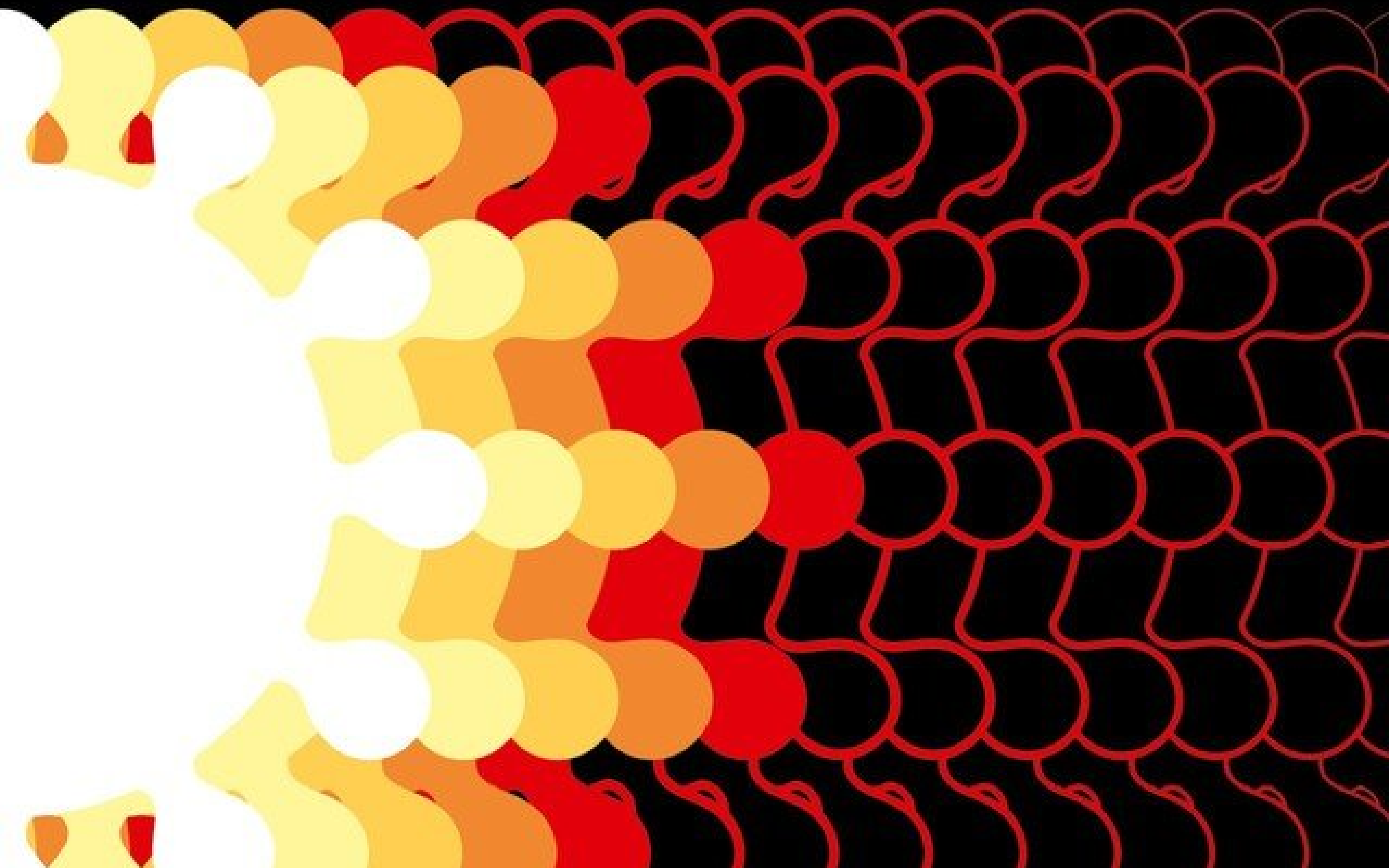
The Economist

JULY 3RD–9TH 2021

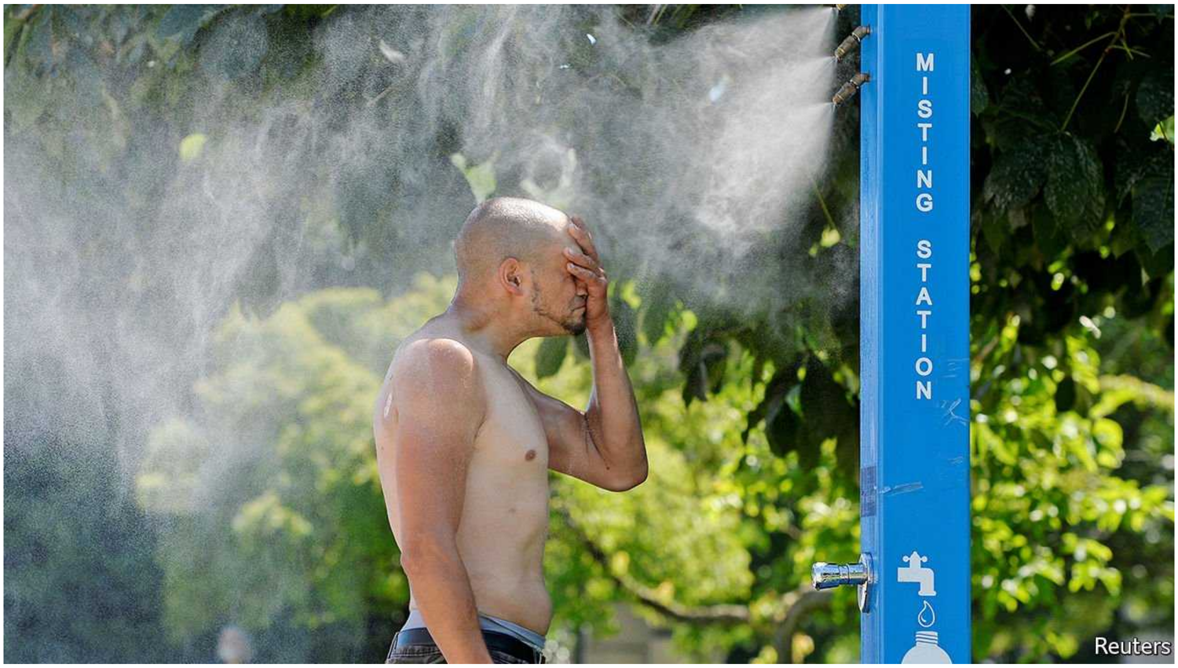
The long goodbye



The world this week

Politics this week

Jul 1st 2021



Much of America's Pacific north-west and Canada's west coast baked in a heatwave. Police in Vancouver reported more than 130 sudden deaths, most of them old people or those with underlying conditions. The extreme temperatures were caused by a phenomenon known as a "heat dome", in which an area of high pressure in the atmosphere stops air escaping.

President Joe Biden backed down over his claim that he would not sign a bipartisan infrastructure bill worth roughly $1trn unless it was accompanied by more expansive provisions off the Democratic party's wishlist, such as tax increases. Mr Biden had tied the two together after striking a deal with a group of senators from both sides last week, riling Republicans.

Florida's governor declared an emergency after a beach-front condominium building in Surfside, a suburb of Miami, collapsed. At least 18 people have died and almost 150 are missing. A study published last year charted subsidence in the ground beneath the building in the 1990s.

Donald Rumsfeld died at the age of 88. The Republican served twice as America's defence secretary, under Presidents Gerald Ford and George W.

Bush. He was instrumental in the invasion of Iraq in 2003, and bore much of the criticism when it led to violent insurgency and sectarian strife.

A high-ranking official at Brazil's health ministry was fired after being accused of asking for a bribe in negotiations over the AstraZeneca covid-19 vaccine. A whistleblower also denounced alleged irregularities in a contract for the Indian-made Covaxin. The vaccine, which has yet to be approved by a Western regulator, cost Brazil more per dose than any other and was acquired by a third-party firm. President Jair Bolsonaro denied wrongdoing. The health ministry suspended the contract.

Mexico's Supreme Court ruled that sections of a law which prohibit recreational use of marijuana were unconstitutional, in another step towards narrow legalisation. When a bill currently in parliament is enacted, those who want to smoke the drug recreationally, or grow plants at home, would be able to apply for a permit. The sale of cannabis would continue to be illegal; Andrés Manuel López Obrador, the president, has called the idea of a legal market "immoral".

America carried out air strikes against Iranian-backed militias in Iraq and Syria. The Pentagon said the militias had conducted drone strikes against Americans in Iraq.

Yair Lapid, Israel's foreign minister, became the highest-ranking Israeli official to visit the United Arab Emirates (UAE) since the countries signed a historic deal to normalise relations last year. Mr Lapid inaugurated Israel's embassy in the UAE, saying: "We're here to stay."

South Africa's highest court sentenced Jacob Zuma, a former president, to 15 months in prison for ignoring legal summons and impugning judges. His time in the dock is not over; he is also accused of taking bribes from a French arms company while he was deputy president.

Sudan's reform-minded government said it would send the former president, Omar al-Bashir, to the International Criminal Court (ICC) at The Hague after a local trial. The ICC has accused him of genocide, war crimes and crimes against humanity said to have been committed in the Darfur region in 2003.

The second round of France's local elections were a disappointment for Marine Le Pen and her National Rally party. She had high hopes that the party would for the first time take control of one of the regional governments, in the south. But other parties teamed up against her candidates, who lost. President Emmanuel Macron's La République en Marche also failed to win any regions.

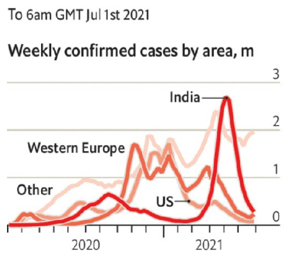
Britain and the European Union agreed a truce in the "sausage war". They delayed for three months a ban on some British meat products being sold in Northern Ireland, a consequence of the post-Brexit arrangement which in effect keeps the province in the EU's single market and customs union.

The military junta in Myanmar released nearly 2,300 people who had been locked up for protesting against the army's coup. Some activists and journalists critical of the regime were also released. No reason was given for the move, but the junta may be trying to temper popular ire. A cross-section of society has joined the protests.

India's government, which is seeking more control of online content, piled pressure on Twitter. In the latest of many twists, the social-media company was accused of treason for carrying a map that placed territory claimed by India outside its borders.

The Chinese Communist Party celebrated its 100th birthday. To mark the occasion, the party's leader, Xi Jinping, appeared in front of 70,000 people at Tiananmen Square. He waxed lyrical about how the party had transformed China for the better, and promised that the party would never allow the country to be bullied, oppressed or subjugated.

Coronavirus briefs



Vaccination doses

	Total '000	% of over-11s with 1st dose	2nd
Malta	659	92	77
Iceland	391	90	46
Kuwait	3,100	84	4
Israel	10,749	83	77
Mongolia	3,720	82	72
Bhutan	485	78	0
Canada	36,775	78	34
Chile	22,501	77	62
Uruguay	3,883	77	56
Britain	77,304	77	56

Sources: Johns Hopkins University CSSE; Our World in Data; United Nations

The Economist

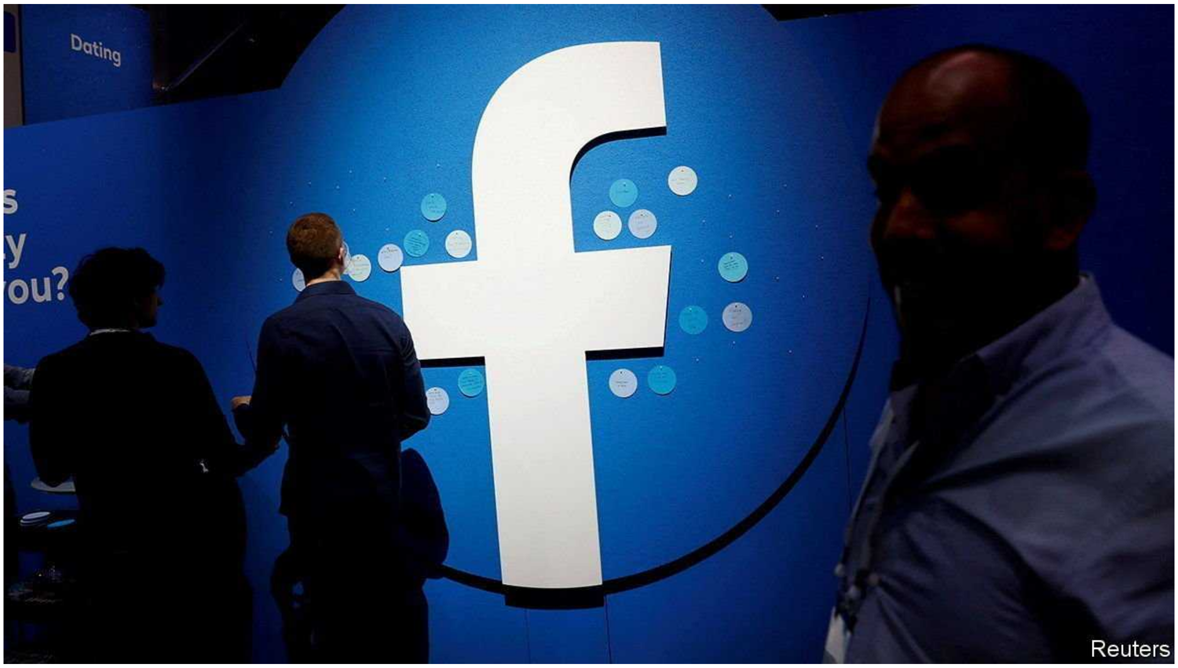
Australia's states closed their borders as new clusters of the Delta variant emerged across the country. Around 80% of Australians are now living under restrictions and their "travel bubble" with New Zealand has been suspended. Just 5% of the population has been vaccinated.

Mixing different covid-19 vaccines could boost immunity against the coronavirus, according to researchers at Oxford University. A shot of Pfizer-BioNTech's vaccine four weeks after one of Oxford-AstraZeneca's, and vice versa, produced a high level of antibodies.

Kim Jong Un, North Korea's dictator, dismissed senior officials for "incompetence and irresponsibility" related to pandemic prevention. Mr Kim did not admit that there had been a covid-19 outbreak in his country. Last week North Korea again told the World Health Organisation that it had recorded no cases.

Business this week

Jul 3rd 2021



In America a federal judge dismissed two antitrust cases against Facebook brought by the Federal Trade Commission and by a group of state attorneys general. The latter was thrown out on a technicality. The FTC'S case claimed that the tech giant was abusing its market power in social networking and using it to crush smaller rivals. But the judge found that the FTC failed to provide enough evidence to prove that Facebook is a monopoly. The company's share price jumped 4% on the news.

Separately, Amazon filed a petition to try to force Lina Khan, the new chair of the FTC, to recuse herself . It argued that she had "already made up her mind" that the company was a threat to competition.

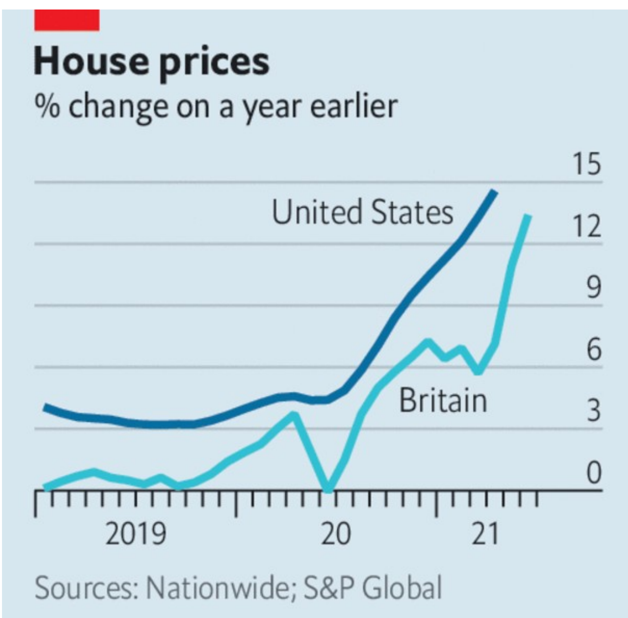
Microsoft and Google ended a truce in which they had agreed not to litigate or complain about each other to regulators without trying to resolve the disagreements first. The deal was struck in 2015 by two then-new bosses who wanted a fresh start to a fraught relationship.

America's biggest banks said they will pay an extra $2bn in dividends in the next quarter. The announcements come after the Federal Reserve relaxed restrictions on shareholder payouts, which it imposed last year to guard against large capital losses related to the pandemic.

The news from Facebook and the banks helped to push American stockmarkets to new highs. Both the Nasdaq and S&P 500 reached all-time highs. On Wednesday the S&P 500 achieved its fifth record-breaking close in a row. The surge was also boosted by an expectation among investors that the upcoming corporate earnings season will yield strong results as well as a new survey which showed an uptick in consumer sentiment in America.

Binance, one of the world's biggest cryptocurrency exchanges, froze customers' ability to withdraw and deposit sterling on its main platform. The firm claimed the function was "suspended for maintenance". It is unclear whether the incident is related to a decision by the Financial Conduct Authority, a British watchdog, which found that the exchange was not registered in Britain and so was not allowed to operate there. Later Binance said that it had unfrozen sterling withdrawals.

Hot property



The Economist

American house prices rose by 14.6% in the 12 months to April. That is the fastest growth rate in 30 years. The jump is largely because of low mortgage rates and greater demand for suburban dwellings. Similar factors pushed house prices in Britain to their highest year-on-year growth rate since 2004.

Argentina was dropped from an index of emerging-market economies compiled by MSCI, a big index provider. The decision was made in response to Argentina's capital controls which were imposed in September 2019 to try to support the weakening peso. Argentine share prices tumbled as a result.

Didi Chuxing, China's biggest ride-hailing app, ended its first day of trading on the New York Stock Exchange with a market capitalisation of $68bn. It is the biggest foreign listing in America since Alibaba's debut in 2014.

UBS said it will allow around two-thirds of its staff to mix working from home and the office. The Swiss bank hopes that this will give it a recruitment edge over rivals. Other big banks, such as Morgan Stanley and Goldman Sachs, are pushing for a full return to the office.

The UN estimated that the pandemic's impact on the tourism industry will reduce global GDP by $1.7trn-2.4trn in 2021 (1.9-2.7% of the total). Poor countries are expected to be hardest hit because they will probably have the lowest vaccination rates.

Nevertheless, United Airlines is betting that air travel will eventually rebound. It spent $30bn on 270 new planes, its biggest-ever addition to its fleet. United plans to replace two-thirds of its 50-seat jets with larger craft. That will help the airline offer customers more premium seats.

Shareholders at Toshiba, a Japanese conglomerate, voted to dismiss the chair of the company's board. The vote comes after an independent report found that last year the firm's management colluded with government officials to crush an activist investor rebellion. Following their show of strength, activist investors are reportedly keen to invite bids from private-equity firms.

Rocket man

Elon Musk said that Space x, his private rocket company, could spend between $20bn and $30bn on its low-orbit network. The firm has 1,500 satellites which provide broadband to places without fibre connections or

5G. It wants to expand the network to 12,000 satellites. The cost is much higher than previous estimates. As Mr Musk put it: “It’s a lot, basically.”

KAL’s cartoon

Jul 1st 2021

What If?

- If biohackers injected themselves with mRNA: Freedom to tinker
- If America tackled its opioid crisis: The other epidemic
- If a deadly heat wave hit India: A tale of two cities
- If everyone’s nutrition was personalised: You are what you eat
- If smartphones became personal health assistants: An Apple a day
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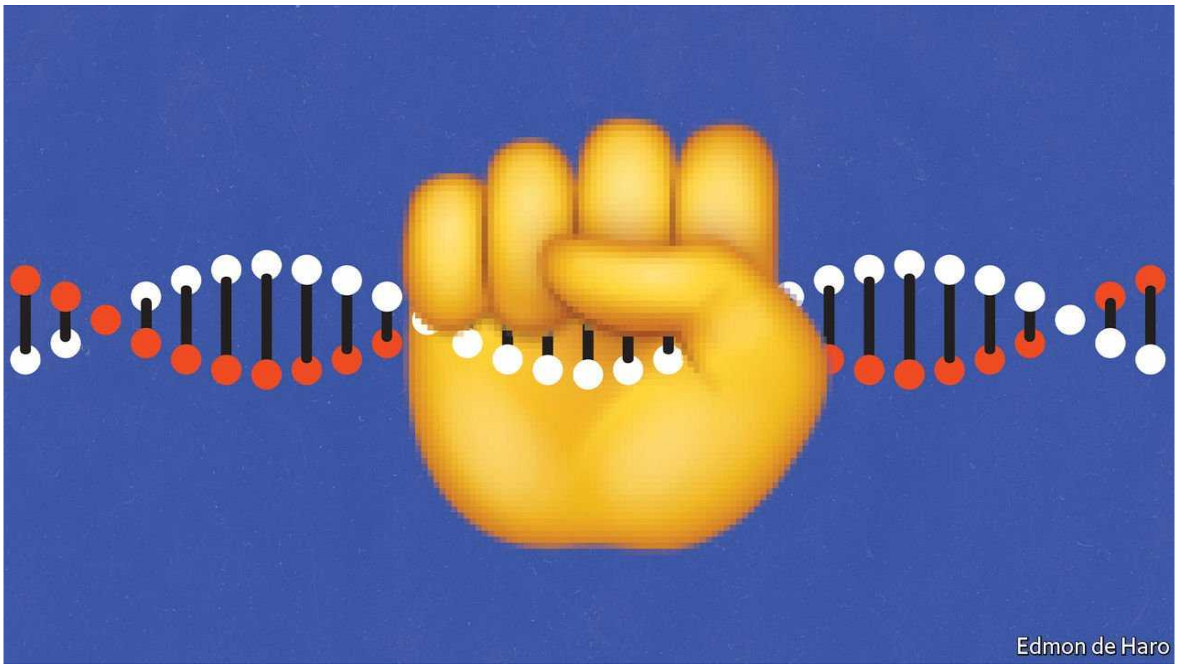
- If dementia was preventable and treatable: Novel treatments
- If an AI won the Nobel prize for medicine: Rage against the machine
- If germ theory had caught on sooner: Germ of an idea

Freedom to tinker: October 2029

What if biohackers injected themselves with mRNA?

Members of the Witnesses of Bioinformatic Freedom, a biohacking-rights group, demand the right to alter their own biology. An imagined scenario from 2029

Jul 3rd 2021

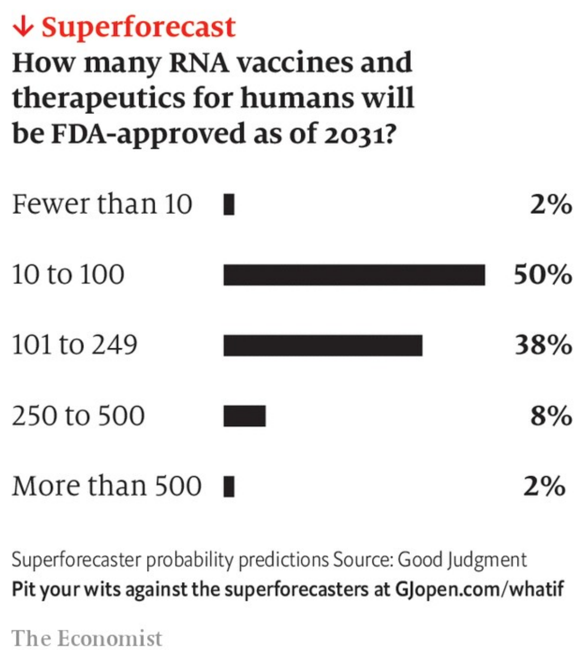


Editor's note: This year What If?, our annual collection of scenarios, considers the future of health. Each of these stories is fiction, but grounded in historical fact, current speculation and real science. They do not present a unified narrative but are set in different possible futures

TO UNDERSTAND THE controversy around the Witnesses of Bioinformatic Freedom (WBF), a biohacktivist group, cast your mind back to the coronavirus pandemic a decade ago. Within days of the discovery of the SARS-CoV-2 virus in 2019, its genome had been sequenced and used to create prototype vaccines containing molecules of messenger RNA, or mRNA. Hundreds of millions of people were injected with these artificial mRNA molecules, which instructed the protein-producing machinery inside the body's cells to make a "spike" protein, identical to that found on the virus's surface. The resulting spike proteins then triggered an immune response, priming the recipient's immune system so that it could recognise and fight off the virus if required to do so.

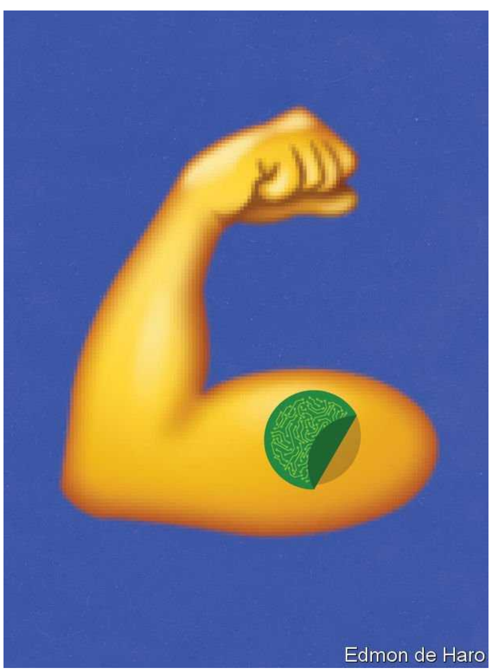
The same mRNA technology had been used in the 2010s to develop experimental vaccines for other diseases, including Zika virus and Ebola. But the power of mRNA was demonstrated on a global scale during the pandemic, paving the way for other treatments in the 2020s. Like the vaccines, these use carefully crafted mRNA messages to boost temporarily the production of needed proteins, or inhibit the production of harmful ones—a technique often likened to using the patient's own cellular machinery as an on-demand drug factory. This approach is now used to treat cancer, heart disease and neurological disorders.

The story of that medical revolution has been widely told. Less well known is the parallel story that has been unfolding alongside it. During the pandemic, new technologies, infrastructure and supply chains were created to manufacture mRNA vaccines at vast scale, while also allowing their mRNA payloads to be quickly and easily tweaked as new variants emerged. Once covid-19 was brought under control and demand for vaccines subsided, some of that infrastructure began to be put to new and unexpected uses.



The possibility of using mRNA for self-enhancement first emerged in 2024, after the Paris Olympics. In 2012, Katalin Karikó and Drew Weissman, two of the main actors in the intellectual development of therapeutic mRNA, had shown that carefully designed mRNA molecules could transiently raise the level of erythropoietin (EPO), a protein hormone which stimulates production of red blood cells, in mice. More EPO means more red blood cells, which means more oxygen delivered to working muscles, which improves physical performance. In the months after the Paris Olympics rumours began to circulate that some competitors had been taking regular injections of EPO-producing mRNA. But the tests available failed to show conclusive evidence of foul play. New tests were then developed in time for the 2028 games.

Meanwhile, a group of biology doctoral students at the University of Belgrade began producing and distributing an mRNA molecule said to enhance learning abilities by boosting the synthesis of small proteins involved in memory formation. The government launched an investigation after a student, Luka Dragotin, died of a mysterious autoimmune complaint in 2025. The test scores of the students who had been dosing themselves with mRNA did seem to have risen relative to those of their peers. The doctoral students went to prison for 15 years, and the government imposed strict new regulations on mRNA technology.



The following year *Wired*, a technology-news outlet, published a story about a group of mothers in Austin, Texas, who had dosed themselves with mRNA molecules during pregnancy. The treatment was said to keep their production of thyroid hormones within the optimal window for neurological development in utero, thus maximising the cognitive capacity of their offspring. None of the mothers suffered any complications in pregnancy, and the mRNA-dosed children all turned out to be healthy. But there was an outcry from evangelical Christians and right-wing politicians who denounced “meddling” with biology. In 2027 the federal government banned self-dosing with mRNA and set up a Senate committee to investigate the use and misuse of the technology.

It was at this point that the WBF, a group championing biohackers’ rights, stepped onto the public stage. It declared in its manifesto that people had the right to send genetic messages of their own making to their own cells. WBF members, it emerged, had documented successful mRNA dosing for alertness, minor tweaks to physiology (such as to prevent hair loss), and suppression of stress hormones. It was, they argued, already too late for governments to stop them.

The group has since turned out to have members and sympathisers throughout the research community, who have helped refine the process of delivering messages to human cells. Needles and syringes are no longer required. Biohackers have built small patches of flexible electronics and microfluidics, worn on the body much like a nicotine patch, capable of crafting specific mRNA sequences in situ and inserting them into the bloodstream. New sequences can be beamed to the patch from a smartphone or computer.

A flourishing open-source ecosystem has developed around the designs of the patches and the molecules they can produce. New mRNA molecules are usually released to a select group of alpha testers, and made widely available only after the alpha testers have granted approval. Not all mRNA molecules are therapeutics or enhancements; the fastest-growing category is for molecules that offer transient, drug-like experiences, supposedly with no long-term side-effects.

Some doctors are said to be quietly dabbling in mRNA hacking themselves, and even recommending it to patients. For their part, drug companies have called for a clampdown on what they deride as “amateur pharmaceuticals”. They have also tried to have some repositories of mRNA molecules taken offline, claiming violation of intellectual property.

The question now is whether governments can put the genie back in the bottle through concerted, co-ordinated action. Many politicians say the power to tinker with biology is too dangerous to have in the hands even just of doctors and must be regulated. Next month’s global meeting on the topic in Belgrade, the Dragotin Conference, will bring together policymakers, medical experts and regulatory specialists. Representatives from the WBF have not been invited. ■

Full contents of this What If?

The other epidemic: June 2025

What if America tackled its opioid crisis?

Kamala Harris's administration is getting serious about tackling deaths from drug overdoses. It is a problem with deep roots. An imagined scenario from 2025

Jul 3rd 2021

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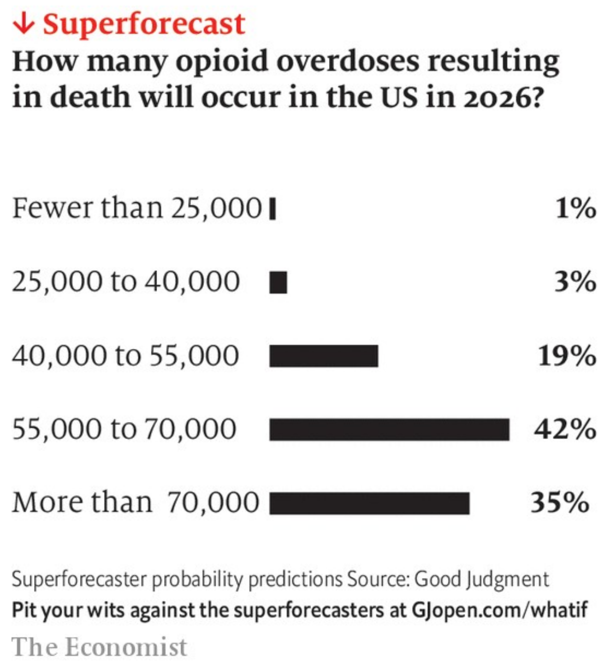
PROJECTIONS FROM the Centres for Disease Control and Prevention (CDC) published this month predict that in 2025, for the first time, more than 100,000 Americans will die from a drug overdose, bringing the total to more than 1m since 1999. At current rates, by the time of the next presidential election in 2028, more Americans will have died in the 21st century of drug overdoses than died in all of America's wars over its entire history. These horrifying statistics have at last focused attention on this neglected crisis.

The roots of the problem go back a long way. Since the 1980s, America's drug-overdose death rates have increased at the terrifyingly steady clip of 7.6% per year. In 2018, when the death rate dropped for the first time in ages, the Trump administration took a victory lap much too soon, touting the success of its policies. Then came covid-19. Drug-overdose rates exploded as people sheltered in self-enforced quarantine, addiction-treatment clinics were closed and Mexican cartels established supply lines of cheap, potent drugs to all parts of America. The rising death toll was barely dented by the modest sums spent on the problem during the Biden administration, which did little more than twiddle its thumbs after Republicans took back control of Congress in the mid-term elections of 2022.

Though addiction to all types of drugs (including cocaine and methamphetamines) has steadily increased, the primary problem remains opioids. They came to the fore in the early 1990s in the form of prescription painkillers that were unscrupulously marketed to doctors as unlikely to cause addiction. The most famous was OxyContin, launched in 1996. By the time it had been reformulated to make it harder to abuse, too many Americans were already hooked and the drug crisis had morphed into something else entirely, as addicts looked for alternatives. "Reformulation led markets to sell deadlier substances and contaminate non-opioid drugs, expanding illicit opioid drug use," concluded David Powell and Rosalie Liccardo Pacula, two drugs-policy researchers, in 2020.



Prosecutors spent years in litigation against the makers of OxyContin and other opioid manufacturers and distributors, culminating in last year's momentous judgment and a penalty of $350bn—larger than that imposed on tobacco giants over their promotion of smoking. But few pharmaceutical executives went to jail, and this immense sum seems small, given that the crisis has lasted a quarter of a century and costs America $80bn a year, according to the CDC.

In addition to the cash from the settlement, Democrats in Congress, with the backing of the White House, now propose to spend an extra $250bn over the next ten years to tackle the problem (President Kamala Harris shares her predecessor's proclivity for eye-popping sums). It is something that a few Republican senators could even agree to—curtailing addiction being one of the only remaining bipartisan issues. The emerging consensus reflects a continuing shift in America's approach to drugs policy, with less emphasis on reducing the supply of illicit drugs via enforcement and incarceration, and more emphasis on reducing harm and the risk of death for those addicted.

The model for the new legislation is the Ryan White Care Act, passed in 1990 to deal with the HIV/AIDS epidemic by establishing the federal government as the payer of last resort for patients. It was part of a successful campaign against the disease, as the distribution of therapeutics rapidly reduced mortality, and prevention efforts stemmed the growth of infections. The introduction of a prophylactic treatment in 2012 has since helped keep rates of infection among vulnerable groups (mainly gay and bisexual men) in check.

There is now hope that similar progress can be made against drug addiction, particularly to opioids. The Food and Drug Administration (FDA) long ago approved three drugs to provide medically assisted treatment to those addicted to opioids: methadone, buprenorphine and naltrexone. The first two are opioids used as replacements, with less scope for abuse. The third blocks cells' opioid receptors and thus the euphoria from abusing drugs. All three medicines substantially reduce the risk of dying from an overdose.

Yet they are surprisingly underused. Only around half of those addicted to opioids in America receive these therapies. But for years their use has been hampered. Bureaucratic restrictions kept doctors from widely prescribing buprenorphine. The requirement that methadone be doled out in person remains, even though evidence shows that allowing it to be taken home reduces subsequent hospitalisations. Skittishness among non-specialist doctors limited the use of these treatments, as did a shortage of addiction specialists in rural areas.

Much of the cash will be steered towards the expansion of these treatments for the already addicted. Democratic aspirations for universal health coverage having failed during the Biden administration, it will be channelled through Medicaid, or via specialised grants. These have the advantage of being targeted, but the disadvantage of being temporary. Some funding will also be directed to purchasing naloxone, a drug that saves lives by immediately reversing the effects of an opioid overdose. Yet in classic American fashion, little attention is being paid to constraining costs. Naloxone, which was patented in 1961 and once cost $1 per dose, now costs $150, hamstringing cities that had tried to buy the life-saving medicine. Bidencare's failure means the federal government remains unable to negotiate bulk purchases of essential drugs.

None of the cash, however, will be steered towards the creation of "safe-injection sites", centres where users can go to shoot up under the watchful gaze of health professionals, for which left-leaning cities had been agitating. Calls for "heroin-assisted treatment", as practised in some European countries, also went nowhere. America is still not Switzerland. Even if it managed to build 5,000 supervised injection sites, says Keith Humphreys, a professor of psychiatry at Stanford, that might only cover 1% of actual usage. "It's just not scalable," he says. "Buprenorphine is scalable. Needle exchanges are scalable. Naloxone is scalable. That's what covers public health."

All epidemics are sustained by the inflow of new cases. Researchers are encouraged that in America the flow of new addictions has slowed, partly because of reductions in opioid prescribing. At the peak of the prescribing blitz, in 2012, physicians wrote 81 opioid prescriptions per 100 Americans; by 2019, there were fewer than 46.7 per 100 (still high compared with the rest of the world). But even if new addictions are rarer, there are still more than 20m addicted people for whom better treatment is necessary.

The challenge is that the nature of addiction has transformed into something deadlier in recent years—and not just because of potent synthetic opioids like fentanyl and carfentanil, though these have certainly made inadvertent opioid overdoses easier. It is also because of rising abuse of multiple types of drug at once. In 2011, 19% of opioid drug users said that they also used methamphetamine; by 2017, that number had grown to 34%. Such polydrug use makes treatment more complicated. Vaccines that blunt the worst effects of synthetic opioids, currently in development, may provide protection against overdoses in future. But there are not well-developed pharmaceutical therapeutics for addiction to methamphetamine.

As with all epidemics, the curve can be bent. The new administration is taking the problem seriously, after years of neglect. But as the past 50 years of drug policy have demonstrated in America, the longer a problem persists, the worse it tends to become. ■

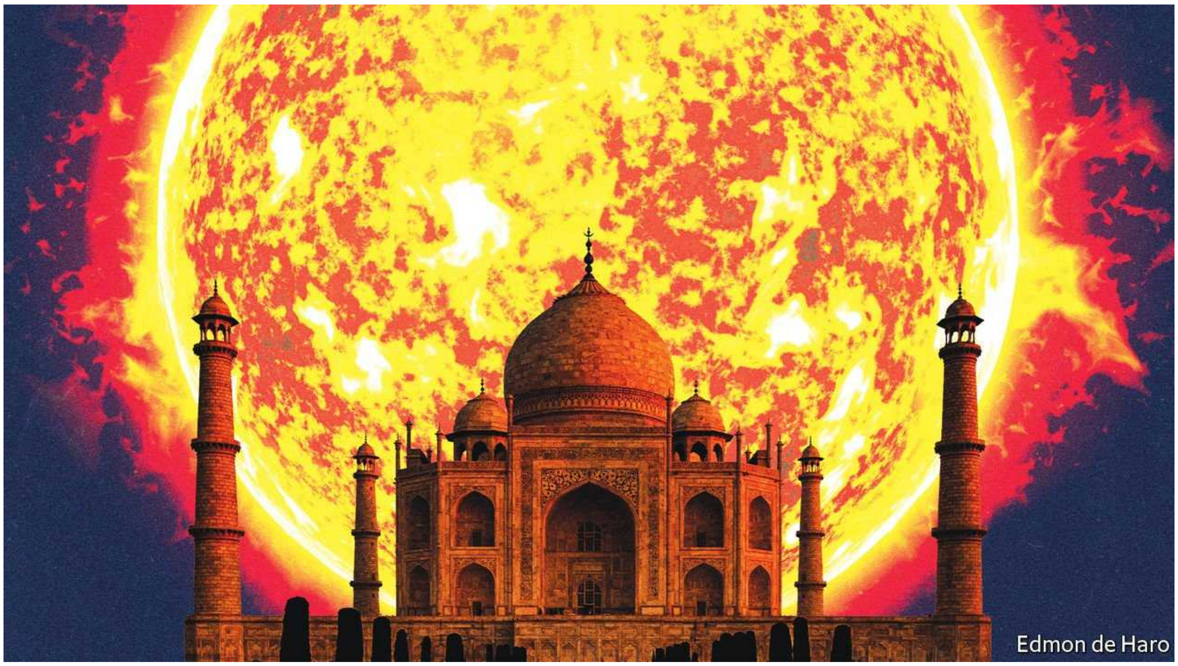
[You are what you eat, January 2035: What if everyone’s nutrition was personalised?]
[iHealthy, September 2028: What if smartphones become personal health assistants?]
[Mrs Chippy’s benediction, February 2055: What if marmosets lived on the Moon?]
[Novel treatments, August 2050: What if dementia was preventable and treatable?]
[Rage against the machine, December 2036: What if an AI wins the Nobel prize for medicine?]
[Germ of an idea: What if germ theory had caught on sooner?]

A tale of two cities: June 2041

What if a deadly heatwave hit India?

Why Hyderabad is weathering India's deadly heatwave so much better than Chennai. An imagined scenario from 2041

Jul 3rd 2021 | NEW DELHI



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IN NEW DELHI, India's capital, the roads have begun to melt. Temperatures in the city reached 49.3°C (120.7°F) as the deadliest heatwave in the country's history entered its third week. It was even hotter in the south, where temperatures rose above 50°C, peaking at a record-breaking 52.1°C in the town of Markapur, Andhra Pradesh, on June 23rd. But the centre of the crisis is the city of Chennai, where hospitals are buckling in the face of heat-related illnesses. The worst scenes were outside Jawaharlal Nehru Hospital, where 11 people died from heat exposure while queuing.

The real killer in Chennai is the humidity. The combined measure of heat and humidity in air is the "wet-bulb temperature"—the lowest temperature to which something can be cooled through evaporation from its surface. In dry air, even at temperatures well above 37°C—human body temperature—people can sweat to cool down. But at wet-bulb temperatures of 32°C and higher, “it becomes unsafe to perform most physical labour,” says Moetasim Ashfaq, an atmospheric physicist at the Oak Ridge National Laboratory in Tennessee. Few people can survive a wet-bulb temperature above 35°C. In the past decade, wet-bulb temperatures in Chennai have regularly risen above 32°C. But for much of the past week, wet-bulb temperatures have repeatedly crossed 36°C—a fatal level.

Initially, the deaths were concentrated among those who could not escape the heat, especially the city’s homeless population. But the high energy demand of air conditioning soon stretched the city’s power grid to its breaking point, resulting in city-wide blackouts lasting hours. That exposed anybody without a generator to the deadly heat. According to official statistics, 17,642 people have died from heat-related causes in Chennai since the heatwave began—more than a third of the 52,348 deaths reported nationally. Those are shocking statistics, but all the more so when juxtaposed with the experience of nearby Hyderabad.

The two cities have similar temperatures in their immediate surroundings and similar populations of around 10m people. But Hyderabad has registered just 26 deaths, fewer than any other big city in southern India. The comparison has not been lost on officials. “Whatever Hyderabad is doing, it’s working,” said Ramanatha Srinivasan, the mayor of Chennai, this week. Hyderabad is in fact one of the leading cities in heat-wave mitigation—not just in India, but globally. So what exactly is it doing differently?

Heat of the moment

India’s current heatwave is the result of an unlucky confluence of factors. Unusually strong north-westerly winds blowing in from Pakistan kept moist air from the Bay of Bengal from drifting inland onto the subcontinent. As a result, the region’s customary pre-monsoon rain showers failed to materialise this year, leaving much of southern India drier and more arid than usual. The unprecedented length of the current dry season—the monsoon usually starts at the beginning of June—has compounded matters. A strong El Niño effect has turned the heat up even further.

It was a similar, though much less deadly, heatwave 26 years ago that jump-started Hyderabad's efforts to reduce city heat. In 2015 at least 585 people died as blistering temperatures enveloped the city and the surrounding state of Telangana. It was a turning point. Hyderabad has since become a crucible of experimentation in urban heat-reduction techniques.

In most heatwaves, the highest temperatures are experienced in cities, towns and other urban areas. One of the simplest ways to reduce heat is to boost the reflectiveness, or "albedo" of city surfaces—especially the roofs of buildings. The more solar radiation is reflected away from a city, the less is absorbed to be re-radiated as heat. To that end, the city government of Hyderabad tested a "cool roofs" programme in low-income neighbourhoods in the city in 2017.

The results were striking. Indoor air temperatures in homes fitted with a cheap, white polyethylene roof coating were, on average, 2°C cooler than similar homes without them. As a result, in 2019, Telangana committed to a statewide cool-roof programme, making cool roofing mandatory for commercial and government buildings, and in low-cost housing provided by the government. By 2027 more than 8,000 buildings in Hyderabad had been fitted with cool roofs.

These efforts received a further boost in 2030, when India's National Rural Employment Guarantee Act (NREGA)—a rural jobs guarantee—was extended to poor urban neighbourhoods. Under the programme, the city of Hyderabad put unemployed residents to work painting shacks, shanties and other makeshift structures with a lime-based whitewash. More than 250,000 homes have been made heat-resilient in this way. The city also borrowed an idea from South Africa, planting 2.5m trees, which reduce surface and air temperatures by providing shade and through the evaporation of moisture from their leaves.

An analysis by the University of Hyderabad found that all these initiatives have collectively reduced the average outdoor temperature in the city by 0.9°C since the early 2020s. That may not sound much, but this small change can make an enormous difference, as events in Chennai are now demonstrating. Until the 2030s, Chennai remained largely unscathed by deadly heatwaves because of its proximity to the ocean. But in recent years heatwaves have increased in frequency and intensity as a result of climate change.

This heatwave is likely to be a harbinger of things to come. Though the world is on track to reach net-zero carbon emissions around 2062, the effects of past emissions will continue to manifest themselves for decades. Deadly heatwaves are expected to increase in frequency well into the next century. Scientists have known this for some time. Since the early 2020s experts have warned that deadly temperatures could be commonplace in the Middle East, South Asia and parts of China by 2100. Yet the danger posed by heatwaves continues to surprise many policymakers.

Few cities have made interventions of the type undertaken in Hyderabad, and the consequences are now becoming clear. Fortunately, it is never too late to start. The best time to begin adapting may have been 20 years ago, but the second-best time is now. ■

Full contents of this What If?

