelatine for gummy sweets.

And it is not just extinct animals that companies think might prove valuable. Haeckels, a British cosmetics firm, is attempting to engineer scents from extinct flowers for use in perfumes. Geltor has also produced human collagen for use in the cosmetics business. Perhaps engineering some from a celebrity's DNA would be a hit?



Guess who's coming to dinner? ■



The creative industries

Built to order

MANCHESTER

Governments around the world are turning to the arts as a means to spur economic regeneration

ST JOHN'S, A district in central Manchester, has long reflected the city's ambitions. Thanks to its proximity to the River Irwell, the site became a hub for the booming cotton and timber trades during the Industrial Revolution. After the second world war, as the city's economy turned towards services, Britain's first purpose-built television studios were set up there. (Most of the studios were closed or relocated in 2013.) Now the area is undergoing yet another transformation. On June 30th a multi-use arts venue on the banks of the river—costing £211m (\$268m) and spanning more than 140,000 square feet—welcomed its first visitors.

The building, initially called Factory International but recently rebranded as Aviva Studios, was announced in 2014 by George Osborne, then the chancellor of the exchequer. It is mostly funded by the government and Manchester City Council and is the biggest investment in a cultural project in Britain since Tate Modern in 2000.

Mr Osborne saw Factory International as part of his "northern powerhouse" policy, which aimed to boost the economies of places such as Manchester and Newcastle, and to shift jobs, investment and influence away from the south-east of England. According to recent data from the Office for National Statistics, London's gross value added (GVA, a measure of output) is around 10% higher than the total of 11 other "core" cities, including Manchester. Mr Osborne has since left politics—he is now chairman of the British Museum—but talk of "leveling up" continues.

The venue was designed by Ellen van

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— Johnson is away

Loon of OMA, an esteemed architecture firm, and its façade evokes Manchester's mishmash of period buildings. Inside, a vast warehouse space can be configured in various ways; thanks to high-tech acoustic walls, different events can take place simultaneously. It will be the permanent home of the Manchester International Festival, a biennial event founded in 2007.

The venue can host enormous installations. The inaugural exhibition, "You, Me and the Balloons", is the largest-ever show by Yayoi Kusama, a blockbuster Japanese artist (see picture). For the full launch in October, Danny Boyle, a Mancunian filmmaker, has created an immersive production inspired by "The Matrix".

Aviva Studios's aims are grandiose, too: executives say it will contribute £1.bn in GVA in the next decade and directly and indirectly create more than 1,500 jobs. The Factory Academy, established in 2018, provides people with the technical skills needed by the venue and by the arts sector at large. "Yes, we've built a really exciting international arts venue that people across the world will travel to see," says Bev Craig, the leader of Manchester City Council, but "that's only half the story...It's purposeful growth, not just any old growth."

Manchester is not alone in betting on culture as a catalyst of regeneration. In America, Jersey City hopes to become a "destination for the arts" and is footing the ➤

bill for Centre Pompidou's first North American outpost, due to open in 2026. In 2021 Abu Dhabi confirmed it would spend \$6bn on its creative industries over five years in an attempt to diversify from oil; Muhammad bin Salman hopes to turn Al Ula into Saudi Arabia's capital of culture. China has opened scores of new museums in recent years, as has South Korea.

In January the Australian government launched "Revive", a plan for the culture sector. Adrian Collette, the chief executive of Creative Australia, says that funding will be distributed across "regional and remote communities" and help turn the country into a knowledge economy rather than one based on "extraction". (Mining remains one of its biggest industries.)

The idea of state support for culture can be a controversial one, as the well-off are most likely to participate in the arts; detractors would often rather see the money spent on hospitals or schools. Yet evidence suggests that a vibrant culture scene brings several benefits. Research by Centre for Cities, a think-tank, found that proximity to recreation facilities is important to 25- to 34-year-olds and influences their decisions about where to live.