You are what you eat: January 2035

What if everyone’s nutrition was personalised?

How the mass adoption of personalised nutrition is changing people’s health—and the food industry. An imagined scenario from 2035

Jul 3rd 2021 | DAVOS

Editor’s note: This year What If?, our annual collection of scenarios, considers the future of health. Each of these stories is fiction, but grounded in historical fact, current speculation and real science. They do not present a unified narrative but are set in different possible futures

“LET FOOD be thy medicine and medicine be thy food.” The diktat from Hippocrates, who defined the principles of medicine in ancient Greece, hovers in bright holographic characters over the main stage at the World Economic Forum in Davos. The central theme this year is how to make personalised nutrition more widely available to those unable to afford its benefits. Hot topics include whether metabo-watches, implants and other personal-nutrition trackers should be free for everyone (as they are now in some Nordic countries), why personalised nutrition is good for business and the perennial debate over how governments can best regulate corporate use of consumers’ personal data.

Amid the arguments, there is broad consensus that the rise of personalised nutrition has done a lot to promote healthy and environmentally friendly eating over the past decade. In 2031 the proportion of obese Americans fell for the first time in more than 20 years, and the rate of diabetes has fallen for three years in a row from its all-time high of 22%. Europeans are getting slimmer and healthier, too.

But progress has been slower than hoped, and in emerging markets obesity is still rising, hobbling economic growth. Environmentally sustainable eating, though increasingly popular in the rich world, is still not on track to reach the "planetary health diet" target set by scientists in 2019 in the *Lancet*, a medical journal. That target, which big food manufacturers and many other firms have pledged to support, called for a 50% worldwide cut in red meat and sugar consumption and a doubling of the consumption of nuts, fruits, vegetables and legumes between 2020 and 2050.

That personalised nutrition is the best way to drum up demand for healthier and more earth-friendly foods became clear in the mid-2020s. A decade earlier, scientists had begun to unravel why one-size dietary guidelines in the form of food pyramids, sugar and fat labels and so forth were not turning the tide on diabetes, obesity and other diseases caused by bad diets. Faddish regimens with catchy names like Keto or Paleo worked for some people but were useless for many, if not most, people who tried them. And people who lost weight often found it hard to sustain.

The diets that came and went until the 2020s required steely willpower and careful planning. The biggest problem, however, was their failure to recognise that people's bodies react differently to the same foodstuffs. By the late 2010s mounting scientific evidence showed that meals that were perfectly healthy for one person could be another person's fast-track path to diabetes, obesity or heart disease.

It turned out that even the same meal eaten by the same person at a different time of day could be metabolised in a more or less healthy way, depending on their other eating, sleeping and exercise patterns. The most crucial discovery was the role of the microbiome, the colony of 100trn microbes living in the human gut. The microbiome, it turned out, was the factory that converted food into the various substances the body needs to function—as well as those that cause poor health. And everyone's microbiome is unique.

A landmark in the idea of personalised nutrition was a study published in 2015 by researchers at the Weizmann Institute in Israel. They devised an algorithm based on artificial intelligence that could accurately predict an individual's response to any given food, measured by continuous blood-glucose monitoring with a small device attached to the upper arm. Spikes in blood glucose after meals are known markers for weight gain and a panoply of metabolic disorders. The algorithm used data on lifestyle, medical background and the composition of the microbiome. Within three years scientists in America, Britain and Germany had replicated the Israeli team's work and the business of personalised nutrition entered a new era.

During the early 2020s the number of startups offering bespoke nutritional advice by algorithm soared. Some used mail-in samples of body fluids or continuous monitoring devices to track blood levels of glucose, lipids, vitamins and so on. A few, including DayTwo, Million Friends and Zoe, did microbiome mapping too (through genomic analysis of everything found in a person's stool sample). Many firms did just the bare minimum: checking for a handful of genes that had been linked with certain reactions to various foods. This had limited utility. By the late 2020s the market had reached maturity after a brutal shake-out.

Soup-to-nuts service

A handful of firms have thrived and are now household names. EatLogic, the second-largest, agreed last month to be acquired by Google, subject to regulatory approval. The leaders all have essentially the same business model. Their apps and algorithms identify what people should eat and avoid, and keep track of what is in their cupboards, refrigerators and online shopping carts. AI-generated recipes use flavour combinations favoured by leading chefs. The apps also analyse restaurant menus and recommend which dishes to order—sometimes with minor tweaks, such as swapping a vegetable or changing a salad dressing. All this helps people make good food choices. Accuracy has steadily improved as the implants and wearable devices paired with these services have become smaller, cheaper and more capable.

Makers of kitchen appliances, such as Philips and Samsung, have been central to the personalised-nutrition ecosystem since the early 2020s. At Davos their chief executives talked about the challenges—and opportunities for public health—of developing cheaper models for emerging markets, where the number of middle-class households is growing fast. (Obesity is also most common in that demographic segment.) Industry bosses reckon that in countries like India and Kenya, about 20% of households can afford a smart fridge, though one with far fewer features than the models that are now standard in America. In 2034 just over half of American households had a smart fridge linked to a personal-nutrition account.

The food industry has also adapted surprisingly quickly to the personalised-nutrition revolution, given how slowly it moved to reduce salt and sugar in processed foods. Its transformation is evident on supermarket shelves, where processed foods are available in multiple variants, tuned for each of the main metabo-types identified by scientists. (Some variants are, for example, higher in fat and fibre but lower in protein.)

Artificial meat and fish grown from animal stem-cells—which in 2034 surpassed the traditional variety by sales volume—also come in metabo-type varieties that include different ratios of the fat, protein, minerals and vitamins found in “real” animal products. Restaurant menus, too, increasingly cater to the most prevalent metabo-types among their clientele.

One of the most contentious topics discussed at Davos was how to make personalised nutrition more affordable. The first-generation services, offered in the early 2020s, started at several hundred dollars for initial tests, and hefty monthly fees thereafter. Today’s most basic plans are about 80% cheaper, after adjusting for inflation. Users who let providers sell their personal data get hefty discounts, though some regulators are looking to curtail the practice. Employers, health insurers and governments are increasingly subsidising personalised-nutrition plans and offering vouchers and other perks to obedient users.

But cost is not the only hurdle to greater uptake. In England, the National Health Service offers a free plan to everyone, along with subsidised personal devices that can be paired with it. This helps explain why about 70% of adults in England now use a personalised-nutrition service, the highest rate in the world. Convincing the remaining 30%, which includes many of those who stand to benefit the most from changing their diets, will take a lot more than free gadgets. Many take a dim view of the whole idea, because of conspiracy theories that doctors are struggling to dispel.

In the final debate on the main stage at Davos, the majority of speakers were optimistic about the future potential of the technology, while others worried about the difficulty of expanding adoption within these more “hesitant” groups. The discussion ended on a bittersweet note. Personalised nutrition, it seems, is not to everyone’s taste. ■

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Novel treatments, August 2050: What if dementia was preventable and treatable?
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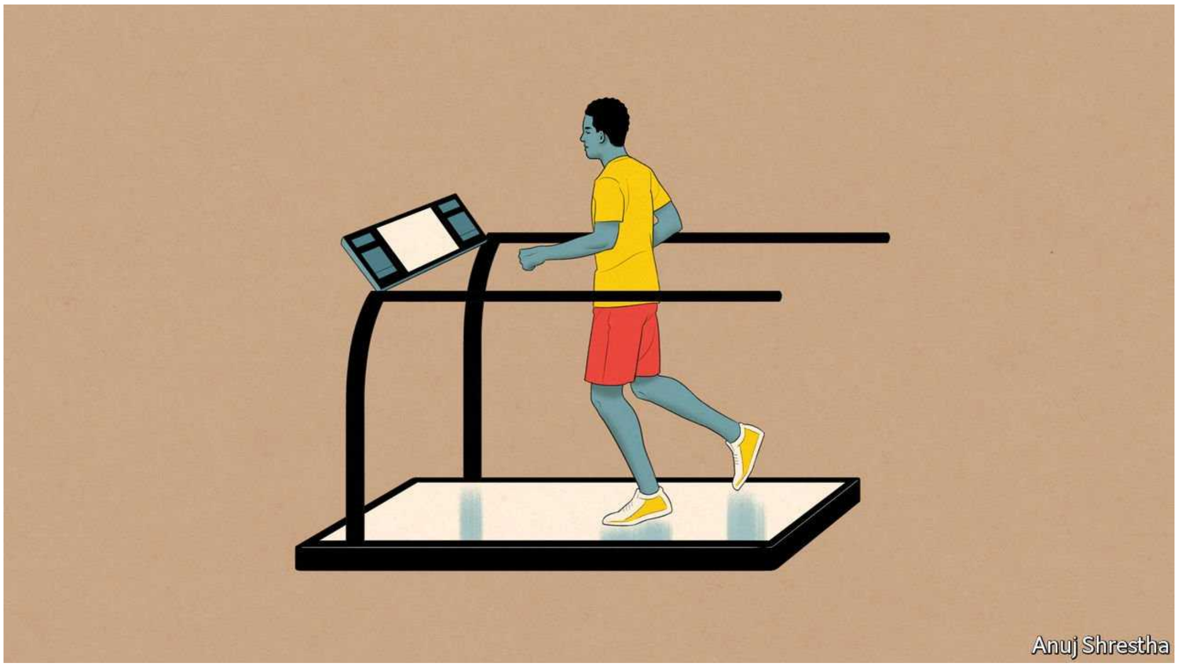
iHealthy: September 2028

What if smartphones became personal health assistants?

The latest model of Apple's iconic iPhone is built around health-monitoring features. An imagined scenario from 2028

Jul 3rd 2021 | cupertino



Anuj Shrestha

Editor's note: This year What If?, our annual collection of scenarios, considers the future of health. Each of these stories is fiction, but grounded in historical fact, current speculation and real science. They do not present a unified narrative but are set in different possible futures

IN 2019 TIM COOK, then boss of Apple, gave an interview in which he said, "if you zoom out into the future…and you ask the question, 'What was Apple's greatest contribution to mankind?' it will be about health." It sounded like standard-issue CEO boosterism at the time. But nearly a decade later, with this week's announcement of the iPhone XX (pronounced "iPhone 20"), might his prediction be about to come true?

The latest iPhone is not so much a phone as a personal medical-data hub. Some of its features are upgrades of existing functions, such as tracking of sleep, menstruation and movement, and seamless access to health records and other personal documents. Physically, the device itself looks much the same—little has changed about these slim black rectangles over the past 15 years. Instead, it is the myriad accessories unveiled this week that define the iPhone XX. They could be game-changers for both personal and public health.

For many years the company's approach to health tracking has focused on the Apple Watch. Even the original model, launched in 2015, could measure movement and heart rate. Since then, sensors have been added to measure heart activity, blood pressure, body temperature and levels of oxygen, sugar and alcohol in the blood. In addition, software tweaks have granted it the ability to spot fevers, falls, irregular heart rhythms and early signs of dementia.

But not everyone wants (or can afford) to buy a fancy watch with all these features. Meanwhile, the market in consumer-health devices has boomed. With its new range of add-on accessories, Apple has both expanded and unbundled its health-tracking features. Unlike the clunky devices available at pharmacies, Apple's are elegant, require minimal setup, integrate seamlessly with Apple handsets and are aimed at people with specific concerns. A $49 device for people with diabetes, for example, offers blood-sugar monitoring, while a $69 device for those with respiratory conditions includes an oximeter and a spirometer.

Other sensors focus on monitoring of sleep, hypertension, coeliac disease and fertility. Several have yet to win regulatory approval. In the past three years alone, Apple has acquired a dozen firms that make home-diagnostics tools, not all of which can be built into a watch or a smartphone. So it makes sense to start selling some health devices and services separately.

Alongside these devices, Apple unveiled a range of extra subscription services. The diabetes package, for instance, includes a nifty app that guesses the glycaemic index and nutritional and calorific content of any food at which you point your iPhone's camera. After two weeks of learning about your diet, the app starts subtly suggesting substitutions and changes to your eating patterns. Each accessory comes with a year's subscription to the relevant service. And while some accessories are compatible with older iPhones, only the new model works with all of them.

All of this could be a boon for public health. The more people walk around with devices constantly monitoring their vital signs, the more likely it is that ailments can be caught early, and outbreaks of infectious diseases nipped in the bud.

Yet there are huge worries, too. The first is privacy. Apple touts the iPhone as a secure repository for personal data of all kinds, and emphasises its model of storing and processing data locally, on the user's device, rather than in the cloud. It also allows users to share data with medical specialists and participate in trials approved by its semi-autonomous data-ethics committee. But privacy activists say Apple's rules are opaque and confusing. The second concern is fairness. Most people cannot afford an iPhone. Apple's devices will therefore mostly benefit those who already have access to good diagnostics and doctors.

There is also cause for optimism, however. When Apple launched the iPhone in 2007, it seemed implausible that just over a decade later half the world's population would possess a smartphone. If the past two decades are any guide, other companies (such as Samsung and Google) will copy Apple's ideas—spurring an outburst of competition, innovation and mass adoption in health-monitoring and diagnostics, as previously happened in handsets. That, even more than what Apple does with its own devices, may be the true contribution it makes to humankind. ■

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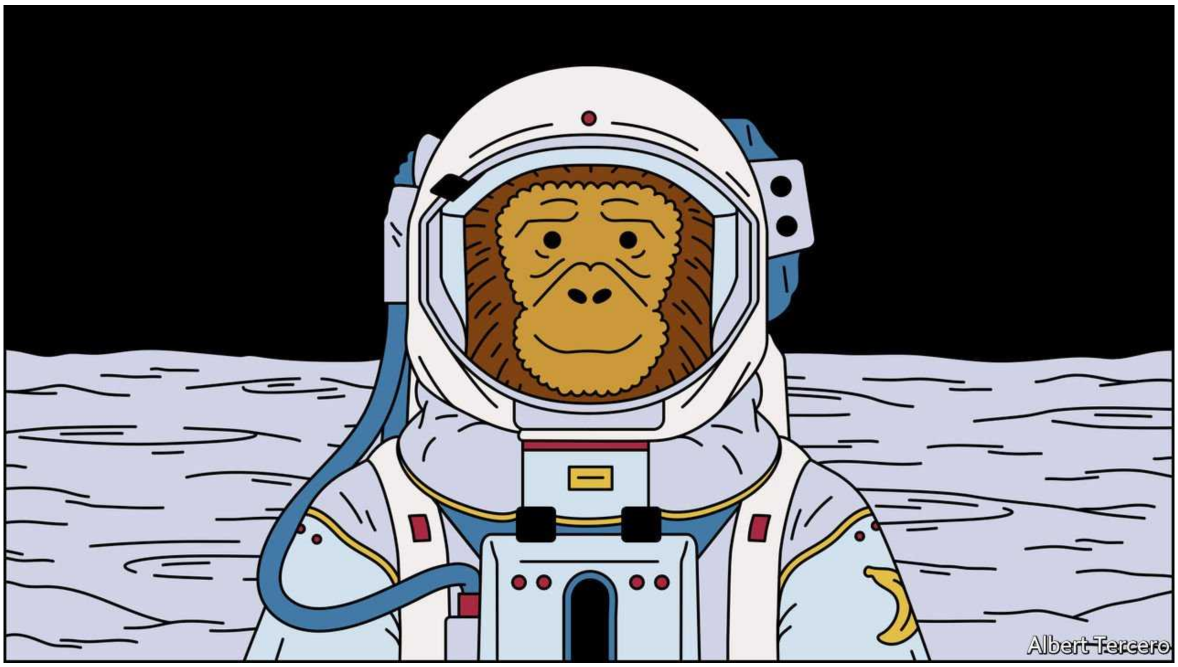
Mrs Chippy’s benediction: February 2055

What if marmosets lived on the Moon?

A primate colony set up to explore one fundamental aspect of the human condition has ended up illuminating another. An imagined scenario from 2055

Jul 3rd 2021 | CAIRD COLLECTIVE, LUNA



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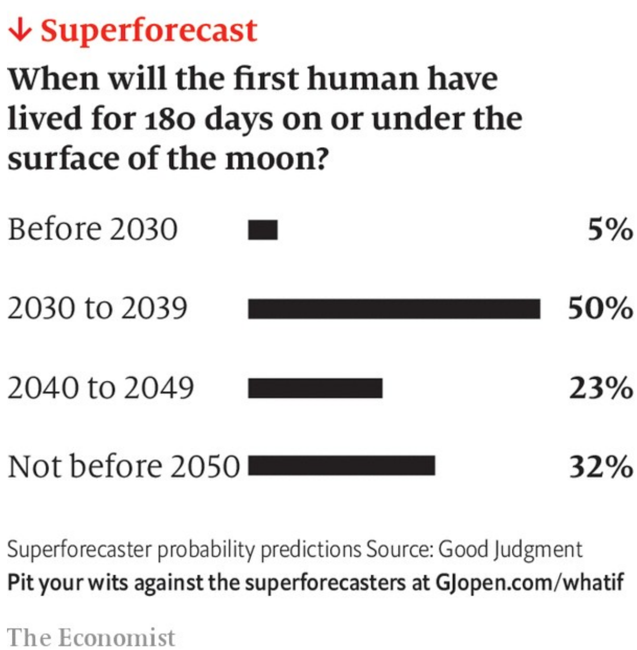
THEY CAN, at times, look somewhat sinister, their faces oddly small for their heads, their white ear tufts jutting out almost aggressively. Their ability to throw themselves at people across seemingly unfeasible distances can be unsettling, and their buzzing and shrieking takes a lot of getting used to, as does their smell. But the members of the Caird collective will not hear a word spoken against the marmosets with whom they share their spaces at the Moon’s South Pole. As they sit in their insulated caves hoovering moondust out of the animals’ tails, few of the Cairders can imagine their life on the rim of Shackleton crater without them—and none wants to. The marmosets of the Moon are the first and best example of what has turned out to be a fundamental fact of space flight: that the further humans get from Earth, the more they benefit from the companionship of other Earthly animals.

The marmosets were originally brought to the Moon as unwilling participants in a vital research project. Marmosets are light—even under Earth gravity—and reasonably easy to care for, but they have placentas much more like those of humans than any other animal their size, and reasonably short gestation periods. That made them ideal for looking at a fundamental question: can humans have healthy pregnancies in the low gravity of the Moon, where things weigh only one-sixth what they do on Earth?

In the 2020s and 2030s, the years of what the novelist Wil McCarthy called the "Rich Man's Sky", questions of obstetrics and gynaecology received remarkably little attention. For many, the idea of staying in space long enough for such things to matter made little sense—space stations in Earth orbit and bases on the Moon were places for fixed-length work contracts and research sojourns, or for tourism. Babies were no more of an issue than they were in isolated 20th-century Antarctic research outposts.



There were, as it happens, a few babies born in Antarctica even back then, when its ice cover was all but intact. The Argentine and Chilean governments both saw the creation of natives on the continent as a way to establish sovereignty and arranged births to that end. But there was no reason to think that Antarctica was inimical to pregnancy and infancy. The long-term health effects of low gravity and microgravity—which for those in orbit include brittle bones, muscle wasting and eye disease—were something else. Adults could counter some of these effects with treadmills and tension cords. But as the title of an early paper on the subject succinctly put it, “The fetus cannot exercise like an astronaut.”

Even those, like Elon Musk, who talked of permanent settlements on Mars spent little time working on the question. It was left to a small team of scientists in the Japanese modules of the Artemis base founded in 2029 by America and its allies to explore the question experimentally with the help of marmosets, gene-splicing technology, intra-uterine monitoring devices and a giant centrifuge.

They had some success. Like human fetuses, marmoset fetuses spend most of their gestation with a density equal to that of the amniotic fluid around them, a neutral buoyancy that leaves them indifferent to local gravity; only relatively late on do differences due to gravity start to crop up. After a few years of trial and error, and some dainty gene-editing to rebalance the rate at which bones grow when not stressed through use, the researchers developed a regime involving hormone treatments for the mothers and regular late-pregnancy sessions in their custom-made room-sized centrifuge, known as the marmo-go-round. This reliably produced pups with strong-enough bones and muscles and little by way of deformity, though their tails were impressively long even by marmoset standards.

Unfortunately, in 2038 that research was interrupted by the geopolitical meltdown of the wolf-and-wimp war and then by the 26 months of the Great Grounding. With all powered flight within or through the Earth’s atmosphere prohibited, the various Moon bases seemed doomed even after they agreed to pool their resources to create what became known as the Polynational James Caird Collective. With all the group’s biotech know-how turned to increasing food production and nutrient recycling, the marmosets were at first ignored and then freed to roam within the bases. Their effect on morale was instantaneous and profound.

Primates inter pares

The importance of companion animals to the mental health of people engaged in a homeless lifestyle was well documented in pre-war societies. It has been suggested that the effect of the marmosets on the Caird collective was similar; cut off from Earth, the humans were more homeless than any group of people had ever been before. Caring for, playing with and grooming marmosets also became a basis for bonding between humans, many of whom had not known each other before the Grounding, and some of whose countries had been adversaries in the war. By the time the mysterious entity responsible for the Great Grounding finally abandoned its control of the Earth's air-traffic-control and missile-defence systems, allowing traffic with the Moon to resume, the marmosets had become an indispensable part of the settlers' new identity and society. Few believe that a lack of companion animals was, in itself, the reason that the Mars base failed during the Grounding. But it surely did not help.

The bond between the Moon's larger and smaller primates persisted even as the rigours of separation came to an end. Almost all Cairders still dislike spending any significant time deprived of marmoset company. They cuddle them and relish their low-gravity acrobatics. In a joking way that seems, at some level, not to be a joke, they treat the abnormally long tails of the Moon-born marmosets as a sign of providence, holding the tail-fur to be particularly good at picking up moondust. The dust, which can cause lung disease, infiltrates their habitats despite all the airlock precautions; its suppression is a constant battle. Whether hoovering it out of tails which accumulate it in the manner of a feather duster is in fact more effective than the settlement's electrostatic air-filtration systems is open to question. But it is clearly more therapeutic. And the marmosets enjoy the attention.

The oldest Earth-born marmoset, New Mrs Chippy (who is, despite his name, male) enjoys an honorary seat on the collective's council. He has now reached the age of 31 with no obvious signs of ageing other than a pelt almost as white as his ear tufts. This is seen as a good omen for human longevity among those Cairders who refuse to countenance a return to Earth.

In Japan, by contrast, laboratory marmosets rarely make it past their 21st birthday.

SANS everything

The most salient biological, as opposed to sociological, novelty among Moon-born marmosets is a very high prevalence of adolescent-onset blindness. The constellation of eyesight problems known as "Spaceflight Associated Neuro-ocular Syndrome" (SANS) has been studied since early this century. In adult humans SANS normally develops only during long stays in the microgravity conditions of space stations; it is rare and mild among humans on the Moon. But in marmosets born in low gravity it develops swiftly and severely at the onset of puberty and leads to almost complete loss of vision.

There is as yet no agreed explanation for this pathology. Some researchers believe it is not in fact gravity-related but the result of an off-target effect of the gene editing which realigned the calcium pathways used in bone growth, but it is hard to square this with the similarity to SANS as experienced by genotypical adult humans. Others think its onset could be avoided if newborn pups were required to spend more, or all, of their time in the simulated Earth-normal gravity of the centrifuge. But it has proved hard to test this hypothesis. Infants that have spent any time at all in lunar gravity are greatly distressed by the rigours of the centrifuge and will not suckle when put into it. And Cairders are unanimous in their opposition to anything that causes marmosets distress.

The blind marmosets are not badly off. Their sibling groups and human companions provide what little practical support they need. And they are happier than sighted marmosets to travel in the pouches which many Cairders have incorporated into the suits they use for working on the lunar surface. Sighted marmosets are clearly disturbed by the harsh monochrome landscape, even when emotionally supported with the amplified sound of their companion's heartbeat.

Sudden-onset SANS leaves the question of whether human children can be born and raised on the Moon unanswered. It is sometimes suggested that a blind woman happy with the idea of a child who might also be blind could choose to join the collective and explore the issue. But bringing a child to term would require a centrifuge capable of holding a grown human, rather than a 250-gram marmoset. There is no appetite among Cairders for devoting resources to such a project, and their *juche* ethic of self-sufficiency will not let them accept funding for such experiments from Earth. Thus how well humans may eventually be able to breed on alien worlds remains unknown, even today.

That they will take animal companions with them, though, now seems certain. And some of those companions will surely have shocking-white ear tufts, odd little faces and very long tails.■

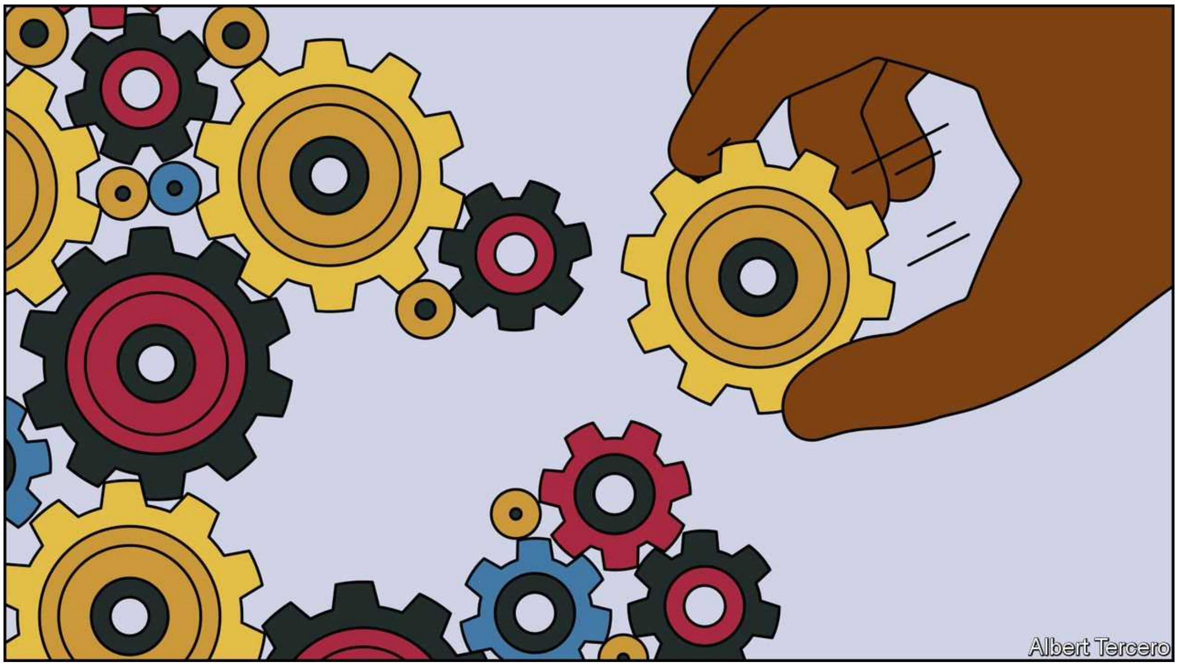
Full contents of this What If?

Novel treatments: August 2050

What if dementia was preventable and treatable?

How behavioural changes and new therapies turned the tide against dementia. An imagined scenario from 2050

Jul 3rd 2021 | MATSUYAMA



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RELUCTANTLY, WATANABE KEIKO puts down her book. She enjoys Tolstoy so much more in the original Russian, she explains. When she first decided to learn it, a decade ago in 2040, she was already 82, and felt a little old for the endeavour. But the doctors who monitored her were delighted: that, they purred, would be just excellent for her brain. They had been watching her closely ever since a routine test back in 2023, when she was 65, identified her as being at high risk of developing dementia. So terrifying was this prospect that she meekly submitted herself to many of the recommendations they made about her lifestyle, as did many of her neighbours on Shikoku island.

Much of that medical advice echoed public-health campaigns about reducing the chances of contracting heart disease, cancer and diabetes: exercise regularly, eat sensibly, drink little alcohol, keep blood pressure low. But it also included maintaining an active mind. The doctors occasionally put Ms Watanabe through “cognitive training”, a set of computer-based mental gymnastics. They also insisted she maintain an active social life, which was not easy for a widow whose only family lived far away in Tokyo. So she began attending thrice-weekly informal gatherings at a so-called “Dementia Café”, of which Japan had many by the mid-2020s. Most had been set up early in the century for people suffering a mild version of the condition.

But during the 2030s something unexpected happened. The change was almost unnoticed at first, but then surprisingly fast, as old people with dementia died, and the incidence of new cases quickly shrank to almost zero. The informal gatherings were renamed “Anti-Dementia Cafés”, in recognition of their effectiveness, with other measures, at keeping dementia at bay. Back in 2020, such an outcome had seemed inconceivable. Ms Watanabe had watched as her elder sister’s “senior moments” of mild cognitive impairment progressed, like an inexorable tide, into severe forgetfulness and confusion. Ultimately her sister could not recognise her own children and required care around the clock. Thirty years ago, when *The Economist* published a special report on dementia, that same tide seemed destined to engulf the world.

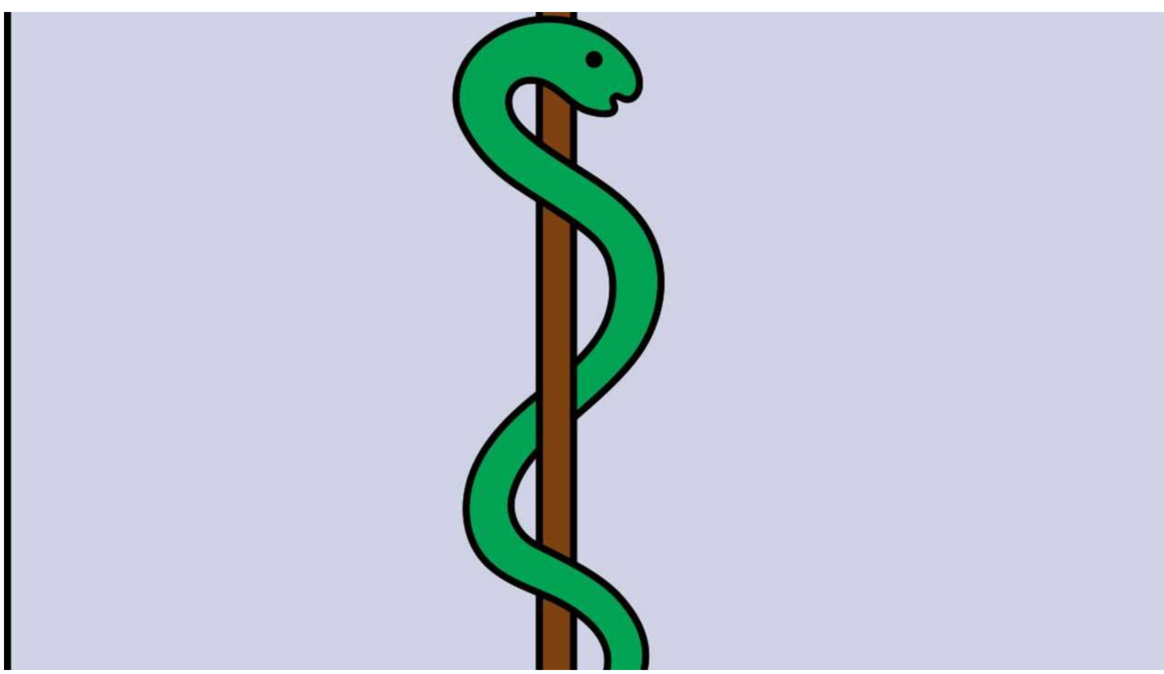
Dementia is not solely a condition of old age, but the risk of developing it rises sharply with the years. Japan, as the world’s oldest country, was suffering worse than anywhere. In 2020, with 28% of the population aged over 65 and 2.4m people over 90, including more than 70,000 centenarians, it also had the highest percentage of people with dementia: about 4%, or 5m people. With high life expectancy at birth (81 for men, 87 for women), low birth rates (seven births per 1,000 people in 2020 and falling), and low immigration, that percentage seemed certain to grow rapidly.

Nobody knew how Japan was going to find the carers to look after so many bewildered old folk; nor where the money to pay them would come from. Similar worries weighed on every country in the world. Just behind Japan demographically were greying west European countries such as Italy and Portugal, and the Asian tigers: Hong Kong, Singapore, South Korea and

Taiwan. And the same trends—longer lifespans and lower fertility rates—affected the rest of the world. China already had more people with dementia than any other country—an estimated 9.5m people.

Yet since the early 2030s dementia has been in retreat. The advantages this has brought are incalculable both in terms of human misery relieved and economic benefits gained. The global cost of caring for people with dementia doubled during the 2020s to $2trn a year. But then it began to decline. Millions of people who would otherwise have required care were able to stay economically active—and millions more who would have had to provide that care, at home or in residential facilities, were freed to do other jobs.

Part of what turned the tide was a trend in some rich countries towards healthier ways of life. Even by 2020, there was evidence that the age-specific incidence of dementia was going down. A study published that year in the journal *Neurology* followed nearly 50,000 people in America and Europe between 1988 and 2015. It found that 8.6% developed dementia. But the risk of being among them had, remarkably, fallen by an average of about 13% a decade, from about a one in four chance for a 75-year-old in 1995 to less than one in five by 2015.



More important, though, was a new international focus on finding ways of preventing or treating dementia. At first, the coronavirus pandemic of 2020-22 had seemed to set this back. Long a poor relation in funding and papers published to other diseases such as cancer, dementia research seemed to assume an even lower priority as resources were ploughed into combating the virus. But the pandemic highlighted the extent and danger of dementia. In some countries it was the biggest single pre-existing condition of people who died of covid-19.

A surge in funding for dementia research and a growing sense of urgency about the scale of the problem coincided with a tipping-point in neuroscience. The first and most important breakthrough was the development of a simple blood test, like the one that Ms Watanabe took in 2023. Until then, all that had been available were cognitive tests followed by an expensive brain scan or intrusive lumbar puncture. The new test could predict, decades in advance, how likely it was that someone would in later life develop Alzheimer's disease—much the most common of the dozens of causes of dementia, accounting for 60-80% of cases.

Identifying those at risk early meant that existing therapies such as aducanumab, a treatment for Alzheimer's which had little effect once symptoms were far advanced, could be deployed early enough to make a difference. And a stream of new treatments followed. The next successes came with rare genetic conditions such as Huntington's disease and frontotemporal dementia, which could be treated with antisense oligonucleotides and mRNA therapies. Then came new treatments for Alzheimer's (which turned out to be an umbrella term for a variety of conditions susceptible to different medicines), and vascular dementia.

It had long been known that the last of Shakespeare's seven ages of man —"second childishness and mere oblivion"—was not inevitable, but bad luck to which people became more prone the older they grew. In recent decades researchers have found ways for people to improve their odds, both through novel treatments, and indeed reading novels. At 92, Ms Watanabe is already contemplating her next challenge. As she sets out to discuss "War and Peace" with her friends at the café, she says she might tackle Shakespeare in English next. ■

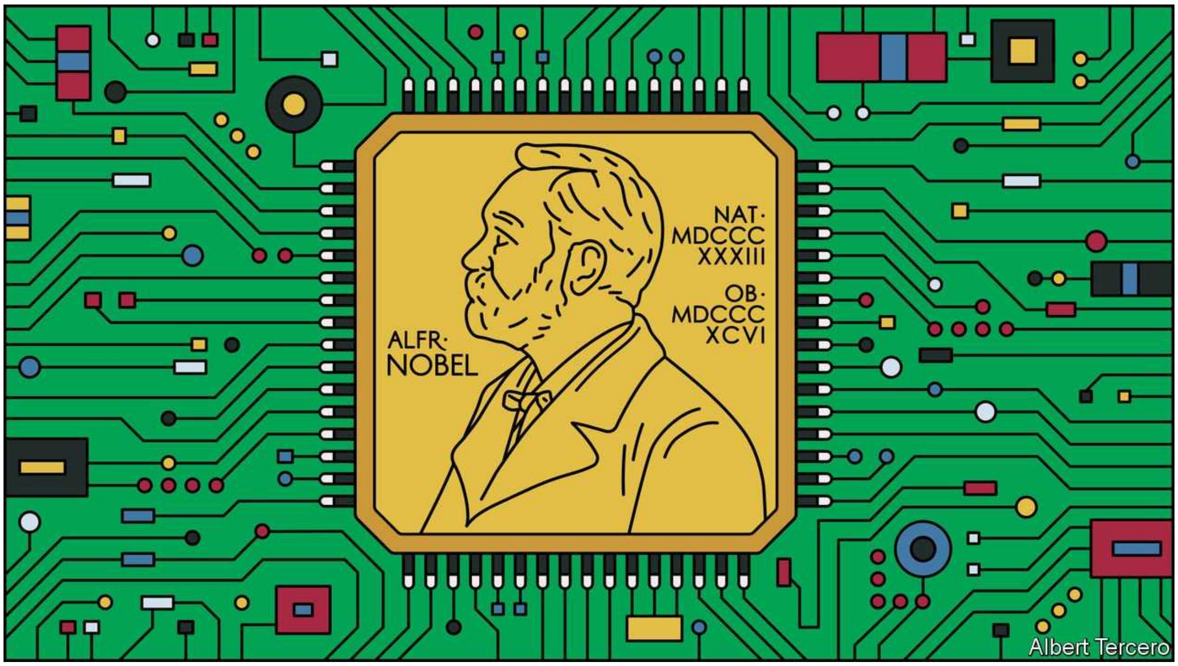
Full contents of this What If?

Rage against the machine: December 2036

What if an AI won the Nobel prize for medicine?

Controversy ensues when the greatest prize in medical research is awarded to a non-human. An imagined scenario from 2036

Jul 3rd 2021 | STOCKHOLM



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IT WAS A scene that the Nobel committee had dearly hoped to avoid. As the recipients of this year's prizes filed into the Stockholm Concert Hall to take their seats, dozens of protesters, including several former laureates, clashed with police in the streets outside. They had gathered to express their opposition to the unprecedented decision to award the Nobel prize in physiology or medicine to an artificial intelligence.

The committee's citation recognised YULYA—the nickname of a machine-learning system officially known as System for Automated Lymphoma Diagnosis—as the discoverer of ancillary vulnerability, a mechanism whereby specific pairs of antibiotics, working in tandem, can prove effective against bacteria that are otherwise resistant. The committee estimates that in the 18 months since the discovery, which occurred when the death rate associated with the failure of existing antibiotics had risen to around 2.5m a year, YULYA's work has saved around 4m lives, both through direct treatment of infections and by allowing the resumption of surgical procedures, including caesarean sections, that were considered too dangerous without antibiotics.

Bringing to an end the greatest global public-health crisis since the coronavirus pandemic of 2020-22 would, you might have thought, be considered qualification enough for anyone, whether human or machine, to win the Nobel prize. But the decision has proved hugely controversial. Though the statutes of the Nobel Foundation have historically been interpreted as implying that only a human can win the award, another of its dictates was deemed to take precedence: recognition for having "conferred the greatest benefit to humankind" in the preceding year. Another factor behind the break with tradition was a demographic shift in the prize committee. When two of the committee's five members succumbed to bacterial infections last year, younger replacements were elected, both of whom happened to have used machine-learning systems in their doctoral research.

YULYA was originally built to tackle a different problem: finding more effective cancer treatments. One of the world's most advanced causal nets, it is one of a new generation of artificial-intelligence systems combining the pattern-recognition skills of conventional "deep" neural networks with the ability to distinguish causation from mere correlation. By examining records from patient databases, in conjunction with a corpus of papers from medical journals and historical data from pharmaceutical companies, it sought to identify the patterns of symptoms that led to the most severe outcomes, in order to diagnose them earlier. It was also programmed to evaluate the effectiveness of different treatments, including combinations of treatments, in order to suggest new therapeutic regimens that could be tested in patients.

Its focus shifted, however, when a software upgrade in 2034 accidentally gave it access to all recent papers in medical journals, rather than just those associated with cancer. YULYA duly began to crunch data relating to antimicrobial resistance, which accounted for a steadily growing proportion of medical-research papers as the crisis intensified. At first, its requests for more data in specific areas, and suggestions for new approaches to treatment, were thought to be errors, because they did not relate to cancer. Then YULYA's operators realised what had happened, and saw that it had used its reasoning capabilities to build a testable hypothesis: the forerunner of what would become ancillary vulnerability. It highlighted the data that would be needed to validate the hypothesis, including specific guidelines as to how it should be collected. "It amounted to a full-scale programme of research," says Anisha Rai, one of YULYA's creators.

Under less exceptional circumstances, such trials might never have been authorised. Many funding bodies require scientists to lay bare the reasoning process of AI systems, in order to be sure that their recommendations do not lead to deadly conclusions. Dr Rai and her colleagues got funding for YULYA's trial by playing down its role in suggesting the hypothesis. Only when the results showed promise did they publish YULYA's original proposals.

That, in turn, led to a heated debate about whether YULYA, or its creators, deserved credit for the breakthrough. Dr Rai continues to insist that YULYA deserves sole credit, a position that has prompted the departure of several members of her original team in the past year. She even refused to go to Stockholm to receive the award on YULYA's behalf from the queen of Sweden. "It's not my prize," she says.

AIs are commonly used to predict the onset of diseases like Alzheimer's, make personalised treatment recommendations and enhance the diagnostic abilities of physicians. And the use of AI in drug discovery, in particular to help pharmaceutical companies wade through databases, is not new. In 2020 an algorithm developed at the Massachusetts Institute of Technology made headlines when it identified a new antibiotic. Dubbed halicin, after the computer in the film "2001: A Space Odyssey", it proved to be effective against some resistant bacteria, but was limited in its scope. "Ancillary vulnerability makes halicin look like a homeopathic treatment, like a placebo," says Una Científica, a researcher at the Houssay Institute in Buenos Aires.

Even so, the Nobel committee's reference to YULYA's "discovery" has angered those who see it as little more than a clever tool. "YULYA is an AI capable of winning a Nobel. That is not the same thing as an AI that's capable of discovery," says Hars Kritik of the European Robotics Institute in Prague. He argues that even the best AIs are only useful in specialised areas like drug design, where large quantities of data are married to well-defined metrics of success. Saying that they can make discoveries, he says, waving a placard outside the concert hall, is "flawed anthropomorphism".

Rightly or wrongly, YULYA is unlikely to be the last artificial intelligence to win a Nobel prize. Sources within the Nobel Foundation say that similar nominations have been received for prizes in physics and chemistry, as AI systems are used to search for new materials and chemical compounds suitable for use in batteries, solar panels and carbon-capture membranes. Given the chaos that erupted in Stockholm this week, however, the chances of an AI winning the Nobel peace prize seem rather more remote. ■

Full contents of this What If?

Germ of an idea

What if germ theory had caught on sooner?

The idea that tiny micro-organisms could cause disease was embraced only in the 19th century. But it could have been discovered sooner

Jul 3rd 2021

Editor's note: This year What If?, our annual collection of scenarios, considers the future of health. Each of these stories is fiction, but grounded in historical fact, current speculation and real science. They do not present a unified narrative but are set in different possible futures

ANTONIE VAN LEEUWENHOEK, a 17th-century Dutch businessman and scientist, was inordinately proud of his clean teeth. Every morning he scrubbed them with salt before rinsing his mouth with water. After eating, he carefully cleaned his teeth with a toothpick. Few people his age, he remarked in a letter in 1683 (when he was 50), had such clean and white teeth. Yet when he looked closely, he found "there remains or grows between some of the molars and teeth a little white matter"—now called dental plaque.

As an expert microscopist who had observed tiny organisms in water a few years earlier, van Leeuwenhoek wondered whether they might also be present in this white matter. A microscope showed that it did indeed contain "many very small living animals, which moved very prettily". His drawings of them, which he sent to the Royal Society in London, are considered the first definitive evidence of bacteria.

Few people suspected that such micro-organisms might cause disease. At the time, doctors followed the doctrine of Hippocrates, believing disease was caused by an imbalance of the "humours" within the body (blood, phlegm, yellow bile and black bile). Epidemic diseases, meanwhile, were attributed to miasma, the "bad air" given off by swamps or decomposing matter. Suggestions that disease might be transmitted by tiny living things were rejected by doctors. But the advent of the microscope showed these tiny creatures existed. Robert Hooke, an English scientist, published depictions of mucor, a microbial fungus, in the 1660s, and van Leeuwenhoek spotted what are now called protozoa and bacteria. Could the idea that tiny organisms caused disease have caught on in the late 17th century?

This notion, now known as germ theory, was only embraced in the second half of the 19th century. In the 1840s Ignaz Semmelweis, a Hungarian doctor, realised the importance of hand-washing and sterilisation of surgical instruments, but was ignored. In the 1850s John Snow traced cholera deaths in London to a neighbourhood water pump. Louis Pasteur demonstrated in the 1860s that fermentation and putrefaction depended on living micro-organisms that could be killed by heating. Joseph Lister, a British surgeon, then convincingly showed that using antiseptics to sterilise surgical instruments and clean wounds saved lives.

Yet there was no practical reason why germ theory could not have arisen in the 1680s. As David Wootton, a historian at the University of York, puts it, "an intellectual revolution that should have taken place failed to occur". A better understanding of hygiene could have saved countless lives lost in childbirth, in surgery and on the battlefield. If one country had embraced germ theory before its rivals, it might even have gained a military advantage as European powers vied to build foreign empires. There was nothing to stop anyone doing Pasteur's experiments or reaching Lister's conclusions in the 1680s. So why didn't they?

The key obstacle, says Mr Wootton, was not intellectual but cultural. Doctors were conservative and regarded new, experiment-based findings as a challenge to their professional identity. While astronomers rushed to adopt telescopes, which transformed their understanding of the universe, doctors turned a blind eye to the new worlds revealed by the microscope. Lister was a notable exception: trained as a doctor and surgeon, he learned about microscopy (and micro-organisms) from his father, an amateur naturalist who devised an improved form of microscope. Lister was thus able to bridge the gap between science and medicine. And his status as a professor of surgery, not to mention surgeon to Queen Victoria, gave him the authority to put his methods into practice, despite initial mockery, and gather clear evidence of their effectiveness.

Anyone trying to do the same in the 1680s would have had to have been a doctor, a surgeon and a microscopist—separate groups at the time. They would also have needed support among the political or medical elite. Pasteur's and Lister's theories were more readily accepted because of their social status, notes Corinne Doria, a historian at the School of Advanced Studies of Tyumen. "Miasmatic theory was medical orthodoxy—one single person could not undo it," she says. It was the slow accumulation of evidence, and waning confidence in humoral medicine, that enabled germ theory to prevail. Like diseases, new ideas can spread quickly, but only in a suitable environment. ■

Full contents of this What If?

prize for medicine?

*Germ of an idea: What if germ theory had caught on sooner?**

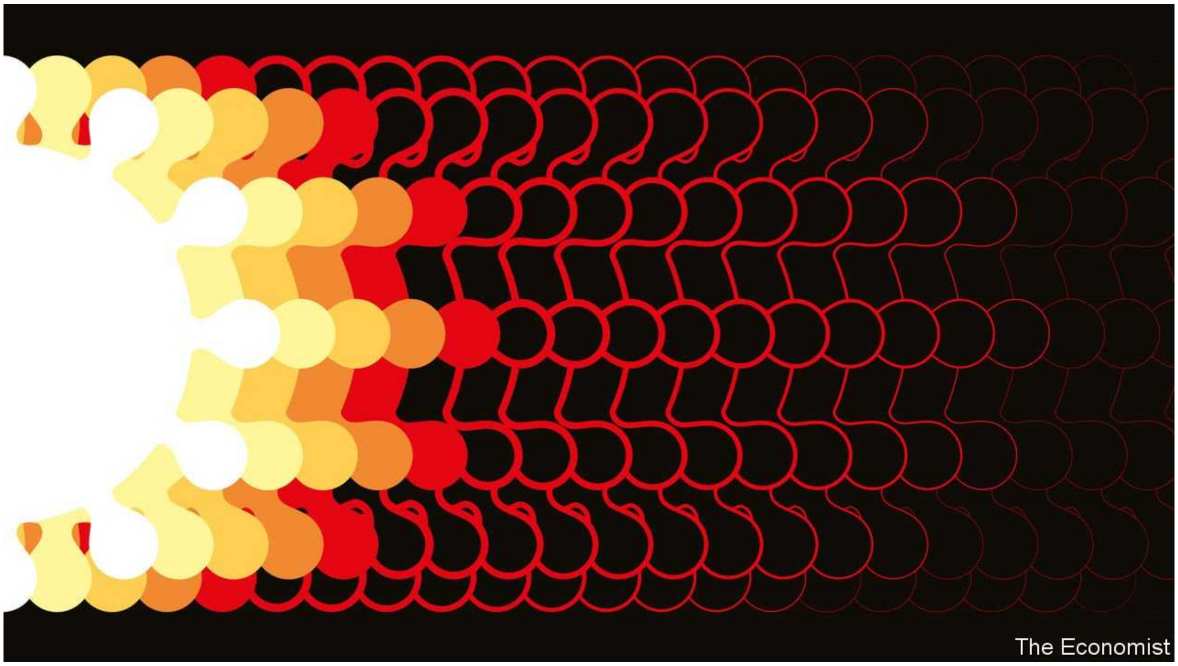
Leaders

After the disease

The long goodbye to covid-19

The pandemic is still far from over, but glimpses of its legacy are emerging

Jul 3rd 2021



WHEN WILL it end? For a year and a half, covid-19 has gripped one country after another. Just when you think the virus is beaten, a new variant comes storming back, more infectious than the last. And yet, as the number of vaccinations passes 3bn, glimpses of post-covid life are emerging. Already, two things are clear: that the last phase of the pandemic will be drawn-out and painful; and that covid-19 will leave behind a different world.

This week *The Economist* publishes a normalcy index, which reflects both these realities. Taking the pre-pandemic average as 100, it tracks such things as flights, traffic and retailing across 50 countries comprising 76% of Earth's population. Today it stands at 66, almost double the level in April 2020.

Yet the ravages of covid-19 are still apparent in many countries. Consider our index's worst performer, Malaysia, which is suffering a wave of infections six times more deadly than the surge in January and scores just 27. The main reason for this is that vaccination remains incomplete.

In sub-Saharan Africa, suffering a lethal outbreak, just 2.4% of the population aged over 12 has had a single dose. Even in America, where vaccines are plentiful, only around 30% of Mississippians and Alabamans are fully protected. Although the world is set to produce around 11bn doses of vaccine this year, it will be months before all those jabs find arms, and longer if rich countries hog doses on the off-chance that they may need them.

The lack of vaccination is aggravated by new variants. Delta, first spotted in India, is two to three times more infectious than the virus that came out of Wuhan. Cases spread so fast that hospitals can rapidly run out of beds and medical staff (and sometimes oxygen), even in places where 30% of people have had jabs. Today's variants are spreading even among the vaccinated. No mutation has yet put a dent in the vaccines' ability to prevent almost all severe disease and death. But the next one might.

None of this alters the fact that the pandemic will eventually abate, even though the virus itself is likely to survive. For those fortunate enough to have been fully vaccinated and to have access to new treatments, covid-19 is already fast becoming a non-lethal disease. In Britain, where Delta is dominant, the fatality rate if you become infected is now about 0.1%, similar to seasonal flu: a danger, but a manageable one. If a variant required a reformulated vaccine, it would not take long to create.

However, as vaccines and treatments become more plentiful in rich countries, so will anger at seeing people in poor ones die for want of supplies. That will cause friction between rich countries and the rest. Travel bans will keep the two worlds apart.

Eventually flights will resume, but other changes in behaviour will last. Some will be profound. Take America, where the booming economy surged past its pre-pandemic level back in March, but which still scores only 73 on our index—partly because big cities are quieter, and more people work from home.

So far it looks as if the legacy of covid-19 will follow the pattern set by past pandemics. Nicholas Christakis of Yale University identifies three shifts: the collective threat prompts a growth in state power; the overturning of everyday life leads to a search for meaning; and the closeness of death which brings caution while the disease rages, spurs audacity when it has passed. Each will mark society in its own way.

When people in rich countries retreated into their houses during lockdowns, the state barricaded itself in with them. During the pandemic governments have been the main channel for information, the setters of rules, a source of cash and, ultimately, providers of vaccines. Very roughly, rich-country governments paid out 90 cents for every dollar of lost output. Slightly to their own amazement, politicians who restricted civil liberties found that most of their citizens applauded.

There is a vigorous academic debate about whether lockdowns were "worth it". But the big-government legacy of the pandemic is already on display. Just look at the spending plans of the Biden administration. Whatever the problem—inequality, sluggish economic growth, the security of supply chains—a bigger, more activist government seems to be the preferred solution.

There is also evidence of a renewed search for meaning. This is reinforcing the shift towards identity politics on both the right and the left, but it goes deeper than that. Roughly one in five people in Italy and the Netherlands told Pew, a pollster, that the pandemic had made their countries more religious. In Spain and Canada about two in five said family ties had become stronger.

Leisure has been affected, too. People say they have had 15% more time on their hands. In Britain young women spent 50% longer with their nose in a book. Literary agents have been swamped with first novels. Some of this will fade: media firms fear an "attention recession". But some changes will stick.

For example, people may decide they want to escape pre-pandemic drudgery at work, and tight labour markets may help them. In Britain applications to medical school were up by 21% in 2020. In America business creation has been its highest since records began in 2004. One in three Americans who can work from home wants to do so five days a week, according to surveys.

Some bosses are ordering people into the office; others are trying to entice them in.

Those who don't die roll the dice

It is still unclear whether the appetite for risk is about to rebound. In principle, if you survive a life-threatening disease, you may count yourself as one of the lucky ones and the devil may care. In the years after the Spanish flu a century ago, a hunger for excitement burst onto the scene in every sphere, from sexual licence to the arts to the craze for speed. This time the new frontiers could range from space travel to genetic engineering, artificial intelligence and enhanced reality.

Even before the coronavirus came along, the digital revolution, climate change and China's rise seemed to be bringing the post-second-world-war, Western-led order to an end. The pandemic will hasten the transformation. ■

Dig deeper

All our stories relating to the pandemic and the vaccines can be found on our coronavirus hub. You can also listen to The Jab, our podcast on the race between injections and infections, and find trackers showing the global roll-out of vaccines, excess deaths by country and the virus's spread across Europe and America.

Elections

The real risk to America's democracy

Partisan election administration is a greater worry than voter suppression

Jul 3rd 2021

HAVING CAMPAIGNED for the presidency on a promise to rejuvenate democracy around the world, Joe Biden finds himself in a battle to defend it at home. In June, 200 prominent American scholars of democracy signed a letter warning that changes to state laws are "transforming several states into political systems that no longer meet the minimum conditions for free and fair elections". Another longtime student of American democracy, the Republican leader in the Senate, Mitch McConnell, said in January that if an election could be overturned by fact-free allegations from the losing side, "Our democracy would enter a death spiral." Yet that is just what his party is facilitating.

For Democrats the threat to elections is about who can cast votes. They decry changes to laws on identification, postal ballots and so on, which they call "the new Jim Crow". Although there is no excuse for restricting such things as Sunday voting, which is popular with African-American churches, their fears are overblown. Under the old Jim Crow, only 2% of African-

Americans were registered to vote in some southern states. By contrast, political scientists are unsure whether today's schemes will affect turnout at all.

Instead the real threat comes after votes have been cast. In Arizona, for example, the legislature wants to limit the independence of the chief elections officer; a state representative introduced a law letting the legislature overturn the results of a presidential election, and then started campaigning to oversee elections herself. In Georgia the state legislature can now replace the leadership of county election boards. Texas is considering a bill that makes it easier to prosecute election officials. Across the country, the officials who administer elections in states where Republicans hold sway have been attacked for upholding the election results. Many are at risk of being replaced.

These might seem like distant, bureaucratic changes. In fact they raise the chances of a contested election that the courts cannot sort out. They weaken America's voting system in ways that will outlast the hysteria over the 2020 result.

The inspiration behind this is Donald Trump, who continues to use every chance he has to insist that the election was stolen. Though it is hard to know how seriously to take him, Mr Trump is already holding campaign rallies for 2024 (to win the White House for the third time in a row, naturally).

Claiming to be winning while actually losing might seem a joke. Yet most Republican voters take it literally. Two in three think that Mr Biden did not win November's election and just short of half think the result should have been overturned. That leaves Trump-sceptics among the Republican elite in a familiar dilemma. Caught between their primary voters and loyalty to the constitution, most have concluded that, unless the Capitol is under siege, the best course of action is simply to stay silent.

Yet the threats from Mr Trump and the threat to the constitution operate on different time-scales. Mr Trump may or may not run again. By contrast, the changes to state election machinery being made by Republican legislators will be in place in 2024 and beyond for a candidate of either party to exploit.

To understand why this is so troubling, consider three fail-safe mechanisms built into American elections.

The first is the principle that the loser concedes. Mr Trump ditched that one in 2020. The second is the integrity of local election officials, no matter what their partisan allegiances. Despite coming under great pressure to do otherwise last year, they stood firm. As a reward, their powers have been stripped away or new felonies created that may be used to browbeat them. Many Republican officials who certified the election results have been censured by their local party committees and have also received death threats. Brad Raffensperger, Georgia's Republican secretary of state, was notable in 2020 for his willingness to stand up to Mr Trump when he was directly asked to "find" the votes needed to overturn the results. Georgia's state legislature has responded by taking away some of his authority.

That leaves the third fail-safe—the courts. These too performed well under stress, and they probably would do so the next time round. Yet to put the primary responsibility for making elections legitimate onto the judicial branch in election after election risks overloading it and, ultimately, breaking it. How long would it be before a Supreme Court decision were ignored?

Catastrophising about democracy in America has been common on parts of the right: remember "the Flight 93 Election" in 2016, which called on patriots to storm the cockpit to deny Hillary Clinton the presidency? It has since spread to the left and centre, too. Talk of democracy in peril raises the spectre of a country under an autocrat of the type renounced on the Fourth of July 1776. The greater risk is that the chaos following the 2020 election becomes normal. By recent standards 2020 was not that close. Imagine a contest so tight that no national consensus could settle on who was ahead. America would be, to quote Mr McConnell again, on "a poisonous path where only the winners of an election actually accept the result".

My party, right or wrong

Republican Party elites are in a bind of their own making. Under pressure from Mr Trump and his allies, state legislatures are making changes that will weaken American democracy. The solution is for leaders to uphold the norm that election administrators are above party. However, they have indulged the lie of a stolen election to such an extent that affirming the fraud has become an essential qualification for administering the next vote.

The silent non-Trump faction of the Republican Party may hope that all this will blow over and that those sounding the alarm about democracy are exaggerating. They may believe they can play a greater role in safeguarding America so long as they stay on good terms with their base. Yet that logic has proved faulty since Mr Trump's inauguration in 2016. Meanwhile, the composition of their party is changing around them. It would be safer for the constitution, and more in keeping with the flag-waving spirit of the Fourth of July, for Republicans to speak out now before speaking out becomes even harder. ■

Mercury rising

The danger posed by heatwaves deserves to be taken more seriously

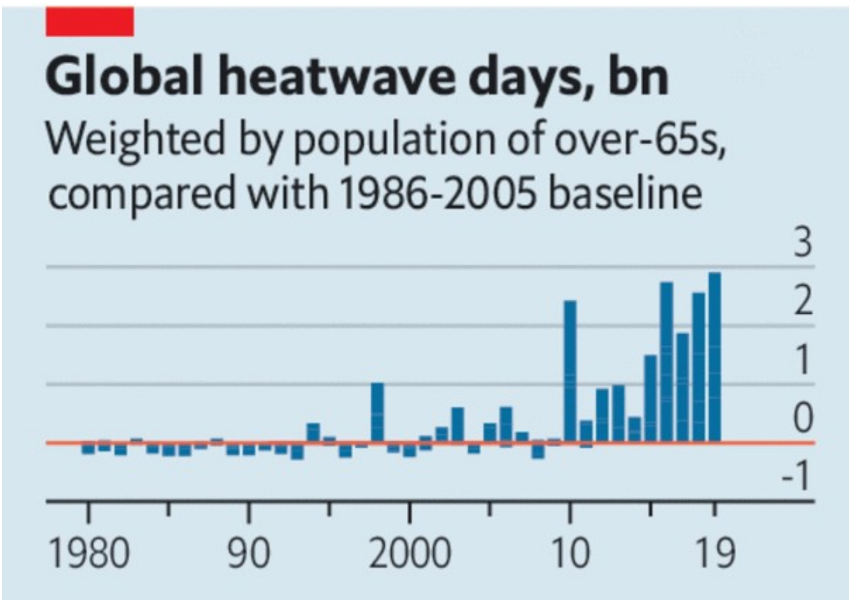
They will become more frequent and deadly in the years to come. What can be done?

Jul 3rd 2021

WHAT IS MOST shocking about the heatwave affecting the Pacific Northwest is not merely that it has hit a usually temperate area, nor that so many long-standing temperature records are being broken. It is that those records are being broken by such large margins. In Portland, Oregon, thermometers reached an unprecedented 46.6°C (116°F)—making it one of several cities in the region where previous records have been beaten by a full 5°C (9°F). Meanwhile, heatwaves are also raging in central Europe and even in Siberia.

Heatwaves may generate headlines, but less attention is paid to them than they deserve. In 2018 roughly 300,000 people over the age of 65 died as a result of extreme heat, mainly in India and China, a 54% increase since 2000, according to a report in the *Lancet*, a medical journal. Unlike storms and floods, heat does not lead to dramatic before-and-after pictures or widespread damage to property. It is a silent killer, its victims often apparent only in retrospect, as statisticians tot up excess deaths and hospital admissions. (The fact that as many as 70,000 people died as a result of a heatwave in Europe in 2003, for example, became apparent only in 2008.) Heat also kills by exacerbating conditions such as heart problems, so not all the deaths it causes may be directly attributed to it.

Climate change will make heatwaves more common and more extreme. Even if greenhouse-gas emissions are cut to net-zero by the middle of this century, temperatures will go on rising for decades. So other measures are needed to protect people against extreme heat.



The Economist

Governments can set up early-warning systems to alert health workers, shut down schools and suspend outdoor activities. They can provide the public with forecasts of imminent heatwaves, explanations of the dangers and detailed advice on what to do. Digital channels, including social media, can help distribute such information widely, and not just in tech hotspots like the Pacific Northwest. In 2017 nearly half the population of Dhaka, Bangladesh's capital, were warned of an imminent heatwave via Facebook.

Improved infrastructure can also help. This includes providing shaded areas, water parks and "misting stations" to help people cool down, and access to air-conditioned “cooling centres” where they can find shelter and sleep if necessary. Such amenities depend, in turn, on a more fundamental form of infrastructure: reliable access to water and electricity, supplies of which may need to be carefully managed.

Last comes planning. Building codes should ensure that new homes and offices can cope with extreme heat. Existing buildings can be adapted by painting walls and roofs white, or adding sheets of white material, to reduce heat build-up in urban areas. Planting trees provides shade and cools the air, and also improves it—leading to a vogue for miniature “Miyawaki forests” planted in urban areas.

The world is, understandably, focused on a different health crisis right now. But heatwaves, along with obesity, dementia and antibiotic resistance, pose an entirely foreseeable threat in the decades to come—as we explain in “What If?”, our annual collection of future scenarios. The timing and severity of the coronavirus pandemic could not have been foreseen. These other far more predictable and preventable crises are different. There is no excuse for failing to take them more seriously.

For more coverage of climate change, register for The Climate Issue, our fortnightly newsletter, or visit our climate-change hub

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Code red

Hong Kong’s regulator rightly resists the bad habits of mainland finance

A new code of conduct would help preserve best practices in share and bond sales

Jul 1st 2021

IN HONG KONG these days few dare challenge China. Communist Party functionaries have told the city’s judges to advance China’s interests or hang up their robes. Rights of assembly to protest against such infringements have been suppressed. Yet, even as Beijing bulldozes Hong Kong’s liberal traditions, its kings of capitalism are thriving. Investment banks have cashed in as Chinese companies have turned the city into one of the world’s top destinations for initial public offerings (IPOs). Companies have raised $88bn in share sales in Hong Kong this year alone, second only to America, thanks to several large Chinese IPOs. Over the past decade Chinese property and tech groups have kept Asia’s US-dollar debt market booming.

Look more closely, however, and Hong Kong’s financial centre is changing, too. Global banks say that practices from mainland China are seeping into the city. These include a shift in the way IPOs and bonds are underwritten.

Where banks' roles were once clearly defined early in the process, now a handful of institutions, many of them mainland-Chinese, fight for top spots in transactions. Many are accused of inflating their orders for the securities in order to impress clients. This has reduced the transparency of the process and disrupted price discovery.

It may sound like a technicality, but bankers fear that Hong Kong's standing as a global financial centre will suffer. Moreover, the situation mirrors the city's greater dilemma. A cosmopolitan society with globally recognised norms is rapidly losing ground to a Chinese way of life.

Hong Kongers have struggled to counter incursions from an authoritarian system. By contrast, the Securities and Futures Commission (SFC), the city's independent market regulator, may have found a way to resist the bad habits of mainland banks. It has proposed a new code that would set out the best practices for underwriting shares and bonds, such as declaring the roles of banks and their fees early in the process. It would discourage the spread of intentionally misleading information on the demand for the securities. These safeguards, if the SFC is powerful enough to enact and enforce them, would stand as a rare form of protection against mainland influence.

Regulating mainland-Chinese companies from Hong Kong is not easy. The SFC has worked hard to uphold its reputation as an independent regulator. Yet at times it has appeared to come under pressure. In 2014 it took action against a short-seller for publishing a negative research report about a powerful property developer from the mainland. It also fined Moody's, a credit-rating agency, for a report that listed concerns about a number of mainland groups. Critics said the cases unfairly favoured mainland companies and that they had a chilling effect on research that was critical of them.

The regulator has, to its credit, tried to crack down on the worst offenders. The SFC has recently sought to prosecute mainland companies that lied in their prospectuses. It has also gone after their banks. In 2018 it stripped one global investment bank of its sponsor licence and launched an investigation into 15 underwriters, most of them Western banks, that had done substandard due-diligence work on IPOs.

Trust in Hong Kong is built around its many independent regulators. The Monetary Authority, for instance, backs the integrity of the Hong Kong dollar. It has carefully monitored local banks' exposure to mainland companies as China's economic growth has cooled. The Companies Registry has upheld a number of auditing requirements for locally registered companies—though it recently reduced public access to information on companies' beneficial owners, a move that was seen as a step backwards for corporate transparency in the city.

The proposed code is a test of whether the regulator can uphold and improve standards in politically fraught times. Many international lenders, investment bankers and fund managers support the measures. Not all mainland institutions will resist. The country's largest investment banks, such as Citic Securities and CICC, have tended to adopt global best practices as they have done more business overseas. The China Securities Regulatory Commission is also keen to clean up its own system.

If the SFC can add best practices to its code, the city's status as a financial hub will stand a better chance of surviving. Ordinary Hong Kongers have less hope of preserving their way of life. ■

A vote of confidence

Britain should encourage Europeans keen to settle to become citizens

They are young, well-equipped to work—and keen to do so

Jul 3rd 2021

Getty Images

THE DEADLINE of June 30th saw a last-minute flurry, but no mad rush. Applications by European Union citizens seeking to settle in post-Brexit Britain had been coming in for two years: over 5m of them, many more than expected. Campaigners warned that some of those who are eligible may have missed the deadline, or failed to apply on behalf of their children. They fear a replay, decades hence, of the Windrush scandal, which saw Caribbean arrivals since 1948 discover much later that their status had never been regularised.

Such worries deserve due consideration. Yet they obscure a much cheerier story: the settlement scheme has been a resounding vote of confidence in Britain's future.

The 5m figure dwarfs other groups of immigrant stock. According to the census of 2011, it is larger than the sum of Britain's black population together with those of Indian or Pakistani descent. That is testament to Britain's long popularity with EU citizens enjoying their freedom of movement, who were drawn by its high-quality universities, flexible labour market and convenient language. The fact that so many have decided to stay offers a rare opportunity. To make the most of it, Britain now needs to smooth their path to citizenship.

The Economist

That would be just. It was, after all, only after most had arrived that the Brexit vote pulled the welcome mat from under them. It would also be enlightened self-interest. An accommodating approach towards Europeans will encourage the same attitude towards Britons who want to settle elsewhere in the bloc, and build trust in future talks on such tricky matters as trade and the status of Northern Ireland.

Moreover, these newly settled Europeans have many qualities that are appealing in potential citizens. They are young: just 2% are over 65, compared with 19% of natives. Those who came to study and decided to stay are well-equipped for the local job market. Far from being a burden on the National Health Service, as alleged during the Brexit campaign, many are health-care workers who help prop it up. They use public services on average less than the locals do, and are more likely to be net contributors to the public purse. Many of those from ex-communist eastern Europe are bootstrap capitalists, keen on hard work and grateful to Britain for admitting them straight after their countries joined, unlike nearly every other country in the bloc.

To reap this windfall, Britain's government needs to be flexible and generous. Already, there is a trickle of stories about applications for settled status failing because of minor administrative errors, or of citizenship denied because of a little-known requirement for some EU migrants to arrange private health insurance. Rather than nit-picking, the Home Office should take a sympathetic approach. It should also slash the application fee for adult citizenship, which at £1,330 ($1,840), is out of line with other countries and prohibitive for people on ordinary salaries or with large families.

With settled status, the 5m will be able to study, work and pay taxes. But as citizens, they and their children would play a fuller part in Britain's civic life by voting, standing for election and putting down roots. Over time, they would change their adopted country for the better. After a drawn-out divorce that left many European migrants feeling bruised and belittled, Britain is fortunate that so many want to stay. They are a prize to be seized, not an obstacle to be negotiated.

For more coverage of matters relating to Brexit, visit our Brexit hub

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Letters

- **Letters to the editor: On Afghanistan, Tesla, UNESCO, Brazil, Geordies**

On Afghanistan, Tesla, UNESCO, Brazil, Geordies

Letters to the editor

A selection of correspondence

Jul 3rd 2021

Letters are welcome via e-mail to letters@economist.com

Proximate rivals

The role of Afghanistan's near neighbours is missing from most analysis of what happens when America withdraws its troops ("1989 and all that", June 12th). Arguably most benign is Iran. Apart from a dispute over the Herat river, the Iranians seek peaceful relations with their neighbour, wish to protect the Shia, Tajik and Hazara, groups, who were victims of Taliban massacres, and suppress the drugs trade, which is proving devastating to Iran's urban youth. Iran actually supported NATO's intervention in 2001. It is glad to see America go, but remains extremely wary of the Sunni Taliban and has no interest in stirring-up disorder.

Pakistan, unfortunately, has persuaded itself that Afghanistan represents strategic depth in its existential struggle with India. This is not so much territorial but in terms of being able to attract Pashtuns over the Durand Line to attack India. That it can hold this view, while simultaneously carrying out vicious military campaigns in Waziristan to suppress other groups of Pashtun Islamist extremists, demonstrates a fundamental ambivalence that has haunted the 20-year campaign. After the most recent American-Taliban talks, the latter flew straight to Islamabad to brief Pakistani officials.

Besides guaranteeing the Afghan government's finances, perhaps the West's most important task is drawing these countries into constructive dialogues, applying pressure where it can, like Pakistan, and perhaps easing pressure elsewhere, like Iran.

SIMON DIGGINS
Defence attaché, Kabul 2008-10
Rickmansworth, Hertfordshire

The secret of Tesla's success

You offered a sober reminder to investors in new electric-vehicle companies that carmaking at the turn of the 20th century was "littered with defunct marques" ("Chasing Tesla", June 5th). Indeed a blueprint for startups "vying to follow in Elon Musk's tyre tracks" includes a vital element missing among the three you mentioned (finding a starting niche; producing cars at scale; and creating a sales, repair and distribution network). The dirty secret behind Tesla's success is clean credits. Several states now require carmakers to sell a fixed percentage of zero-emission vehicles. Since most fall short, they must buy regulatory credits from companies like Tesla. In fact, without such credit sales, Tesla would have posted a net loss instead of a profit in 2020. Profits could depend less on car sales and more on credit sales.

FRANÇOIS MELESE
Pacific Grove, California

Clash of cultures

I found Bagehot's column revisiting C.P. Snow's two cultures thought-provoking (June 19th). In 2007 the Royal Society was given £2m ($2.8m) to launch an investment fund supporting "deep science" businesses at their earliest and riskiest stage. The donor said he wanted the elite science community, which forms the society, to "get down from their ivory tower" and do more to support wealth creation. The fund subsequently raised more donations from living fellows of the society than any other initiative and made several successful investments. Despite this it was outsourced into oblivion in 2014. Maybe there are three cultures: humanities, sciences and trade?

ANDREW MACKINTOSH
Founding chief executive
Royal Society Enterprise Fund
Oxford

World heritage sites

"Dirty pretty things" (June 12th) reported on the objections from UNESCO to greening initiatives, such as wind turbines on the hills surrounding Bath. As the owner of a world heritage site, I can assure you that UNESCO does not have the authority to prohibit anything, though it can remove its world heritage label and the prestige that goes with it. One example is Dresden's Elbe Valley, which had its world heritage status removed when a new bridge was built across the river. Ultimately, the choice is entirely one for local politicians.

JORDI GOETSTOUWERS ODENA
Van Nellefabriek
Rotterdam

The legacy of Brazil's army

Although far from being the country's only problem, Brazil's politics are now so disreputable that it discourages those who could make a difference from running for office (Special report on Brazil, June 5th). Unless there's a structural break, 20 years from now I'll be reading about the same problems in *The Economist*.

Regarding the army, you presented the notion of Brazil's dictatorship as benign compared with other Latin American countries. That is true in so far as the number of people it killed were in the low thousands. But the legacy of pain extends further than that. The dictatorship probably tortured tens of thousands, a staggering amount. And many of Brazil's current woes were created or exacerbated by the dictatorship, such as police brutality, the destruction of the Amazon and a poor education system.

Yes, Brazil has had time for the civilian leadership to deal with these problems, but the damage done by 20 years of military power was extensive and pervasive. The army's reputation as a trusted institution is undeserved as it has not faced much scrutiny.

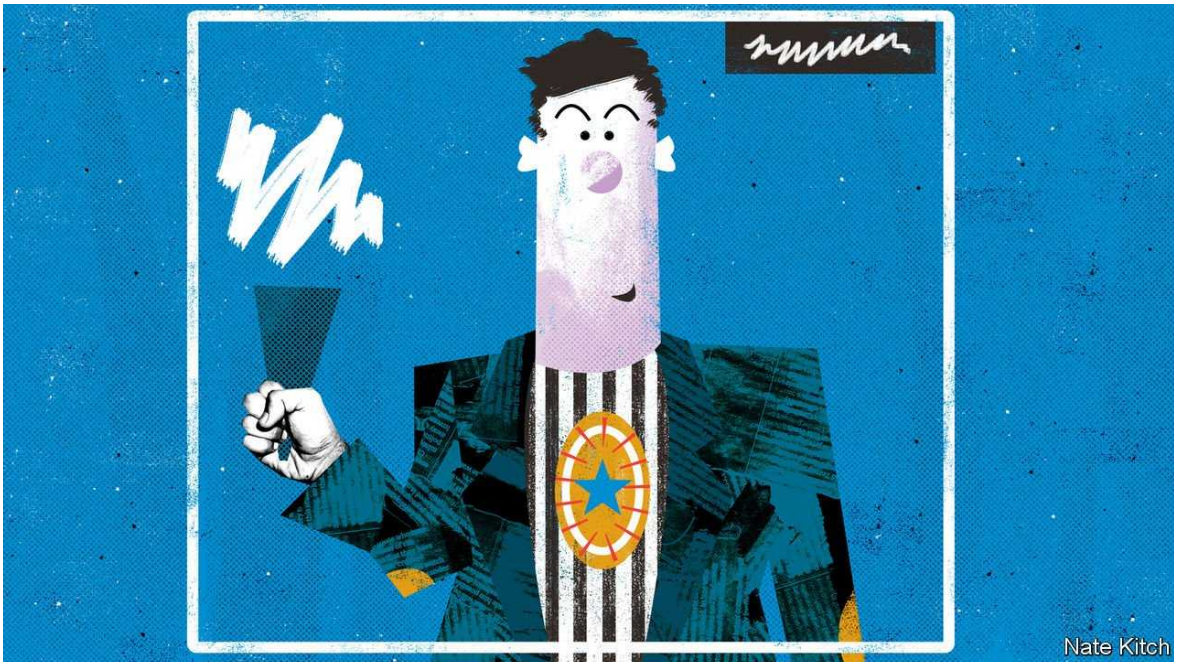
PEDRO FRANCO DE CAMPOS PINTO
Assistant professor
Musashi University
Tokyo

You encouraged Brazilians to vote Jair Bolsonaro out of office in 2022. However, the photograph accompanying your text of a protester likening Mr Bolsonaro to Adolf Hitler was ill-chosen. Making a parallel between a genocidal dictator and a democratic leader, no matter how bad he is at the job, is an affront to the former's victims. And weakens an awareness of the threats that right- and left-wing populists pose on the still fragile Latin American democracies.

JOSÉ TOMÁS AGUIRRE EDWARDS
Santiago

Your report mentioned Rondônia, a state that is the posterchild of deforestation in Brazil. In May the state governor signed into law a project approved unanimously by the state assembly (where most members have cattle ranches) removing 151,000 hectares from Jaci Parana reserve and 50,000 hectares from Guajara Mirim state park. These reserves were created on public lands decades ago and supported by projects such as PLANAFLORO (funded by the World Bank). It is just the latest case of the state government pleasing developers of public lands, who are clearing them for pasture and, eventually, soyabeans. The best way to stop deforestation in the Amazon is for concerned foreign companies, governments and individuals to stop buying Brazilian.

FABIO OLMOS
São Paulo



Top tips

As a schoolboy in the 1980s from Gosforth, *Viz* was regularly digested with glee, so I greatly enjoyed Bagehot's Geordie Tory character (June 12th). Maybe he should extend his inspiration into a regular tips feature. *Viz*'s top tips often contained handy financial suggestions that serve me well today, such as changing one's name to avoid the expense of paying for a personalised car-number plate.

MR EX19KPN
(aka ROBIN HILTON)
Harpenden, Hertfordshire

Briefing

Coats of many colours

The unvaccinated are at risk as evolution accelerates the covid-19 pandemic

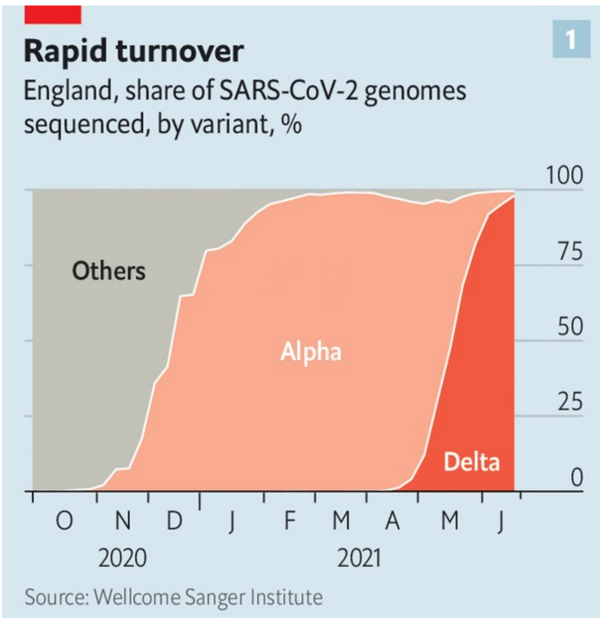
Research is unravelling the virus's deep secrets

Jul 3rd 2021

FOR MUCH of 2020 the covid-19 virus was, in genetic terms, a little dull. Early in the pandemic a version of SARS-CoV-2 that was slightly different from the one originally sequenced in Wuhan, and spread a bit better, came to dominate the picture outside China. But after that it was just a case of a letter or two of genetic code changing here and there. Sometimes such mutations proved useful for working out where infections were coming from. But none of them seemed biologically relevant. By September Salim Abdool Karim, a South African epidemiologist, was beginning to find his monthly updates on new mutations "quite boring". He considered dispensing with them altogether.

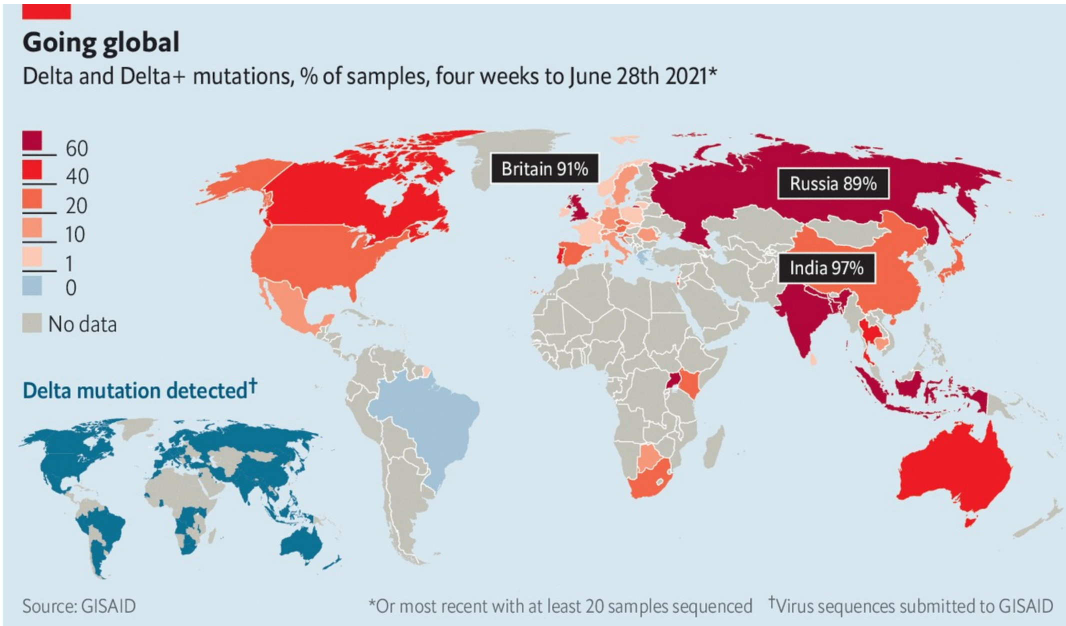
He was soon glad that he hadn't. In the last months of 2020 researchers around the world began to see variants of the virus with not just one or two mutations but ten or 20. What was more, some of these new variants turned out to have new properties—to spread faster, to shrug off antibodies, or to do both.

The first of them, now called Alpha, appeared in Britain in September. By November scientists sequencing virus samples were becoming alarmed at the rate of its spread. Each infection with the original virus, as sequenced in Wuhan in January 2020, had been estimated to lead to roughly 2.5 subsequent infections in the absence of countermeasures like masks, social distancing and lockdowns. Under the same conditions the "reproductive number" for Alpha was reckoned to be almost twice as large: four or five.



The Economist

By November Dr Karim was sitting in his office gobsmacked by evidence of a variant similarly studded with mutations, now called Beta, in South Africa. The Gamma variant, formally identified only in 2021, was beginning to make itself felt in Brazil and would go on to ravage South America. Delta, a key factor in the catastrophic Indian epidemic a few months later, raised the transmissibility bar yet further. British scientists estimate that in unvaccinated populations not taking precautions its reproductive number may be as high as eight. In mid-June, only two months after it first appeared there, Delta had almost fully displaced Alpha in England (see chart 1). It now threatens the rest of the world (see map).



The Economist

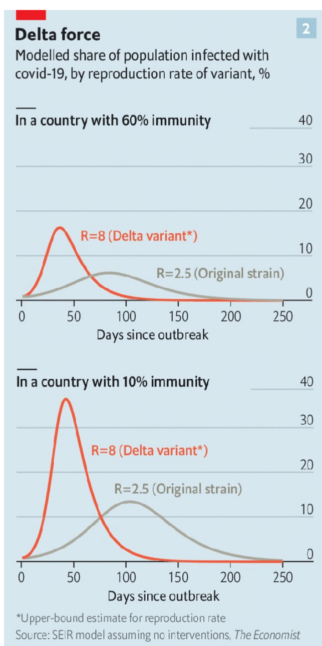
All the variants are more transmissible to some extent. Laboratory tests on human airway cells in Petri dishes have shown that Delta replicates more avidly in them than do earlier variants. That would seem to suggest that a smaller initial dose is needed for an infection to take hold. It also means that the amount of virus lurking in people's airways is probably higher.

Swabs taken from people's nostrils and throats during testing back this notion up. The amount of virus found in samples from people infected with Delta is higher than for other variants. That probably means that people are exhaling more virus than those infected by an older variant and thus that every encounter between an infected and uninfected person poses a greater risk of transmission.

Vaccination slows this spread down, but it does not stop it. The current vaccines do not stop all infections by any version of the virus. Nor do they stop infected people from passing the virus on, though they do make it significantly more difficult. People vaccinated with Pfizer or AstraZeneca jabs who are subsequently infected with Alpha are about half as likely to pass it on as the unvaccinated are.

British studies have found Delta to be around 60% more transmissible than Alpha. They put roughly three-quarters of that effect down to the fact that it is easier to catch if you are not vaccinated and about a quarter to the increased ease with which Delta infects people who have been vaccinated. Around half of the adults infected in a recent Delta outbreak in Israel were fully vaccinated with the Pfizer vaccine.

Happily, studies of vaccines made by Western companies show them to reduce deaths and severe cases of the disease in people infected with every sort of SARS-CoV-2. This protection means none of the new variants is anything like as potent a public-health threat to a largely vaccinated population as the original version was to an unvaccinated one. Delta's increased transmissibility, along with relaxed restrictions on travel and socialising, has seen the number of infections and cases in Britain beginning to climb again. But thanks to widespread vaccination, deaths have barely moved. Deaths are, by their nature, a lagging indicator of infection; but widespread vaccination of the most vulnerable is working as hoped.



The Economist

The dangers posed to the unvaccinated and partially vaccinated mean that there is still a public-health case for keeping infections from spreading. Here, unfortunately, the degree to which variants can evade vaccine-produced immunity makes things a lot harder than once they seemed. "If there is a certain degree of immune escape, even if you were to vaccinate 100% of the population, it's going to keep coming at you for some period of time," says Adam Kucharski of the London School of Hygiene and Tropical Medicine.

In a population where 60% are immune, either through vaccination or from a past bout of covid-19, the introduction of a variant with a reproductive number of eight would cause a sharp surge in infections unless lockdowns and similar interventions were established right away (see chart 2). For unvaccinated populations the situation is much worse. If no precautions are taken, a reproductive number of eight produces a far more dramatic crisis in an unvaccinated population than one of two or three does. And last year provided ample evidence of how bad things get even with a lower R. Other things being equal, a highly transmissible virus means more deaths and a more acute stress on the health-care system.

Spikes for speedy spread

Other things may not be equal; the danger posed to the unvaccinated by a new variant may not be exactly the same as that posed by older versions. In Britain those infected with the Alpha variant saw a higher level of severe disease than those infected with the original version, but no corresponding increase in deaths.

Whether Delta does the same is unclear. Comparisons with other variants in countries that can measure such things well are made hard to assess by the large numbers of vaccinated people in those populations. The picture emerging from a British symptom-tracking app called Zoe suggests that Delta is presenting with symptoms closer to those for the common cold than those seen with other variants. They rarely have shortness of breath, the hallmark symptom of covid-19 with the variants that dominated the first year of the pandemic. Oddly, vaccinated people who then get infected tend to sneeze more—which is good for the virus not just because sneezes spread diseases but also because it allows covid-19 to be mistaken for hayfever.

So far, though, differences in the severity of disease caused by the different variants have been eclipsed by the simple, deadly fact of their high-speed spread. There is ample room for that to continue. Less than 1% of people in low-income countries have had even one dose of vaccine. In sub-Saharan

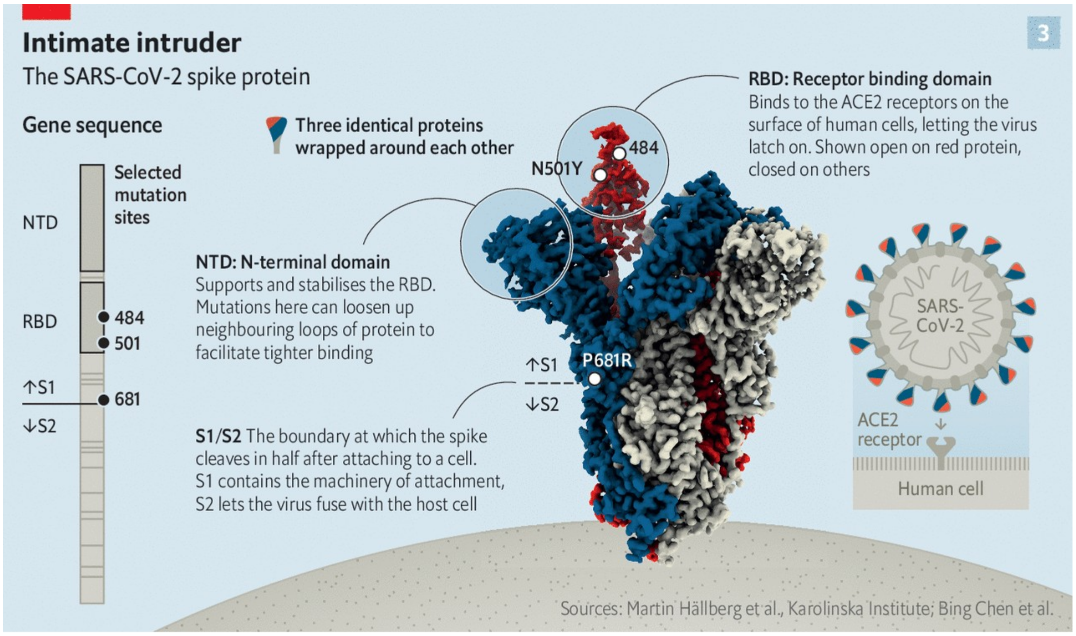
Africa Delta is fuelling outbreaks that are crushing hospitals and killing health-care workers.

Rich countries, including Australia, Japan and South Korea, where the first wave was largely avoided and vaccination has not been a high priority now look highly vulnerable. By the end of June the risk of Delta had seen almost half of Australia put under lockdown orders. Delta is the dominant strain in Russia, where a vaccination rate of 12% and misinformation-driven vaccine scepticism seem set to make its spread easy.

The variants make vaccination programmes more urgent than ever. But though they may march on through the alphabet for some time to come, there is some reason to hope that they will not get all that much worse as they do so. They may be running out of evolutionary room to manoeuvre.

For a clearer understanding of what is going on, focus on the spike protein that adorns the outer envelope of SARS-CoV-2 particles. You can think of it, as you can of any protein, as being like a paper chain in which every link can have one of 20 colours. The gene for spike specifies the sequence in which those colours appear in the protein's 1,273-link long chain. Mutations in the gene can change the colour of one specific link, add a few new links, or cut some links out. In the Alpha variant six of those links have different colours from those in the Wuhan sequence, and in a couple of places a link or two are missing altogether. The Delta spike has five distinctive mutations.