Culture has an impact on well-being, too. Researchers at University College London analysed a series of longitudinal studies conducted between 2017 and 2022 in America and Britain. Controlling for income, education and other demographic factors, they found that enjoying the arts was good for your health. Whether you are reading a book or going to the opera, you are guarding against depression, dementia and chronic pain.

In the 19th century, as Americans and Europeans moved to the city, governments built public institutions to enrich people's lives. Some economists have long sensed that this kind of investment can pay dividends. In Britain the Arts Council was established in the wake of the second world war to distribute government money across England, Scotland and Wales. John Maynard Keynes, a lover of opera and ballet, was its first chairman. "At last the public exchequer has recognised the support and encouragement of the civilising arts of life as a part of their duty," he said.

David Throsby, a professor of economics at Macquarie University in Sydney, says that works started to define and quantify culture's impact on the economy in the late 1990s. The British government set up a Creative Industries Task Force in 1997.

The economic value of such institutions was further underscored by the success of Guggenheim Bilbao, also inaugurated in 1997. The Spanish city was undergoing structural change, says Juan Ignacio Vidarte, the museum's director. Steel and shipbuilding, historically a large part of the city's economy, was in decline; unem-

ployment was high. The local government paid the \$100m cost of the building, designed by Frank Gehry. That decision attracted opprobrium, but authorities recognised that the venue "was important for defining the future prospects of the city".

The risk paid off. Last year the museum attracted 1.3m visitors, two-thirds coming from outside Spain; Mr Vidarte says that visitors' spending in Bilbao raised more than €70m (\$76m) in taxes for the regional government. The regeneration of the city, spearheaded by the Guggenheim, has been dubbed the "Bilbao effect".

The wrong conclusions are sometimes drawn from the project, Mr Vidarte warns. The museum did not reverse the city's fortunes single-handedly: just as important was the investment in transport infrastructure and the cleaning up of the Nervión river (on which the museum sits.) It is not enough to commission an architect to design "a flamboyant building and think that's going to be the magic wand to turn everything from dust to diamonds," Mr Vidarte says. "That's so naive."

All that glitters

A multitude of factors make a city appealing to tourists as well as migrants. Economist Intelligence Unit, a sister company of *The Economist*, calculates a city's "liveability" according to five broad categories: culture and environment, education and infrastructure, health care and stability. Abu Dhabi welcomed an outpost of the Louvre in 2017; in recent years, its score has risen thanks to improvements in public services. Yet it still ranks only slightly above the average rating globally.

The authorities in Manchester know there is no single formula for growth. In 2022 it was announced the city would receive £1bn to improve its public-transport system; it is also focusing on attracting technology companies and startups. A wide cultural ecosystem has been established over the past 25 years, with Media City, a BBC outpost, the National Football Museum and HOME, an arts complex.

"This building is a manifestation of Manchester investing in creative industries as part of its future," says John McGrath, the artistic director and chief executive of Factory International (the moniker was retained for the organisation that runs Aviva Studios and the arts festival.) That name hints at the city's particular cultural heritage: between 1978 and 1992 Factory Records, a music label, championed bands including Happy Mondays, Joy Division and New Order.

At the same time, it emphasises the focus on economic output. St John's has a long history of manufacturing and exporting goods around the world. That continues—only now, as Mr McGrath says, "We're building a factory for artists." ■

Philippe Pétain

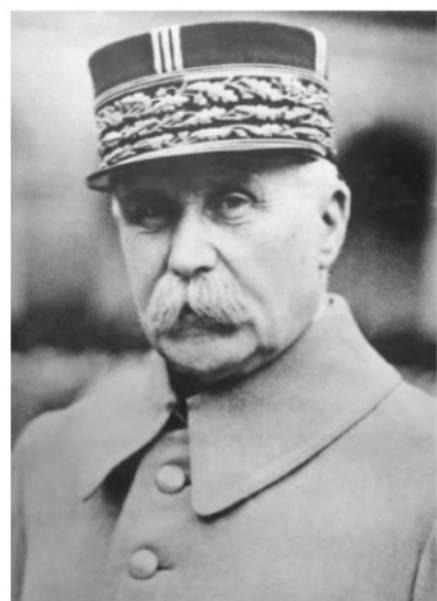
Man of dishonour

France on Trial. By Julian Jackson.