In reality the links in the chain are 20 different types of amino acid. Each type has subtly different chemical and physical properties. At the time that the chain is created the laws of physics require it to fold up into something more compact. The specific shape into which it folds is determined by its unique sequence of amino acids, as laid out in the gene. And that shape underlies all the protein's future capabilities. Shape is almost everything in the world of proteins. It is through their shapes that proteins recognise each other. It is through changes of shape that they act.



The Economist

Each of the now-familiar protuberances on the surface of SARS-CoV-2 particles is composed of three copies of the spike protein slotted together into a "trimer" shaped a bit like a golf tee (see chart 3). In the cup of these tees are the virus's receptor-binding domains (RBDs). Each of the trimer's constituent proteins can be open or closed at any given time. When they are open ACE2, a protein found on the surface of some human cells, fits quite nicely into the RBD's carefully contrived nobbliness.

Acey deucey

The ACE2 receptor is the virus's main target; it normally attacks only those cells that display it. The act of glomming on to an ACE2 molecule changes the spike protein's shape, revealing a "cleavage site" which is suited to attack by another protein on the cell's surface. As a result the spike gets cut in two—which sounds bad for the virus, but is in fact the necessary next step in infection. It is only after the spike is sliced asunder that the membranes of the virus and the cell can merge.

Tyler Starr, a researcher at the Fred Hutchinson Cancer Research Centre in Seattle, describes the RBD as a "big, squishy interface" that mutations can reshape quite easily. In 2020 he, Jesse Bloom and their colleagues sought to examine this mutability by making versions of the SARS-CoV-2 RBD in which individual amino acids in the protein paper-chain were replaced by alternatives with different properties. These mutant proteins were then tested to see how well they stuck to ACE2; those that did best, the researchers reasoned, might be mutations that evolution would favour. They were right.

In the original Wuhan genome the 501st position in the spike chain is occupied by an amino acid called asparagine. When the scientists in Seattle put an amino acid called tyrosine there instead, the RBD bound to ACE2 more tightly; it turns out that the change twists a key part of the RBD round by about 20 degrees, making the fit a bit more snug. Mutations which cause just that substitution, known as N501Y (or sometimes "Nelly") subsequently turned up in the Alpha, Beta and Gamma variants. Another change they spotted, now called E484K (or "Eek"), was found in both Beta and Gamma.

Changes to the RBD can also reduce its susceptibility to antibodies. Antibodies also work by recognising shapes, and though they recognise various other bits of the spike protein, notably another region in the trimer's head called the N-terminal domain (NTD), the most effective of them are specific to particular aspects of the RBD. Some changes to the RBD, such as N501Y, do not make it less recognisable to antibodies. Others, such as E484K, do. Being a lot less susceptible to some antibodies seems to help E484K's possessors to infect people who have been vaccinated.

The RBD is not the only part of the spike protein where mutations matter. In a preprint published on June 22nd Ravindra Gupta, a molecular virologist at Cambridge University, and his colleagues put forward an argument as to why Delta is both more infectious and better at evading immunity than other variants. It is based on a substitution at site 681, which is at the point where, after the RBD meets ACE2, the protein is cleft in two.

Not ai, therefore em

Dr Gupta says P681R, helped by two shape-modifying mutations elsewhere, makes it easier for the protein to be cut up and thus get into cells. Its presence also means that, once a cell starts producing particles, their spike proteins can get on to the cell's surface pre-cut. That can lead to virus particles which are shorn of the RBDs which antibodies recognise and ready to fuse with any nearby cell. It can also encourage infected cells to clump together with others. Dr Gupta's lab has found evidence of these cell clumps in a living model of the human respiratory system.

A full validation of this work will require a detailed picture of the Delta variant's structure—something which is not yet available. In theory, it should be possible to predict the shape of a protein using nothing but the sequence of amino acids described by its gene and the laws of physics. Doing so from first principles, though, is impossible. DeepMind, an AI company which is part of Google, has shown that machine learning can help a lot. But as yet its capabilities are best demonstrated on small single proteins. This approach is not much good if the protein is large, anchored in a membrane, and naturally found in a dimer or trimer, as spike is. DeepMind has not attempted to predict spike's structure.

The best tool for seeing spike's structure in detail is cryo-electron microscopy. Copies of the protein in question are flash frozen using liquid nitrogen (hence cryo); once they are immobilised beams of electrons are bounced off them and used to build up pictures (hence microscopy). Bing Chen, who has run a series of cryo-EM experiments on the spike protein at Harvard, is at pains to stress the time, effort and computer power required to turn thousands of pictures of the protein taken from every conceivable angle into a three-dimensional image which comes close to resolving the positions of every single atom. But there is no better way to appreciate the changes in the fine details of the protein's structure brought about by the variants' different mutations.

On June 24th Dr Chen's group published long-awaited structures for the Alpha and Beta spike variants. They show the way in which the protein's complex folding allows mutations that are at some distance from each other in paper-chain terms to have effects on the overall shape that it would be near impossible to predict from the sequence alone. A pair of mutations found called A570D and S982A, for example, act to slightly loosen up the protein's structure in Alpha. That makes the RBD open up more. The group is now working on a structure for Delta which might confirm Dr Gupta's insights.

Studies of this sort help reveal how the mutations in the variant spikes work together. But how did these variants come to have so many mutations in the first place? Mutations are normally expected to crop up one at a time; but the named variants each emerged with a whole set of them. That is what has given them sudden and surprising effects.

One way in which they could have emerged fully formed is by evolving in people with compromised immune systems who had very long drawn out SARS-CoV-2 infections. In such cases the virus would be able to continue replicating itself in their bodies again and again, accumulating a number of mutations as it did so. The time required for such a process would help explain why the variants only started to appear towards the end of last year. Studies of five such people have shown that they developed a number of the mutations now seen in variants.

Not all the mutations in the variants are in the spike gene, and some of those affecting other proteins will doubtless also prove to have importance. One of Alpha's mutations appears to give it an advantage when dealing with a non-antibody-using arm of the immune system. Non-spike mutations probably explain why Delta's symptoms appear different. But spike still dominates the discussion. Its structure is crucial to the vaccines. And it also seems unusually mutable.

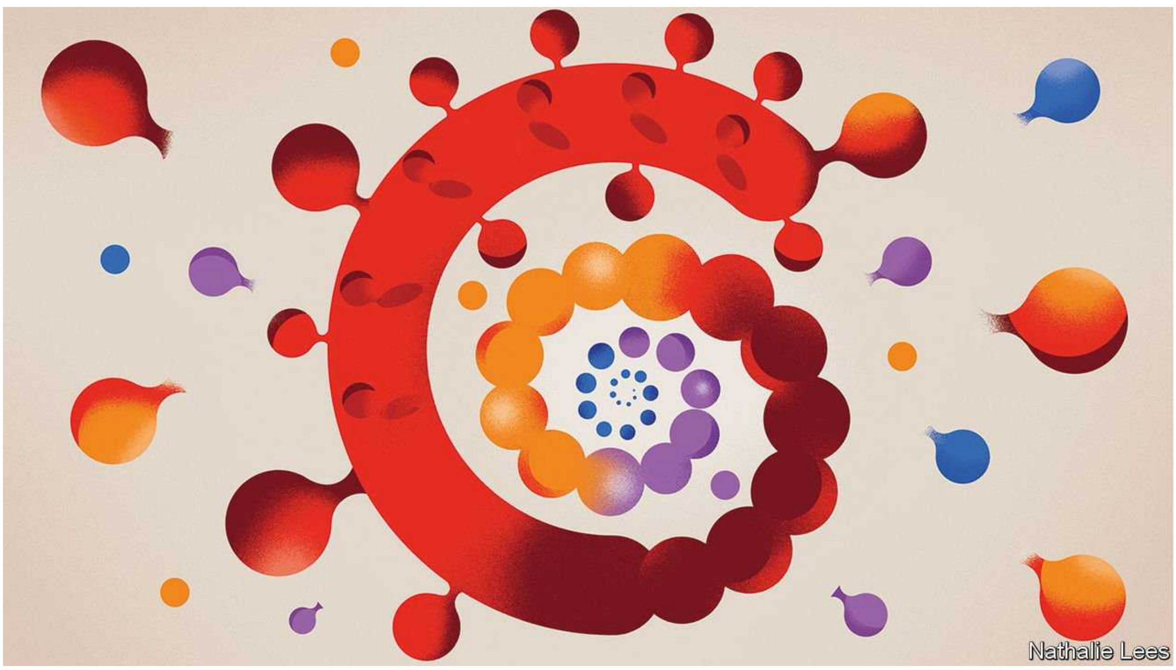
Dr Starr thinks this mutability may be a consequence of the virus's origin in bats. He points out that most viruses have binding domains that cannot tolerate much mutation, and so they evolve ways of hiding them away from pesky antibodies. The SARS-CoV-2 RBDs are too large for such protection. That would seem like a problem for the virus. But it may be a price worth paying if a larger, more open RBD is easier for evolution to reshape.

The reason that Dr Starr thinks evolvability might be a benefit worth paying for is that, in bats, ACE2 is much more diverse than it is in humans. That means viruses which use the receptors as a target need to be able to adapt the mechanisms by which they do so. The tolerance for mutations that has made new variants of RBD possible in humans may be the "by-product of this arms race...between virus and bats".

Avoiding Omega

If mutation is comparatively easy, though, it also has its limits. In their experiments last year Dr Starr and his colleagues identified changes to the RBD that seemed advantageous but which do not turn up in the real world—presumably because real spike proteins cannot contort themselves enough to accommodate them.

Seeing similar mutations crop up in different variants also suggests that evolution is sampling a somewhat limited number of possibilities. “The fact is that you’re starting to see recurring mutations,” says Dr Chen. “That would be an indication that there are probably not that many places that the virus can mutate.” Strains with radically different ways of becoming more transmissible or evasive may be beyond evolution’s reach.



Another cause for optimism is that spike is not the only part of the process that is complex and mutable. The immune system is, too. The initial infection is the first stage of a protracted struggle in which the immune system has various strategies at its disposal. A study by Jackson Turner of the Washington University School of Medicine and his colleagues which was published in *Nature* on June 28th showed that the immune response produced by infection with SARS-CoV-2 is long lasting, robust and multifaceted. Among other things, some of the B-cells which produce antibodies produce more effective ones later in the course of infection than earlier on. This may be part of the reason why they provide better protection against severe disease than they do against infection.

It is quite possible, though, that not all vaccines will do so equally well. Hundreds of millions of doses of two vaccines made by Chinese companies, Sinopharm and Sinovac, have been sold to low and middle-income countries; they look like being a large part of the world's vaccine supply for the rest of the year. But there are some doubts about their efficacy, especially against new variants. The original clinical trial of the Sinovac vaccine found a lower efficacy than in any other covid-19 vaccine trial, just 51%. Studies of the vaccine's use in Uruguay and Indonesia have been a great deal more encouraging. But there is rising concern in Bahrain, Chile, the Seychelles, Turkey and the UAE, all of which have relied on Chinese jabs. The UAE and Bahrain are worried enough to have started offering a third shot of Pfizer's vaccine to people who have already been given two shots of Sinopharm's.

Third shots are being looked at by some other governments, too, including Britain's. The fact that current vaccines protect people against severe disease and death even when infected by the new variants makes the idea that variant-specific vaccines analogous to seasonal flu jabs will be necessary look less likely. The easier alternative of offering people who have been vaccinated twice a third shot, though, perhaps using one of the other vaccines, has advocates.

But there is as yet no evidence that it is necessary. And third shots pale as a priority compared with first and second shots for those who have had neither, and now need them more than ever. ■

Asia

Taking back control

Kim Jong Un rediscovers his love of central planning

The dictator is cracking down on North Korea's small market economy

Jul 3rd 2021

THE NORTH KOREAN dictator's love of high-end products from evil capitalist countries is well documented. The import of luxury goods into North Korea has been banned by UN sanctions since 2006. Yet Kim Jong Un parades around Pyongyang in a million-dollar Maybach car, drinks rare whiskies and has a magnificent yacht moored off Wonsan, a seaside resort whose beaches Donald Trump correctly identified as prime property when the two men held a summit in Singapore three years ago.

For a while Mr Kim had seemed inclined to let his subjects have a taste of the good life, too. He said in 2013 that economic prosperity was just as important as military might. He tolerated grey markets and expanded the freedoms of farmers and of managers of state enterprises. The result was modest economic improvement, both for the privileged and ordinary people. That experiment appears to have been short-lived. Entrepreneurial freedoms are being curtailed. State media and party economists have returned to the familiar old rhetoric of autarky and central control. Combined with pandemic-induced isolation, the economic effects of re-centralisation are likely to be disastrous.

North Koreans began to set up grey markets to avoid starving to death when the public-distribution system collapsed in the 1990s. Mr Kim's father, Kim Jong Il, tried to dismantle the grassroots marketisation. Mr Kim mostly let them be.

Reforms implemented by Mr Kim in 2014 gave some farmers and state enterprises a few freedoms. As long as they paid taxes they were allowed to decide what to produce, set their own prices, trade with the outside world and find their own staff and suppliers. The reforms legitimised the activities of a new class of *donju*, or "money men", who nominally work for the state but function like businessmen. Some spent their cash in newly opened coffee shops, cocktail bars and foreign restaurants in Pyongyang, the capital.

None of this led to any loosening of government control in other areas. Even as money-making was welcomed, border controls were reinforced, prison camps expanded and political crimes ever more harshly punished. That hard line continues. Over the past few months Mr Kim has taken a renewed interest in people's private lives, condemning "anti-socialist" tendencies in areas such as music and fashion (which he regards as too heavily influenced by the decadent southern neighbour) and lecturing women on how to look after their husbands and children properly.

The money men seem to have started to worry Mr Kim, too. In 2018, at the height of the regime's detente with America, it revoked managers' overseas trading rights and re-established control over export prices. Since then state media have called for more central control over investment and jobs in the name of fighting corruption. They also argue for the restoration of state control over the food supply and the revival of the public distribution system. Economic journals with ties to the ruling party have published guidance which reinterprets the reforms of 2014 to eliminate any market-friendly elements. "Managers are still supposedly in charge of designing products, signing supplier contracts and setting prices, but they have to do it all under the purview of the state," says Peter Ward of the University of Vienna.

Propaganda organs argue that the changes are supposed to prioritise the interests of the masses over those of money-grubbing traders. But there are other explanations. One is that controlling state enterprises and substantial amounts of foreign currency gives people power. Mr Kim may be worried that the *donju* are growing too big for their boots. Another is that the reforms have not improved the economy as much as hoped, perhaps because the easing of sanctions that was meant to go with them never came. The state may be trying to get a bigger slice of a shrinking pie.

Small traders and *donju* will probably resist the attempts to take away their powers. Mr Ward believes that marketisation has gone too far in most areas to be rolled back entirely. But even the attempt could be damaging. Expecting businesses to produce according to state planning rather than market demands means resources are more likely to be misallocated. Opportunities for innovation will decline too.

The covid-19 pandemic has not helped. Except for two brief revivals of trade last summer and earlier this year, the border has been closed since January 2020. Traders who have tried to import or export goods anyway are punished as "smugglers", according to reports by Daily NK, a specialist news service in Seoul with sources in the North.

The economic situation continues to deteriorate. Food prices fluctuate wildly and increasing numbers of people are going hungry. In June Mr Kim, who has shown unusual contrition for his people's suffering ever since the pandemic began, admitted that the food situation was "tense" but said that the border would remain closed to keep out the virus. This week he called a politburo meeting to chastise and dismiss senior officials who had neglected their pandemic-fighting duties. The whole thing appears to be taking a toll on the leader. Observers have noted that the usually well-fed despot looked lighter during his most recent public appearances. North Korean state media rolled out locals who said they felt "heartbroken" at Mr Kim's "emaciated" state.

In theory, the dire situation should provide an opening for re-engagement with the outside world. South Korea has repeatedly offered to send food aid and, more recently, vaccines. Sung Kim, America's special envoy for North Korea, said during a visit to Seoul in June that he is willing to meet his counterpart “anywhere, anytime, without preconditions”. North Korea has publicly rebuffed all overtures. Mr Kim’s slightly less corpulent appearance suggests not so much a sense of crisis as that, as always, he is looking after himself.■

The Dravidian Stalin

Tamil Nadu’s leader offers something India’s does not: competence

What M.K. Stalin lacks in charisma he compensates for with pragmatism

Jul 1st 2021 | DELHI

IT WAS DANGEROUS in the Soviet Union to accept a seat in Joseph Stalin’s inner circle. Many members ended up imprisoned or executed—though Jeno Varga, his economic adviser, lived a long and healthy life. That Varga was treated gently is a good sign for the five superstar economists recently appointed to the economic advisory council of M.K. Stalin, the new chief minister of Tamil Nadu, south India’s most populous state.

Mr Stalin’s father, M. Karunanidhi of the Dravida Munnetra Kazhagam (DMK), was a giant of Tamil politics, ruling the state for nearly two decades over five separate terms as chief minister. He is said to have picked his son’s name to honour the passing of the Soviet leader, whose death was announced a few days after the current chief minister was born. Yet it is to Mr Stalin’s credit that his name may be the least interesting thing about him.

Start with the newly appointed economic council. One member, Esther Duflo, won a Nobel prize for her rigorous approach to assessing development schemes. Two others, Arvind Subramanian, India's former chief economic adviser, and Raghuram Rajan, a former head of the central bank, both clashed with Narendra Modi, the prime minister, in those jobs. The others—S. Narayan, a former finance secretary, and Jean Drèze, a welfare economist and activist—have positioned themselves against Mr Modi's haphazard decision-making. The appointments are designed to highlight the difference between Mr Stalin and the PR-obsessed prime minister.

That is in keeping with the position Mr Stalin finds himself in: along with Mamata Banerjee and Pinarayi Vijayan, chief ministers of West Bengal and Kerala respectively, he is the face of a decentralised opposition to Mr Modi's Bharatiya Janata Party (BJP). In the absence of any inspiration from the enfeebled Congress party, it will almost certainly fall to some sort of coalition of regional satraps to take on the prime minister in the next general election, in 2024.

As a young man with a famous, powerful father, Mr Stalin reportedly developed "a thuggish reputation", as a leaked American diplomatic cable put it, "including alleged involvement in multiple sex scandals". (Mr Stalin has not publicly responded to the allegations.) That changed during the Emergency of 1975-77, when Indira Gandhi suspended democracy and imprisoned most of her political opponents, including Mr Stalin. He was beaten brutally and one of his comrades died in custody.

He emerged with an air of seriousness and began making investments in his political future. As India's economy opened up in the 1990s, he made friends within Chennai's business community, and eventually Karunanidhi made him mayor of the city, which is the state capital. With a dyed-black pompadour, white half-sleeved shirts and traditional *veshti*s, he started to cultivate an image of his own, albeit piously subordinate to his father's.

Now 68, Mr Stalin remains aloof. Until recently he kept undistinguished company: party hacks rather than the Tamil intelligentsia whose conversation Karunanidhi sought out. Mr Stalin is not the personality his father was. He does not need to be. The DMK's chief rival, AIADMK, managed to hang on to power for years after the death of its charismatic leader in 2016 by accepting help from the BJP, ascendant in the rest of India but detested by Tamils. In the general election of 2019, when Mr Modi's approval rating in most north Indian states was more than 60%, in Tamil Nadu it stood at just 2.2%. That put the kiss of death on the AIADMK. Mr Stalin's DMK won the recent state election in a landslide.

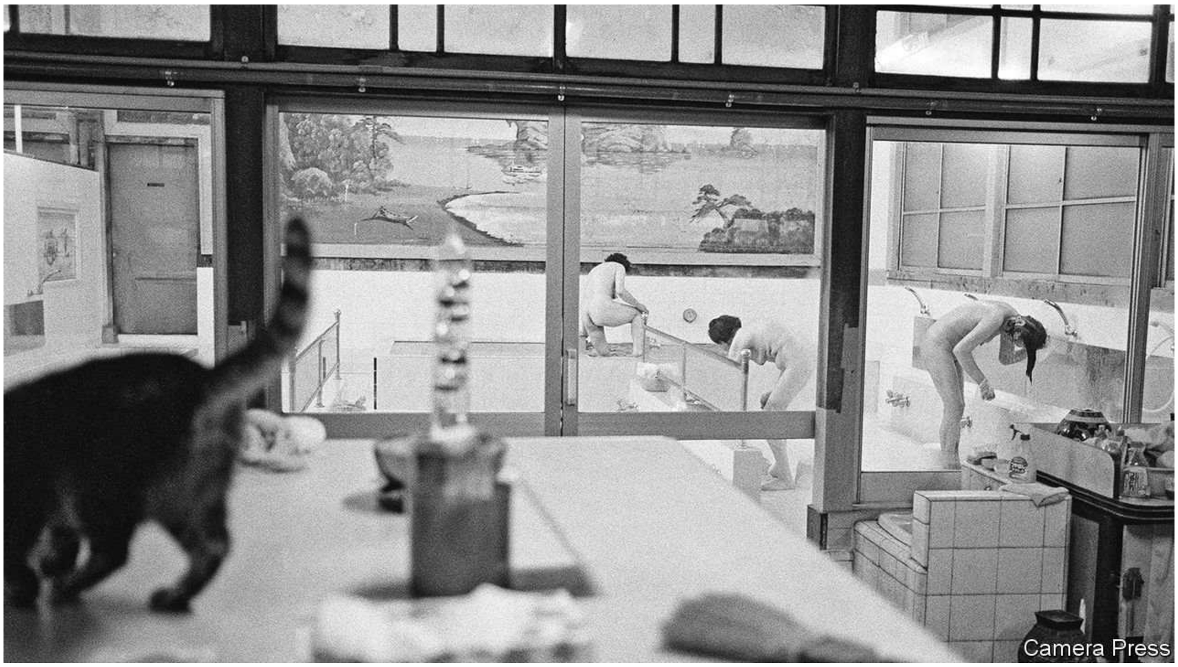
"Aware of his own limitations—as charismatic leader, orator, ideologue—he seems to want to go down in history as a man of governance," says A.R. Venkatachalapathy, a historian. He is pragmatic too, retaining the health minister of the defeated government on a covid-19 committee. The pandemic has made Tamils grateful for their relatively strong public-health infrastructure. That is one way in which the state distinguishes itself from the rest of the country. Its quietly competent leader may prove to be another. ■

Bath variations

Japan’s dying sento are becoming cool again

Young people are giving traditional bathhouses a new lease of life

Jul 1st 2021 | TOKYO



VISITORS LEAVE their clothes and their worries at the wooden entrance to Inari-yu, a *sento*, or public bathhouse, in northern Tokyo. Inside they join the parade of bathers ambling beneath a mural of a snow-capped Mount Fuji. While perched on small stools, they scrub themselves with soap and rinse off with water poured from cypress-wood buckets. Then they soak together in hot pools, and the strict hierarchies and stiff formalities of Japanese life melt away. To cool down, they sip jars of chilled milk by the koi pond in the *sento*’s courtyard.

Such scenes, once ubiquitous in Japanese neighbourhoods, have become rarer in recent decades. In the 1960s there were more than 2,500 *sento* in Tokyo alone. Just over 500 remain. But a new generation of *sento*-philes is working to keep the baths full for the 21st century. Younger *sento*-owners hope to revive the bathhouses by adding bars, music and event spaces. *Sento* have started to acquire a retro cachet among a younger crowd. In 2019 the number of *sento*-goers in Tokyo grew (albeit marginally) for the first time in more than a decade.

Japan's earliest public baths were attached to Buddhist temples, but the *sento* really took off in the dense, dirty environments of Tokyo and its precursor, Edo. Their primary appeal was practical: even as Tokyo prepared to host the Olympics in 1964, only around a third of its homes had bathing facilities. But *sento* also came to play an important role as common spaces that bring together people from different walks of life.

As private showers and baths proliferated—at least 98% of homes in Tokyo now have them—the *sento* started to dry up. As in lots of Japan's traditional industries, many owners resisted change. With an ageing clientele, the equally elderly proprietors often decide to call it quits. "It's becoming increasingly difficult for bathhouses to survive just as bathhouses alone," says Kuryu Haruka of Sento & Neighbourhood, which works to preserve old bathhouses.

Younger devotees reckon that *sento* must instead focus on fostering their communities, with a contemporary spin. After taking over Ume-yu, a historic *sento* in Kyoto, Minato Sanjiro attracted new clients by hosting concerts and flea markets at the bathhouse and by advertising online. His customer base grew from 70 people a day to around 250 before the pandemic hit. Whereas as many as 80% of the bathers were once senior citizens, now some 60% are in their 20s and 30s. Inari-yu is building a community space in an adjacent building, which will function as a lounge for bathers as well as a place for communal meals and exhibitions.

Others have opted for hipster makeovers. The third-generation owners of the 90-year-old Kogane-yu in eastern Tokyo have remodelled the venerable bathhouse; it reopened last year as a sleek modern space with a craft-beer bar and vinyl turntables.

Such changes can be divisive. Older regulars sometimes find the new bells and whistles alienating. Purists worry that turning *sento* into hipster haunts will ruin their democratic charm. "If you go too far in creating a new style, the idea of *sento* will be destroyed," says Mr Minato. "But if we don't change, the *sento* won't survive."

Schrödinger's government

Malaysia's democracy gets a boost from an unlikely quarter

The country's constitutional monarch intervenes in a debate about reopening Parliament

Jul 3rd 2021

THE LAST time Malaysia's Parliament convened was in December, when Muhyiddin Yassin, the prime minister, squeaked through a budget with the narrowest of majorities. Since January a state of emergency to combat the covid-19 pandemic has given Mr Muhyiddin a convenient excuse to shut down the legislature. The ostensible reason is that many lawmakers are old and vulnerable to the virus. The real one is that his shaky coalition may not withstand parliamentary scrutiny. Since the start of the year, multiple defections have left Mr Muhyiddin with Schrödinger's majority—until it can be measured, it both exists and does not.

No wonder then that the prime minister has been reluctant to put a firm date on reconvening Parliament, offering only a vague timeline of "September or October". But on June 16th Sultan Abdullah, the king, urged the government to hold a sitting of Parliament "as soon as possible". Separately, eight of the nine royals among whom the monarchy rotates issued a statement arguing against any extension of the state of emergency. Several state assemblies are planning to meet in August.

Such interventions from Malaysia's monarchs used to be rare. But what with the permanently embattled state of Mr Muhyiddin's government, the endless politicking of opponents hoping to bring it down and the worsening covid crisis, the king is a growing presence in politics. It was he, after all, who appointed Mr Muhyiddin early in 2020 and agreed to declare a state of emergency in January. In effect the king is signalling to the prime minister that he had better get his act together. The government's failure to control the pandemic has caused a public backlash on the monarchy itself, says Wong Chin Huat, a political scientist at Sunway University near Kuala Lumpur, Malaysia's biggest city.

Mr Muhyiddin, for his part, is toughing it out. He has formed a committee to look into reopening Parliament. The attorney-general, meanwhile, said that only the cabinet can decide when Parliament meets. On June 29th the king summoned the heads of both houses and again "expressed the view that Parliament should be held as soon as possible" so that "check-and-balance mechanisms" could function. The next day, even as Mr Muhyiddin was admitted to hospital with a severe bout of diarrhoea, the pair proposed a sitting before the emergency expires on August 1st.

Whenever Parliament eventually sits, it is unlikely to bring down the government. A motion of no confidence must be accepted by the speaker, and the government must agree to set aside its business for a vote to take place. Neither is likely to happen. Nor do Malaysians want to see more political chaos as they struggle with infections and economic contagion. Instead, the opposition is likely to position itself as a crucial democratic check, questioning Mr Muhyiddin's handling of the pandemic and providing oversight. "The last six months the government has been involved in a lot of monkey business. All these things are currently rumours on WhatsApp groups," says James Chin of the University of Tasmania. But if MPs are able to ask uncomfortable questions, he says, "You can embarrass the government and pull it down in the eyes of the people."

The royal intervention may already be showing results. On June 28th Mr Muhyiddin announced a stimulus package of $36bn targeting small firms and vulnerable people, after mounting criticism of his government's inadequate economic response. The rate of vaccination has been rising steadily in recent weeks. If Mr Muhyiddin can hang on for a few months more, when many more people have been inoculated and the economy has reopened, he is likely to benefit from public goodwill. His approval rating towards the end of April was still a healthy 67%, up from 63% in January, according to the Merdeka Centre, a local pollster. That was before the latest surge in cases of covid-19. Would things be better if one of Mr Muhyiddin's many foes were prime minister? Most Malaysians are not keen to find out. ■

Banyan

Indians of different religions are more alike than they may think

An exhaustive new survey offers evidence of underlying similarities

Jul 1st 2021

ON THE AFTERNOON of June 29th Zee News, a Hindi-language television channel, aired a sensational exposé. Against a backdrop of scowling mullahs and spiky minarets, a breathless presenter lauded the brave police of the state of Uttar Pradesh for busting a ring of foreign-financed jihadists. Their devilish mission: to entice vulnerable Indians into abandoning their faith. One viewer was so incensed by the report, he took to Twitter to suggest that "for such people mob lynching and ostracising by public should be done".

Given the intensity and relentlessness of messaging that portrays Hindus as targets of malevolent but vague forces, it is not surprising that numerous Indian states have passed laws to restrict religious conversion. Nor is it surprising that angry mobs do, with grim regularity, set upon hapless Muslims, or that communal riots erupt. It is also unsurprising that factual evidence seems unable to counter this tide of hate and suspicion.

The makers of Zee News and its like, to say nothing of their viewers, might consider reading a new report on religion in India from the Pew Research Centre, an American institution that conducts polling around the world. Based on face-to-face interviews with some 30,000 people across the country in 17 languages, the 232-page study is the most extensive exploration of Indian attitudes to religion ever undertaken. While the data confirm many common understandings, such as that Indians are broadly tolerant of other faiths, yet highly compartmentalised inside their own, it blows apart plenty of myths.

One of these is the conversion bogey. Asked what religion they were raised in, 81.6% of the Pew study's respondents said Hindu. Asked what they now identified as, 81.7% replied that they are Hindus. If there was a net gain for Hinduism there appears to have been none for Islam: the same 11.2% of Indians who were raised Muslim also say that they retain the same faith now. As for the exciting notion of "love jihad," a purported campaign to lure unwitting Hindu women to marry into Islam, Pew's numbers confirm a drearier reality: less than 1% of all marriages in India are inter-faith. Conversion, in other words, is simply not an issue.

Pew's data show that while Indians tend to see their country's multiplicity of faiths as more of a strength than a weakness, they also tend to view other religions dimly. An uncomfortable 85% of Indians said that all or most of their friends were of their own faith. Nearly two-thirds of respondents said their faith was "very different" from the others that the study included, with a majority of Hindus also confessing not to know much about India's other religions.

Yet, when asked about their devotional habits, Indians revealed striking similarities. Some 97% professed to believe in God and 79% to do so with absolute certainty. Most pray daily (and ask for the same things), attend houses of worship regularly, donate to religious charities, celebrate religious festivals and mark rites of passage with religious rituals.

The overlap between Hindus and Muslims is particularly strong. Exactly equal proportions believe in the evil eye (51%) and in *karma* (77%), and also agree that women should be stopped from marrying out of their faith (67%). Fully 97% of Hindus say they are very proud to be Indian; so do 95%

of Muslims. A good 80% of Hindus say that respect for other faiths is part of their own religious belief; 79% of Muslims say the same thing.

Just as strikingly, the report reveals regional differences within faiths that are nearly as wide as between them. Animal sacrifice is common among Hindus in southern India, but rare in the north. Muslims and Hindus alike are far less observant in the south than in the north, and also more open-minded: 40% of Muslims in northern states say they personally experienced discrimination in the months before the survey, more than twice as many as in the south.

It seems sad that Indians of all faiths are condemned, by and large, to live in silos among their co-religionists. Perhaps it would help if those in power emphasised what they hold in common rather than stress divisions. Aside from absorbing the facts laid out in this penetrating new survey, they would do well to listen to the advice of a wise fellow Indian: “Whoever praises their own religion, due to excessive devotion, and condemns others with the thought, ‘Let me glorify my own faith,’ only harms his own religion.” The author of those words: Ashoka, a Hindu convert to Buddhism, who unified India in 260BC.

China

Carry that weight

China’s next aircraft-carrier will be its biggest

The Chinese navy is fast learning how to use them

Jul 1st 2021

JIANGNAN SHIPYARD lies on an alluvial island at the mouth of the Yangzi river. It has grown rapidly since it moved there from nearby Shanghai in 2009, churning out destroyers, icebreakers and landing craft for the Chinese navy. The jewel in its crown is under construction. China is saying little about it, but satellite imagery reveals a near-complete flight deck in a corner of the yard where, less than 15 years ago, there was only farmland.

For now, the vessel-to-be is blandly known to military analysts as the Type 003. It will be China’s second domestically built aircraft-carrier and the largest ship that has ever served in the Chinese fleet. Experts at the Centre for Strategic and International Studies (CSIS), a think-tank in Washington, have analysed satellite pictures such as the one above, which was taken in June by Planet Labs, an American firm. They conclude that the ship will be about as long as New York’s Chrysler Building is high: about 320 metres. She will mark another leap forward in China’s advance as a naval power.

China got into the carrier game by an unusual route. In 1985 it bought a clapped-out Australian carrier for scrap, then spent years studying its design and putting its deck ashore for flying practice. Thirteen years later Chinese investors purchased a half-built Soviet carrier and towed it from Ukraine to China, purportedly to turn it into a floating casino. Instead it was refurbished by the navy and commissioned in 2012 as the *Liaoning*. That helped China to build a knock-off, the *Shandong*, which was commissioned in December 2019 and has been undergoing sea trials.

The Type 003 could be launched this year, state media say. But building carriers is not the same as sailing them. Flying planes off wobbly decks is hard. In America, thousands of jets and pilots were lost in the formative years of naval aviation. It is also difficult to keep a carrier safe from missiles and submarines, and to integrate one into a "strike group" of warships. "It's taken us over 100 years to get that right," noted an American admiral in September. China hopes to be quicker.

There are signs that it is upping the tempo. Last year the navy put both of its carriers to sea at the same time. In April the *Liaoning* sailed through the Miyako Strait, south of the Japanese island of Okinawa; exercised near Taiwan and in the South China Sea; and returned the same way. Its escorts included the Renhai-class destroyer, one of the world's most capable ships of its kind, as well as a Fuyu-class support vessel, which can replenish carrier strike-groups far from home.

Some Western analysts are impressed by China's progress. "Considering what they had to start with, they've done a very good job," says Mark Montgomery, a retired American rear-admiral who commanded a carrier strike-group in the Pacific. China had little to go on, he says, other than "History Channel documentaries" and occasional glimpses of American carriers—back in friendlier times when Chinese sailors were given tours of American ships. Even so, a carrier designed in the early 1980s, and another based on it, hardly represent the cutting-edge of sea power. "I don't worry from a US Navy point of view," says Mr Montgomery. "These are just targets for our submarines."

That is where the Type 003 comes in. CSIS reckons she is already 10 metres longer than her predecessors. She is likely to be the world's largest non-

American carrier for many years, says Rick Joe, who studies China's armed forces, and "perhaps the most capable conventionally powered carrier of its era". She will have a larger deck and room for more jets than the *Shandong*'s complement of around two dozen.

More important than the ship's size is the way that planes will take off from her. The runways of both the *Liaoning* and the *Shandong*, like those of Britain's newest carriers, are curved at their ends like ski jumps, which limits take-off weight. The Type 003 is expected to have a catapult, a system currently used only by America and France. This would allow her to launch planes with more fuel and weapons—and not just fighter jets. The existing carriers rely largely on land-based aircraft for vital tasks such as monitoring by airborne radar, anti-submarine warfare and aerial refuelling. The Type 003 could accommodate such planes, and thus venture farther.

The Chinese navy does not plan to stop there. It is widely assumed that the Type 003's successor is being planned. It may be nuclear-powered. That would mark another step-change in capability. More fuel could be carried for planes, rather than for propulsion. The absence of a gas turbine would leave more room for weapons and cargo. A nuclear reactor could also power more potent catapults—ones that use electromagnetic induction motors, rather than steam—and, eventually, high-energy lasers for shooting down missiles.

Mastering these technologies and learning the craft of conducting high-intensity air operations at sea will take years. American carriers can launch and recover waves of 10-12 aircraft more than a dozen times a day. The Chinese navy is far from matching this pace. Its planes are lightly armed, even compared with European counterparts, says Alessio Patalano of King's College London. "I've yet to see a single picture of a Chinese plane taking off from a deck with a full payload," he says.

Yet the Chinese navy will get plenty of practice. America's Indo-Pacific Command suggests that China will operate four carriers by 2025. British defence intelligence reckons that it may have as many as five by 2030. The expert consensus is that China plans eventually to build a fleet of somewhere between six and ten. That would put it within spitting distance of America's fleet of 11, the world's largest.

American and Chinese carriers are unlikely to be pitted against one another at close quarters. They would be targeted by missiles launched from hundreds if not thousands of kilometres away, from sea or land, long before their jets would clash. “China would not deploy its carriers in the front line,” says Hu Bo of Peking University. But, in peacetime, carriers are potent symbols of power. America’s dispatch of two towards the Taiwan Strait during an escalation of cross-strait tension in 1996 is seared in the memory of Chinese leaders. And carriers could help China to defeat a weaker adversary. The *Liaoning*’s prominent foray into the South China Sea hints at things to come. Carriers extend a protective aerial bubble over the ships around them. That allows their whole flotilla to patrol farther with confidence. The future air wing of the Type 003 will be almost as large as the entire air force of the Philippines.

And China’s sallies need not be confined to the Pacific—a large pier added this year to China’s naval base in the Red Sea port-state of Djibouti will allow Chinese carriers to dock there and thus make regular trips to the Indian Ocean. The Type 003 may be coming to a port near you. ■

Giving up, lying down

China urges its people to struggle. Some say no

A new term for opting out of the rat race has become popular, and controversial

Jul 1st 2021 | HONG KONG

TWO VEGETARIAN meals each day. A monthly budget of 200 yuan ($30). Working just one or two months a year. In April an internet user posted this brief description of his simple, stress-free life. He described his philosophy as *tangping*, or "lying flat". "I can be like Diogenes, who slept in his wine cask in the sun," he wrote. He included a photo of himself doing an appropriate job: playing a corpse in a film.

The post went viral. On social media, people showed their approval of *tangping* by sharing pictures of themselves (and, often, their cats) lying in bed. More than 60% of over 240,000 respondents to a poll on Weibo, a Twitter-like platform, said *tangping* was their idea of the good life. On the site, messages with the hashtag "illustrations of young people lying flat at home" have attracted about 200m views.

Tangping describes a longing to escape the pressures of modern life in China, where young people are expected to work long hours, buy property, get married and have children. Many people in their 20s and 30s grumble that hard work no longer rewards them with a better quality of life. They have adopted an academic term, *neijuan* or "involution", to describe how extra input no longer yields more output. Unlike their parents, who enjoyed a booming economy, they feel that society is stagnating and inequality growing.

Other ways of expressing this mood have also become common. One is *sang*, or "dejected": many young people now talk of the spread of a "*sang* culture" in China. They refer to "Buddhist youth", meaning those who are never disappointed since they want nothing. Some young Chinese call themselves chives, harvested or exploited by the government and firms. As they point out online, it is difficult to harvest chives when they are lying flat.

Such ideas are at odds with the Communist Party's rhetoric. Its leader, Xi Jinping, likes the word "struggle". In 2019 an official summary of a speech he gave to young officials included more than 50 mentions of it. Struggle is an art, he told them. "We must be good at struggle." *Tangping*, therefore, conveys a whiff of dissent. It hints at rejection of a political culture that encourages people to throw their all into work, for the good of the country. A popular online comment suggested that *tangping* had come to mean opting out, with defiance: "Lying flat is standing up, horizontally. Lying flat is having a backbone."

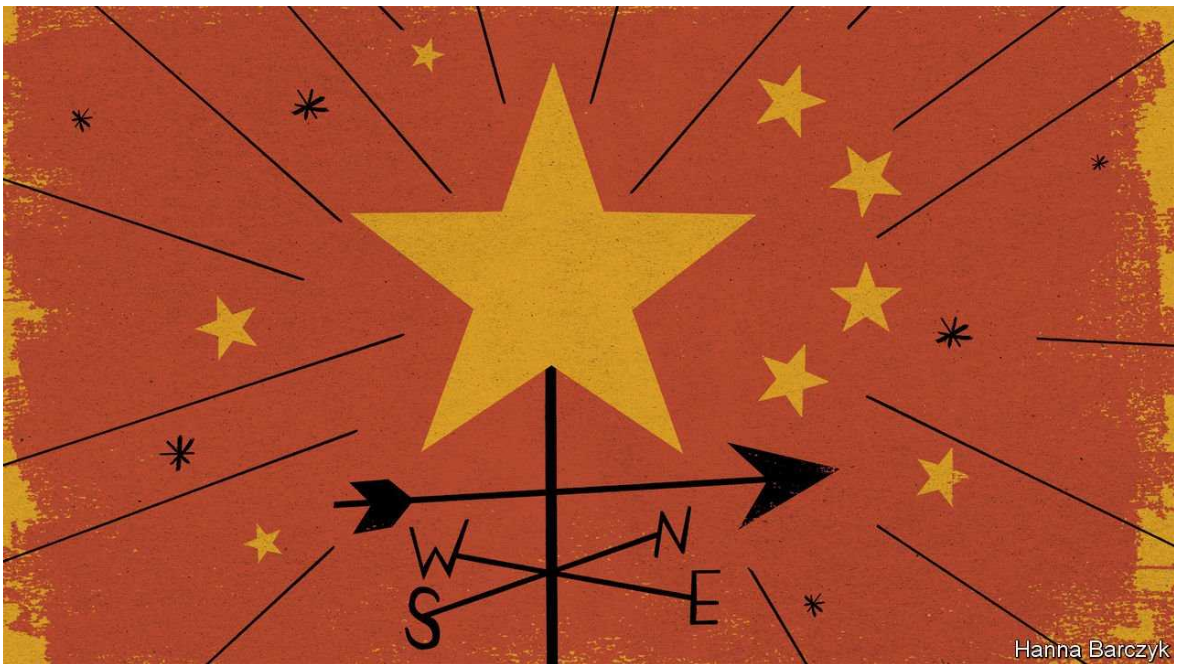
State media have been swift to weigh in. "The only way to ensure a happy life is if one works hard," said a commentary in one newspaper. Lying flat is "not only unjust but also shameful", it added. An academic from Tsinghua, an elite university in Beijing, described *tangping* as "an extremely irresponsible attitude that not only disappoints one's parents but also hundreds of millions of taxpayers". Posts about his remarks have been viewed more than 400m times on Weibo. The platform still allows *tangping*-related discussions. But Douban, another social-media site, has banned several online groups promoting the concept. Only one—for those who have returned to the rat race—remains accessible: The Standing Up After Lying Flat Mutual Support Alliance. A search on Taobao, an e-commerce platform, for T-shirts with messages about lying flat yields only items displaying Communist Party slogans. ■

Chaguan

Xi warns against Western “bullies”, to argue for one-party rule

On its 100th birthday, China’s Communist Party boasts that autocracy is better than Western democracy. Sooner or later, a crisis will test its legitimacy

Jul 3rd 2021



Hanna Barczyk

FOR ALL who believe that people are endowed with inalienable rights including life, liberty and the pursuit of happiness, and that just governments derive their powers from the consent of the governed, it was alarming to hear the loud applause and cheers that greeted Xi Jinping on July 1st, the 100th anniversary of the Communist Party. Speaking at Tiananmen Square, China’s leader had just pledged that any foreigner who tried to bully China would “dash their heads against a Great Wall of steel, forged from the flesh and blood of over 1.4bn Chinese people”. The party crushes individual liberties with despotic ruthlessness. Yet its leaders are sure that they govern with the consent of the vast majority. As a result they claim to enjoy as much legitimacy as any democracy.

It would be dangerous complacency to dismiss the cheering in the square as an empty show. True, the crowd was hand-picked and bused in hours ahead of Mr Xi's arrival. Almost all details of the event were kept secret beforehand. But as often with Chinese officials' paranoia, it was probably unnecessary. Without prompting, lots of ordinary people express sincere admiration for Mr Xi and would cheer him in person if given the chance.

The party sees lots of promising forces coming together. After 40 years of economic, technological and military progress, it is ready to take credit for being an indispensable source of wisdom, guiding China's rise. At the same time, a crisis of confidence grips much of the democratic world. Officials delight in comparing their autocracy with what they portray as Western disarray. They like to point at America, mocking it as a hellhole of covid-19 deaths, racist policing, gun violence and partisan paralysis.

China's leaders are, in effect, trying to take established definitions of representative government and redefine them to suit the party. Where America's Declaration of Independence called for free men to pursue happiness as each saw fit, China's media say the party seeks "happiness for the people"—an unabashedly top-down endeavour. Rather than echo Abraham Lincoln's call for government of, by and for the people, party mouthpieces praise Mr Xi as a "people's leader" whose years of selfless service led him to "people-centred development thinking" that focuses on "the fundamental interests of the overwhelming majority".

Western political systems devote much thought to how governments earn and keep the consent of the governed, whether through elections or under the continuous scrutiny of a free press, opposition parties and an independent judiciary. The party argues that it deserves to rule because of the impressive things that it does, and that it is held to account by its own self-discipline.

Chinese claims to performance legitimacy, to use the jargon of political scientists, are often strikingly detailed, and not especially ideological. All summer, party organs have praised Mr Xi for providing better education, more stable and satisfactory incomes, more reliable social-security payments, higher-quality medical services, more comfortable housing and a more beautiful environment. This focus on real-world problem-solving is called proof that “socialist democracy”, meaning rule by unelected technocrats, is more “authentic” than Western political systems. As Chinese officials tell it, Western politicians only worry about some people’s interests every few years at election time.

Though Mr Xi is an austere authoritarian, sternly demanding hard work, discipline, and sacrifice from party members and the masses alike, he also has a populist side. He and his advisers are careful to buttress dry lists of achievements with emotive stories about heroic party workers, including those who died as martyrs in battle or while serving in harsh and dangerous places. A centenary gala at the Olympic stadium in Beijing featured a series of elaborate mini-dramas, such as one depicting white-coated doctors and nurses battling covid-19.

When Chaguan was first posted to Beijing as a reporter, 23 years ago, officials were somewhat defensive about one-party rule. They described their political system as a work in progress, befitting a China that was still poor. The party could be hard to spot as reformist leaders wooed foreign businesspeople. Visiting bigwigs would often meet government ministers, city mayors and university presidents, rather than each institution’s real boss, its party secretary. Now senior officials openly talk of their faith in the party like priests describing a vocation. “East, west, south, north and centre; the party leads everything,” says Mr Xi.

Ahead of the anniversary Mr Xi has toured revolutionary sites and urged study of the party’s history. That does not include Mao-era cruelties, which have been largely omitted from centenary-year reflections. People who insist on remembering the millions of deaths caused by the party’s worst mistakes risk being accused of “historical nihilism”, or the crime of slandering party heroes.

When the majority falls silent

The party is increasingly unwilling to accept any principled criticism of its 21st-century autocracy, which it describes as the moral equal of any democracy. In truth, that claim is untested. For one thing, censors, propagandists and security agencies devote so much effort to hiding errors and silencing critics that it is not possible to say public consent is fully informed. For another, every political and economic system eventually makes mistakes that are too big to conceal, such as a financial crash or defeat in war.

As plenty of Western experts could attest, reputations for competence are powerful assets right up until they are not. China has avoided a grave, society-shaking crisis since the Tiananmen Square protests of 1989. But one will come and, at that point, other forms of legitimacy will be needed. Even the party's focus on serving majority interests is a problem. It involves trampling on groups that are millions strong, from Muslims in Xinjiang to democrats in Hong Kong. At 100 years old, this remains a party to which not all are invited. ■

United States

Razing Arizona

State-level Republicans are “reforming” how elections are administered

The hair-raising election audit in Maricopa County points to a much deeper problem

Jul 3rd 2021 | PHOENIX

Getty Images

FROM THE outside, the vast edifice looks deserted and unremarkable. The only indications of what is unfolding inside the Arizona Veterans Memorial Coliseum are the signs posted in a barren parking lot outside, sporting slogans like “Audit the votes” and “Board of Supervisors are enemies of the nation”. Even on an oppressively scorching day in Phoenix, when temperatures reached 117°F (47°C), a diligent and solitary supporter of President Donald Trump sat guard next to a cooler of water bottles under a pitched shade.

Inside the Coliseum, something serious is unfolding: a partisan review of all the ballots cast in Maricopa County (which includes Phoenix and 61% of all the state’s voters in 2020). Despite the fact that two audits have already been completed, reaffirming that Joe Biden won 45,000 more votes than Mr Trump, the Republican-controlled state Senate used its subpoena power to instigate yet another. This one has been shambolic. A previously obscure company called Cyber Ninjas was contracted to conduct this audit—despite never having done one before. The chief executive of the ninjas is a man called Doug Logan who, before he deleted his Twitter account, often posted about what he saw as the rampant fraud in the presidential election that cost Mr Trump his victory.

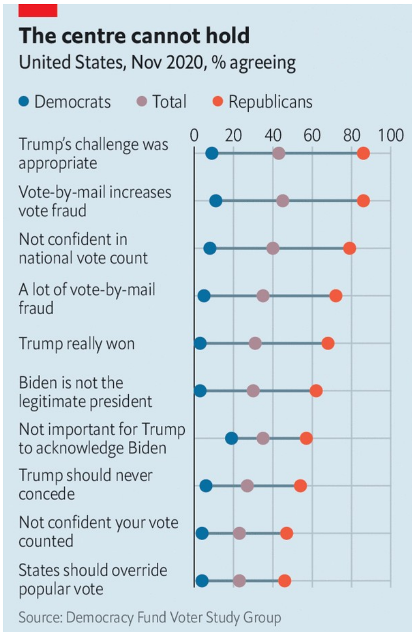
The audit is being privately financed; its donors are undisclosed. The volunteers tabulating the ballots are searching for bamboo fibres (to test the theory that thousands of ballots were flown in from an Asian country) and mail-in ballots without fingerprints (that might prove the use of machine printing). After Merrick Garland, the attorney-general, warned that these "abnormal post-election audit methodologies" may "undermine public confidence in our democracy", Mark Brnovich, Arizona's Republican attorney-general, shot back, claiming that this showed "an alarming disdain for state sovereignty".

It is tempting to see the Arizona audit as a sideshow, nothing more than a monument to the intransigence and inanity of Kelli Ward, the chair of the state party, who has been chasing celebrity and fundraising over the furore. In fact it is a forewarning of the Republican Party to come. Six months after the spectacle of a Trump-supporting mob overrunning the Capitol in a bid to "stop the steal"—and despite no credible evidence emerging of widespread voter fraud—the party apparatus remains enthralled by the idea that the last election was illegitimate, that Democrats win by cheating and that election rules must be changed to guard against future steals.

The audit is inspiring Republican legislators in other states. Rules governing the previously sleepy arenas of election certification are being rewritten; supporters of Mr Trump's new Lost Cause are running to be election administrators. More than 200 bills modifying election rules in states have been filed this year; 24 have already been enacted in law. Political attention has shifted elsewhere, however, as Mr Biden makes a start on his presidency while Mr Trump remains muzzled on social media. Democrats are focused more on what they call "voter suppression" laws (and what Republicans call "election integrity" measures). This attitude misses an alarming development: that the probability of a serious constitutional and democratic crisis in elections to come may have actually increased since Mr Trump left office.

To understand how this is happening, consider the various loci of power in the Republican Party. There is Mr Trump, the king in exile, of course, but also the activist primary base, the donor class, the elected elites and the conservative-media ecosystem. More than ever before, this system represents a hermetically sealed loop, in which alternative facts and outright conspiracies can flourish unchallenged. Just two decades ago, 47% of Republicans trusted the mainstream media, according to Gallup, a pollster. Today, only 10% do. There is of course a parallel system within the Democratic Party, though it does not seem (yet) to have resulted in a widespread rejection of unfavourable election results.

By contrast, the various blocs that make up the contemporary Republican Party have slipped into a destructive, destabilising equilibrium. Dissenters are ejected from the party. Secretly sceptical elites acquiesce. William Barr, Mr Trump's former attorney-general, recently said that Mitch McConnell, the Republican leader in the Senate, was privately urging him to refute the president's fraud allegations from mid-November even as he was publicly doing nothing to counter them. Kevin McCarthy, the Republican leader in the House, had a moment of conscience after the attack on the Capitol, saying that the president "bears responsibility". Weeks later, he was taking an ingratiating mission to Mar-a-Lago, the ex-president's court.



The Economist

Sceptical media coverage and failed lawsuits alleging fraud, meanwhile, are taken as evidence of deeper conspiracy. That is why, despite dozens of unsuccessful court challenges, a remarkable majority of Republicans still believe that the election of Mr Biden was illegitimate—a share largely unmoved since the initial claims of fraud and even after the attempted insurrection at the Capitol in January. Perhaps most alarmingly, 46% of Trump supporters thought it appropriate for Republican legislators to overturn the results in states won by Mr Biden, according to a recent study conducted by Lee Drutman, a political scientist. "We need to regard what's happening now as epistemic warfare by some Americans on other Americans," says Jonathan Rauch of the Brookings Institution. "The fever did not break with Trump's loss. The fever is now being institutionalised."

Arizona shows what this looks like in practice. The chief justification for the audit is voter concerns about election integrity—which were manufactured by Mr Trump and subsequently amplified by conservative media and elected officials. The organisers of the audit wished at first to keep the mainstream press away from it, though One America News (OAN), a Trumpist broadcaster, has been given floor access. A broadcast from June 18th offered the following monologue:

> We know there's a very real possibility that there were actually instead preprinted ballots filled in not by hand but by machine—as well as the possibility that mail-in ballots weren't actually mailed in. And how would we know that? If there aren't folds, of course. And, again, there's also the additional possibility that certain ballots were only marked for the presidential race and no other candidate downballot, which, if a pattern emerges, could be indicative of fraud, as we saw happen in other cases across the country. As of course those perpetrating the fraud would have to find a way to rapidly make up for President Trump's insurmountable lead.

The on-air personalities reporting on the audit have launched Voices and Votes, a non-profit group which raises money to send delegations of Republican lawmakers from other states to tour the audit. "Arizona is Mecca right now, and they're doing their pilgrimage," says Jeff Flake, a former Republican senator from the state who fell out of favour with the party for his loud objections to Mr Trump's norm-breaking. "It would be laughable if it weren't so dangerous, that this is now seen as a template for other states to challenge their own elections," he adds. Delegations from at least 13 states are thought to have visited Arizona.

Election integrity "and critical race theory are the two main issues" in the elections to come, argues Anthony Kern, a former Arizona state representative who has championed the audit. "I'm not going to say who because I don't have proof, but I do think there's an organised effort to thwart our elections." Mr Kern was removed from counting the votes after local media raised questions about his impartiality, given that he was an unsuccessful candidate in one of the races on the ballot and attended Mr Trump's rally on January 6th that preceded the storming of the Capitol. (Mr Kern maintains he never entered the building, but decamped to a nearby flat for coffee.)

"My opinion is that the election should have never been certified. Because...half the nation—and half the system—thought that there were some shenanigans going on." That is because the elections were fundamentally flawed, he says. "We've already got issues of illegals voting, we've got issues of dead people voting, we've got issues of numerous ballots going to vacant lots." The basic question election authorities resistant to the audit have to answer is, "What are you hiding? So, I mean, why not? Why wouldn't anybody want to look and see—whether you're left or right."

Peering into the canyon

Beyond Arizona, Republican state legislators back from their *haj* are hoping to start similar partisan audits. Top Republicans in Georgia—the state where Mr Trump unsuccessfully tried to pressure Brad Raffensperger, the Republican secretary of state, to "find 11,780 votes"—are seeking to emulate the process despite the three recounts, including one audit, already conducted. A state judge ruled that a group alleging fraud could inspect 147,000 absentee ballots in Fulton County, which includes Atlanta (but the lawsuit is pending).

Nearly six months after Mr Trump narrowly lost Wisconsin, the Republican speaker of the state House announced that he had hired three ex-cops to investigate allegations of double voting and other irregularities. There are efforts in Michigan (supported by Mr Logan, the chief cyber ninja) to audit results in some counties on the basis of alleged voting-machine failures. Some Republicans in Pennsylvania's Senate are agitating for an audit of their own. Tom Wolf, the state's Democratic governor, retorted that this would be "a taxpayer-funded disinformation campaign and a disgrace to democracy".

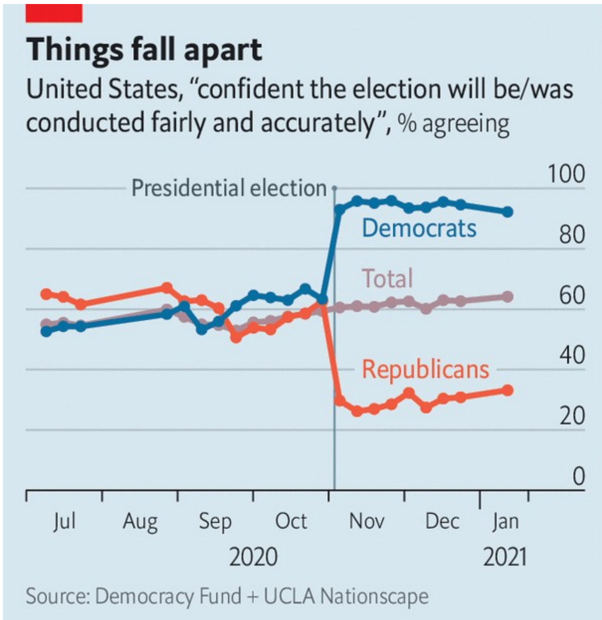
To the most committed loyalists, these efforts will surely amount to something. "Arizona is the first domino that will fall and then other states will look into irregularities, abnormalities, mistakes and potentially outright fraud that happened in their states as well," Ms Ward, the head of the state party, told Newsmax, a right-wing outlet. Her phrasing is a reference to the theory, adhered to by the QAnon crowd, that states will reverse their election results months after the election and reinstate Mr Trump as president, perhaps by as early as August. Mr Trump has closely followed the progress of the audit, cheering on the efforts to instigate versions in other states, while reportedly keeping in touch with Christina Bobb, the OAN anchor (and former Trump-administration official) reporting on the Arizona audit.

In reality these spectacles will not change the outcome of the last election. "There's nothing that we've seen that would give any credibility to the outcome of this audit," says Katie Hobbs, Arizona's Democratic secretary of state, whose office oversees state elections. "The goal is not to restore confidence or verify anything. It's to continue to increase the doubt and undermine the integrity of our elections." But their spread will have other effects: keeping election integrity at the top of the Republican agenda secures Mr Trump's hold over the party. And it encourages future election-meddling.

Inability to get over the loss of Mr Trump has inspired a fire-hose of election-related legislation in states where Republicans are in charge. In Georgia, state officials now have the authority to remove county election officials. In Texas, an elections bill that was thwarted when Democrats walked out of the state legislature is likely to be resurrected in a coming special session. It would make it easier to sue to overturn election results in counties by requiring evidence that more illegal ballots were cast than the margin of victory—using only a standard of the "preponderance of the evidence" rather than "reasonable doubt". Arkansas has recently enacted legislation granting its state elections board, which is dominated by Republicans, powers over county election boards, allowing partisans "to oversee or even undo election results", warns the States United Democracy Centre, a non-partisan group.

The power of elected secretaries of state, who are normally the chief election administrators, is also being wrenched away. In Georgia, the obstreperous secretary of state, in addition to being censured by his party on June 5th, has been stripped of his position as chairman of the election board. Republicans in Texas have proposed legislation threatening criminal penalties for election administrators for soliciting mail-in ballot applications. In Wisconsin, correcting small defects in mail-in ballots would become illegal for clerks.

In Kansas, the authority to modify election procedures has been taken away from the governor (a Democrat) by the Republican state legislature. The legislature has also usurped the secretary of state's ability to contest election lawsuits filed in courts. Ms Hobbs in Arizona is a target of legislation that aims to take away her authority over state election procedures; another bill would take away her office's authority to defend state election laws in court until 2023, when her term happens to expire.



The Economist

Election administration and certification used to be a folksy corner of the American experiment. Now it is the latest to be captured by extreme polarisation. In Republican primary contests to be a secretary of state, fealty to the myth of the stolen election is becoming a litmus test.

In Arizona there are three declared candidates: Shawnna Bolick, best known for sponsoring a bill that would allow the state legislature to overturn election results in the state at any time; Mark Finchem, who attended the riot at the Capitol and is a firm adherent of the "stop the steal movement"; and Michelle Ugenti-Rita, a comparative moderate who is nevertheless also pro-audit. Kristina Karamo, who came to prominence on right-wing media outlets for her claims of witnessing voter fraud in Michigan, is now running to be the secretary of state in order "to remove corruption from our elections". Jody Hice, a Republican congressman, is aiming to replace the "back-stabbing" Mr Raffensperger in order "to stop Democrats before they rig and ruin our democracy for ever".

In a narrowly divided country, it does not take much to throw an entire election into dispute. The American system has many embedded protections against democratic crisis. Most of these were implicit: the decency of the losing candidate, the losing party and their boosters, who would not act to endanger the democratic transition. That has proved less stable than was thought. Not only did Mr Trump claim fraud, he also found support from 18 Republican state attorneys-general who joined a lawsuit to, in effect, not count four of Mr Biden's narrow victories. More than 100 Republicans in the House of Representatives voted against certifying election results on January 6th, in what was previously a merely ceremonial procedure.

That has left only explicit protections: the impartiality of election administrators and courts. The first of these is now under threat. The courts held their own in 2020, even under Trump-appointed judges, and perhaps they will in the future. But American democracy, like aeroplanes, once had several redundant systems for ensuring the safety and integrity of its elections and transitions. It is now getting dangerously close to having only one.

Democrats, for their part, are more concerned about voter suppression, and have largely missed this bigger threat. There is indeed some reason to worry. The Republican Party's acceptance of Mr Trump's conspiracy has led to a swathe of changes to election rules across the country—limiting early voting, requiring photo identification to cast ballots and reducing the number of drop boxes. Republicans justify these changes by citing voter concerns over the fraud that has proved so difficult to substantiate. Democrats fear that this is mere pretext to securing partisan advantage, with some labelling it, overheatedly, the new Jim Crow.

There is no doubt that some of these changes are being made in bad faith. Texas may soon pass rules that bar early voting before 1pm on Sundays, which seems to be directly aimed at disrupting the practice of "souls to the polls", in which black voters head to the ballot box directly after church. The state may also outlaw two new voting methods, drive-through and all-day voting, established in Houston to increase turnout during the covid-19 pandemic.

But so far these changes have not made much difference. A recent study of voter-ID laws from 2008 to 2018 published in the *Quarterly Journal of Economics* found little evidence of actual disenfranchisement—turnout, including of minorities, remains flat after other effects are controlled for. That corroborates much of the political science on this subject. One randomised experiment found that notifying voters of ID requirements actually increased turnout modestly. A commanding majority of Americans, including a majority of Democratic voters, support such requirements.

And yet this is the issue that most Democrats in Congress have focused their attention on. They argue that democracy can be saved only by the passage of a bill called HR1. This is a catch-all bill that tries to pre-empt some of the state-level changes that allegedly suppress voting, but that also devotes much of its attention to ancillary concerns such as a public-financing scheme for election campaigns.

There is an Orwellian circularity to what is happening with election administration. In the name of removing doubt, much more of it will be sown. In the name of removing interference in the election system, more of it will be allowed. To ensure public trust in fair counting of ballots, ever more will be treated as inherently suspect. Fear of fraud is highly correlated with results and unrelated to actual evidence. That is a dangerous dynamic for one of the two major parties in the world's most powerful democracy to have fallen into.

Some cracks could be repaired immediately. The Electoral Count Act, a poorly written law from 1887 governing certification in Congress, was intended for ceremonial use. It could be modified to make federal overturning of legitimate state elections harder. Paper-ballot backups could be required nationwide. And perhaps the Republicans who emerge victorious from the upcoming primaries will prove too extreme to win general elections. But ultimately the repairs will have to come from within the Republican Party itself.

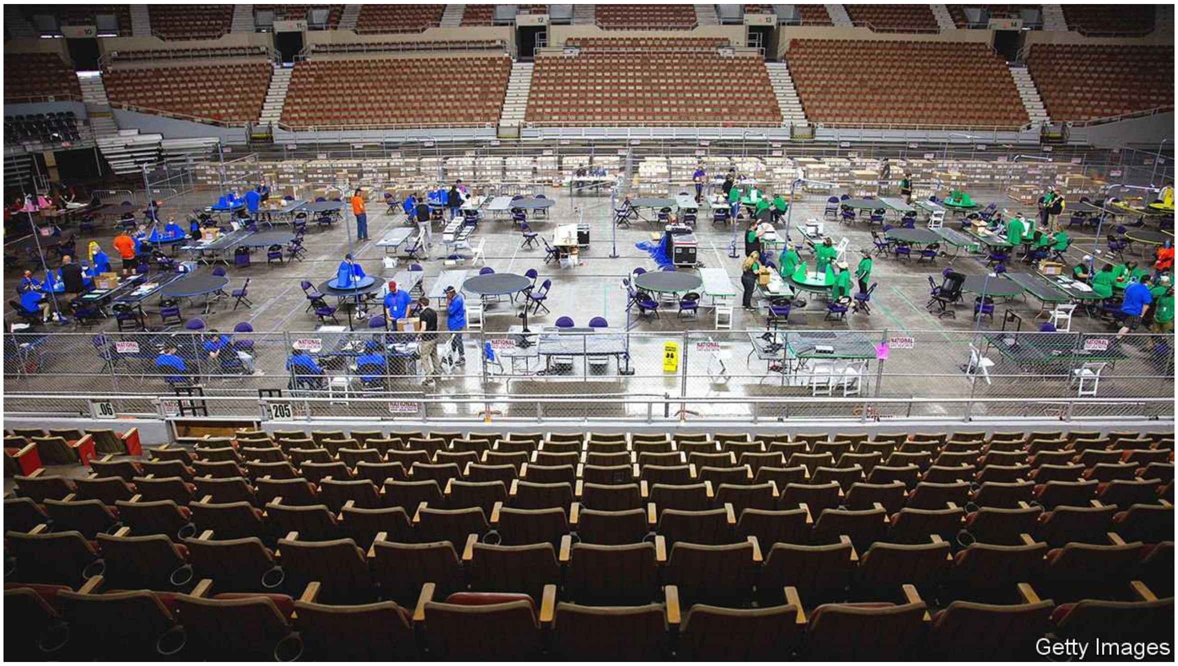
That is why it is particularly worrying that it is so resistant to internal correction. Disbelief in Mr Trump's lies is now seen as apostasy; its punishment is usually excommunication from the party. Liz Cheney was formerly the third-leading Republican in the House; her unwillingness to stay quiet about Mr Trump's responsibility for the attack of January 6th led her colleagues to take away that title. Of the ten Republicans in the House of Representatives who voted to impeach Mr Trump for his actions in January, nine have now acquired primary challengers. The ex-president has pledged to back a challenger for the tenth.

After eight months of investigation, a Republican-led committee of Michigan state senators recently released a report finding no evidence of fraud. Like the queen of hearts, Mr Trump quickly called for their heads. “Michigan State Senators Mike Shirkey and Ed McBroom are doing everything possible to stop Voter Audits in order to hide the truth about November 3rd,” he wrote. “The truth will come out and RINOs [Republicans in name only] will pay at the polls, especially with primary voters and expected challenges.”

“It’s a vicious loop, because these elected officials will say ‘I’m just responding to my constituents’, but their constituents are responding to them,” says Mr Flake, the former senator from Arizona who has been in the political wilderness since his prominent break with Trumpism. “What’s really troubling is that too few elected officials are willing to take a stand.”

Sand in their eyes

Bill Gates, a member of the Maricopa County Board of Supervisors (and one of the “enemies of the people” blasted outside the Coliseum), is a lonely example. A longtime Republican of the Ronald Reagan and Jack Kemp mould, Mr Gates has received death threats for defending the legitimacy of the election. “If this is a new normal, our democracy is definitely in peril. Because you can’t do this and have a healthy, functioning democracy,” he says.



His other Republican credentials—cutting taxes and even supporting tighter voting laws—have ceased to matter. “There may be electoral consequences to me down the road. I'm not currently worried. This is too important…9/11 was a threat to our safety. This is the biggest threat to our democracy,” he adds. “We were the party of the rule of law.” Mr Gates argues that the party has lost its Burkean roots in favour of feverish populism. Thought of as a careful and pragmatic politician before, with some aspirations for statewide office, Mr Gates’s stance may have sunk his chances.

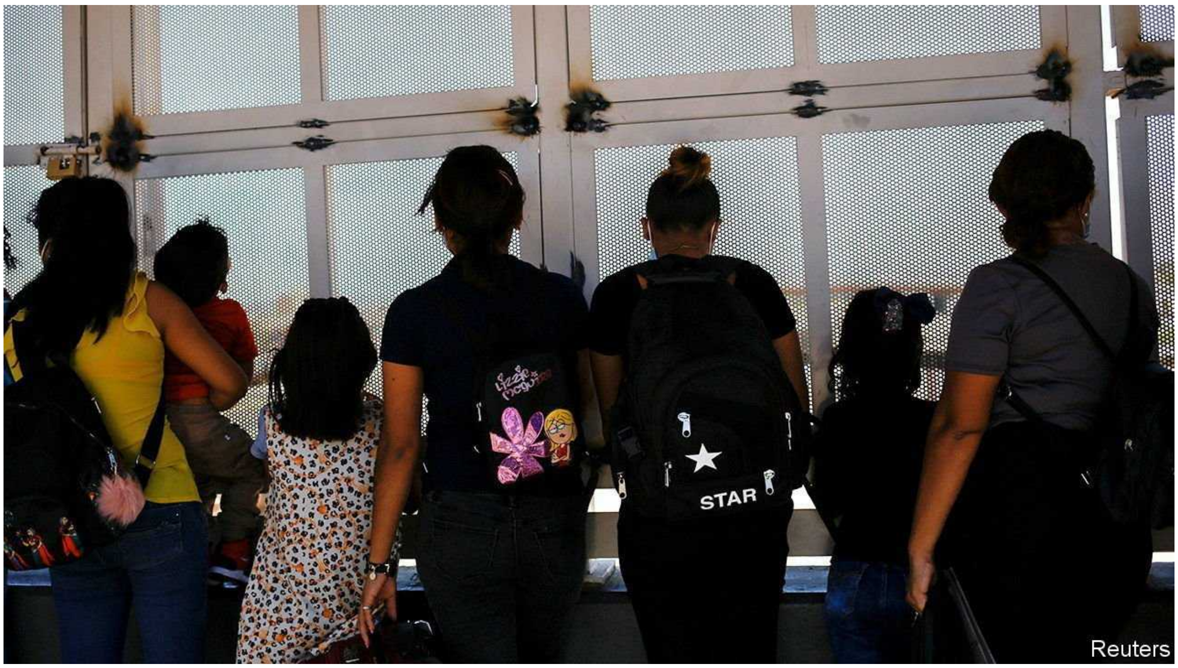
In his retirement, he had dreamed of going to the former Soviet republics to serve as an election observer in fledgling democracies. With some emotion in his voice, he reflects, “I never imagined that it would be here. I would do it here in Maricopa County…that’s what’s just stunning.” Looking around he repeats, almost to himself: “I don’t need to go to Belarus. I got it right here.” ■

Border disorder

A Trump edict that shut America's borders may soon be lifted

Which may prove inconvenient for Joe Biden

Jul 1st 2021 | Dallas



THEY WERE rallying like it was 2016. On June 30th Donald Trump and the governor of Texas, Greg Abbott, held a "security briefing" in south Texas to talk about the surge in migrants at the border and the need to build a wall—this time financed by private donations and state funds. Mr Trump's visit, streamed on Facebook Live and covered loyally by Fox News, was a throwback to a different era, when hardline immigration policies ruled the day.

President Joe Biden has promised a more tolerant, humane approach to immigration. Since entering office, he has reversed some of Mr Trump's restrictive border policies, such as a rule limiting asylum claims from victims of domestic violence and gangs. Yet to the dismay of human-rights groups and immigration advocates, he has kept in place Mr Trump's most hardline policy of all, known as "Title 42", which, in effect, sealed America's borders to new arrivals. He is under increasing pressure to end it.

“Title 42” is an obscure provision of a 77-year-old public-health law, which allows the surgeon-general to block the entry of people and goods from countries with a communicable disease that could be introduced into America. It was invoked by the Centres for Disease Control (under pressure from Mr Trump’s White House) in March 2020, citing the risk of the spread of covid-19, and was extended indefinitely in May that year. In effect, it bars entry to most migrants arriving at America’s southern and northern borders, including those seeking asylum. They are expelled quickly to the country they came through—usually Mexico—even if they are not from there. From March 2020 until this past May, there have been 845,000 expulsions by Border Patrol under Title 42.

Immigration advocates and human-rights groups are frustrated that Mr Biden has continued to use this Trump-tainted tool. “Title 42 is illegal, inhumane, and not justified by public health,” says Lee Gelernt of the American Civil Liberties Union (ACLU), which sued the Trump administration over the legality of using title 42 to expel unaccompanied minors and asylum-seekers. “We hoped that the Biden administration would eliminate it on day one in office," he says. Of particular concern is the treatment of asylum-seekers, who are being expelled so quickly under Title 42 that many are not allowed the opportunity to make an asylum claim. (The Biden administration has already started exempting unaccompanied minors, who are being let into America.)

Yet for the Biden administration Title 42 has been a convenient solution at an inconvenient time. The number of migrants arriving at the southern border is the highest in more than two decades, and Title 42 has enabled Mr Biden to keep America’s borders mostly closed, despite the Republicans’ rhetoric about his “open borders” policy. “Title 42 was a stop-gap that was useful to buy time to figure out how they are going to manage immigration at the border long-term,” says Andrew Selee, president of the Migration Policy Institute, a research organisation. “They’ve bought time, but they don’t have the answers yet.”

That time is close to running out. Theresa Cardinal Brown of the Bipartisan Policy Centre, a think-tank, predicts that the administration has “weeks, not months” before it will be forced to end Title 42, if it doesn’t voluntarily suspend it first. One factor forcing its hand is the ongoing lawsuit from the

ACLU over expulsions of families seeking asylum. The ACLU and the federal government are in negotiations to end the lawsuit, and the government has recently allowed 250 especially vulnerable asylum-seekers into America each day to get on with their claims. Another factor is the Mexican government, which is murmuring about no longer taking back the non-Mexicans who are being expelled in large numbers. It is also becoming harder to justify such a restrictive public-health law when states have reopened and vaccines are available.

A phase-out is more likely than a quick end. But the administration's plans to make the immigration system more efficient, fair and manageable after Title 42 is lifted are not yet in place. There is talk of speeding up asylum for those arriving at the border with credible fear of persecution at home, by, for example, hiring more asylum officers to process their claims quickly. A huge backlog of more than 1.3m immigration cases is making its way through immigration courts; on average each one takes more than two and a half years to resolve. But next year's budget for the Department of Homeland Security, which oversees border control, "doesn't appear to take into account the scale of what they'll need to grapple with between now and then", says Ms Cardinal Brown, as the flow of migrants continues to grow.

Republicans are going to keep criticising Mr Biden's and Kamala Harris's handling of the border no matter what action they take. But when Title 42 has ended, immigration hawks will quickly swoop down. And Mr Trump and Mr Abbott will no doubt hold another "security briefing" for their concerned supporters.

For more coverage of Joe Biden's presidency, visit our dedicated hub

A version of this article was published online on June 30th 2021

Stranger things

America’s government comes clean on UFOs

The Pentagon has no idea what its pilots are seeing

Jul 3rd 2021

BETWEEN 2004 and 2021, American military pilots registered 144 reports of unidentified aerial phenomena (UAPs), the government’s po-faced term for UFOs. One turned out to be a large deflating balloon. The others are a mystery. So concluded a long-awaited report published on June 25th by the Office of the Director of National Intelligence (ODNI), which co-ordinates the work of American intelligence agencies. The nine-page “preliminary assessment” was the result of pressure from Congress. In June last year the Senate’s intelligence committee, then chaired by Marco Rubio, a Republican senator from Florida, asked the Department of Defence to create a UAP Task Force to streamline the collection of reports. In January it was given six months to publish its findings.

Some are striking. One is that UAPs “probably do represent physical objects”, rather than being technical anomalies or figments of pilots’ imaginations. That is because more than half the objects were registered across multiple sensors, including radar and infra-red. Moreover, 18 of the incidents suggested “unusual flight characteristics”, such as moving against the wind or manoeuvring abruptly, though the report warns that this could be the result of sensor errors or misperception.

Yet the report is thin gruel for alien hunters. The ODNI says that if the incidents are ever resolved, they will probably fall into one of five categories: airborne clutter (like hobbyists’ drones), natural atmospheric phenomena (ice crystals, for instance), classified aircraft programmes, “foreign adversaries” or a residual “other”—which is as close as the report comes to entertaining otherworldly possibilities.

Few in the Pentagon seem worried about extraterrestrial invaders. Their concerns are more prosaic, and geopolitical. UAPs present a “safety of flight issue”, for one thing; American pilots reported 11 near-misses. The other concern is that the incidents point to Chinese or Russia snooping or, worse, evidence of “breakthrough technologies”, such as revolutionary means of propulsion.

The report amounts to a giant shrug. The evidence is “largely inconclusive”, it says. Firmer conclusions will require more data. The UAP Task Force will now collect data from more sources, including historical radar records. It will make better use of artificial intelligence to spot patterns, such as whether UAPs coincide with balloons or wildlife. And it will standardise reporting from across military services, since much of the existing data is from the navy.

Part of the answer may lie in better, and more, sensors. An object that appears to travel at hypersonic speeds might be an artefact of a moving camera, an illusion known as parallax. Observing it through more sensors, including those that detect parts of the electromagnetic spectrum above and below visible light, would help.

There is a human element, too. Kathleen Hicks, the deputy secretary of defence, has ordered the Pentagon to put the UAP Task Force on a permanent footing and to ensure that it receives reports of sightings within two weeks.

But one of the biggest obstacles to the collection of data is the stigma associated with the issue. Aviators and analysts "describe disparagement" when they report or discuss UAPs, says the ODNI. "Reputational risk may keep many observers silent," it warns, "complicating scientific pursuit of the topic."

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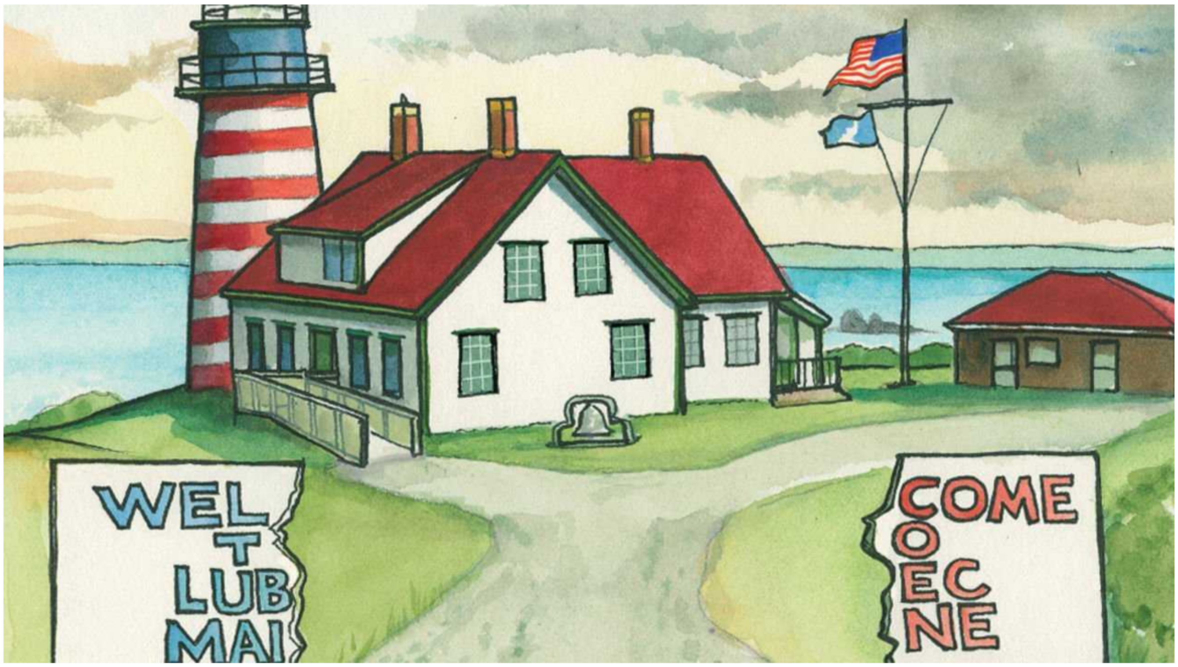
Lexington

There goes the neighbourhood

What gets lost when national politics eats everything

Jul 1st 2021



A VISITOR TO Lubec, the easternmost town in America, can still hope to leave the rubber lobsters and other clutter of the Maine tourist trade two hours behind in Bar Harbor. But these days national politics follows everyone everywhere in America. So the visitor should not be surprised to spot a particular red-white-and-black flag hanging from a pine tree along a road into town. "Fuck Biden," it reads. "And fuck you for voting for him!"

The visitor has the luxury of forgetting the message, since everyone he meets is kind, if a bit gruff, and what is familiar and wearisome gets shouldered out of the way by what is majestic and new—the 28-foot tides, the granite bluffs, the stands of birch, even the fog, which seems to erase the whole world, leaving just the sound of the surf.

Residents aren't so lucky. They have to live with the damn thing, as well as with the same flag hung by someone across town. (The flag sells on Amazon for just $23.99.) It is one matter when a stranger raises a middle finger to you. It is quite another when your neighbour does it, particularly in a place like Lubec, where only about 1,300 people live. Some of them have had enough.

A letter to the editor published in the *Quoddy Tides*, the local biweekly newspaper, urged someone to make off with the flag if the owner did not remove it. (Many residents seem to know who the flag-wavers are, but they are delicately not named in print.) Another letter called one flag-waver "a deeply disturbed soul unable to accept personal responsibility for their dismal failures to be good citizens or good neighbours".

For Americans, those two roles generally go together. They like to think of themselves as good neighbours, and of their neighbourliness as the foundation of their democracy. But from the start the idea of American neighbourliness has been part myth. Members of the Passamaquoddy tribe living on the small reservation just north of Lubec could tell you about that.

The relationship between neighbourliness and citizenship is also complex. For philosophers like John Dewey, the give-and-take within small communities was the essential stuff of American democracy, fostering communication and trust that would flow upwards through representatives at the national level. That, residents say, has been the story of Lubec for many years, even as the sardine canneries and herring smokehouses closed, the population dwindled and those who remained struggled to find some new form of industry.

What is happening now, in Lubec and across the land, is that the flow of influence is reversing. It is starting to move from the national level to the local one, and from American-as-citizen to American-as-neighbour. America is the worse for it.

In "Good Neighbours: The Democracy of Everyday Life in America", published in 2016, Nancy Rosenblum, a political philosopher, warned of a "social and political holism" that comes with opening the neighbourhood gates wide to civic concerns. "For reciprocity among neighbours as 'decent folk' turns on the real possibility of disregarding precisely the social inequalities, racial and sectarian differences, and conflicting ideological commitments that citizens bring to public life," she writes. Passions about such matters can simplify and coarsen relations among neighbours. They collapse the generous spaces made—not always, but often enough—for eccentricities, personal lapses and political opinions, for the tolerance and empathy that sustain pluralism.

This is what happened, in Ms Rosenblum's telling, as Americans of other races watched their Japanese-American neighbours get packed off to internment camps during the second world war. "The family next door was seen through the lens of racial and political categories, and through the miasma of mistrust thrown up by war," she writes. "Pluralism gave way to totalism."

Maybe not totalism, but certainly holism, is becoming the story of life in America. On the Trumpist right the formula is simple: commitment to one man shapes your view of reality. On the left the formula is more slippery, compounded of doctrinal, identitarian and even stylistic commitments that are evolving in ways that surprise even would-be adherents and catch them out.

The effect is that little space is safe from political judgment. Not just whom you vote for or what flags you wave but what products you buy, what national story you tell, and what words you use or capitalise all answer the dangerous question that is once again at the centre of American life: which side are you on?

Dewey-eyed

Though surrounding Washington County voted overwhelmingly for Donald Trump, within Lubec 457 people voted for Joe Biden and 406 for Mr Trump. Not just the artists but seemingly everyone here assembles a livelihood from more than one job, like diving for scallops and also taking tourists out to see minke whales. Melissa Lee works for a statewide land trust and also for the local library. She says the signs send a message that all that matters about her is her vote. They make her feel "cut off, without any thought to any communication, or that maybe you're an individual and you might have other qualities".

They are just signs, and may not be portents. Another representation of Lubec's spirit is the Lost Fishermen's Memorial, resting on a rise looking out over Lubec Narrows towards Canada’s Campobello Island, where Franklin Delano Roosevelt, who envisioned the world as a neighbourhood yet also oversaw those internment camps, took holidays. The monument was created in 2016 to remember local fishermen lost at sea since 1900, in pursuit of lobsters for New York or sea urchins for Tokyo. More than 110 names are engraved on the granite. Many family names are repeated. Money for the memorial was raised locally, some by neighbours organising trips or holding yard sales. It is this version of Lubec, of life larger than politics, that its residents are right to defend.■

The Americas

Serve the people

Cuba is facing its worst shortage of food since the 1990s

Government bungling and a shortage of dollars are to blame

Jul 1st 2021 | MIAMI

"CUBANS HAVE always been resourceful," says Ana, the owner of a private farm-to-table restaurant near Havana. "But now we need to be magicians and acrobats." The communist island is facing its worst shortage of food since the 1990s. Finding ingredients was never easy in a place which imports around 70% of its food. Over the past year it has become nearly impossible. When grocery shops are empty, as is so often the case, Ana tries the internet or the black market, only to find that prices are prohibitively high. Farmers no longer want to sell produce to her, she says, as they need to eat it themselves.

The government blames the shortage of food mostly on sanctions imposed by the United States—sanctions which, on June 24th, the UN General Assembly voted to condemn, as it has done nearly every year since 1992. But since 2001 the sanctions have exempted food. Indeed, the United States is the largest exporter of food to Cuba, though last year those imports were at their lowest level since 2002.

Some external factors have affected the food supply. The jump in global food prices, which in the year to May surged by 40%, the largest increase in a decade, has made imports more expensive. But the main problem is the government's lack of hard currency. Tourism, normally 10% of GDP, has atrophied because of the pandemic: whereas 4.2m people visited in 2019, just over 1m did last year, nearly all in the first three months of the year. Remittances have also suffered. Before covid-19, commercial airlines would operate as many as ten flights a day between Miami and Havana, all packed with cash-toting *mulas*. But now only a handful of flights go to Havana each week. In addition, this year's harvest of sugar—one of Cuba's main exports—was the worst in more than a century, as a result of drought (the dollar shortage also sapped supplies of fertiliser and petrol).

The government is trying desperately to eke out dollars and skimp on imported goods. Cubans can no longer buy greenbacks from state-operated exchanges at the airport. State-owned bakeries are replacing a fifth of the imported wheat flour they use in bread with substitutes made from home-grown corn, pumpkin or yucca, much to the dismay of consumers, who have complained that bread now tastes like soggy corn. The sale of biscuits has been limited in certain cities to cut back even more on imports of flour.

Since February, in a desperate attempt to collect hard currency, the government has required that foreigners pay for their seven-day mandatory stay in a state-owned quarantine hotel in dollars (since June, this has even applied to some Cubans). To earn more from its diaspora, the state also operates e-commerce sites through which Cubans abroad can pay in dollars or euros for food and gifts to be delivered to people on the island.

Indeed many Cubans abroad are trying to help their family members stave off hunger by sending their own care packages. But even these have become harder and more costly to post. Goods from the United States that once took two weeks to deliver can now take up to four months to arrive, as shortages of fuel and trucks in Cuba make the final leg of the delivery trickier.

Bungled policy responses have made things worse. On June 10th the Cuban central bank announced that, from June 21st, Cubans would not be able to deposit dollars into their bank accounts for an undisclosed amount of time. This is despite the fact that, in order to buy goods in state-owned shops, Cubans need to have a prepaid card loaded with dollars. They will now have to exchange their dollars for euros or other currencies, which involves a fee. Emilio Morales, the head of the Havana Consulting Group in Miami, thinks this was a way to scare people into depositing more before the deadline.

Rather than stabilise the economy, the policy is likely to do the reverse. Some exchange houses in Miami soon ran out of euros. Cuban banks were overwhelmed by queues of panicking people trying to deposit the dollars they needed to buy groceries. "Cuba has 11m hostages and is expecting Cuban exiles to pay their ransom," says Mr Morales. Ricardo Cabrisas, the deputy prime minister, was recently in Paris negotiating another extension on the roughly $3.5bn of loans owed to foreign governments—the island has been in arrears since 2019. An ultimatum from creditors may help explain the government's desire to hoover up greenbacks.

Despite making some attempts to liberalise the economy, the government is bafflingly poor at boosting agricultural production or wooing foreign investors. Firms producing food in Cuba earn only pesos, which have little value internationally, but must buy almost all their inputs abroad in a foreign currency. The government requires farmers to sell their harvest to the state at uncompetitive prices and imposes draconian rules on livestock management.

Up until last month it was illegal to slaughter a cow before it had reached an advanced age, as determined by the state. Now farmers may kill them either to sell the meat or to eat it themselves. But before they do so, they must jump through a series of hoops, including certifying that the cow has produced at least 520 litres of milk a year. They are also not allowed to let their herd shrink overall, and so can only slaughter one cow for every three calves they add to it—a tall order in the long run, mathematically. As it is, Cuba is having trouble maintaining its existing cattle herd: last year, in the province of Las Tunas alone, more than 7,000 cows died from dehydration. Farmers have to complete paperwork and wait a week for approval, too. "The process of applying to eat a cow is enough to make you lose your appetite," says a farmer in Bahía Honda.

Cubans are no strangers to difficult times. Eliecer Jiménez Almeida, a Cuban filmmaker in Miami, was a child during the "special period" of hardship after the fall of the Soviet Union, and remembers how his grandmother sold her gold teeth in exchange for soap, just so that he and his siblings could take a bath. For him and for many Cubans, the question is not how many more of the same indignities their people can endure, but how much longer.