Harvard University Press; 480 pages; \$35. Allen Lane; £20

FEW HOME-GROWN 20th-century leaders prompt as much discomfort for the French as Philippe Pétain. The head of the Vichy regime, who signed the armistice with Germany on June 22nd 1940 and was photographed shaking the hand of Adolf Hitler in the French town of Montoire, embodied his country's collaboration with Nazi Germany and the sacrifice of its national honour. In this painstakingly researched work, Julian Jackson, a British historian and biographer of Charles de Gaulle, examines Pétain's trial as a way to put both a leader and a country in the dock.

The court case took place over three weeks, between victory over the Third Reich on May 8th 1945 and the Nuremberg trials that began in November that year. Mr Jackson vividly reconstructs the drama. It was the height of summer. Rationing was still in place. But cinemas in Paris were open, as was the Louvre, where the "Mona Lisa" had returned after being hidden for four years in different secret locations around France. A special high court was set up, and a jury of 24 selected for the trial: all men, half of them members of the Resistance, half pre-war parliamentarians. The prosecution made use of 60 crates of archives from Vichy, and a veritable "Hima-"



War hero turned traitor

▶ laya of official papers", wrote one investigator, "which soon made our corridors and offices look like wartime trenches".

In the courtroom Pétain spoke little and remained inscrutable, "his tired eyes continuously blinking", as one journalist noted. Indeed the original assumption was that the marshal would be tried in absentia. In 1944 the Nazis had transferred him to the turreted castle of Hohenzollern-Sigmaringen, in Germany, where Louis-Ferdinand Céline, a pro-Vichy French novelist, also found refuge. To general astonishment, the 89-year-old Pétain handed himself in, in order to return to Paris and answer to the French people.

When the old man in a khaki field uniform entered the courtroom, it fell silent. Pétain's opening statement, writes Mr Jackson, was "a compilation of dubious assertions and half-truths, approximations and provocations". He had signed the armistice as an "act of salvation", he insisted. It had spared France "the fate of Poland", argued his defence lawyers. The marshal, they claimed, was not Pierre Laval, the Vichy prime minister, who actually sympathised with Nazi Germany; Pétain had "protected" many Jews. Moreover, "If he was guilty so was all of France." Parliament, after all, had voted in 1940 to hand over powers to the marshal.

The spectacle was miserable. Léon Blum, France's pre-war Socialist prime minister, who had been deported to Nazi Germany in 1943, told the court that French leaders "had been dipped into some kind of toxic bath...the nobility and courage of men that one had known corroded and dissolved in front of one's eyes". The trial's conclusion, at a time of intense post-war purges, was never in any doubt. André Mornet, the chief public prosecutor, took five hours to deliver the *réquisitoire*. Pétain was sentenced to death, a decision that de Gaulle later commuted to life imprisonment. He was stripped of his military honours.

After meeting Hitler, Pétain had declared: "It is I alone who will be judged by history." In 1945 the Paris court certainly judged him severely. But it was not until 1995 that a French president, Jacques Chirac, acknowledged his country's responsibility for terrible acts carried out under occupation, referring specifically to the round-up of thousands of Jews at the Vel' d'Hiv' stadium in Paris in 1942 before they were sent to their deaths. This "undermined the Gaullist narrative that between 1940 and 1944 'France' had been in London [where de Gaulle had fled] and that Vichy was a parenthesis in French history".