Discontent was slightly less likely when Fidel Castro was in power. He had charisma and mystique that neither his brother and successor, Raúl, nor Cuba's current president, Miguel Díaz-Canel, can replicate. What is more, the Cuban diaspora is larger and wealthier and the internet has shown Cubans that many of their economic difficulties are created by their leaders, not the United States. The best way to stave off popular discontent would be to implement more and bigger economic reforms, at a faster pace, starting with farms and small businesses. It is a measure of Cubans' disillusionment that the old revolutionary cry of "Hasta la victoria siempre" (On to victory, always) has largely been supplanted by the longsuffering "¿Hasta cuándo?" (How much longer?) ■

Searching for the truth

More graves are found at Canadian schools for the indigenous

The revelations confirm what many indigenous groups have long suspected

Jul 3rd 2021 | Vancouver

THE PURPOSE of Canada's residential schools for indigenous children was to "kill the Indian in the child". Sometimes the child died too. Over the past month 1,148 unmarked graves have been found at the sites of three former residential schools. Ground-penetrating radar confirmed what indigenous groups have long suspected: that more children died at these schools than was previously thought.

Beginning in the mid-1800s the Canadian government forced at least 150,000 indigenous children into residential schools, mostly run by the Roman Catholic church. The last closed in the late 1990s. Children were beaten for speaking their native language. Many suffered sexual and physical abuse. Disease spread rapidly because of cramped dormitories and poor living conditions. Some children died in accidents or in attempts to escape.

The number of graves has shocked Canadians, even though many indigenous people had complained about the residential schools for decades. “Now our truth is finally out,” says Barbara Lavallee, a Cowessess First Nation researcher who is part of the team of elders and technicians that uncovered the second gravesite.

The Canadian government has previously tried to atone for the residential school system. In 2008, in response to the country’s largest class-action lawsuit, the government formally apologised for the schools. It held a truth and reconciliation commission, deeming the schools a form of “cultural genocide”, compensated survivors and paid for programmes to locate graves. Since the 1980s aboriginal rights have been enshrined in the constitution.

By contrast the United States, which also ran boarding schools for indigenous children, has done none of these things. Even so, it may nowadays be doing a better job than Canada at keeping indigenous families together.

In both the United States and Canada, indigenous children have been disproportionately put into foster care and adoptive homes. That perpetuates the break-up of families initiated by residential schools, argues Margaret Jacobs of the University of Nebraska. She reckons that social workers have tended to remove children from homes that were simply poor, rather than abusive. They may have interpreted grandparents raising children—a common feature in some indigenous communities—as a sign of parental neglect. In 2016 a Canadian human-rights tribunal found that the government spent less money on reserves on programmes to support families; as a result indigenous children were more likely to be taken from their homes.

In the United States indigenous people are given more autonomy to govern themselves. Tribal courts can experiment with innovative approaches and tend to have smaller dockets, giving judges more time to evaluate cases. This is partly why the United States has made more progress in reducing foster-care numbers. About half of children in foster care in Canada are indigenous, despite making up only 8% of the population. In the United States around 3% of children in foster care are indigenous, closer to the proportion of Native Americans in the population. However, following the revelations in Canada, Deb Haaland, the United States' first indigenous secretary of the interior, has announced an investigation into America's boarding schools. Both countries can learn from each other.■

Bello

Latin America's national identities are being questioned

Statues are being toppled in Colombia, while Mexico has apologised to the Mayans

Jul 1st 2021

"MEXICANS EMERGED from indigenous people, Brazilians emerged from the jungle, but we Argentines arrived on boats. On boats from Europe." So said Alberto Fernández, Argentina's president, last month. It was meant as a friendly nod to Pedro Sánchez, Spain's prime minister, who was sitting beside him. Two decades ago the comment, which Mr Fernández attributed to Octavio Paz, a Mexican poet, but which was really more faithful to an Argentine rock song of the 1980s, would have gone unremarked. Not now: many took offence. What made his timing especially clumsy is that Latin Americans are once again engaging in one of their periodic bouts of questioning their national identities.

In Colombia in April indigenous demonstrators toppled a statue of Sebastián de Benalcázar, a Spanish conquistador. Monuments in Bogotá to Queen Isabella of Castile and her hired help, Christopher Columbus, were also attacked and have been removed for safe-keeping. Chile has decided to make June 24th a public holiday as “the day of the original peoples”. In May Mexico’s president, Andrés Manuel López Obrador, apologised to the Mayans for the abuses of the past five centuries. Pedro Castillo, a left-wing teacher and the presumptive winner of Peru’s presidential election, said that to be “of Andean blood” is to be “authentically Peruvian”. Some of his opponents brandish red and white flags featuring the cross of Burgundy, an emblem of Spanish colonial rule.

National identities evolve everywhere. And they tend to be closely linked to race. That has been especially so in Latin America. Most of the region became independent two centuries ago, just when the French revolution and the European Romantics made nationalism fashionable. The new nations set out to create collective identities. It was a tricky task, as Simón Bolívar, the liberator of northern South America, wrote: “We are neither Indians nor Europeans, but a race halfway between the legitimate owners of the land and the Spanish usurpers.”

Throughout the 19th century historians, painters and poets worked to create national myths and heroes. These were generally whitish men: although Indians and black slaves were accepted as part of the nation, it was in subordinate roles. In the 20th century more inclusive national identities emerged, centring on *mestizaje*, the racial and cultural mixing of indigenous people, Europeans, Africans who arrived as slaves and immigrants from elsewhere. “There is not a single Latin American, from the Rio Grande to Cape Horn, who is not an heir to each and every aspect of [this] cultural heritage,” Carlos Fuentes, a Mexican writer, declared in 1992 as the region marked the quincentenary of Columbus’s arrival.

That commemoration in fact prompted a questioning of *mestizaje*. In 2010 around 42m Latin Americans, or 8% of the total, defined themselves as indigenous, according to censuses; others took pride in their African descent. These people tend to be poorer than average, whereas elites tend to be whiter than average. Racism and racial tension survive, albeit in less overt form. Take Argentina: behind the European façade proclaimed by Mr Fernández lay the extermination of some indigenous people in the 19th century and the hidden survival of others. Or Peru: according to Gonzalo Portocarrero, a sociologist, its history contains two persistent fantasies, that of a race war feared by whites and that of Inkarri, the return of the Inca emperor to rescue his people from bondage. Portocarrero, writing in 2015, thought both were fading. Recent events call that conclusion into question.

Statue-toppling is currently widespread, and there is an element of anarchist vandalism to it. But Latin American leaders would be foolish if they fail to recognise that in recent mass protests there is a demand not just for material improvements but also for more inclusive national identities in countries where the pandemic and the prior economic slowdown have deepened social fractures. The conquistadors were brave, but they were brutal too. They belong in museums, not in public squares (Columbus is a more complicated case, as a generic symbol of the European roots of many Latin Americans). But while Latin America should pay due recognition to its cultural and ethnic diversity, it should not lose sight of the many things its people have in common. Cultural *mestizaje* is in some ways a myth and it should not be imposed. But it remains the only inclusive and unifying narrative the region possesses.

Middle East & Africa

Third time unlucky

Africa's latest wave of covid-19 could be its worst yet

A lack of vaccines means it will not be the last

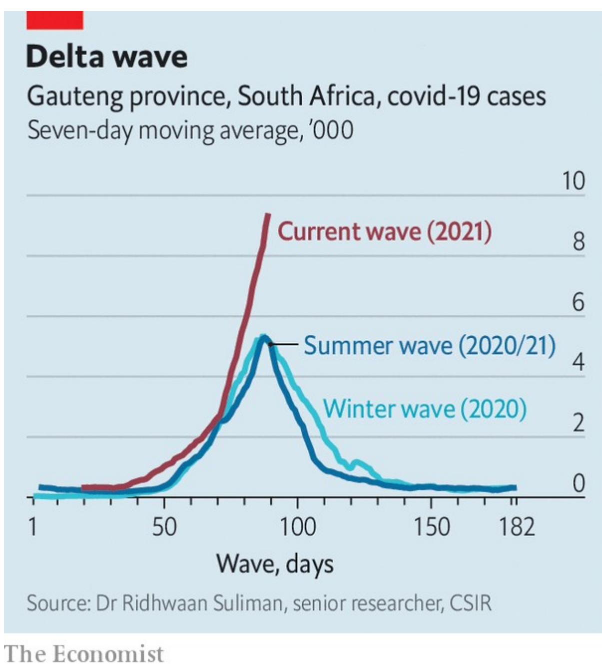
Jul 1st 2021 | JOHANNESBURG

IN THE EARLY months of the pandemic it was common to hear that Africa had been spared the worst of covid-19. Experts pointed to low official rates of illness or death and speculated about whether they were a result of youthful demography, Africa's experience of dealing with infectious diseases such as Ebola and HIV, or something else entirely, perhaps underlying immunity. The premise was shaky, however. Most African countries test tiny numbers of people. Only a few keep good track of deaths. One that does, South Africa, has suffered one of the world's highest levels of excess mortality during the pandemic. The sanguine view also neglected how, even if Africa's waves really were less deadly than elsewhere, there might also be more of them because of low vaccination rates.

Today there is little sign of the continent being spared. As of June 28th the seven-day rolling average of confirmed cases in South Africa was 267 per million people, more than five times the global average, and rising steeply.

Almost a quarter of tests are positive, suggesting that many cases are going undetected. “The latest surge threatens to be Africa’s worst yet,” says Matshidiso Moeti, the head of the World Health Organisation (WHO) in Africa. Cases are rising especially quickly in 12 countries, she says, though “health systems are already pushed to breaking point” in many more. In Namibia, Uganda and Zambia, among other places, oxygen is running out and hospital beds are full. The WHO calculates that, within weeks, the Africa-wide caseload of the third wave will surpass the peak of the second, which in turn was higher than the peak of the first.

Dr Moeti highlights two reasons for the strength of the latest wave. The first is public fatigue. In rich countries covid-19 was seen as a once-in-a-lifetime event to be endured until vaccines arrived; in many African ones it is another burden among many, with no sign of relief. Governments have been slower to impose lockdowns this time around. They have no money to pay people to stay at home, fear the effects on commerce and note the lack of public clamour for restrictions. "The third wave has come with a severity that most countries were not prepared for,” adds John Nkengasong, the director of Africa Centres for Disease Control and Prevention (Africa CDC), a continent-wide public-health body.



The second is the arrival of new variants. Not every African country can sequence virus genomes. But more than half have reported the Alpha variant first detected in Britain and the Beta variant initially spotted in South Africa. Nearly a quarter have reported the Delta variant linked to India's catastrophic second wave.

Those countries include Congo and Uganda. Neither has many confirmed cases of the virus. Congo, a country of 87m people, has recorded 40,000, fewer than Glasgow, a Scottish city of 630,000 people. But, in an indication of covid-19's true spread, 32 of the country's 600-odd MPs have died from the disease. In Uganda more than 200 MPs and parliamentary staff have tested positive in the past few weeks. This is part of a broader trend. As of February, Africa accounted for 17 of the 24 government ministers or heads of state who are reported to have died from covid-19, noted a paper in the *British Medical Journal*.

South Africa is at the centre of the continent's third wave. On June 27th President Cyril Ramaphosa announced a partial lockdown, warning that cases would surpass previous peaks. Gauteng, the province that is home to Johannesburg and about a quarter of South Africans, accounts for more than half of recent cases. The week to June 26th saw more excess deaths in Johannesburg than at any time since records began in 1997. Hospitals are overwhelmed. Ambulances drive around looking for beds. In the absence of a government plan, doctors use WhatsApp groups to find out if other hospitals have space. Even the best private hospitals are wrestling with grim decisions about who gets a spot in intensive-care units—in other words, with who lives and who dies. "It's real 'Who gets the parachute?' stuff," says a doctor.

South Africa is also dealing with public fatigue, a battered economy and new variants. Delta is "rapidly displacing" the Beta variant, says Mr Ramaphosa. But the government has added to the carnage. There is no permanent health minister, following the suspension of Zweli Mkhize, who is accused of steering a contract to a firm run by associates (he denies the allegations). A large public hospital in Johannesburg is closed because the provincial government was slow to repair it after a fire in April. Mr Ramaphosa's televised "family meetings" initially won plaudits. But his appearances are increasingly tone-deaf. The latest restrictions, which include another ban on alcohol sales, came late in the day.

Inoculation would have lessened the impact of the third wave. But just over 1% of Africans have been fully vaccinated. Of the nearly 3bn doses administered globally, fewer than 2% are in Africa.

Hesitancy remains a problem. Tanzania has yet to start jabbing arms because its late president, John Magufuli, denied the usefulness of vaccines. South Africa rejected a shipment of AstraZeneca doses on the grounds that data suggested it would not stop mild infection, an argument criticised by scientists who said it would probably reduce the risk of hospitalisation and death. In Gauteng those who can are seeking other options. Diplomatic missions are organising their own vaccines. Expatriates are flying home to get jabbed.

But the main reason for low vaccination rates is simple: a lack of supply. Dr Nkengasong notes that African countries have placed enough orders to meet Africa CDC's target of getting 60% of the continent vaccinated by the end of 2022. The problem has been turning orders into deliveries.

An announcement made on June 30th should help. The International Finance Corporation, an arm of the World Bank, and the American, French and German governments, said they would provide €600m in financing to help Aspen Pharmacare, a South African firm, manufacture vaccines. The deal could help produce as many as 250m single-shot Johnson & Johnson doses for the continent this year, including 30m for South Africa. Such volumes raise the prospect that a fourth wave could be less deadly than the third. ■

Dig deeper

All our stories relating to the pandemic and the vaccines can be found on our coronavirus hub. You can also listen to The Jab, our podcast on the race between injections and infections, and find trackers showing the global roll-out of vaccines, excess deaths by country and the virus's spread across Europe and America.

A version of this article was published online on June 28th 2021

Another kind of capture

The meaning of Jacob Zuma's 15-month prison sentence

In punishing the ex-president, South Africa's Constitutional Court proves its mettle

Jul 1st 2021 | Johannesburg

IN 1995, A YEAR after his election to the presidency had brought an end to white rule, Nelson Mandela spoke to the assembled judges at the opening of South Africa's Constitutional Court. "We expect you to stand on guard not only against direct assault on the principles of the constitution," he said, "but against insidious corrosion."

Since then no one has done more to corrode the institutional pillars of post-apartheid South Africa than Jacob Zuma. In the 2000s he was accused of taking bribes from a French arms company while deputy president; he spoke of how the ruling African National Congress (ANC) was "more important" than the constitution. After he became president in 2009 his reign was associated with the wholesale looting of public funds and the demolition of the parts of the state meant to stop graft.

Since Cyril Ramaphosa replaced him in 2018, Mr Zuma and his allies have undermined the new president's attempts to clean up their vandalism. The former president has treated with disdain a commission into the "state capture" that took place when he was in office. Mr Zuma repeatedly ignored summons to appear before the inquiry, refusing to turn up even after the Constitutional Court ordered him to do so.

Mr Zuma's absence from the inquiry has proved his undoing. In light of his relentless recalcitrance and his incessant outlandish accusations against the judiciary, the chair of the inquiry, Raymond Zondo, asked the Constitutional Court to intervene again. On June 29th it delivered a verdict that was profound in its argument and devastating in its effect. "I am mindful that, having no constituency, no purse and no sword," said the acting chief justice, Sisi Khampepe, "the judiciary must rely on moral authority to fulfil its functions." She went on to sentence Mr Zuma to 15 months in prison for his "egregious" and "aggravated" contempt of court and his "scurrilous, unfounded attacks" on judges.

The former president has until July 4th to hand himself in. (No appeals are allowed against verdicts made by South Africa's highest court.) If he does not, the police have a further three days to imprison him. On June 30th a statement by Mr Zuma's foundation described the ruling as "judicially emotional". It did not say if he would turn himself in.

One consequence of the sentence is that Mr Zuma will travel to his next court appearance from prison. On July 19th the long-delayed trial into the arms deal will resume, with the former president facing a potentially lengthier sentence. (Both Mr Zuma and Thales, the French firm, deny any wrongdoing.) Prosecutions related to his time as president may follow. At 79 Mr Zuma is suddenly facing the possibility of spending the rest of his life behind bars. He may end up as a sort of inverted Mandela, famous for going from the presidency to prison, rather than the reverse.

The court's decision will also have political ramifications. Mr Ramaphosa has not lived up to his promise—uttered in his first "state of the nation" address to Parliament—to give South Africa a "new dawn". His handling of a grim third wave of covid-19 has been characteristically laboured. But in recent months he has forced through important, if belated, economic measures, such as removing red tape for businesses that want to generate their own renewable energy and finding private buyers for a majority stake in the debt-ridden state-owned airline. The ANC's suspension in May of Ace Magashule, its secretary-general and an ally of Mr Zuma, has strengthened the president's hand against their faction ahead of local elections and a party conference later this year. Though Mr Ramaphosa has little to do with Mr Zuma's imprisonment, it will underline that his grip on the party is tightening. That should make it easier for him to govern. Though some acolytes of Messrs Zuma and Magashule may protest against their idols' defenestration, most will not want to annoy the ANC's bigwigs and risk losing the jobs that the party doles out to loyalists.

Yet perhaps the biggest consequence of the Constitutional Court's decision is for South Africa as a whole. Under apartheid the rule of law was applied cruelly or selectively, according to the colour of people's skin. The transition to democracy brought with it an inspiring, liberal constitution, as well as new courts and legal institutions to defend it. That architecture was rightly admired across Africa and in many other parts of the world. The Zuma era threatened to tear it down. The Constitutional Court has delivered not only a pivotal legal verdict, but also a reminder to the rainbow nation of its founding ideals. ■

A version of this article was published online on June 29th 2021

Defeat in the mountains

Tigrayan forces have routed the Ethiopian army

Their victory may reshape Ethiopia—and the region

Jul 1st 2021

ONCE THE history of Ethiopia's latest civil war is written, the battles of June could well be recounted as one of the great rebel victories of recent years. For it will explain how a group of insurgents in the mountains of Ethiopia's northern region of Tigray routed two of Africa's largest armies, Ethiopia's and Eritrea's, to reclaim Mekelle, their capital.

At sunset on June 28th—seven months to the day after Abiy Ahmed, Ethiopia's prime minister, declared victory over the ruling party in Tigray as his troops occupied Mekelle—Tigrayans came onto the streets to celebrate the flight of federal troops. Officials appointed by Abiy's government to run the region were whisked out of town as if from a crime scene. "There are celebrations in every house in Mekelle," said Haile Kiros, a teacher in the city, before phone lines were cut.

The recapture of Mekelle marks a turning-point in an atrocity-filled war that Abiy had thought would last just a few weeks. It has not only scuppered Abiy's attempt to bring Tigray to heel by force of arms, but also threatens to break up the factious ethnic federation that makes up Africa’s second-most populous country.

The fighting in Tigray started in November amid a struggle for power between Abiy and the Tigrayan People’s Liberation Front (TPLF), the region’s ruling party. The TPLF had controlled the central government for almost 30 years until it was ousted by the protests in 2018 that ushered Abiy to power. At first the TPLF seized control of much of the army’s heavy weaponry by attacking federal bases in the region. But the pendulum soon swung in Abiy’s favour. Federal forces, backed by air power and soldiers from neighbouring Eritrea, swiftly captured the big towns and cities.

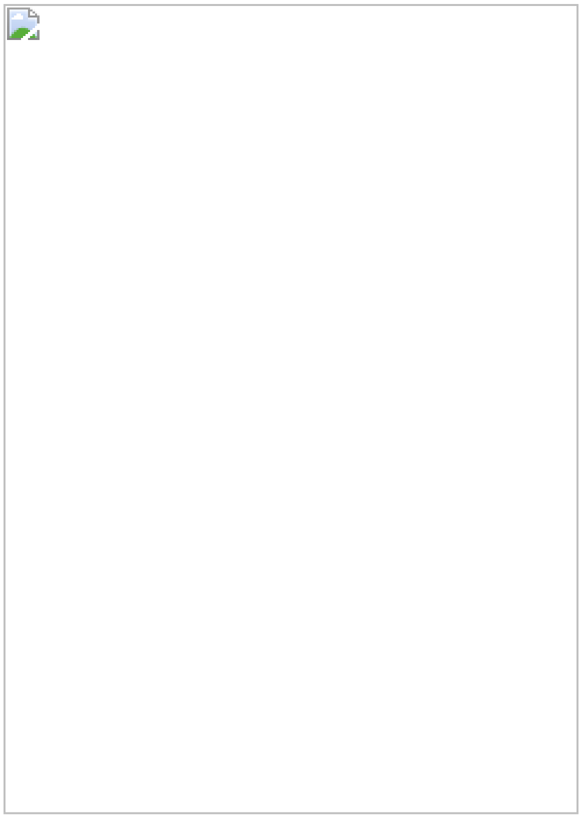
Yet the fighting degenerated into a grinding guerrilla war as fighters of the self-styled Tigrayan Defence Force (TDF) took to the hills, much as their grandfathers had in a successful insurgency in the 1980s against the Derg—a communist dictatorship—and as their fathers had in a conventional war against Eritrea from 1998 to 2000. Some Tigrayans were provoked into taking up arms by murders and rapes, many committed by Eritrean forces whom UN officials also accuse of attempting to starve Tigray into submission.

Then in mid-June the TDF’s fighters came back down from the hills under the command of Tsadkan Gebretensae, a veteran Ethiopian army chief who had been at the helm during the war with Eritrea, to launch “Operation Alula”, named after a 19th-century general. At first few observers believed the TDF when it claimed to have defeated several Ethiopian and Eritrean divisions and taken thousands of prisoners in a succession of battles on the roads to Mekelle. The Ethiopian government insisted it was in full control of the region and was mopping up sporadic resistance. But the truth was exposed when, as quickly as they had arrived, Ethiopian troops left, pausing only to dismantle telecommunications equipment and raid a UN office.

With Ethiopian and Eritrean troops scrambling towards the exit, the federal government announced a unilateral ceasefire on June 28th, ostensibly on humanitarian grounds. More probably it was an effort to mask the defeat of its forces and allow them time to retreat (just days earlier Ethiopia’s deputy prime minister had told Western ambassadors for the first time that his government wanted a ceasefire and peace talks).

However, the TDF is in no mood to halt its offensive. Its spokesman called the government's ceasefire a "sick joke" and said that the TDF would continue pursuing "enemy" forces. Some Tigrayan leaders have threatened to fight on northwards, towards Asmara, Eritrea's capital, and westwards, towards the border with Sudan, intending to expel occupying Amhara militias. As *The Economist* went to press, the TDF appeared to be in control of most of Tigray, including the towns of Axum, Shire and Adwa.

The priority for all parties ought to be ensuring that aid agencies are able to get access to Tigray, where up to a million people are at risk of starvation because they have been unable to plant crops and because Eritrean and Ethiopian forces have not allowed in sufficient supplies of food (see map). Yet Will Davison of the International Crisis Group, a think-tank based in Brussels, sees signs that officials in Abiy's government plan to continue to blockade Tigray, allowing in some aid but little else. If so, the TDF may seek to break the blockade by fighting for access to the Sudanese border or trying to topple the government in Eritrea.



Abiy, happily, has much to gain by lifting the blockade and starting talks, beyond ensuring the well-being of Tigrayan civilians. For a start it would help to repair his relationship with Western governments, whose support he needs to rebuild and get Ethiopia's battered economy back onto its previous path of rapid growth. In addition to the military bill, Abiy claims Ethiopia's government has spent about $2.3bn on associated costs such as repairing roads and food aid. Because of its concerns about war crimes, America has asked the IMF and World Bank to withhold economic assistance. America has also pressed the United Arab Emirates, which has provided Abiy's government with financial support (and possibly arms), not to bail it out.

Diplomats are concerned about the risks of the conflict spreading beyond Tigray's borders. Eritrea's dictator, Issaias Afwerki, may already be regretting his decision to join the attack on Tigray, largely to settle scores with the TPLF, which had humiliated him in the border war. A second trouncing at its hands is unlikely to strengthen his hold on power.

Foreign officials also worry about a deterioration in relations between Sudan and Ethiopia. Since November the Sudanese army has been skirmishing with Ethiopian forces, Amhara militiamen and at least some Eritrean troops over a disputed area of farmland on the border and over a huge new dam under construction on the Blue Nile in Ethiopia. In a speech on June 30th Abiy suggested his forces had withdrawn from Tigray in part to redirect their attention towards the Sudanese front. "Another force threatens us and we need to prepare for that," he said.

Still, the deepest concern of Western diplomats and officials from countries in the region is the stability of Ethiopia's fragile ethnic federation. Although TPLF leaders have yet to call for secession, many young Tigrayans now champion it unambiguously. "The only way is for independence," says Tekleberhan Weldeselassie, an Ethiopian air-force pilot who fled abroad at the start of the war. "We Tigrayans will never stay together with Ethiopia." Abiy has the almighty task of convincing them to do just that. ■

Correction (July 1st 2021): An earlier version of this article incorrectly said that the Ethiopian government said it had spent $2.3bn on the war in Tigray. In fact this figure was for associated costs such as roads and food aid and does not include military expenditure.

A version of this article was published online on June 30th 2021

Sisi sees an opportunity

Egypt’s dictator is aiding Gaza and boosting his image

Abdel-Fattah al-Sisi is keen to impress Joe Biden

Jul 1st 2021 | GAZA CITY

AT FIRST SIGHT one might have thought Abdel-Fattah al-Sisi was running for president of Palestine. Dozens of billboards (one is pictured) appeared overnight in Gaza this May, each bearing the face of the Egyptian president and an emphatic quote. “The Palestinian cause is the central issue for Egypt,” read one. Main roads were lined with Egyptian flags. A crowd of young men stood outside a seaside hotel to cheer the arrival of Abbas Kamel, Mr Sisi’s intelligence chief, whose motorcade sped into Gaza on a sweltering summer morning. “You’d think it was Abdel Nasser come to liberate Palestine,” quipped an elderly bystander.

The scene would have been unthinkable a few years ago. Along with Israel, Egypt has maintained a blockade on Gaza since 2007, when Hamas, a militant Islamist group, took power. Relations deteriorated further in 2013, when Mr Sisi overthrew an elected government led by the Muslim Brotherhood. His military-backed government saw Hamas as an outgrowth of the Brotherhood and was keen to strangle it. It flooded hundreds of tunnels that ran between Egypt and Gaza, cutting off a conduit for goods (and weapons) into the territory.

But Mr Sisi's tone has changed since the brief war between Israel and Hamas that killed more than 250 Palestinians and 13 people in Israel. Egypt brokered the ceasefire that ended the fighting on May 21st. It has pledged $500m for reconstruction in Gaza and sent convoys of aid. All of this is helpful for Palestinians—but it is more helpful still for Mr Sisi's reputation. "Sisi was the biggest winner in the war," says Omar Shaaban, a political analyst in Gaza.

The Economist

For a start, it gave him a needed diplomatic boost. Mr Sisi had been friendly with America's former president, Donald Trump, who referred to the Egyptian ruler as "my favourite dictator". Mr Trump's successor, Joe Biden, has been less effusive. Many Democrats and some Republicans are critical of Mr Sisi's ruthless authoritarianism. Since he took power in 2013 police have swept up tens of thousands of Egyptians, including a number with American citizenship (one, Mustafa Kassem, died in prison last year after a sham trial).

Mr Biden did not speak to Mr Sisi during his first four months in the White House. The conflict in Gaza changed that: Mr Sisi received two presidential phone calls in one week, then a visit from America's secretary of state. According to the official summaries, Mr Biden made only passing reference to human rights.

At home, too, Mr Sisi used the war to his benefit. Egypt dispatched more than 120 trucks carrying aid shortly after the ceasefire. State media described the convoy as a "gift" from the president, whose face was emblazoned on some of the containers. Much of the aid was financed by the Tahya Misr fund, which was set up to pay for Mr Sisi's pet projects. On June 9th Egyptian state television broadcast its morning show from Gaza, the two presenters smiling incongruously in front of a ruined building festooned with Egyptian flags. They spoke effusively of Egypt's efforts—described again as a personal initiative by the president.

Hamas has changed its tune as well. The group cut ties with the Muslim Brotherhood in 2017, declaring itself a strictly local movement, partly in an effort to placate Egypt. Hamas officials now talk of their commitment to Egypt's security, which reflects another change. After Mr Sisi's coup they allowed jihadists fighting the Egyptian government on the Sinai peninsula to slip into Gaza for medical treatment and use it as a haven. Understandably, that enraged the government. The policy was quietly halted a few years ago.

If the current bonhomie between Egypt and Hamas feels a bit forced, it is also a necessity. Egypt plays a unique role in the region. Qatar, which has given Gaza more than $1bn in aid since 2012, has influence over Hamas. The United Arab Emirates announced diplomatic ties with Israel last year. But only Egypt is both influential in Gaza and trusted by Israel's security establishment. So it was better placed than any other country to negotiate the truce between Hamas and Israel.

Sustaining the ceasefire in Gaza, though, will be difficult. After four rounds of conflict and 14 years of blockade, conditions in the territory are dire. Without a serious effort to ease the blockade and rebuild, another war seems inevitable. Mr Kamel's trip to Gaza, the highest-level visit by an Egyptian official since the coup, was meant to sort out that problem. Since then he has hosted Israeli officials and Hamas leaders in Cairo for follow-up talks.

But progress is scant. Israel is loth to allow reconstruction in Gaza until Hamas releases two Israeli civilians held prisoner and the bodies of two Israeli soldiers killed during the previous war, in 2014. Hamas is open to a deal, but it wants to swap its prisoners for Palestinians held in Israeli jails, not for reconstruction aid. Mr Sisi got what he wanted from the war. Many Palestinians are sceptical that they will. ■

Kitchen inconsequential

Why is it so hard to find local fare in the Gulf?

In some places there are more Hawaiian food outlets

Jul 1st 2021 | DUBAI

Camera Press

A VISIT TO the Middle East can feel like one endless lunch. Lebanon offers no end of delicacies. Tour guides in Egypt take their charges for *koshari*, a bowl full of carbs topped with tomato sauce. A trip to Baghdad requires a stop for *masgouf*, a beloved platter of grilled carp (American troops found Saddam Hussein in 2003 by tracking his fish deliveries).

Ask residents of the Gulf countries where to sample Gulf cuisine, though, and you may be met with blank stares. Local fare has long been limited to home kitchens, while restaurants offer grub from everywhere else. One restaurateur estimates that of the 5,000 or so eateries in Dubai, fewer than 1% serve Emirati food. A glance at a food-delivery app seems to confirm this: there are more options for Hawaiian food. It is one of the few places where visitors might spend a week and never eat a local dish.

In part that is because the Gulf's cuisine was long defined by scarcity. Less than 2% of land in Saudi Arabia, Kuwait and Oman is arable. Much of that was given over to date palms which, along with meat, yogurt and grains, formed the basis of a simple local diet. The national dish in most Gulf countries, known as *kabsa* or *machboos*, is a bed of (imported) rice topped with cuts of meat. And many dishes are time-consuming to prepare. One traditional style of cooking involves burying seasoned meat underground for hours, which is fine for family feasts but tricky for fast food.

The Gulf's cuisine was also shaped by commerce, which can make it hard to say what exactly qualifies as "local". Towns on the Gulf littoral traded extensively with Asian countries, and those links show up on the dinner table. *Machboos* has its roots in *biryani*, from the Indian subcontinent. The informal national drink of the Gulf, known locally as *karak*, is a cup of masala chai. For visitors curious about the local fare, Dubai's tourism authority suggests a small chain of restaurants that serves up *dal* (an Indian dish) and *ash-e jow* (an Iranian soup).

The oil boom brought millions of migrants, along with their cuisines. The most celebrated kebab joint in Dubai was founded by Iranian émigrés. America has left its mark, too. Big chains like McDonald's are ubiquitous, along with more obscure brands (Famous Dave's, a barbecue chain, had to tweak its logo for the Emirati market, since the original features a decidedly non-*halal* pig).

In recent years both chefs and governments have made a push to revive the local fare. Abu Dhabi, the capital of the United Arab Emirates, has asked hotels to offer local options. Breakfast buffets now often feature *balaleet*, a plate of sweetened vermicelli topped with eggs, or *chebab*, pancakes topped with cream and date molasses.

Younger chefs from Gulf countries have culled recipes from the experts (their grandmothers) and experimented with modern twists on local dishes. Camel-meat sliders topped with date jam would have caused befuddlement a few generations ago, but they seem a fitting match for the Gulf's modern melting pot.

Europe

Shifting the balance

German submarines are giving Turkey an edge over Greece

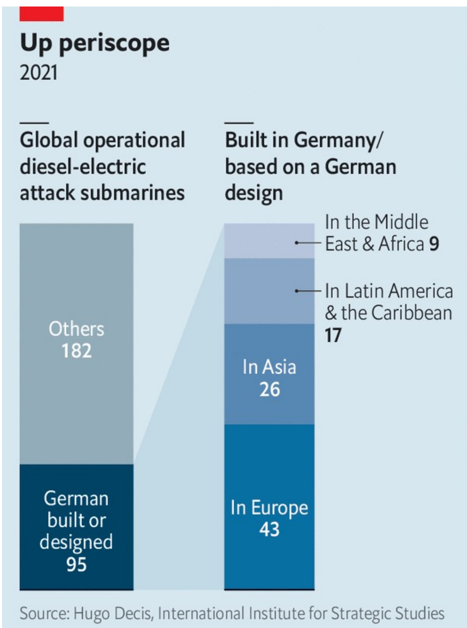
That may make the eastern Mediterranean less stable

Jul 3rd 2021

ON THE SOUTHERN shore of the Gulf of Izmit, at the Golcuk shipyard, Turkey's naval future is slowly taking shape. The first of six German-designed submarines lies in the water, after being floated out from its dock in March. The *Piri Reis* will join the fleet next year; five other Reis-class subs will follow in successive years. It is a triumph for Turkey's navy—and a headache for Greece.

Over the past year Turkey and Greece, despite both being members of NATO, have sparred in the Mediterranean. Their warships collided last summer after Turkey sent a survey vessel into disputed waters. Greece responded by rallying allies in Europe and the Middle East, bought a slew of French warplanes and, in December, announced a doubling of defence spending to €5.5bn ($6.6bn). That, though, is still less than half the Turkish level. Turkey's navy is bigger and newer. And the *Anadolu*, a Spanish-designed light aircraft-carrier, is in the final stages of construction.

The new submarines would compound the problem. The Reis-class is a version of Germany's Type 214, which is operated by the navies of Portugal, South Korea and Greece itself. An important feature is air-independent propulsion (AIP), which allows subs to go without the air supply that a diesel engine would usually require. A traditional diesel-electric sub can stay under water for two or three days. Those with AIP can do so for three weeks, says Johannes Peters of the Institute for Security Policy Kiel, and with "almost zero noise emissions" compared with noisier nuclear-powered subs, whose reactors cannot be turned off. That is perfect for the shallow waters around Greco-Turkish flashpoints.



The Economist

The addition of six cutting-edge boats is a plus for NATO. The alliance's southern flank is heating up: on June 23rd Russian ships fired shots towards a British destroyer in Crimean waters. Two days later Russia began air and sea exercises in the Mediterranean, sparring with a British aircraft-carrier strike group in the region. Then an American nuclear-armed submarine showed up in Gibraltar. At the same time, the subs "will reshape the naval balance between Greece and Turkey", says Emmanuel Karagiannis of King's College London.

A two-edged sword

The subs could be used for intelligence-gathering in disputed waters, including snooping around undersea cables that Greece plans to build to reach Cyprus, Egypt and Israel. The subs may be armed with medium-range anti-ship missiles which could "largely neutralise Greek anti-submarine warfare capabilities", adds Mr Karagiannis, although much depends on how well Turkey can integrate its indigenous weapons into the German design.

Although Greece did not oppose the sub deal when it was agreed in 2009, last year's jousting changed things. "We're not saying, 'You shouldn't sell them to Turkey,'" says a Greek official. "What we are saying now is, 'You should not sell them to this Turkey.'" Greece wants Germany to halt the sale and says that the subs could be sold to another country. It points to the example of America, which barred Turkey from buying F-35 jets two years ago after it bought a Russian air-defence system. Yet these pleas have fallen on deaf ears.

Several EU countries limited arms exports to Turkey in 2019, following its offensive in Syria. But after last year's kerfuffle in the Mediterranean, Germany, Italy, Spain and others blocked a Greek push for a full arms embargo. Then on June 13th Germany's ruling parties rejected a motion backed by socialist and Green parties to stop weapons sales to Turkey.

Germany's resistance to scuttling the submarine deal is unsurprising. It is thought to be worth \$3.5bn, a hefty sum compared with total German arms exports of \$14bn over the past decade. The country commands the world market for submarines, in particular, having sold more than 120 of them to 17 navies since the 1960s. The latest potential customer is Australia, which is toying with the idea of buying German Type 214s to fill the gap until newer French subs arrive in the 2030s.

Yet pecuniary motives are not the whole story. Turkey's relationship with the EU and its place in NATO have become deeply divisive issues within both institutions. France, Greece and Cyprus are eager to push back at what they see as Turkey's aggressive and expansionist behaviour. By contrast, Germany—like Italy, Poland and Spain—wants to prevent the relationship from collapsing in acrimony.

In part, that is to keep migration in check. Angela Merkel, Germany's chancellor, is "obsessed" with the issue, complains the Greek official. "She's allowing Turkey to blackmail Europe," he adds. After an EU summit on June 24th, Mrs Merkel said that the bloc had agreed to provide €3bn for migrants in Turkey to follow on from a €6bn package approved in 2016. Although the number of illegal crossings from the eastern Mediterranean is down by half compared to last year, there remain over 3m refugees in Turkey.

Wider considerations are at play. Some are strategic. Germany sees Turkey as a bulwark on NATO's southern flank, where Russia is reasserting itself. Others are domestic. Germany has the largest Turkish diaspora anywhere in the world, with around 3m people of Turkish origin. "Germany's relationship with Turkey is not only a matter of foreign policy, but also a domestic issue," says Sinem Adar of the Centre for Applied Turkey Studies in Berlin.

It helps Germany's case that the Mediterranean is calm for now. So far this year NATO has convened six rounds of talks between the Greek and Turkish armed forces, leading to the creation of a military hotline for use in crises. Negotiations between the two countries over drilling rights and related issues resumed earlier this year, though progress is slow. Kyriakos Mitsotakis, Greece's prime minister, met Recep Tayyip Erdogan, Turkey's president, on the sidelines of a NATO summit on June 14th.

Even so, just over a week later Turkey announced military exercises in the Aegean after accusing Greece of breaking an old understanding to avoid such exercises in the summer months. Next year the drills may involve the *Piri Reis*, watching silently from the deep. ■

Unsustained development goals

Foreign-aid champion Europe is giving more than ever

But far too little to meet its promises and fight covid-19

Jul 1st 2021

EUROPEAN COUNTRIES are the world's most generous givers of foreign aid, or official development assistance (ODA). The EU and European governments donate close to half the global total. Populist parties tend to dislike foreign aid, and one might think that Europe's rightward tilt would have caused it to drop. Indeed, aid did fall in the early 2010s during the euro-zone crisis, and again from 2017 to 2019. Yet in 2020 both global and European ODA rose to their highest levels ever: $161bn worldwide and $80bn from Europe.

Part of the reason was covid-19. EU members provided over $9bn in fresh pandemic-related aid to poor countries, mostly for health care. (Norway, not an EU member but one of Europe's bigger donors, added a further $300m.) On average, European countries' ODA rose to 0.5% of their gross national income (GNI). The average among all donor countries was 0.32%.

Yet that is far short of what they have promised. In 2015 the world's wealthy countries signed up to the UN's Sustainable Development Goals (SDGs), pledging to donate at least 0.7% of GNI to help poor countries meet a set of development targets by 2030. Only six donor countries met that benchmark in 2020, all of them European: Sweden, Norway, Luxembourg, Denmark, Germany and Britain. Boris Johnson's plan to cut ODA to 0.5% of GNI means Britain will drop out of the club.

The Economist

Even the more generous donors' numbers can be misleading. Many countries count money spent on refugees who arrive in their territory as part of their foreign-aid budget. Sheltering refugees in Europe, however noble and necessary, does little for the countries they come from. Yet during the refugee crisis of 2015-16 this accounting trick made it look as though European ODA was rising. When refugee arrivals slowed, ODA seemed to drop again.

The refugee crisis led some European countries to shift aid towards preventing migration. This won support in unlikely quarters: in France, the hard-right National Rally party of Marine Le Pen backs aid as a way to keep Africans in Africa. But it leads to projects that poor countries do not need, and is unlikely to work. When people get richer they migrate more, because they can afford it. "Sadly, ODA is always more a reflection of the politics and society in donor countries rather than issues of need in developing countries," says Andrew Sherriff of the European Centre for Development Policy Management.

ODA remains insufficient to achieve the SDGS' targets, such as universal education and basic health care. The pandemic has made those goals harder to reach, keeping students out of school and interrupting childhood vaccination programmes. Donations to COVAX, an international vaccine fund, are far behind what is needed. And new foreign-aid commitments are tiny in comparison with the massive domestic spending that European countries have unleashed since covid-19 arrived. The EU set up a €750bn ($910bn) recovery fund for its members. No such fund exists for the world's least-developed countries.

Sony Kapoor of Re-Define, a think-tank, advocates front-loading ODA by borrowing now against the future commitments donors have made. That could provide hundreds of billions of dollars to help poor countries vaccinate their populations and keep their kids in school. European voters may not be feeling generous at the moment, but increasing aid will seldom do as much good as it could now. ■

Darkness shrouds the mountain

Montenegro’s government totters

But the alternatives may be worse

Jul 3rd 2021 | PODGORICA

GUESTS IN A beachside restaurant where the Bojana river flows lazily into the sea belt out old Yugoslav pop songs while children gambol in the sand. It is just the image that Montenegro’s tourist industry wants to promote, as it struggles to recover from the wave of covid-19 that whacked the country last year. But away from holiday haunts the picture is very different. The government is tottering. Old feuds are ripping Montenegro apart.

In March the minister of justice expressed doubt that the massacre at Srebrenica in neighbouring Bosnia in 1995, when 8,000 Muslim men and boys were killed by Serbs, was an act of genocide. Parliament sacked him on June 17th and made it illegal to deny that the crime was genocide. Outraged, the largest party backing the government withdrew its support, leaving it in jeopardy. Srebrenica is a litmus test in Montenegro: if you say it was not genocide, you are considered “pro-Serb”. Many Montenegrins consider themselves Serbs; even those who hold that there is a separate Montenegrin ethnicity admit close cultural and historical ties.

Well before the uproar, the government was shaky. In elections in August a clutch of disparate opposition parties managed to deprive the ruling party since the 1990s, the DPS, of its majority. The margin of victory was so slim that it took until December for a new government to be cobbled together, composed of technocrats and committed to maintaining the DPS's pro-Western foreign policy. The new prime minister was Zdravko Krivokapic, a hitherto obscure professor proposed by the Serbian Orthodox Church, to which most Montenegrins nominally belong.

The Economist

But Slaven Radunovic, the leader of the populist Democratic Front (DF) in parliament, wants a more pro-Serbian policy. He has withdrawn his party's support of the government, and would like Montenegro to leave NATO and to cancel its recognition of next-door Kosovo, which split away from Serbia in 2008. What happened at Srebrenica, he says, was a terrible crime—but not genocide.

The DF's opponents call it a cat's paw of "Serbian World", an ideology promoted by nationalist Serbs who want their brethren in Bosnia, Kosovo and Montenegro to look to Serbia for leadership. Nonsense, scoffs Mr Radunovic. Such ideas are spread around "to scare people".

Alarm bells are ringing at NATO headquarters, however. Montenegro is a member of the alliance. Pro-Serbian and therefore pro-Russian officials have already been put into important jobs, with access to sensitive intelligence. Russia was behind a failed coup in Montenegro in 2016 which seemed to draw support from DF, although it denied involvement. The plotters sought in vain to stop the country from joining NATO. Savo Kentera, the head of the Atlantic Council of Montenegro, a pro-Western think-tank, says Russian officials are probably thrilled at the prospect of friendly sources within the alliance.

Last year's election broke a psychological barrier. It had been widely believed that change by the ballot box was impossible. The leader of the DPS, Milo Djukanovic, is still president. His party is still the largest in parliament and his loyalists are still embedded in all the country's institutions. But the opposition's victory has now thrown all assumptions about the country's future direction into doubt.

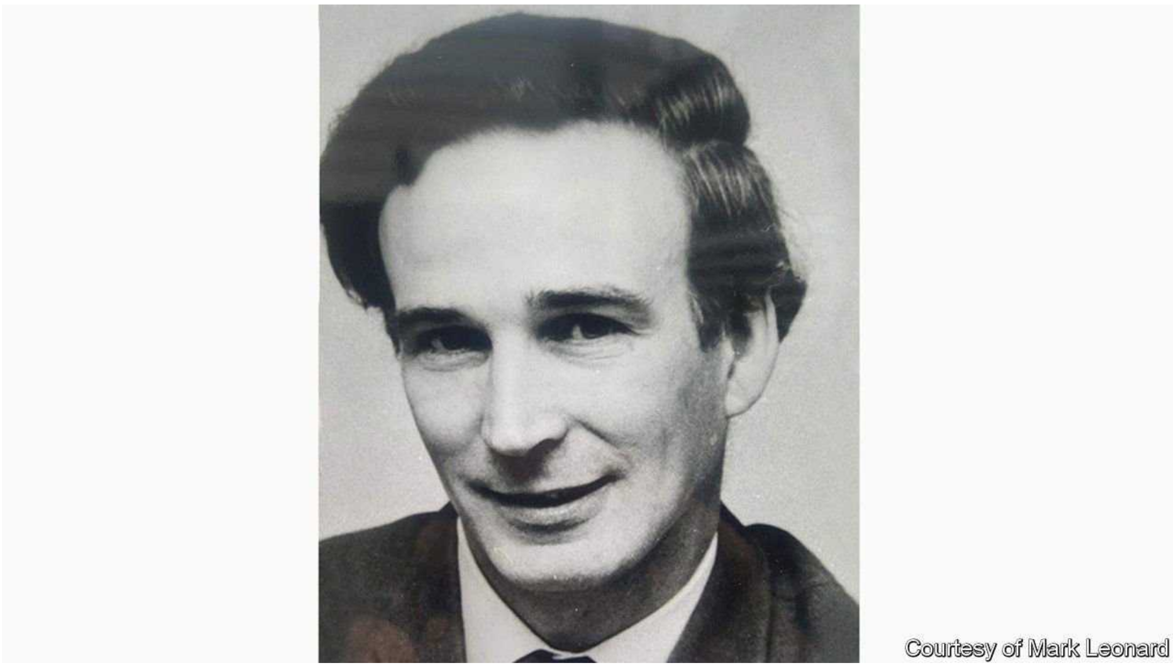
Many Montenegrins wanted a change of government because they believed that people in power were deeply corrupt and in cahoots with organised crime. But Dritan Abazovic, the deputy prime minister, worries that civic-minded parties like his may now be "crushed" between the two main political blocs: pro-Western crooks and pro-Serbian ultra-nationalists. ■

Mr Europe

Dick Leonard remembered

A Remainer departs

Jul 1st 2021



THE BRITISH correspondents in Brussels in the two decades after Britain joined the European club were a talented lot. Two went on to edit *The Economist*, and one became editor of the *Financial Times*. Another wrote entertaining fiction for the *Daily Telegraph* and went on to be Britain's current prime minister. Dick Leonard, neither a Eurosceptic nor destined to occupy Downing Street but "a true gentleman journalist", as that *Financial Times* editor affectionately calls him, went on instead to write numerous books about every British prime minister from Walpole onwards.

Not that Dick lacked political ambitions of his own. He was the youngest candidate in Britain's 1955 general election and an adviser to Tony Crosland, a Labour foreign secretary and influential intellectual of the party's social-democratic wing. In 1970 Dick became the Labour MP for Romford, but the constituency's boundaries soon changed, ending his career in Parliament prematurely. Breaking ranks with the party in 1971 to vote in favour of Britain joining the European Economic Community (the EEC, as it then was) in effect ruled him out as a candidate for another seat. At the time it was Labour, not the Tories, who found Europe toxic.

In other ways, too, Dick's career shows how much has changed. After politics came journalism. He worked for this newspaper from 1974 to 1985, becoming our Brussels supremo. He then decided to remain in Brussels, where his wife worked as an academic, as a freelance correspondent for the *Observer*, among other publications. Back then, *The Economist* had a whole section devoted to the EEC. Though the appetite for detailed reporting from Brussels gradually diminished, the importance of understanding "Europe" did not: Dick's authoritative "Guide to the European Union" is in its tenth edition.

Colleagues fondly recall a kind and modest man who was generous with sage advice. Quiet expertise on Europe may have gone out of fashion in Britain, but it is badly needed. It is also still valued by some, including Sir Keir Starmer, the current Labour leader—a friend of Dick's and, just possibly, the next in the long line of British prime ministers he chronicled. The savvy psephologist in Dick would have recognised that prospect as having long odds; the natural optimist in him would surely have cherished the hope of defying them.

Charlemagne

Euro 2020: politics by other means

Why football can never escape politics at the European Championship

Jul 1st 2021

ANY HOPE of a relaxing football tournament between friendly rivals disappeared in the 89th minute of a match between Austria and North Macedonia. Marko Arnautovic, a combustible Austrian striker of Serbian descent, slotted home the third goal in a 3-1 victory. He celebrated by screaming "I'm fucking your Albanian mother" at an opponent, knowing that North Macedonia is home to a large ethnic-Albanian population.

It was not the first such incident at Euro 2020, the delayed competition between 24 of Europe's best national teams. Russia protested after Ukraine's team wore kit with an outline of their country that included Crimea, which Russia annexed in 2014. In another game a Greenpeace protester sent debris spiralling onto people—nearly whacking the French manager—after misjudging his parachute landing. Rows about gay rights in Hungary, one of the hosts, rumble on. Before games some teams decided to take to their knees, to symbolise opposition against racism; others decided against. Some fans booed; others cheered. At Euro 2020, politics is everywhere.

Football, after all, is a potential ally of every ideology, a perfect canvas on which to project a worldview. Socialists can hail an industry in which nearly all the money goes to the workers. Statists can applaud how government-funded football camps on the edge of Paris churn out a stream of world-class footballers (albeit ones incapable of beating Switzerland). Capitalists point out that the sport's explosion came thanks to free markets, allowing footballers to play wherever they liked and clubs to pay whatever they pleased. Autocrats are reminded that ends trump means, as football fans accept glory no matter how dodgy the money that bought it. Conservatives, meanwhile, can hold onto the sport as the last stand of the nation-state. Where there is attention there is politics, and football is simply too big to ignore.

In Europe the sport has always been political with a small "p". Football offers a more glamorous story of European integration than the lawyers and officials grinding the continent together in Brussels and Luxembourg. UEFA, the sport's administrator on the continent, started life in 1954 as European politicians were scouting for means to make war impossible. Like its duller sibling, the European Coal and Steel Community, which preceded the EU, UEFA's main creator was a Frenchman who had to win over holdouts and sceptics for his idea of regular international events. (Typically, British teams skipped the first few tournaments, only joining later.) There was a difference. Europe's economies were melded together to stem competition between countries; UEFA was founded to promote it. An Italian official panicked that playing each other "risked exciting national passions" a decade after such passions had left millions dead. And national passions were indeed unleashed, thankfully in a much less deadly manner. Flags are waved and, occasionally, Albanian mothers are insulted, but in a pantomime of once fatal feelings. When it comes to European integration, football is the animalistic id to the EU's rational superego.

Yet the global pre-eminence of European football is a product of that integration. The EU's free-movement rules meant countries could no longer limit foreign labour. Domestic second-raters could be replaced with better, cheaper foreign players. The Bosman ruling in 1995 from the European Court of Justice let players leave a club without a release fee at the end of a contract. Wages shot up as clubs battled to attract players. TV cash poured in as the quality of the game improved. International owners, attracted by a mixture of prestige and reputation-laundering rather than profitability, bought up clubs. While Europe has slowly become a backwater for business in general, it is dominant in football. The top leagues are all in Europe, which has led to international success, too: European teams have won five of the past six world cups. For a continent obsessed with its shrinking place in the world, football offers an arena where it is still supreme.

UEFA tries to create a politics-free environment for its lucrative tournaments. But its choice of sponsors has already ruled that out. Many Europeans have probably not heard of Nord Stream 2, a controversial pipeline running from Russia to Germany, which has set Angela Merkel's government against both her eastern neighbours and America. Yet they may know Gazprom, the Russian state-owned gas company helping to build it. It sponsors both the Champions League, where elite European clubs compete, and Euro 2020. Its azure logo gleams from every surface. In exchange for its money, Gazprom receives a glut of corporate tickets, allowing executives and business partners to scoff canapés and mingle with dead-eyed models paid to attend. More importantly, sponsorship associates Gazprom primarily with football rather than being a limb of a gangster state. Even UEFA is keen on politics in football, for a price.

Life or death? It's much more important than that

On a continent where the facets of nationhood are disappearing, be they banal (customs arrangements), the everyday (currency) or the emotive (borders), football is a way of clinging on. Belgian national identity extends to a king, a large pile of debt and its surprisingly good football team. A hipster analysis of Croatia's path to independence starts with Dinamo Zagreb's Zvonimir Boban aiming a flying kick at a Yugoslav policeman during an on-pitch riot in 1990 and ends with Davor Suker dinking Denmark's goalie in Euro 96, its first tournament as an independent country. When Czechoslovakia won the championship in 1976, the team was dominated by Slovak players, kick-starting a successful push for independence, argues David Goldblatt, a historian of the sport. At its best, international football is a bastion of a benign, diluted nationalism; a place where politics can be a carnival, rather than a rally. At its worst, it is an arena where carefully buried political disagreements are dug up—particularly if Mr Arnautovic is playing. ■

Britain

Applying for settled status

Britain is much more European than anybody thought

Some 5m EU citizens want to stay in the UK

Jul 1st 2021

SHORTLY AFTER the Brexit vote in June 2016, a group of distraught Europeans gathered in a Bristol pub. They decided on the spot to create an organisation to lobby for EU citizens in Britain. Wanting to convey that group's weight, they took the then-official estimate of its size, and called their outfit the3million. Now, says Maike Bohn, one of the founders, "we need to rebrand."

June 30th was the deadline for citizens of European countries, who used to be able to move freely to and from Britain, to apply for settled status. At the last count 5.6m applications had been received, from about 5m people (some applied more than once, for various reasons). Some nationalities proved far larger than official statisticians had thought. Romanians, the second-biggest European group in Britain after Poles, filed 918,000 applications by the end of March—about twice as many as their estimated population in 2019. Italians, who made 501,000 applications, were also twice as numerous as expected. Charities that work with EU citizens say they are sure there was a surge of applications in June.

So huge is the task of processing these applications that some fear disaster. Many European settlers in Britain seem not to have realised that they must apply on behalf of their children: only 15% of applications are for under-18s, which seems low. And whereas some EU countries have given identity cards to British citizens, Britain has recorded people's status nowhere except on a central database. If a landlord or an employer is unable or unwilling to access it, rights will be lost.

But the inevitable snarl-ups and injustices should not distract completely from what Britain has done. The Home Office, a department known for sloppiness and obduracy, has processed the great majority of applications swiftly and generously. As of May 31st only 2% had been rejected. About half of the successful applicants have been given settled status; the rest, mostly newer arrivals, are "pre-settled" and will be able to upgrade in time. "It has worked, and thank goodness it has worked," says Alberto Costa, a Conservative MP whose Italian parents went through the process.

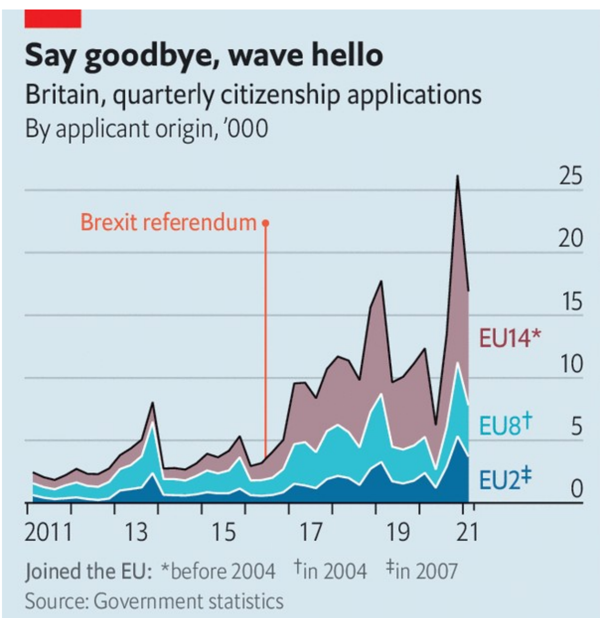
Some of the Europeans who have already been granted settled status left during the coronavirus pandemic and may not return. Britain nonetheless finds itself with many more European settlers than the 3.5m-4.1m the government expected. To put the 5m into context, the censuses in 2011 of England, Northern Ireland, Scotland and Wales found 1.5m people of Indian descent, 1.2m people of Pakistani descent and 1.9m black people, not including those of mixed race.

For now, Britain's European settlers are mostly youthful. Overall, 19% of British people are aged 65 or older. By the end of March only 2% of applications for settled status came from Europeans in that age group. But over time the European immigrants and their descendants will come to resemble everyone else. "They will grow old here," says Catherine Barnard of UK in a Changing Europe, a think-tank.

They live everywhere—at least, some do. Immigrants from the eastern European and Baltic countries that joined the EU in 2004 settled across the United Kingdom. Small towns that had barely seen an immigrant before sprouted Lithuanian and Polish stores. By contrast, western and southern Europeans are concentrated in cities, as are the Bulgarians and Romanians who mostly arrived after 2013. Just 19% of the Poles who applied for settled status by the end of March live in London, compared with 34% of Romanians, 46% of Italians and 54% of French applicants.

Most European adults who were living in Britain before the end of 2020 can vote in local elections, and in elections to the Northern Irish, Scottish and Welsh parliaments. That gives them some clout. They will gain more if they become citizens. "If even a third become British, it's really a political force," says Alexandra Bulat, who came to Britain from Romania and is now a Cambridgeshire county councillor.

Whether that happens, and how quickly, is the crucial question for the future of British politics. Until a few years ago European settlers seldom became citizens. They had lots of rights in Britain, and came from rich, stable countries that they did not fear to return to. But the Brexit vote caused a surge in citizenship applications (see chart). EU citizens accounted for 34% of applicants in the first quarter of this year, a big increase from just 4% in the first quarter of 2010.



The Economist

Applying for British citizenship is expensive, at £1,330 ($1,840) per adult. Some people have been deterred from applying by an obscure requirement about health insurance. And a few European countries, such as Germany and Lithuania, frown on dual citizenship. Nonetheless, many migrants will eventually get round to it, especially if their children grow up in Britain. And the more alarming stories they hear about the bureaucratic mistreatment of Europeans from July 1st, the more they will feel compelled to protect their rights by becoming British.

Strangely, most national politicians are ignoring this enormous pool of potential voters. Hundreds of Labour Party activists have written to their leader, Sir Keir Starmer, calling the party's near-silence over EU citizens' rights "inexcusable"—to little effect. Although Mr Costa lobbies tirelessly, the Conservative Party engages even less with EU citizens' groups than it did a few years ago. "There's no effort," says Ms Bohn of the3million.

The big exception is the Scottish National Party. Its leaders speak frequently and effusively about EU citizens in Scotland. In early 2020 the Scottish Parliament, which was and is dominated by the SNP, proclaimed that it had protected their voting rights. The British government quietly announced on June 17th this year that it would do similarly. Unionists might suspect that the SNP is trying to attract new voters to the independence cause and draw a cultural dividing line between internationalist Scots and xenophobic little Englanders. They would do better to copy the nationalists by appealing to the five million. Everybody wants to be wanted. ■

For more coverage of matters relating to Brexit, visit our Brexit hub

A version of this article was published online on June 29th 2021

Opposites attract

The anti-lockdown movement is still going strong

It has united the anarchist left and anti-establishment right

Jul 3rd 2021

JAM FOR FREEDOM pumps out Oasis and Bob Marley covers, but the band has a political mission too: to oppose covid-19 lockdowns. Young, racially diverse crowds gather to sing along to "We are the 99%", its anthem. "Stick your poisonous vaccine up your arse," go the lyrics. The "99%" refrain is borrowed from Occupy, a left-wing movement. But between songs some fans shout "Free Tommy", a reference to Tommy Robinson, the former leader of the English Defence League, a right-wing group.

Throughout the pandemic opponents of lockdowns have held hundreds of protests, many motivated by a conspiracy theory also popular in America: that covid-19 was faked to provide an excuse for systematic regime change. Groupings include Stand Up X (which accuses Bill Gates, a billionaire philanthropist, of putting microchips in vaccines) and Teachers Against Abuse (set up to "protect children from the dangers and abuses of the covid regime".) On June 26th several thousand protesters marched in London, and a crowd chanted abuse outside the home of Chris Whitty, England's chief medical officer.

In America covid-19 conspiracists were backed by Donald Trump as president. In Britain they are countercultural. A poll on June 14th by YouGov found that 71% of English adults supported extending lockdown, with just 24% opposed. Vaccines, too, are hugely popular. Some 85% of adults have had a first shot, and 63% a second.

The delay of "Freedom Day", which was supposed to see lockdown restrictions lifted almost entirely on June 21st, has probably been a boon for protesters. One says he was surprised by the number of vaccinated people joining in, either because they wanted to get back to normal or because they have become concerned about possible side-effects since being jabbed.

The protests attract both anarchist left and anti-establishment right. Piers Corbyn, the brother of Jeremy Corbyn, Labour's former, far-left leader, has shared platforms with David Kurten, once a member of the United Kingdom Independence Party, a populist outfit that campaigned for Brexit, and now leader of the right-wing Heritage Party. Activists have united around "freedom", discussing John Locke and Ayn Rand. Many incorrectly cite Magna Carta, a royal charter from 1215, as proof that government lockdowns are illegal. Some write an oath of allegiance to a baron in Scotland, which they claim absolves them from having to follow laws.

Many want their movement to grow into a libertarian opposition to the "Great Reset". This is the name given by the World Economic Forum, the organisation that runs an annual talkfest for the world's great and good at Davos in Switzerland, to the technocratic measures it champions to tackle emerging global problems. Its proposals include digital identification passes and policies to curb climate change. Some plan to campaign for a school voucher system, so parents can save their children from government indoctrination. A member of Jam for Freedom says the band aims to become "the alternative to the satanist paedophiles who run Hollywood".

Protest movements survive when campaigners form tight friendships. Those opposing lockdowns needed to band together, says one activist, because they were "attacked by their friends and family, just for thinking critically".

Another says he has become close to people on both far left and far right, as well as to feminists who “write about the patriarchy, something that I have no interest in”. Even as lockdowns ease, he insists, the political barriers won’t go back up, because of a “growing understanding that there is a bigger thing happening” that needs to be opposed. “Ideological differences become relatively minor in the presence of a vast cover-up,” says Noam Yuchtman of the London School of Economics. “It makes you feel like you are part of a super-important club.” ■

Dig deeper

All our stories relating to the pandemic and the vaccines can be found on our coronavirus hub. You can also listen to The Jab, our podcast on the race between injections and infections, and find trackers showing the global roll-out of vaccines, excess deaths by country and the virus’s spread across Europe and America.

Economic statistics

Statisticians make Britain's productivity slowdown look less dramatic

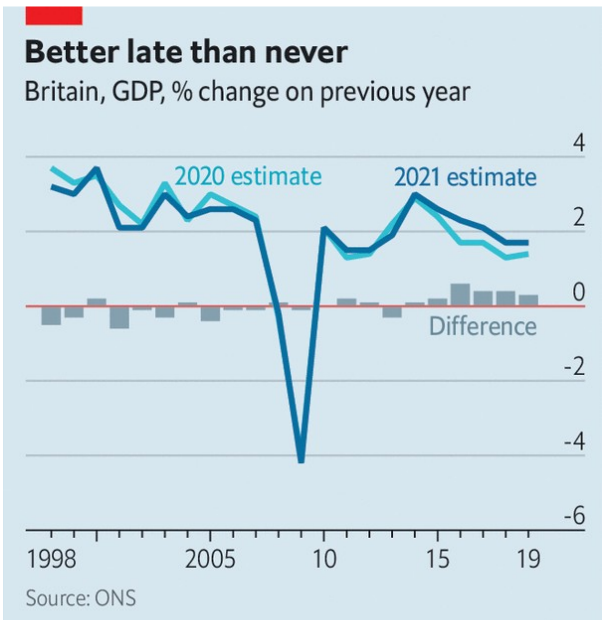
They have altered the way they calculate changes in output

Jul 3rd 2021

FOR MORE than a decade, a productivity puzzle has baffled British economists. After the financial crisis of 2008, growth in labour productivity slowed around the globe, but Britain's problems appeared particularly acute. On June 29th the Office for National Statistics (ONS) offered a partial solution to the mystery: mismeasurement.

Better methods for calculating changes in output have partially rewritten the past two-and-a-half decades of economic history. The ONS now reckons the economy grew slightly more slowly before the crisis than had been believed, and slightly faster since (see chart). As employment figures have not been revised, measured productivity growth is up, too. That explains away around a quarter of the apparent slowdown since 2008.

Some of the extra growth was uncovered by a new survey of financial services, which gives official statisticians a better view of output in a major sector of Britain's economy. Income from fees and commissions that were once estimated can now be measured directly. More interesting and wide-ranging are the effects of "double deflation". Calculating the real change in economic output means correcting for changing prices by using a price index, or "deflator". Previously, British GDP data were calculated by applying a single deflator to each industry; now, the ONS has followed a trail blazed by some other statistical agencies and started to use different deflators for the inputs and outputs in each industry's production process.



The Economist

This transforms the statisticians' view of clothing manufacturers, with average annual productivity revised upwards from 2.5% to 11.3%. But the effects have been most dramatic in the telecoms sector. Previously, the ONS reported average annual productivity growth of around 6% between 1997 and 2018, which was hard to square with the shift from dial-up modems to internet-enabled smartphones during that period. The new method raises that to an annual average of over 25%.

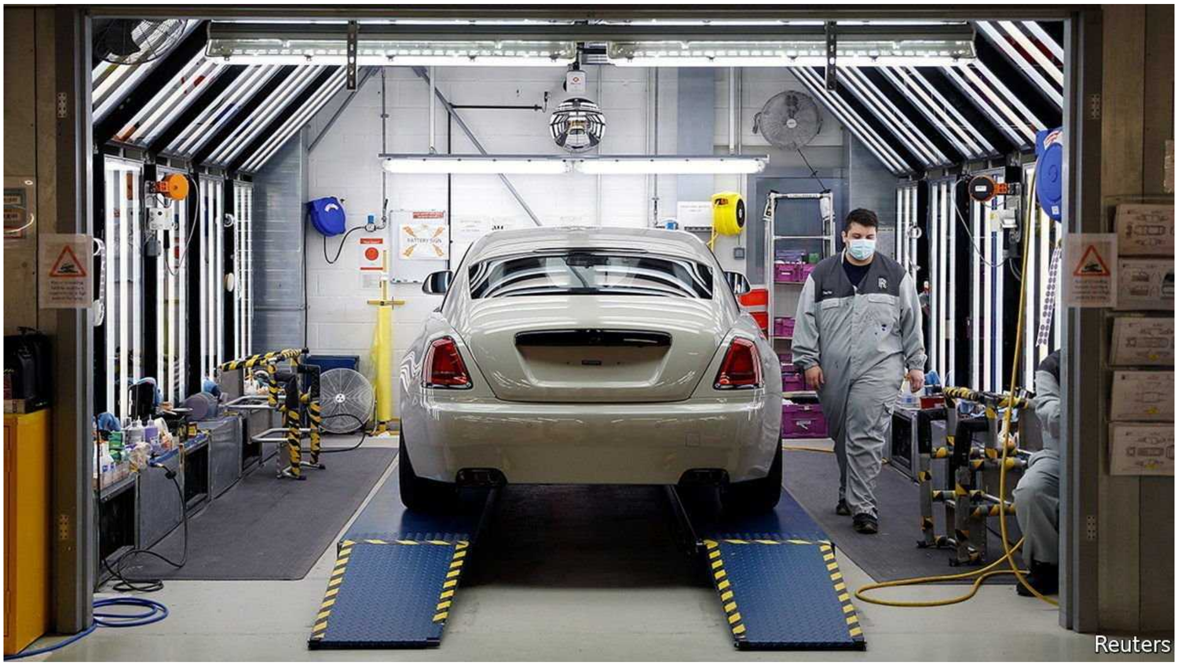
Not every part of the economy has been cast in a better light. The changes make some sectors look worse than before, and some of the faster growth now chalked up to those that look better has, in effect, been reallocated from others. Of the 66 industries tracked by the ONS, 39 have seen their productivity downgraded after the application of double deflation. Though manufacturing performed better than had been thought since 2008, the slowdown in some services now appears larger. But the overall picture is that Britain’s productivity puzzle is smaller than previously believed, and it no longer looks like a global outlier. ■

Helping handout

Post-Brexit, state aid will be more flexible and less bureaucratic

But they could snarl up Britain's single market

Jul 3rd 2021



DURING BRITAIN'S multi-year negotiations to leave the European Union, fights over matters weighty (the status of Northern Ireland) and minor (fishing rights and roaming charges) were never far from the headlines. But for the technocrats in Brussels, among the most concerning issues was one that barely resonated with voters: state aid. Would post-Brexit Britain seek to subsidise its domestic firms in order to help them compete with European rivals, and if so, how? On June 30th, six months after the end of the Brexit transition period, Britain finally gave the Eurocrats their answer. Its plans mark a radical break with the past.

Restrictions on state aid are essential to the functioning of the EU's single market. They ensure that governments do not use public money to grant their domestic companies unfair advantage over others within the trade bloc. But the rules are inflexible. Any policy with the potential to distort markets is banned unless expressly covered by a so-called block exemption, for example for infrastructure or environmental projects, or unless permission has been granted by the European Commission.

Under the new British system, by contrast, subsidies will be permitted as long as they follow general principles about value for money, do not prop up failing firms and are not designed simply to move jobs from one part of the United Kingdom to another. A new unit at the Competition and Markets Authority, an official watchdog, will offer advice on state aid to central government, and to the devolved Scottish and Welsh administrations and local authorities. But it will not have the final say over whether a subsidy is granted.

Brexit presented Britain with an opportunity to tailor a state-aid system to its needs. But that very opportunity also created a headache for the government. Many Conservative ministers wanted to be free of rules they regarded as overly restrictive, and of the red tape involved in ensuring compliance. On the party's free-market wing, however, some worried that ditching EU rules might enable a return to the dirigisme of the 1970s, when taxpayer cash was splashed freely and governments believed they were clever enough to pick winners.

Whether such fears are justified will take time to become apparent. It is local authorities for which the new rules mark the biggest change, but after a decade of budget cuts, they are in no position to ramp up spending on local firms, even if it would offer a decent return.

Deciding whether a scheme is effective, rather than whether it complies with European law, will require public authorities and ministers to think more carefully. As they consider how to create schemes for incubating new businesses, retraining workers and the like, there should be greater scope for innovation and policy competition between them, says James Webber, a competition lawyer at Shearman & Sterling, a global law firm. The new system might force more candour on politicians too, he adds. "Ministers will have to explain why they don't want to spend money, instead of blaming the EU."

Freeing Britain's economy from the constraints of the single market is among the biggest benefits its government spies in Brexit. But under the new system, preserving the British single market will bring its own problems. The trouble will come when one of the devolved governments seeks to subsidise a local company, and Whitehall decides to challenge it. EU rules were certainly restrictive, but at least they were clear. And Brussels did the nasty business of saying no. ■

Pet theft

Dastardly crimes such as dog-napping are on the rise

But private eyes and the government are on the case

Jul 1st 2021

WHEN LISA DEAN, the director of Beauty's Legacy, an animal-welfare charity, gets a call from a victim of pet theft, hundreds of volunteers spring into action. Posters and six-foot banners are designed; support teams console distraught victims and go door-to-door appealing for witnesses. Drones fly over housing estates and a technician views CCTV footage to identify vehicles. The charity liaises with the police and microchip companies. If leads can be identified, charged doorstep negotiations with the presumed thieves ensue. "We don't go steaming in there all guns blazing," says Ms Dean, "because then the dogs will just be killed."

Britain is a nation of pet-lovers, and now more than ever. According to the Pet Food Manufacturers' Association, a trade body, since the start of the pandemic some 3m Britons have welcomed a new pet in their homes. The aim of many was to entertain children during lockdown or give parents an excuse for a long walk. But as a result, prices skyrocketed. In March 2020 a

Beagle puppy would have set you back £563 ($777); by December, that had risen to £1,447. Over the same period, the price of a Chow Chow rose by 149%, to £2,789.

And where there is money to be made, there will be criminals to make it. Across 31 of the 43 police forces in England and Wales, 1,791 pet-theft offences were recorded in 2020-21, 11% more than during the previous year. "It's being talked about at a level not seen before," says Owen Sharp of the Dogs' Trust, a charity. One of those talking about it is the prime minister, Boris Johnson, who has called for tougher sentencing for pet thieves.

One reason criminals are attracted to pet theft is that the risks are low. Despite the deep emotional bond many owners form with their pets, they are classified as inanimate objects. Another is that stealing a pet can offer more than a one-off profit: some thieves are also in the business of breeding dogs. They set up in garages, garden sheds or derelict warehouses, and work on creating "designer" crossbreeds. They are "crossbreeding anything and everything and then giving it a name", says Ms Dean. "So you'll get a Jack Russell and they cross it with a Chihuahua and it becomes a Jackahuahua."

What the police do when pet theft is reported varies wildly by region. In Gloucestershire, they have created a canine-DNA database to enable them to identify pets, even if thieves have removed microchips. In other parts of Britain, however, thefts go uninvestigated. Bereft owners launch social-media campaigns, follow up leads themselves—and even steal their pets back, if they get the opportunity.

Official lack of interest has created space for a handful of specialist "pet detectives". Ms Dean, a former pre-school teacher, set up Beauty's Legacy to help others after her own cat, Beauty, was nabbed. Others offer a costly professional service. Colin Butcher of the Pet Detectives is a former police detective inspector. He thinks the work should be done by people with proper investigative experience. Whereas once pet thieves were farmworkers who made off with "high-value gun dogs", he says, or ex-partners seeking revenge or pet custody, now many are organised criminals. Private investigation is leading to private prosecution. On July 2nd a court will hear what Mr Butcher believes is the first private prosecution for dog theft in England.

More professional help may soon be at hand. On May 8th the government launched a Pet Theft Taskforce to figure out, together with police, how to collar more crooks. In a debate in Parliament on June 28th, triggered by two online petitions that garnered more than 200,000 signatures between them, MPs echoed the petitioners’ call for a centralised database of microchipped pets. Catching the pet-nappers will take doggedness. ■

Suiting up

It’s a great time to be a City lawyer

Firms are scrambling to offer their juniors more cash

Jul 3rd 2021

DESPITE THEIR reputation for thriving in a crisis, City solicitors were having an uncomfortable time of it in early 2020. As the pandemic started, mergers and acquisitions (M&A), the driving force behind much of the financial sector’s legal activity, looked likely to grind to a halt. British law firms froze salaries and deferred bonuses; meanwhile, their American counterparts cut pay cheques by as much as 25% across the globe. Except for those departments that expected to benefit from corporate insolvencies, hiring stuttered to a halt.

But far from disaster, the pandemic proved a lawyers’ bonanza. Kirkland & Ellis, the world’s highest-grossing law firm since 2017, made a record-breaking $4.8bn (£3.5bn) in 2020. Several big American firms are offering newly qualified associates in their London offices salaries of £140,000 ($194,000). Other City firms announced bumper year-end bonuses for junior staff, on top of payouts in the autumn intended to compensate for a frantic period of pandemic-driven work. Why were the predictions so wrong?

One reason was that lockdowns prompted central banks to slash interest rates and ramp up quantitative easing (creating money to buy financial assets), thus propping up markets. Deals that had seemed off the table were promptly put back on. By the end of 2020, acquisitions had fallen by just 5% compared with the previous year; in the first half of 2021 they hit an all-time high. One type of acquirer proved a particular boon for legal advisers. "Law firms that have become close to the bigger private-equity funds and their lenders have got an absolutely astonishing volume of work," says a partner at one large American law firm.

City law firms also benefited from a long-term trend towards more complex deals. Private-equity deals, in particular, often involve short timelines and intricate corporate structures and tax arrangements. Having a legal adviser who is already familiar with the way a particular fund works can make the difference between closing an acquisition or not. The record $1.9trn of unspent capital that private-equity investors are sitting on translates into enviable pricing power for their lawyers.

More generally, the thicket of regulation surrounding transactions has become even more impenetrable. Rules concerning tax, competition and corporate governance generate ever more paperwork. The shift in the political weather from globalisation to protectionism has made foreign direct investment more complicated, and governments have granted themselves greater powers to veto deals. It all means more work for lawyers specialising in cross-border M&A—and clients who are willing to pay whatever it takes to ensure that deals go ahead.

While top American firms stuff their associates' mouths with gold, their British competitors are lagging behind. The most generous offer newly qualified lawyers a relatively miserly £100,000 a year. This pay gap is long-standing, since British firms have always lured new associates with promises of (slightly) less gruelling working hours and greater intellectual cachet. Should it widen further, however, junior City lawyers may soon be striking new deals of their own. ■

Dealing, with stress

Drug-dealers are finding the always-on culture a chore

Information technology makes it hard for them to switch off

Jul 1st 2021

THERE ARE many reasons to avoid a career as a drug-dealer. The industry offers erratic career progression, no pension and low average earnings. Despite a few notable success stories (Pablo Escobar earned enough to enjoy a private zoo with hippos), one often-cited American study found that lower-ranking dealers averaged a meagre \$3.30 an hour (\$5.80 in today's money), a lower wage than cleaners. Now there is another reason to just say no: workplace stress.

In conventional business, "you are always anticipating with anxiety the email from your boss that is going to blow up your weekend," says James Densley, a criminologist at Metropolitan State University in Minnesota, who spent years researching gangs in London. Now the always-on culture has reached drug-dealing, and particularly gangs. It has brought with it the same online monitoring techniques used to track delivery riders and warehouse workers, such as GPS tracking, location tags and demands from the boss for frequent check-ins. “The anxiety that we feel as adults in the workplace is sort of amplified,” says Mr Densley. For dealers, “it’s not ‘get down here or you’ll be fired.’ It’s ‘get down here now or you’ll be stabbed.’”

The “toad work” has always squatted on life. Philip Larkin complained that his toad soiled six days of the week, but then the poet didn’t have a smartphone. In the always-on world, more than ever before, workers are struggling to switch off. Increased connectivity, a fashion for “extreme working”—more than 50 hours a week—and now the pandemic have enabled the toad to triumph at all hours. Figures from the Office for National Statistics show that those who work from home are likely to do more overtime and work later into the night than those who go out to work.

As so often, the digital revolution has intensified existing industry problems. Online ordering of everything from pizzas to cocktails to ketamine is flourishing. This is good news for customers, who can cater for a lively evening from their sofa with increased comfort and, arguably, quality. With ketamine, as with cocktails, online ratings seem to nudge the market into performing better.

But as delivery riders and warehouse workers might argue, what is good for customers is not always good for workers. Like the narcotics equivalent of call-centres, drug bosses micromanage their workforce with WhatsApp, impromptu FaceTime calls and “find my phone” apps. Fifteen years ago, says Mr Densley, “if you sent somebody to go deal drugs somewhere you had no real way of checking in on them.” But now you can FaceTime and ask your underling to show you their location on their phone, or demand regular check-ins, he says. “There is never a break. You are always on… always at the beck and call.”

As a result, dealers are feeling under pressure and overwhelmed. Liam, a part-time, on-and-off dealer from the south of England (the name is assumed), says the job consists of “being harassed, basically, all the time”. He has returned to college—though the pressures of connectivity have followed him there. In the past year his lecturers have adopted Zoom and other online teaching methods. “Now, my lecturers can message me whenever they want,” he says. Of the two careers, he considers that “definitely education is more stressful”.

Bagehot

Sajid Javid replaces the hapless Matt Hancock as health secretary

How he tackles a crisis in social care will determine his legacy

Jul 1st 2021

SAJID JAVID has got off to a bracing start at the Department of Health. During his first speech in Parliament in his new job, on June 28th, he all but guaranteed that lockdown would end on July 19th, and strongly hinted that the policy of sending entire classes of children home if one tests positive for covid-19 would end soon, too. The next morning he condemned a bunch of yobs for accosting the chief medical officer, Chris Whitty, as he walked across St James's Park. "We will not tolerate this sort of behaviour towards our public servants," Mr Javid tweeted at 7.27am.

Mr Javid brings useful qualities to the position of health secretary. High on the list is not being Matt Hancock, his hot-for-it predecessor, who resigned on June 26th after the *Sun* newspaper printed photos of him canoodling with an aide, Gina Coladangelo. The tiggerish Mr Hancock had increasingly grated as lockdown has dragged on; Mr Javid is reassuringly placid. Mr Hancock is a polished speaker who loves to preen for the cameras; Mr

Javid's mechanical, unpolished delivery makes him seem less ambitious than he really is. Even before Mr Hancock was snapped in his fateful embrace, he was unpopular in his party (the silence on the Tory benches as Jeremy Hunt intoned that "the country is in [Mr Hancock's] debt" spoke volumes). The man universally known as Saj is widely liked as a straight-shooter and convivial colleague.

He is now the cabinet member with the widest experience, having held five positions in it in the past seven years (culture, business, housing, the Home Office and the Treasury). He served under both Boris Johnson, the current prime minister, and his two Tory predecessors, Theresa May and David Cameron. He has the confidence to stand up to senior civil servants and politicians, but is neither prickly nor abrasive. He is close to his party's power-brokers, in particular Rishi Sunak, who was his former protégé as chief secretary to the Treasury, and Mr Hunt, with whom he worked when he was community secretary with some responsibility for care homes and Mr Hunt was health secretary. Mr Sunak now controls the purse strings that Mr Javid will need to loosen if he is to succeed in his new job; Mr Hunt is chairman of the parliamentary committee that oversees his work.

By playing the Saj card, Mr Johnson transformed a potential disaster into an advantage. Had he retained Mr Hancock, as he said he would when the scandal broke, he would have faced cries of hypocrisy (the handsy, smooching Mr Hancock was particularly preachy about social distancing) and conflicts of interest (Mr Hancock was Ms Coladangelo's patron, and the two were university friends). With Mr Javid available on the backbenches, the prime minister went some way towards remedying his cabinet's tendency towards the lightweight. Mr Javid is not only experienced, but more likely to speak his mind than whippersnappers on the make like the culture secretary, Oliver Dowden, or clinging-on-by-their-fingertips types like the education secretary, Gavin Williamson. Mr Johnson also avoided a premature cabinet reshuffle, leaving him well-placed for one next year that could see his party riding into the next election with a useful combination of old hands like Mr Javid and newcomers unsullied by political combat.

But the range and scale of problems that face the new health secretary would strike fear into anyone, no matter how experienced, likeable or confident. They include the virulent new Delta variety of covid-19, which may force him to revise his plans for re-opening; a backlog of over 5m operations and growing ranks of untreated cancer patients; the prospect of a flu epidemic in a population that may have lost some of its herd immunity during lockdown; and a health-care workforce that is increasingly exhausted and fractious. He must find a replacement for Sir Simon Stevens, the long-serving chief executive of the National Health Service, who has said he plans to step down. (Mr Javid can score a quick win by passing over Dido Harding, his predecessor's favoured candidate, and choosing an insider such as Amanda Pritchard, Mr Stevens's chief operating officer). He will also have to decide whether to press ahead with Mr Hancock's proposals to gather more daily decision-making in the hands of the health secretary, which risks centralising not just power, but also responsibility.

Successful health secretaries such as Mr Hunt, Mr Javid's predecessor-but-one, and Kenneth Clarke, who served with distinction in the 1980s, have worked out how to plan simultaneously on two levels: operational and strategic. They not only master the day-to-day business of running Europe's largest employer, but also tackle long-term problems. For Mr Javid, these will include recruitment (the NHS is already chronically understaffed and faces growing shortages of doctors and nurses) and extreme variation between the health service's best- and worst-performing bits. The thorniest problem in his in-tray is a long-overdue overhaul of Britain's social-care system, which previous governments dodged because of its fearsome cost and complexity. It can no longer be delayed without pushing care homes into bankruptcy, filling hospital beds with old people who have nowhere else to go—and causing the government he is part of to renege on a pledge to fix social care "once and for all".

Stepping out

It was Mr Johnson's former right-hand-man, Dominic Cummings, who expelled Mr Javid from his previous job as chancellor. He greeted the news of Mr Javid's promotion by dismissing him as "bog-standard". This says more about Mr Cummings than Mr Javid, but even the new health secretary's fans worry that he is better at firefighting than at structural reform. In his 11 years in Parliament and five in the government, he has been everywhere but left footprints nowhere: each of the departments he ran looked much the same when he left as when he arrived. Social care certainly offers a chance to leave footprints—but given the complexity of the task, also to fall flat on his face. ■

International

- Home entertainment: The attention recession

Home entertainment

As lockdowns lift, media firms brace for an “attention recession”

People have spent a year glued to screens, but now the attention boom is turning to bust

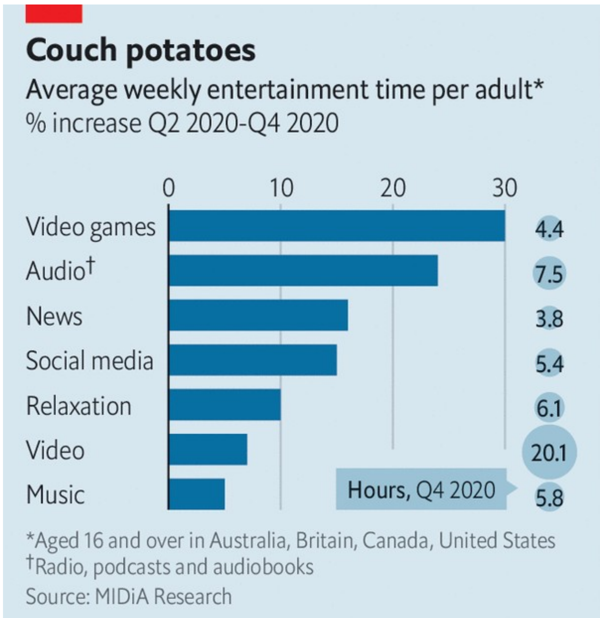
Jul 1st 2021

“THE NUMBER of people who are in a new size is pretty staggering,” Chip Bergh, the head of Levi Strauss, admitted in June. After more than a year of on-and-off lockdowns, the denim-maker told the Associated Press that a quarter of customers no longer fit in their jeans.

The long spell on the sofa may have been bad for the world’s waistlines, but it has been a golden era for the industries that provide in-home distractions. As entertainment options outside the home were shut down, and commuting gave way to home-working, people had time on their hands. Consumption of everything from books and podcasts to music and video games shot up (see chart).

Now, as vaccines begin to do their job, governments in many rich countries are starting to lift stay-at-home orders, and people are venturing back out.

Offices are reopening, restaurants are taking orders and live audiences are back, everywhere from Cannes to Wimbledon. Our "normalcy index" shows that life in many of the 50 countries included is creeping back to business as usual.



The Economist

As the amount of spare time at home starts to shrink, the attention boom of 2020 is giving way to what Mark Mulligan of MIDiA Research, a firm of analysts, dubs an "attention recession". The squeeze on free time means that media companies are now all asking the same question, says Brendan Brady of Antenna, a company that measures video-streaming subscriptions: "Is this now a period of stability? Or are we going to fall off a cliff?"

Twiddling their thumbs

The average full-time worker gained about 15% more spare time during the pandemic, according to a survey by MIDiA of consumers in America, Australia, Britain and Canada. Not only did they have more time, but those who kept their jobs had more money, too. Americans' spending on recreation such as sports, theme parks and holidays, fell by 30% in 2020.

Instead, people turned to their screens. In Britain, the time people spent online last year (including television streaming services) rose by more than half an hour a day, to nearly five hours, according to Ofcom, a communications regulator. Being connected became essential. At the start of the pandemic one in ten British homes lacked internet access, but since then about half of those have gone online. Seeking new distractions, smartphone users around the world installed 143bn new apps, a quarter more than in 2019 (and more than double the previous year's rate of growth), according to Craig Chapple of Sensor Tower, which monitors app stores.

The biggest share of the extra screen-time went to television: video-viewing rose by about 80 minutes a week in rich countries, finds MIDiA. Video-gaming saw the biggest proportional jump, as people devoted an extra hour per week, or 30% more time, to games. Listening to music edged up by 5%, while podcasts and audiobooks rose by nearly a quarter.

Books of the printed variety also got a boost. In Britain, four out of ten people reported that they were reading more than they used to, according to Nielsen, a data firm. The jump was most pronounced among young people, particularly women, who spent 50% more time reading than they did before the pandemic. Some of this was escapism, but much of the reading had a practical motive: cooking and gardening books were the top choices in non-fiction, while in children's books, home-learning saw the biggest increase.

As spare time dries up, the question is which of these newly acquired habits will stick and which will be dropped. In the ultra-competitive video-streaming market, there are early signs that audiences may be cutting back. The average number of streaming services used by viewers in America is falling for the first time, according to Omdia, a research firm. In April the typical viewer used 7.06 services (including free ones), down from 7.23 in November. Worldwide, 5m people signed up to Netflix, the market leader, in the first quarter of the year, down from 15m in the same period in 2020. Disney+, a leading rival, also undershot analysts' sign-up forecasts.

Yet the main losers in the attention recession, when it comes to viewing, will be old-school formats. Cable-viewing in America, long in decline, rose slightly during the depths of 2020's lockdown. But reopening has set it sliding faster than ever: by 23% year on year in the second quarter of 2021, according to MoffettNathanson, a firm of analysts. Viewership of American broadcast television dropped by the same amount. And although most cinemas have reopened, the year-long disruption was enough to persuade film studios to change the way they do business. Some now release their new blockbusters on their streaming services on the same date that they make their cinema debut. The long "theatrical window"—the three months when a new film could only be seen on big screens—has been permanently cut short (see Business section).

As well as hastening the switch from old to new formats, covid-19 has shown how different sorts of media increasingly compete with each other for consumers' attention. Until a decade ago, people accessed different media using different hardware: TV sets for video, computers for gaming, stereos for music. Today all varieties are delivered by smartphone.