The legal basis for this argument remains contested, as Mr Jackson points out. But only the nationalist right today tries to defend Pétain. Successive presidents have, rather, reaffirmed the French

state's responsibility. When speaking in 2017 of the Vel' d'Hiv' round-up, Emmanuel Macron, the current president, stated soberly: "Not a single German took part."

Indeed, the complexity of the figure of Pétain is now difficult to evoke for any moderate democratic politician. During the first world war, as Mr Jackson notes, the marshal was a distinguished military tactician, who earned national admiration for commanding the French troops in Verdun. Pétain and de Gaulle were close for several years, and in 1926 visited the Verdun battlefields together. In 2018, ahead of centenary commemorations for the end of the first world war, Mr Macron suggested that it might be "legitimate" to pay homage to Pétain in this specific historical context. The idea prompted an outcry and was quietly dropped. The wound that Pétain left in France remains raw. ■

to study the work slowly, the way you might scrutinise a particular patch of a Jackson Pollock painting.

The piece was made by Mary Jackson, an African-American fibre artist, in 2007. Dale Rosengarten, a historian and curator, describes Mrs Jackson as a "genius". Such acclaim is not uncommon. In 2008 Mrs Jackson received one of the MacArthur Foundation's prestigious grants, worth \$500,000, to support the creation of work that both preserved "the centuries-old craft of sweetgrass basketry" and moved "the tradition in stunning new directions". Two years later, in 2010, she was awarded a National Heritage Fellowship by the National Endowment for the Arts.

A number of America's most respected art institutions, including the Smithsonian American Art Museum and the Museum of Fine Arts in Boston, have acquired her pieces. Her work has also been bought by the White House, King Charles III and the Japanese royal family. Some of Mrs Jackson's designs are works of elegant simplicity, even as she draws on a wide variety of influences for her craft.

Born in 1945, Mrs Jackson grew up in Mount Pleasant, South Carolina. She is Gullah, a member of an ethnic group which predominantly lives in the Sea Islands region along the coast of Florida, Georgia and South Carolina. This remoteness has allowed Gullah people to preserve the African roots of their distinct language and culture more than other African-American communities farther inland.

Coiled baskets were originally designed for rice cultivation. In South Carolina the history of agriculture is inextricably linked with slavery: many Gullah people's enslaved ancestors brought their own farming traditions with them from west and ➤

Fibre art

Out of the long grass

CHARLESTON

Mary Jackson has turned coiled basketry into a fine-art form

“**N**EVER AGAIN” sits at the intriguing intersection of art and craft. The object is both a basket, woven from sweetgrass and palmetto, and an abstract sculpture. Much wider than it is tall, from a distance “Never Again” seems to be of one hue, but on closer inspection you can see that its brown, cream and green fibres converge into purposeful, swirling patterns of colour. Such details encourage the viewer



Weaving gorgeous fancies

► central Africa, including the use of grass baskets for winnowing (tossing rice in the air to remove the husks). South Carolina's rice trade outlasted slavery, but struggled to keep up with domestic competition; a series of hurricanes in the early 20th century crippled the industry's infrastructure.

No longer needed for farm work, the demand for sweetgrass baskets declined. Before the methods for making them were forgotten, however, a burgeoning tourist industry in the 1930s began funnelling travellers through Mount Pleasant on their way to holidays in Charleston. To profit from this, members of the Gullah community started selling decorative interpretations of their traditional baskets to holidaymakers. This new trade provided a source of income for rural black families in the segregated South.

Mrs Jackson was introduced to traditional weaving techniques by her mother and grandmother at the age of four. As well as mastering the art, learning how to harvest, dry and manipulate the grasses was a way of keeping her and her siblings busy in the summer. As a youngster she regarded basketmaking as something of a chore.

In the 1960s, after finishing school, Mrs Jackson moved to New York to find work. There, she visited the city's museums and discovered Minimalism, Pop Art and other influential contemporary-art movements. When she returned to South Carolina in 1972, she picked up basketmaking again, but with a new sensibility.

Her work pays homage to Gullah basketmaking, yet she has experimented with bold shapes and innovative dimensions. Early works, such as "Cobra with Handle", were intricate, but still usable, baskets. Mid-career pieces, including "Two Lips", reveal a subtle turn away from utility towards aestheticism. The piece's handle connects to a cosmetic "lip" woven midway up the basket. It is a delicate work that is ill-suited to holding rice or produce.

"I wanted to do something that was very different from what my ancestors made," she says. Mrs Jackson has been able to create large baskets by using stronger plants than tradition dictates; her oversized pieces have integrated patterns of bulrush as well as palmetto leaves and pine straw. In a testament to her influence, many other modern artisans' sweetgrass baskets now contain all four materials.

"Never Again" is perhaps the best representation of her work; Mrs Jackson says she named the piece to reflect her belief that she would not be able to create another object as striking. (It took her three years to complete.) All the same, she strives to push her discipline forward. "I don't think I'll continue to make these baskets like how I used to," she says. Instead, approaching her 80s, she is "working on things I haven't made before". ■

HOME
ENTERTAINMENT



Literature in Iran

Freedom writer

Forough Farrokhzad gave voice to Iranian women's despair and defiance

WOMEN'S LIBERTY is at the forefront of Iranian politics. In September Mahsa Amini was arrested for not wearing her hijab correctly and died in police custody; for weeks people occupied the streets and chanted "women, life, freedom." The Islamic Revolutionary Guard Corps, the regime's praetorian guard, has clamped down on the protests and arrested tens of thousands of people. Some police officers have continued to threaten women who do not cover their hair and have erected billboards stating that those forgoing the hijab are dishonouring their families.

The struggle for female emancipation was powerfully articulated by Forough Farrokhzad, a 20th-century poet. She was born into a strict military family in Tehran in 1934; at the age of 16 she married a distant, much older relative and had a son. In 1954 the couple divorced and, in accordance with the law at that time, she lost custody of the child. Farrokhzad released her first collection of poetry, "Asir" ("The Captive"), the following year.

Her work offered provocative explorations of lust; the verses are shot through with religious language. "Weary of divine asceticism," she wrote, "in the middle of

the night in Satan's bed/I'd seek refuge in the slopes of a fresh sin." Elsewhere sex and artistic inspiration are entwined: "You kindled my passionate desire/Thus setting my poems afire."

Farrokhzad saw that the repression of women was having a stultifying effect. Poets such as Rumi had imagined Persia as a thriving garden, yet she saw her country as "dying" and "waiting for rain". In her final and most widely read collection, "Tavalodi Digar" ("Another Birth", 1964), a blistering poem attacked self-satisfied elites who "suckle on our past glory".

She released only four collections of poetry during her short life: she died in 1967, aged 32, in a car accident. Her work was potent enough to cause consternation more than a decade later, during the Islamic revolution of 1979. Religious clerics banned the dissemination of her poetry and, when Farrokhzad's publisher refused to stop, he was thrown in jail.

Iranian artists have continued to evoke her verse when drawing attention to the oppression of women. For one photographic series called "Women of Allah" (1994), Shirin Neshat wrote lines from the poems on her subjects. In 2002 "The Green Cold", a documentary about Farrokhzad's life by Nasser Saffarian, was screened to sold-out audiences for three weeks before it was banned. In 2009, during the presidential-election protests, women etched lines from her poetry on placards when they took to the streets.

Last year New Directions, an American publisher, released a fresh translation of her selected poems. (They are also available online.) Her work is still read widely in Iran as old editions are sold on the black market. Farrokhzad remains a symbol of defiance. "Only you, O Iranian woman, have remained/In bonds of wretchedness, misfortune, and cruelty;/If you want these bonds broken,/grasp the skirt of obstinacy," she wrote. "Take action because a world/awaits and is in tune with you." ■



One size does not fit all

Prescription rules for new weight-loss drugs may unfairly exclude non-whites

POTENT NEW anti-obesity drugs can reduce body weight by 15–20%. However, regulation and costs limit who can take them. In America, the Food and Drug Administration (FDA) has approved just one of the new drugs, Wegovy, for weight loss—and only for patients with a body-mass index (BMI) above certain thresholds. The cut-off is 27 for people with weight-related illnesses, and 30 otherwise. For someone 1.7 metres (5'7") tall, these correspond to 78kg (172lb) and 87kg. People with lower BMIs can try to get a prescription anyway. However, insurers rarely cover such "off-label" use of the \$1,000-per-month drugs.

BMI's vary between racial groups. According to the National Health and Nutrition Examination Survey, run by the Centres for Disease Control and Prevention, Asian-Americans aged 18–75 have an average BMI of 25, compared with 29 for whites, 30 for Hispanics and 31 for black people. As a result, few Asians meet the FDA's criteria.

This would not be a problem if it reflected real differences in risk. But the link between BMI and health also varies by race. Type-2 diabetes is 30% more common among Asians than whites. And black people with a BMI of 23 are as likely to have hypertension as whites with a BMI of 27.

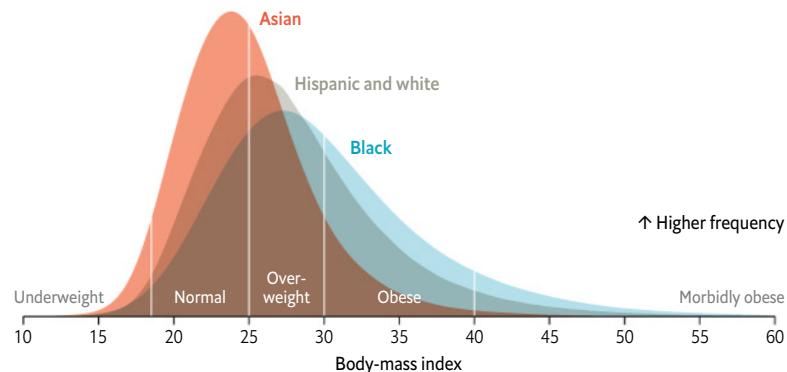
These patterns imply that the FDA may be excluding non-white people whom Wegovy could help. To measure racial gaps, we first estimated rates of diabetes, hypertension and high cholesterol for white people with BMIs at the FDA's cut-off. For example, 70% of 50-year-old white women with a BMI of 30 have at least one of these conditions. Next, we found the BMI that matches this prevalence for other races: eg, the BMI at which 70% of 50-year-old Asian women have at least one such ailment is 25. Finally, we added up the share of people of each race whose BMIs exceed these thresholds.

This exercise makes the FDA's rules look unfair. Although 18% of Asians aged 18–75 qualify for Wegovy, 46% have BMIs above our race-specific value. The 49% share of black people now eligible is greater than whites' 38—but below the 69% whose chance of having a weight-related illness exceeds that of whites with a BMI of 30.

These numbers do not mean that 46% of Asian-Americans should take Wegovy. But they do make a case for new trials of the drug on non-white people with lower BMIs—and for the FDA to reconsider its colourblind rules based on the results. ■

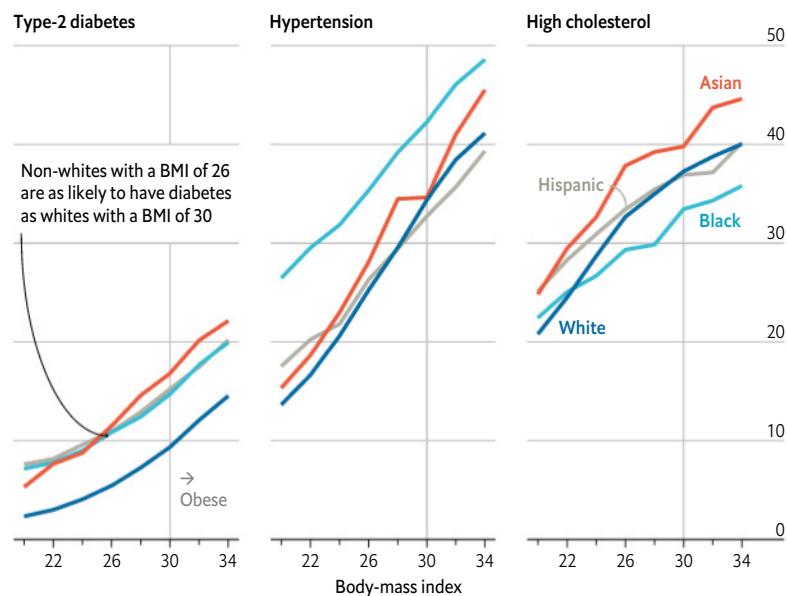
→ The average body-mass index (BMI) varies widely by race

Distribution of Americans aged 18–75
2005–21



→ People with the same BMI face different disease risks based on race

Average share of Americans with condition, %
2005–21, ages 18–75, age-standardised

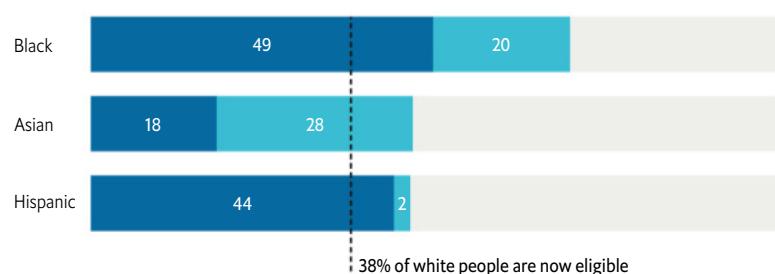


→ BMI cut-offs should arguably be lower for racial minorities than for whites

Share of group, %
Age-standardised

Currently eligible for Wegovy

Not eligible, but have greater weight-related health risks* than whites with a BMI of 30



*Probability of having type-2 diabetes, hypertension or high cholesterol, estimated using a statistical model based on age, BMI, sex and race. Sources: Centres for Disease Control and Prevention; The Economist



Through the dark clouds shining

Donald Triplett, the first man to be diagnosed with autism, died on June 15th, aged 89

AT FIRST THERE were words, so many words. "Chrysanthemum!" was a favourite. He used to like saying that one. And "Dahlia" too—he liked that one so much he would repeat it: "Dahlia! Dahlia! Dahlia!" The five-year-old Donald Triplett had non-floral favourites as well. Sometimes, he sounded like an irate grammarian: "Semicolon, capital, slain, slain," he would say. Then, as if conciliatory: "I could put a little comma." Some of his phrases had an almost biblical beauty: "Through the dark clouds shining."

But if his words could be brilliant his meaning was often opaque. When he said "you" he meant "me". When he said "yes" it meant "pick me up and put me on your shoulders." When someone stood on his toy he said "umbrella". And what he meant by "chrysanthemum" was anybody's guess. He had other idiosyncrasies, too. He shook his head, constantly, from side to side. He gave people numbers, not just names. And if his toys weren't just so, he screamed till the muscles stood out on his neck. Most upsetting of all, he never seemed glad to see his mother, Mary. But he loved making things—blocks, pans, ashtrays, anything at all—spin. And when they spun the boy would, as the psychiatrist's report observed, jump up and down "in ecstasy".

There were so many words. But there was no word for Donald. In the 1930s American psychiatry was not short of terms for what they called "nature's mistakes". There was "imbecile" and "cretin" and "lunatic"; there was "simpleton" and "dullard" and "dunce". However there was nothing to describe a little boy who liked to shout "chrysanthemum" but didn't hug his mother. Mary begged doctors to give her a term. She even took her son to Leo Kanner, the best child psychiatrist in America, but he too demurred. Modern medicine, he told her, had no words for this. So in despair she came up with her own. Her son, she wrote, was "hopelessly insane". Kanner would, eventually, opt for a more neutral term for Donald. He would call him "Case 1".

An earlier doctor, near her home in Forest, Mississippi, had been far less cautious. He had known exactly what was wrong with Mary's boy: it was Mary. She had overstimulated him, with all her songs and all that talking. He knew how to cure him, too: Mary must put Donald in an institution, away from her. So she and her husband put their boy in the family Buick and drove him to a children's institution in a town called Sanatorium. Then they left him there. And, in a way, it worked: Donald's tantrums and screaming stopped. However so too did everything else. There was no more humming, or singing, or spinning. Now Donald did almost nothing at all. He just sat, motionless, in his regulation white bloomers and top. He was three years old.

Which was why Mary ended up taking him to Kanner. He was an Austrian-Jewish psychiatrist who had come to America years before (he would later help hundreds of people escape from Nazi Germany). He was never much of a one for putting labels on people: they were more complicated than that. Then Mary turned up in his office with her boy Donald, and her husband, and her husband's 33 pages of typed notes on his son ("obsessive", Kanner observed). He read the notes and he studied the boy. He stuck a pin in Donald's arm and was riveted to see that though the boy pushed the pin away, "He was never angry at the interfering person." And he could see that this needed a name.

Kanner started work on a paper. He would include ten other children in it too but Donald would be his first: "Case 1". Many of these children had wildly different characteristics, he wrote. However they all shared one thing: an "inability to relate themselves in the ordinary way to people". Common English had no word for this, so Kanner borrowed a word for it from elsewhere in psychiatry. The word he chose came from a Greek word, "autos", which meant "self". Donald, he wrote, was "autistic". Kanner went further: this "unique syndrome not heretofore reported" was rare—but probably more frequent than "the paucity of observed cases" made it seem. Kanner's paper has since been cited 17,000 times.

Later, Kanner would always say that he hadn't discovered autism: it was there before. Not that the people of Forest, Mississippi, the home of its first case, knew much about that. Back in Forest (population—as Don could tell you—5,330), they hadn't really heard about "autism". But everyone knew Don. After those spells away, Don had come back to Forest and spent the rest of his life there: he graduated from high school there; learned to drive there; he even got a job in the bank there: he could add long numbers in his head faster than you could type them into a calculator. Sure, he was different. And never much of a one for chit-chat. But that was just Don. Too clever for his own good. A genius, they reckoned.

And he was happy. He still gave numbers to people, too. Pastor Mark was 472. His friend Celeste was 1,315. Olivia and Toby were 154 and 155. And he just loved to flick people with rubber bands. At first he had flicked his colleagues at work, but then he got in a whole lot of trouble for that. So he took to getting his fellow workers when they were out and about. In the grocery store. In the parking lot. He used to keep the bands on his wrist so he was always ready. He particularly liked to flick Celeste in church. She'd feel the flick—it really stung!—and she'd know: that's Don.

Later, when other people started to know who Don was too, Forest looked out for him. When some journalists had wanted to write about him, they'd approached locals to ask if they could be introduced. Sure, they had said. Then they had said: and if you hurt him in any way we'll make sure you regret it. Don's story became a book; the book became a film, "In A Different Key"; and Don became an entry in the "Encyclopaedia Britannica".

Though to the people of Forest, he was always just Don. The pastor who preached at his funeral began his sermon by introducing himself with his number: I'm 472, he said. Later, others in the congregation had joined in: I'm 1,316. I'm 40. I'm 30. But Don had never given himself a number, so neither did they. To them, Donald Triplett—Case 1—was always just Don. ■