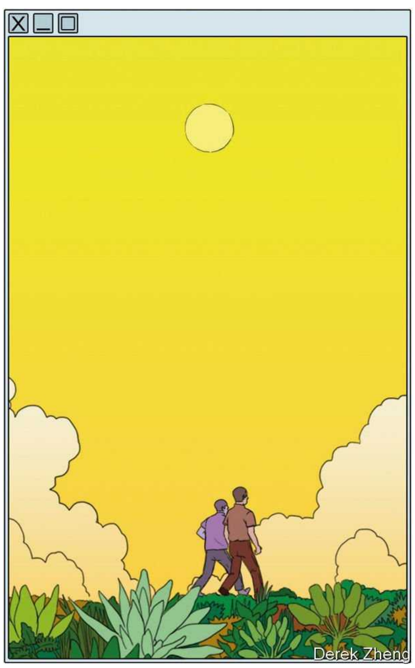
People don't have a specific slot in their schedule for video, says Emmett Shear, chief executive of Twitch, a live-streaming company. Instead, "People think about, 'Where am I going to get entertainment?'… and they go to the service that is providing the most of that." As lockdowns lift, he adds, Twitch's main competitors will probably be basketball, frisbee and the park.

The competition between different types of media is clearest in audio. During the downtime of 2020 people listened to more of everything, from music to podcasts and audiobooks. But music's share of overall listening time went down. At the start of the pandemic, podcasts and audiobooks accounted for a fifth of all listening. By the end of last year their share had risen to a quarter, says MIDiA. As listening time returns to pre-pandemic levels, some evidence suggests that people are sticking with these new choices, and cutting back on music to make way for them. Spotify said in April that podcasts had nibbled away at music to reach an all-time high in their share of customers' total listening.

The rebalancing from music to podcasts suits streaming companies. Whereas they license most of their music from record companies, which own the rights to songs, they are increasingly commissioning podcasts of their own. This gives them both a way to differentiate themselves from their competitors—"Call Her Daddy" and "The Joe Rogan Experience" are exclusive to Spotify, for instance—and to increase their profit margins. Mr Mulligan notes that Amazon has an opportunity to differentiate its own audio offering by combining Amazon Music, its music- and podcast-streaming service, with Audible, its audiobook company.

No obstacles for Roblox

The single biggest new media habit to be formed during the pandemic appears to be gaming. The extra hour per week that people spent gaming last year represented the largest percentage increase of any media category. And unlike other lockdown hobbies, it is showing no sign of falling away as life gets back to normal. It has become “a sticky habit”, says Craig Chapple of Sensor Tower. He finds that last year people installed 56.2bn gaming apps, a third more than in 2019 (and three times the rate of increase the previous year). The easing of lockdowns is not denting the habit: the first quarter of 2021 saw more installations than any quarter of 2020. Roblox, a sprawling platform on which people make and share their own basic games, reported that in the first quarter of this year players spent nearly 10bn hours on the platform, nearly twice as much time as they spent in the same period in 2020.



Gaming’s popularity rests most heavily on Generation Z—roughly, under-25s—who account for most of Roblox’s users. A poll in February by Deloitte, a consultancy, found that whereas all other generations of

Americans named television and films as their favourite form of home entertainment, Generation Z ranked them last, after video games, music, web browsing and social media. In time, "the dominant position that video entertainment has held could be challenged," Deloitte argues.

The changing shape of post-lockdown life can also be seen through social media. People spent an extra 40 minutes a week on social networks last year, as well as an extra half-hour consuming news, sometimes via social-media platforms. In April this year Facebook said that the increased levels of engagement it had seen in 2020 were subsiding as lockdowns eased.

Snapchat, on the other hand, reported the opposite. Evan Spiegel, chief executive of Snap, the app's developer, told investors that as lockdowns lifted in America in late February, the amount of content posted on it increased. Since the end of March, he said, there had been a rise in the rate of new friendships, as people began to socialise more in real life. "There doesn't seem to be much concern that social-media usage will meaningfully erode as economies open up," notes Michael Nathanson of MoffettNathanson in an analyst's note. "With people able to meet more in person, it may indeed increase."

Perhaps the most obvious winner among social networks will be dating apps. Match Group, which owns several such outfits including Tinder, reported that new sign-ups fell last year in April, as covid-19 arrived, and again in December, amid the virus's second wave. But now people seem to be making up for lost time. So far this year sign-ups are running about 10% higher than they were before the pandemic. In February nearly 20% more messages were sent than a year earlier. As people's attention turns from the screen back to real life, Match has told investors to look forward to a "summer of love". ■

Dig deeper

All our stories relating to the pandemic and the vaccines can be found on our coronavirus hub. You can also listen to The Jab, our podcast on the race between injections and infections, and find trackers showing the global roll-out of vaccines, excess deaths by country and the virus's spread across Europe and America.

A version of this article was published online on June 27th 2021

Business

After the exodus

Office re-entry is proving trickier than last year's abrupt exit

As economies reopen employers face tough choices

Jul 1st 2021

EIGHT YEARS ago Google's then finance chief, Patrick Pichette, recalled being asked how many of the tech giant's employees telecommuted. His answer was simple: "As few as possible." Despite the fact that Google was busy churning out apps that enabled remote work, his comment was also unremarkable. From Silicon Valley and Wall Street to the Square Mile in London, La Défense in Paris, Potsdamer Platz in Berlin and Hong Kong's Central, the world's business districts welcomed millions of office grunts every workday. Congregating in one place was believed to spur productivity, innovation, camaraderie. It enabled bosses to keep a beady eye on their underlings. Work from home was something to be done only if it absolutely couldn't be avoided.

In March 2020 it suddenly could not. The covid-19 pandemic forced governments around the world to impose strict lockdowns. Overnight, most of the world's offices became off limits. To survive, companies everywhere embarked on a gigantic experiment in home-working. City workers swapped suits for jogging trousers and city-centre flats for the suburbs. In a corporate change of heart that typified the era, Google gave each employee globally $1,000 for home-office furniture, offered them virtual fitness videos and cooking lessons, and urged everyone to "take good care of yourselves and one another".

As vaccination rates rise in the rich world the home-working experiment is being unwound (see chart 1). But the speed of the unwinding, and its scope, has become a matter of hot debate among chief executives, and between them and their staff. The strategies that emerge out of these debates will shape not just what happens in the next few months but also the longer-term future of office work.

The Economist

One change is already obvious. The universal anti-remote-work mindset of yesteryear is gone, replaced by a range of attitudes that vary by industry and region. At one extreme, some companies now expect all workers to be back at their desks. At the other, certain firms are doing away with offices altogether. Most businesses fall somewhere in the middle.

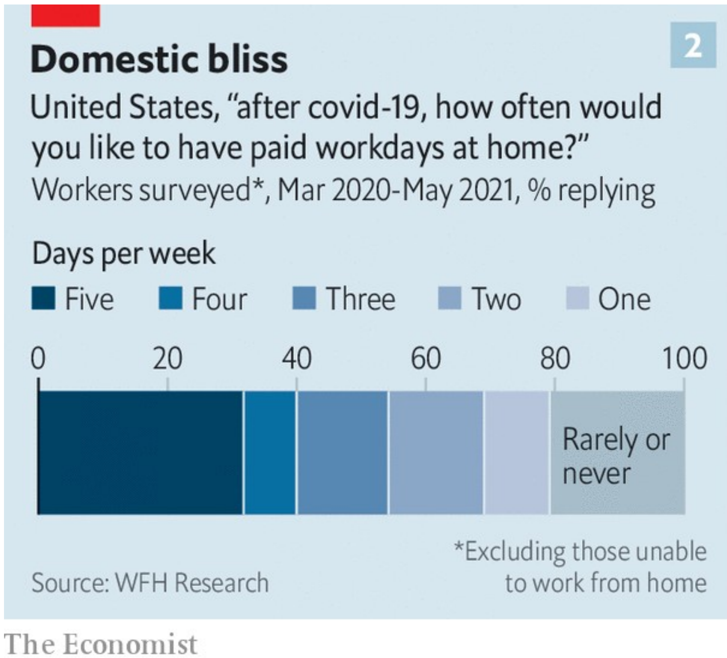
The most ardent supporters of the status quo ante can be found on Wall Street. David Solomon, boss of Goldman Sachs, has called remote work an "aberration". His opposite number at Morgan Stanley, James Gorman, recently quipped, "If you can go into a restaurant in New York City, you can come into the office." Jamie Dimon, chief executive of JPMorgan Chase, has conceded that "people don't like commuting, but so what?" The three bank bosses worry that remote workers are less engaged with the company, and potentially less productive.

Whether or not they agree with the Wall Street titans deep down, their counterparts in Europe see such intransigence as an opportunity to lure disaffected bankers who prefer greater flexibility. UBS, a Swiss lender, is reportedly about to allow two-thirds of its employees to pursue "hybrid" work, which combines some days at home and some at the office—in part as a recruitment tool. NatWest, a British bank, expects just one in eight workers back at the office full-time, with the rest on hybrid schedules or primarily home-working. People at Germany's Deutsche Bank will work remotely up to 60% of the time. Noel Quinn, chief executive of HSBC, has described drifting back to pre-pandemic patterns as a "missed opportunity" and would like the Asia-centric bank's staff to embrace hybrid arrangements.

Many technology CEOs seem to share Mr Quinn's sentiment. They fret that strict return-to-office mandates will put off restless software engineers. Dylan Field, co-founder of Figma, which helps firms create and test apps and websites, worries that employees will jump ship if the rules are too restrictive. Tech workers may indeed be getting more footloose, with quit rates seemingly higher and poaching more rampant than usual. Perhaps in recognition of this, in June Facebook said that all of the social-media giant's full-time employees could apply for permanent remote work. Companies such as Spotify, a music-streamer, Square, a fintech firm, and Twitter have told many of their staff they can work remotely for ever if they please.

Corporate chimeras

Across regions and industries evidence suggests that people like the ability to work from home at least occasionally. A poll of 2,000 American adults by Prudential, an insurer, found that 87% of those who worked from home during the pandemic wanted to be able to continue doing so after restrictions ease. According to the same survey, 42% of remote workers said they would search for a new job if they were asked to return to the office full-time. Only one in five American employees say they would seldom or never want to work from home (see chart 2). In a recent poll of more than 10,000 European office workers, 79% said that they would back legislation prohibiting bosses from forcing people to work from the office.



Young workers, often seen as casualties of remote working, have warmed to flexible schedules. Members of Gen-Z, now aged 16-21, were more likely than any other age group to cite personal choice rather than employers' policies as the main reason for continuing to work remotely, according to a study by Morgan Stanley. At the same time, many workers of all ages are still keen to come to the office every now and again—not least to enjoy reliable air-conditioning during what is shaping up to be a scorching northern summer. Salesforce, a business-software giant itself implementing a work-from-anywhere model, found that although nearly half its employees are opting to stay home most of the time, four in five want to maintain a physical connection with the corporate office.

The public sector, often the largest employer in a country, faces similar considerations. Britain's tax authority is offering all employees the right to work from home two days a week. In America the federal government predicts that many civil servants will want to maintain flexible schedules after the pandemic. Ireland, which wants 20% of its 300,000 public servants working remotely by the end of the year, is offering financial support to encourage them to relocate outside cities. It will create more than 400 remote-working hubs, allowing staff to work closer to home. Indonesia has set up a “work from Bali” scheme for civil servants to help revive the tropical island’s tourism industry.

All this suggests that hybrid arrangements will persist in most places (with the possible exception of Wall Street). They present their own challenges, however. They blur the lines between work and family life. Virtual meetings can be even more tedious than in-person ones; people who have admitted to Zoom fatigue include Eric Yuan, the video-conferencing app’s billionaire founder. And hybrid schedules make managing office space tricky, especially at a time when many companies, including HSBC, are planning to reduce their office footprint.

Given a choice, most Australian workers would prefer to work from home on Mondays and Fridays, according to EY, a consultancy. Even if managers’ suspicions that this is a thinly veiled effort to extend the weekend prove unfounded, that means that offices would be far busier on Wednesdays, the least popular choice for home-working, than at the start and end of the work week.

Some firms still intend to let people come in whenever they want. Others are getting inventive. Mr Field of Figma gives his staff a choice: work remotely full-time or, if you come in at least twice a week, get a desk in an office. Snowflake, a data-management firm, will let individual units decide how to organise themselves. Many companies, including giants such as Apple, have got around the problem by mandating days when employees are required to be present.

Normality bites

The sudden reconfiguring of work life is leading to friction. Workers who want more flexibility are finding themselves at odds with employers calling for a return to something closer to pre-pandemic normal. Some of Apple’s employees have criticised the tech giant’s requirement to work in-person three days a week as tonally “dismissive and invalidating”. The AFL-CIO, America’s biggest trade-union federation, is facing health-and-safety complaints from its own staff over its measures to bring workers back to the office in the absence of improved ventilation and amid fears of continued risk of infection while commuting on public transport.

Such disagreements are spilling over into boardrooms. Some shareholders, including big institutional investors, are keen to promote flexible working not only to retain talent but also to burnish companies' environmental, social and governance (ESG) credentials. S&P Global, an analytics firm, says that under its assessments, the ability to work from home is one measure of employees' health and wellbeing, which can influence up to 5% of a firm's ESG score. This is roughly the same weighting attached to risk and crisis management for banks, or human-rights measures for miners. It may affect things like gender and racial diversity. Studies find that mothers are likelier than fathers to favour work from home. Research by Slack, a messaging app, found that only 3% of black knowledge-workers want to return to the office full-time in America, compared with 21% their white counterparts.

That is a lot for companies to ponder, even as they deal with short-term controversies, such as whether or not to bar unvaccinated workers from the office. Disruptive though it was, last year's abrupt transition to remote work may, ironically, prove considerably smoother than the shift to whatever counts as normal in the post-pandemic era. ■

Dig deeper

All our stories relating to the pandemic and the vaccines can be found on our [coronavirus hub](). You can also listen to [The Jab](), our podcast on the race between injections and infections, and find trackers showing [the global roll-out of vaccines](), [excess deaths by country]() and the virus's spread across [Europe]() and [America]().

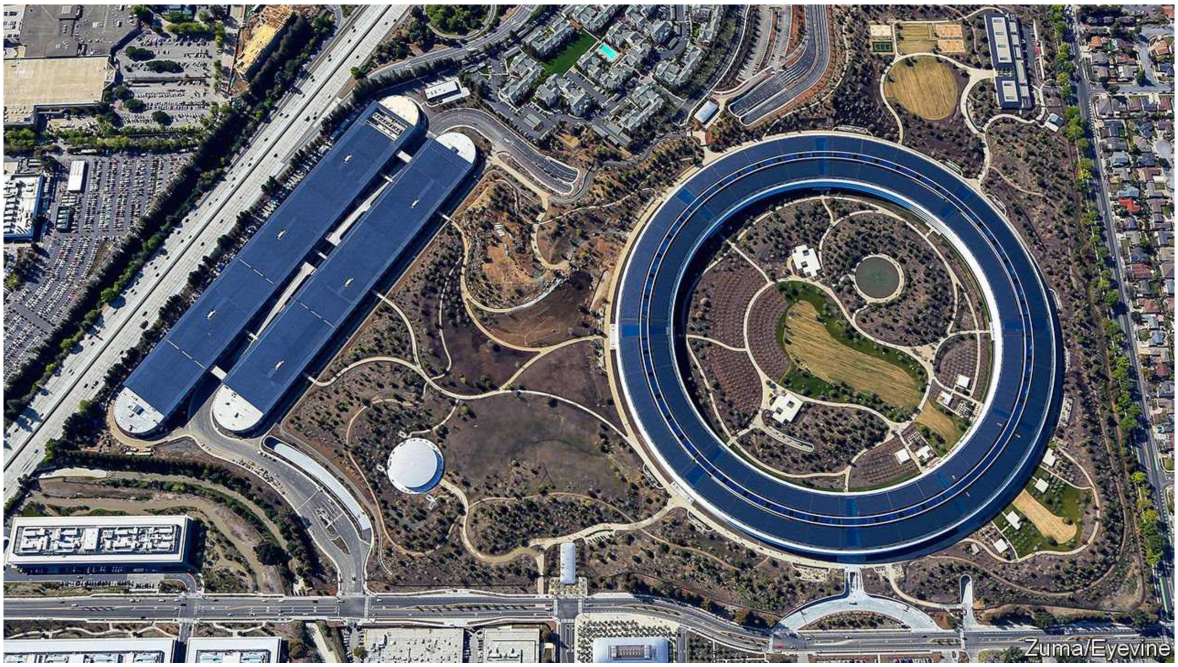
A version of this article was published online on June 28th 2021

Edifice complexities

The future of Silicon Valley headquarters

What will happen to technology companies' pricey digs?

Jul 1st 2021 | SAN FRANCISCO



"THIS IS ONE of the healthiest buildings in San Francisco." Giving a tour of the new headquarters of Uber on a recent afternoon, Michael Huaco, the ride-hailing giant's head of "workplace and real estate", does not hide his pride. And he has plenty to be proud of. Employees make their way to work stations up a wood-panelled staircase, then through a sun-soaked atrium which doubles as the conduit for the building's natural ventilation. Meeting rooms and nooks with couches abound; desks are scarce. This being tech central, there is, naturally, a juice bar and a yoga studio.

There is only one niggle. Many Uber employees may prefer to keep working from home and come in only a couple of days a week, if at all. "No one really knows," concedes Mr Huaco. His firm is not alone. Up and down Silicon Valley technology companies are wondering what will happen when they fully reopen after the summer break. Where they go, others often follow. How tech solves its HQ conundrum may therefore once again blaze the trail for new work spaces and practices in other industries, says Charlton Hutton of M Moser Associates, a design agency.

When it comes to offices, Silicon Valley has been an odd, some would say ridiculous, place. For an industry whose avowed goal is to digitise all of life by having software "eat the world", most big firms' work practices looked remarkably analogue. Before the pandemic, daily presence in the office was expected. Many spent hundreds of millions of dollars on headquarters to accommodate a large part of their workforce. Uber's new San Francisco digs reportedly cost $130m to build; the company has told investors it will spend $1bn over 20 years on leases in the city. Salesforce, a business-software giant, is paying the developer of Salesforce Tower nearly $560m over 15 years to lease 30 of its 61 floors. Apple's spaceship-like base in Cupertino (pictured), which can accommodate up to 13,000 people, cost the iPhone-maker $5bn, or $385,000 per employee.

Tech is not the first to suffer from the "edifice complex". From the Chrysler Building and Sears Tower to the Bank of China's iconic Hong Kong headquarters, companies have always erected monuments to their success. Technology firms have reasons beyond self-aggrandisement to covet posh quarters. Fancy workplaces help such businesses, which live and die by the quality of their human capital, to attract employees, in effect becoming a key part of the pay package. They enable teamwork, which most founders believe, rightly or wrongly, to be indispensable for innovation. And since many fast-growing startups lack a long history, offices where everyone congregates can help imbue the troops with the corporate mission. It may be no coincidence that Airbnb's feel like a high-end Airbnb.

Even so, tech temples had begun to seem anachronistic long before covid-19 washed up on California's shores. Traffic was making the daily commute an insufferable two-hour ordeal. Most computer programmers came to the office but really worked elsewhere—in the cloud, managing projects with Trello, on Zoom and Slack. Designed to be lively, tech offices were often eerily quiet. Realising this, companies began to open more of them beyond the Valley, and to make more use of the virtual realm. The pandemic then gave the shifting equilibrium a shove, notes Nicholas Bloom of Stanford University. Although it is hard to predict where exactly all the bits will land, the contours of tech HQs of the future are coming into view.

For starters, most will be smaller. As in many other sectors, tech firms will blend remote and office work. When Andreessen Horowitz, a leading venture-capital firm, recently asked its 226 portfolio companies to describe work in the future, two-thirds said "hybrid". Uber is reportedly trying to lease out a third of its new headquarters to other tenants.

Offices will also look different. Firms are throwing out desks and creating spaces for employees to socialise and collaborate. Okta, a digital-identity manager, is becoming a "dynamic working" space. In its remodelled headquarters most rooms will be easy to reconfigure, and let people gather more easily. M Moser Associates expects the pre-pandemic ratio, of half of office space reserved for individual work and less than a third for meetings, roughly to flip. The daily battle for meeting rooms, legendary in tech, will be less fierce.

As physical space shrinks the virtual sort will expand. The pandemic has already set off a battle among Google, Microsoft and Salesforce over which will be the dominant platform for online work. Some less well-known services have seen user numbers go through the roof, among them Figma, a tool for prototyping apps and websites, Miro, a virtual whiteboard, and Envoy, which helps firms conduct health screenings, order food or book a desk.

To avoid remote workers feeling like second-class citizens, many companies are pursuing a "digital first" policy for meetings. When Salesforce's employees can meet digitally, they should, says Brent Hyder, the firm's human-resources chief. Or, as he puts it, "We're all equal on Zoom." Many businesses are planning more off-site meetings to compensate for the extra screen time (and rekindle social bonds). "Since we will pay much less for real estate, we will have lots of budget for such things," says Marco Zappacosta, boss of Thumbtack, a marketplace matching customers with local plumbers, dog walkers or other service providers.

The most radical firms are doing away with headquarters altogether—becoming fully "distributed", in the jargon. Snowflake, a data-management firm, now only maintains an "executive office" in Bozeman, Montana. The firm's centre of gravity has moved from its former base in California to local offices around the world. This makes sense given that, as Denise Persson, its chief marketing officer, points out, “95% of our customers are outside of Silicon Valley.” In May Coinbase, a cryptocurrency exchange, said it no longer had a headquarters and that it would shut its San Francisco office next year.

As these shifts take effect they will reshape tech’s Californian heartland. More firms will hire remote workers outside the region. More will follow Oracle, Tesla and others, and move their head offices to cheaper, less congested and lower-tax jurisdictions such as Texas or Florida. Silicon Valley will persist, though perhaps less as a place and more as a global network. ■

A version of this article was published online on June 27th 2021

The defining issue of the day

Is Facebook a monopolist?

A judge rules there is no simple answer

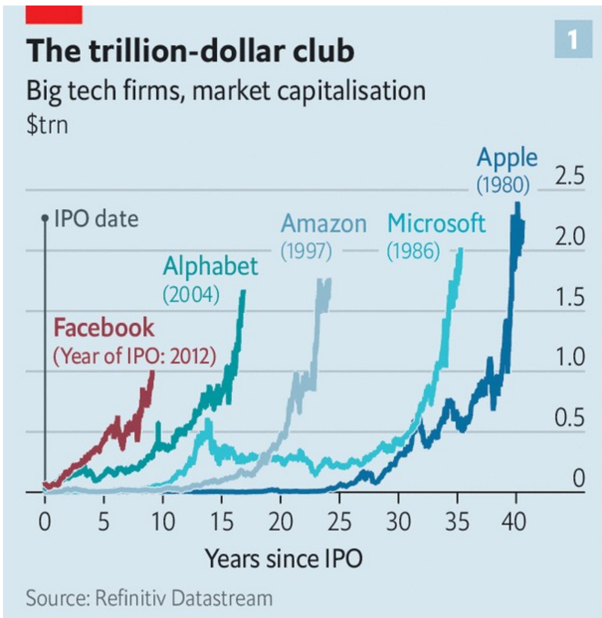
Jul 3rd 2021 | San Francisco

Stephen Voss/Redux/Eyevine

AT LAST, IT'S happening. Or so big tech's critics thought. President Joe Biden has named one of their own, Lina Khan, to head the Federal Trade Commission (FTC). A Congressional committee has approved six bills to rein in Alphabet, Amazon, Apple and Facebook. Then, on June 28th, a federal judge provided a heavy dose of realism by summarily dismissing two antitrust cases against Facebook.

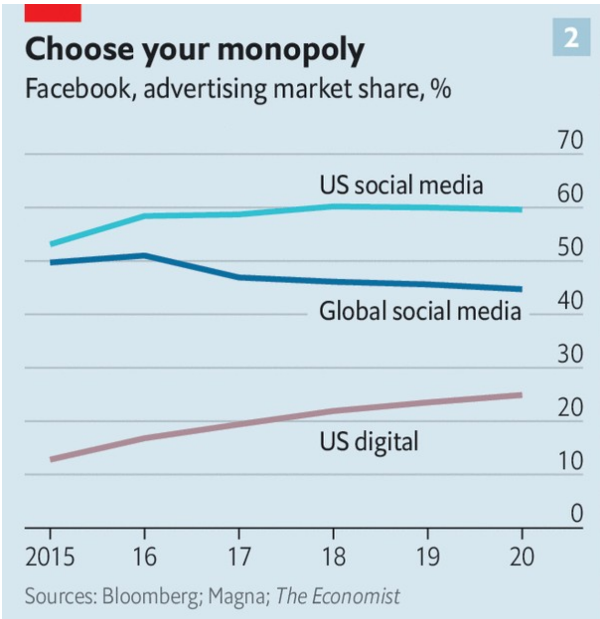
The unexpected ruling, which sent Facebook's market value past \$1trn, was a reminder that, in America, the swelling "techlash" may yield meagre results (see chart 1). Judge James Boasberg—appointed by Mr Biden's former boss, Barack Obama—threw out one of the cases, brought by 46 states, on a technicality. The complaint, which accused Facebook of acquiring nascent rivals, such as Instagram in 2012 and WhatsApp in 2014, to cement its social-networking dominance, was deemed too tardy. More profoundly, the judge found the second case, lodged by the FTC, "legally insufficient". "It is almost as if the agency expects the Court to simply nod to the conventional wisdom that Facebook is a monopolist [in social-networking]," he wrote.

That indeed seems to be what the FTC expected. It asserted that Facebook has a "dominant share of the market (in excess of 60%)" without explaining what that market is. And it defined "personal social networking" to exclude things like professional networks (LinkedIn) or video-sharing sites (YouTube).



The Economist

To give the FTC its due, delineating digital markets is devilishly tricky. Like Facebook, most social-media firms do not charge users, so the typical approach of looking at an industry's consumer-derived sales is no use. Facebook does have paying customers, firms that buy ads on its platforms, but the extent of that market, too, is hazy. If all American online advertising counts, its share is 25%, according to an estimate by *The Economist* (see chart 2). Looking just at social-media advertising it does rise to 60% in America (though globally Facebook's share is declining). But what qualifies as social media is amorphous, as features and rivals pop up and fizzle.



The Economist

The judge conceded that Facebook has market power ("no one who hears the title of the 2010 film 'The Social Network' wonders which company it is about") and he has given the FTC 30 days to show this more precisely. However, he also threw out one of the agency's core claims. The FTC accused Facebook of stifling competition by blocking rivals from its platform. According to Supreme Court precedents, the judge pointed out, such conduct is legal: monopolists have no "duty to deal".

That may make sense in the analogue world. Critics like Ms Khan argue that in the digital one, where dominant platforms look a lot like pipe-owning utilities, it amounts to a licence to kill competition. If more cases against big tech stumble—as may happen to those involving Apple and Google—that would lend weight to demands to reform antitrust laws. Even this may not be enough to get any of the six bills, or anything like them, passed by the gridlocked Senate. Despite a bipartisan consensus in Washington that big tech is too powerful, Democrats and Republicans are unlikely to agree on the details of what to do about it. ■

Bartleby

The perils of PR

Companies can spend a fortune on their image

Jul 3rd 2021

SOME DECADES ago Bartleby was covering the results of a company that was then in the FTSE 100 index. He was ushered into the offices of the firm’s public-relations outfit, whereupon the smooth-talking PR man (still a titan of the industry today) launched into a ten-minute monologue about the company’s strategy. At that point a subordinate popped his head around the door and the PR man was called away. “Thank goodness he’s gone,” said the chief executive. “Now I can tell you what is really happening.”

Any big business may need a team to handle its public image and to deal with the “reptiles” of the press, as Denis Thatcher dubbed them. (This extends to PR firms: this week reports of inappropriate behaviour forced the boss of a big one, Teneo, to resign.) But once you start employing PR people, it can be difficult to stop. In a variant of Parkinson’s law, “PR expands to fill the budget available.” Companies can hire an in-house team while also choosing to use an external PR firm. And if bad news strikes, bosses often want to call in a firm that specialises in “crisis management”.

A company's aim is to frame the narrative in a favourable manner. Any firm wants to be seen not as a money-grubbing corporation that pollutes the environment and exploits its workers but as an innovative pioneer with sustainable operations and a social conscience. An expert PR executive can hone such a message and identify the best way of communicating it to investors and the wider public, for example by selecting the journalists and publications which will lend it a sympathetic ear.

That is the theory, at least. In practice, most journalists' dealings with PR professionals resemble "groundhog day". Day 1: PR person sends email about client. Day 2: PR person sends follow-up email to check journalist received earlier missive. Day 3: PR person calls journalist to make absolutely certain that they are aware of the emails' existence. Day 4: PR sends a fresh email about the same client, and the process begins anew.

Perhaps this frenetic activity has a use. There is a chance that some publication has a desperate need to fill space, or was looking for a random executive's views on an issue of the day. But in most cases it only serves to irritate the correspondent who has to deal with the pestering.

The poor office juniors at the PR companies are given the thankless task of chasing emails. More senior staff operate face-to-face, or at least did in the pre-pandemic days. They tend to come in three types. The first is the interventionist mentioned earlier, who pontificates as if they were actually on the board of the company concerned. Friendly on the surface, these PR people tend to get patronising or hostile if the journalist asks an uncomfortable question. An unfavourable piece will be followed up with an angry phone call (Lord X will be very disappointed by your article) or even an attempt to influence the editor.

The second PR type is much more discreet. Some issue the minimal amount of information as part of a deliberate policy to keep their clients out of the headlines. Others are keen on publicity but maintain a Trappist-like silence in meetings, content only to take notes and enjoy expensive lunches while the client talks. Apart from inflating the revenues of the restaurant industry, it can be hard to discern what function this group serves.

There is a third group. Some PR people supply useful facts about the company when asked, give an accurate steer on whether market rumours are true, and arrange an interview with the chief executive when required. These helpful PR people are scattered unevenly across the corporate sector. It is virtually impossible to predict where they will be found.

The existence of these three categories is not the only reason journalists have a love-hate relationship with the PR industry. However irritating PR people can be, they are often one of the only conduits for information about a company. And many hacks in their 30s and 40s opt to join the industry as a way of earning a bigger salary. In a sense, the relationship is an ecosystem, in which both parties regard the other as the parasites.

Whether companies need to finance this system is another matter, as the main benefits go to the participants. A lot of PR activity has zero impact on the client’s public profile. It seems like a more extreme version of the famous quote about advertising: three-quarters of the money I spend on public relations is wasted—the problem is knowing which three-quarters.

Curtain-raiser

Cannes kicks off a brighter blockbuster season

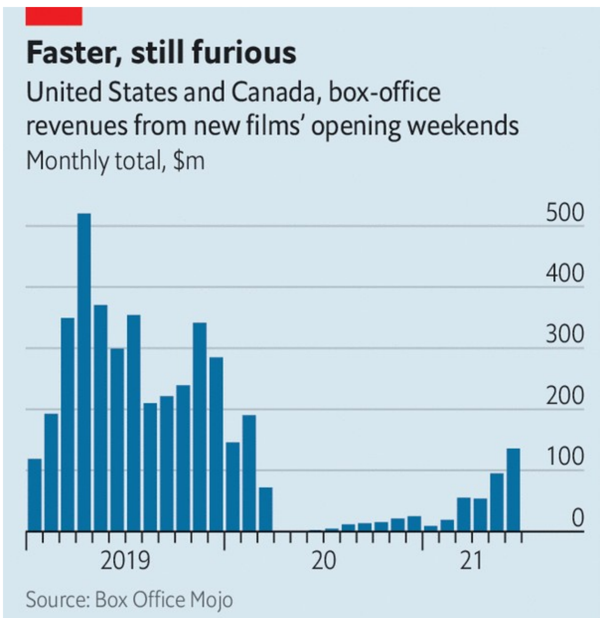
Backstage, things look bleaker

Jul 1st 2021

LAST SPRING at the Palais des Festivals in Cannes couture-clad film stars gave way to camp beds and showers. When France went into lockdown and the city's film fete was postponed, then cancelled, the glitzy events space became a homeless shelter. This year's bash, which begins on July 6th, offers a dose of Hollywood escapism. Screenings will be indoors, at full capacity. Stars will strut the red carpet (with designer face-masks and whiff of disinfectant the only giveaways). Yet backstage, covid-19 has changed the film business for good.

Few industries were hit as hard. In 2020 global box-office takings fell by 80%, to $7.9bn. Still, the show has gone on. In China, the world's biggest market, theatres are nearly as busy as in 2019. Though America's reopening has been slower, "F9", the latest "Fast and Furious" film released on June 25th, took $70m in the best opening weekend since 2019. A pile-up of delayed blockbusters, from Spiderman to James Bond, will tempt audiences to return all year.

Not all will, thanks to a choice of formats that was "unimaginable" before the pandemic, notes Robert Fishman of MoffettNathanson, a research firm. Previously, films spent about 90 days in cinemas before making it to DVDs or streaming. Covid-19 shattered this "theatrical window" and this year's slate of releases suggests it is broken for good. Universal Pictures has the option to put "F9" online just 31 days after its cinematic release. Its new "Boss Baby" film will be free to watch on Peacock, its sister streaming platform, when it enters theatres on July 2nd. Paramount will release "Paw Patrol: the Movie" on its Paramount+ service next month on the same day that it hits cinemas. Warner Bros has said that all its films this year will stream simultaneously on its HBO Max service.



The Economist

The five big Hollywood studios look poised to release about 40% fewer films exclusively in theatres than before the pandemic, reckons Mr Fishman. Had studios applied this new approach to their slate in 2019, 17% of America's box-office receipts would have been cannibalised by streaming. For studios keen to promote their online platforms, this may be a price worth paying. For cinemas it is a straight loss.

"We're in a box-office laboratory," says Paul Dergarabedian of Comscore, a research firm. Disney, the biggest studio, is experimenting the most. Last month it sent "Luca", a Pixar animation, straight to streaming on Disney+.

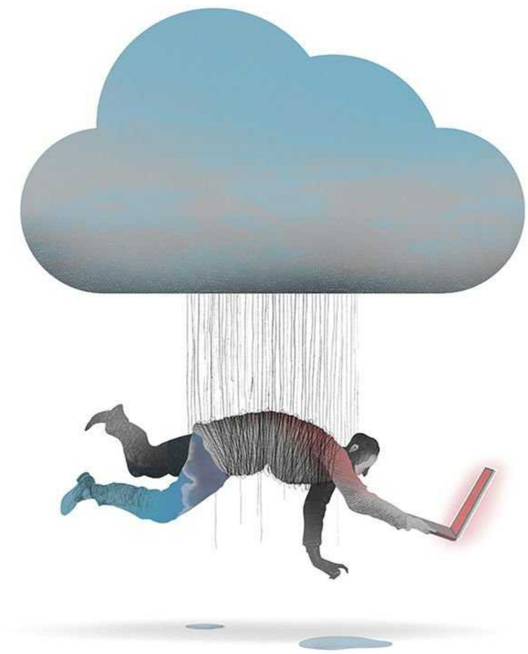
In September it will give “Shang-Chi”, a superhero flick, 45 days in cinemas. The next big test is on July 9th, when “Black Widow” will launch simultaneously in cinemas and on Disney+ (for a surcharge), a first for a Marvel movie. Audiences will be on the edge of their seats. Studio executives still more so. ■

Schumpeter

Do the costs of the cloud outweigh the benefits?

The risk of writing blank cheques to an oligopoly

Jul 3rd 2021



Brett Ryder

FOR THE past decade few aspects of modern life have made geeks drool more than the cloud, the cumulus of data centres dominated by three American tech giants, Amazon, Microsoft and Google, as well as Alibaba in China. In America some liken their position of impregnability to that of Detroit's three big carmakers, Ford, General Motors and Chrysler, a century ago. During the covid-19 pandemic they have helped transform people's lives, supporting online medical appointments, Zoom meetings and Netflix binges. They attract the brightest engineering talent. Amazon Web Services (AWS), the biggest, is now part of business folklore. So it is bordering on heresy to argue, as executives at Andreessen Horowitz, a venture-capital firm, have done recently, that the cloud threatens to become a weight around the necks of big companies.

That possibly explains the defensiveness of Andreessen Horowitz's Martin Casado, co-author of the blog post titled "The cost of cloud: a trillion-dollar paradox". On June 24th he described it in a gathering on Clubhouse, a social-media app, as "one of the more misread, misquoted things I've ever done". At the risk of further mischaracterisation, Schumpeter would summarise it as follows. It uses paltry evidence and baffling numbers (where, for instance, does the "trillion dollars" come from?) to propose an excessively all-or-nothing business conundrum: "You're crazy if you don't start in the cloud; you're crazy if you stay on it." Yet for all its flaws, it is well-timed. It poses a question that businesses will have to think about for years to come. If they entrust all their data—the lifeblood of the digital economy—to an oligopoly of cloud providers, what control do they have over their costs?

It is a problem many companies are already grappling with. On June 29th the *Information*, an online tech publication, reported that Apple, maker of the iPhone, is poised to spend $300m on Google Cloud this year, a 50% increase from 2020. It is also using AWS and its own data centres to handle overflowing demand for services such as iCloud, a data-storage app. On the same day the chief operating officer of a big software firm told your columnist that the current trajectory of cloud costs is "unsustainable" but that it does not make sense just to leave the cloud. "It is very hard. One can't be so simplistic as to say it's all cloud for ever or it's no cloud." Jonathan Chaplin of New Street Research likens acquiring flexible data storage on the cloud to flexible office space such as WeWork. Both are similarly expensive, he says. He knows—his boutique firm of analysts is considering renting both.

One reason Andreessen Horowitz has stirred up a storm is because it went a step further. The blog post raises the prospect of "repatriation", arguing that companies could save considerable sums of money by bringing back their data from the cloud to their own servers. It uses the example of Dropbox, a file-sharing firm that in 2017 said it had saved $75m in the two years before its initial public offering chiefly by clawing back workloads from the cloud. Mr Casado and his colleague, Sarah Wang, estimate that a group of 50 such publicly traded software firms could halve their cloud bills by doing the same, collectively saving $4bn a year. That could, using generous price-earnings multiples, improve their market value by around $100bn. You don't have to be a super-sleuth to suspect an ulterior motive: if Silicon Valley unicorns take the hint, higher valuations could make venture capitalists like Andreessen Horowitz more money when they go public.

This is an oversimplification, however, in several ways. First, the cloud is not just a cost. It can also boost revenues by providing young companies with the flexibility to scale up rapidly, accelerate new product launches and expand internationally without having to build their own mishmash of racks, servers, wires and plugs. Moreover, cloud providers offer more than storage and spare capacity. Increasingly their most valuable services are data analytics, prediction and machine learning, made possible by the vast troves of data they can crunch. They may also be more difficult to hack. The question is whether a company gets a better return on its investment by paying for cloud services, or by paying to bring data centres, engineers and cyber-security in house.

Second, the supply of engineers is finite. Whereas in the past coders were trained to work with on-premise servers, the latest generation knows more about working with cloud providers. That makes repatriation harder. In a recent podcast about its decision in 2015 to shift entirely from its own servers to Google Cloud, Spotify, a music-streaming app, highlighted the opportunity costs of having engineers tied up managing its own data centres rather than working on new products. (As a geeky relic, it keeps pieces of its last big server in an urn.)

Third, profits are in the eye of the beholder. A company may hope to improve margins by reducing the cost of renting cloud servers. But building its own data centres requires investment. Labour costs will also rise to pay for engineers to manage them.

The silver lining?

There is little to suggest that the stampede into the cloud is slowing. Gartner, a data-gatherer, predicts that worldwide spending on cloud services will increase by almost a quarter this year, to more than $330bn. Repatriation is “an urban myth”, says Sid Nag, Gartner’s research vice-president. “We just don’t see it.”

Continuing to write blank cheques to cloud providers is not sustainable, either. The more firms embrace cloud-computing, the more carefully they must manage its costs. The biggest users, such as Apple, bargain for huge discounts. Smaller ones lack the clout. To keep costs down, they may need to run basic storage in house, diversify into the "multicloud" by spreading computing across several clouds, and make engineers responsible for cloud expenditures. With luck, a low-cost alternative to the biggest clouds will emerge, much as Japanese car companies challenged Detroit's big three. That took half a century, though. ■

Finance & economics

Lives v livelihoods

How to assess the costs and benefits of lockdowns

The policy will stay in governments' toolkits. A growing body of research will guide its use

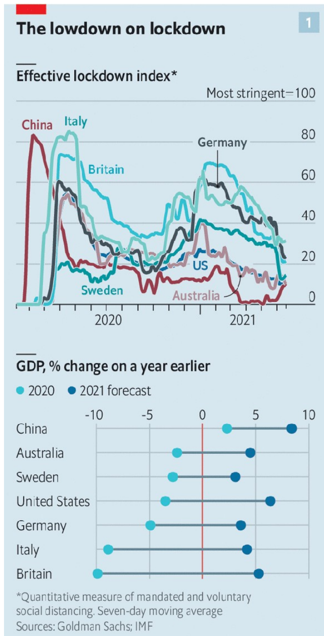
Jul 1st 2021

"TO ME, I say the cost of a human life is priceless, period," said Andrew Cuomo, the governor of New York state. As they tried to slow the spread of covid-19 in the spring of 2020, politicians took actions that were unprecedented in their scale and scope. The dire warnings of the deaths to come if nothing was done, and the sight of overflowing Italian hospitals, were unfamiliar and terrifying. Before the crisis the notion of halting people's day-to-day activity seemed so economically and politically costly as to be implausible. But once China and Italy imposed lockdowns, they became unavoidable elsewhere.

Much of the public debate over covid-19 has echoed Mr Cuomo's refusal to think through the uncomfortable calculus between saving lives and the economy. To oversimplify just a little, the two sides of the lockdown debate hold diametrically opposed and equally unconvincing positions. Both reject the idea of a trade-off between lives and livelihoods. Those who support lockdowns say that they have had few malign economic effects, because people were already so fearful that they avoided public spaces without needing to be told. They therefore credit the policy with saving lives but do not blame it for wrecking the economy. Those who hate lockdowns say the opposite: that they destroyed livelihoods but did little to prevent the virus spreading.

The reality lies between these two extremes. Lockdowns both damage the economy and save lives, and governments have had to strike a balance between the two. Were trillions of dollars of lost economic output an acceptable price to pay to have slowed transmission of the disease? Or, with around 10m people dead, should the authorities have clamped down even harder? Now that politicians are considering whether and when to lift existing restrictions, or whether to impose new ones, the answers to these questions are still crucial for policy today. Alongside vaccines, lockdowns remain an important way of coping with new variants and local outbreaks. In late June Sydney went into lockdown for two weeks; Indonesia, South Africa and parts of Russia have followed suit.

Countries have used a range of measures to restrict social mixing over the past year, from stopping people visiting bars and restaurants to ordering mask-wearing. The extent to which these strictures have constrained life has varied widely across countries and over time (see chart 1). A growing body of economic research now explores the trade-off between lives and livelihoods associated with such policies. Economists have also compared their estimates of the costs of lockdowns with those of the benefits. Whether the costs are worth incurring is a matter for debate not just among wonks, but also for society at large.



The Economist

People who see no trade-off at all might start by pointing to a study of the Spanish flu outbreak in America in 1918-20 by Sergio Correia, Stephan Luck and Emil Verner, which suggested that cities that enacted social distancing earlier may have ended up with better economic outcomes, perhaps because business could resume once the pandemic was under control. But other economists have criticised the paper's methodology. Cities with economies that were doing better before the pandemic, they say, happened to implement restrictions earlier. So it is unsurprising that they also fared better afterwards. (The authors of the original paper note that pre-existing trends are "a concern", but that "our original conclusion that there is no obvious trade-off between 'flattening the curve' and economic activity is largely robust.")

Another plank of the no-trade-off argument is the present-day experience of a handful of places. Countries such as Australia and New Zealand followed a strategy of eliminating the virus, by locking down when recorded infections rose even to very low levels and imposing tough border controls. "Covid-19 deaths per 1m population in OECD countries that opted for elimination...have been about 25 times lower than in other OECD countries that favoured mitigation," while "GDP growth returned to pre-pandemic levels in early 2021 in the five countries that opted for elimination," argues a recent paper in the *Lancet*. The lesson seems to be that elimination allows the economy to restart and people to move about without fear.

Something for nothing

But correlations do not tell you much. Such countries' success so far may say more about good fortune than it does about enlightened policy. What was available to islands such as Australia, Iceland and New Zealand was not possible for most countries, which have land borders (and once the virus was spreading widely, eradication was almost impossible). Japan and South Korea have seen very low deaths from covid-19 and are also cited by the *Lancet* paper as having pursued elimination. But whether they did so or not is questionable; neither country imposed harsh lockdowns. Perhaps instead their experience with the SARS epidemic in the early 2000s helped them escape relatively unscathed.

When you look at more comparable cases—countries that are close together, say, or different parts of the same country—the notion that there is no trade-off between lives and livelihoods becomes less credible. Research by Goldman Sachs, a bank, shows a remarkably consistent relationship between the severity of lockdowns and the hit to output: moving from France's peak lockdown (strict) to Italy's peak (extremely strict) is associated with a decline in GDP of about 3%. Countries in the euro area with more excess deaths as measured by *The Economist* are seeing a smaller hit to output: in Finland, which has had one of the smallest rises in excess deaths in the club, GDP per person will fall by 1% in 2019-21, according to the IMF; but in Lithuania, the worst-performing member in terms of excess deaths, GDP per person will rise by more than 2%.

The experience across American states also hints at the existence of a trade-off. South Dakota, which imposed neither a lockdown nor mask-wearing, has done poorly in terms of deaths but its economy, on most measures, is faring better today than it was before the pandemic. Migration patterns also tell you something. There have been plenty of stories in recent months about people moving to Florida (a low-restriction state) and few about people going to Vermont (the state with the fewest deaths from covid-19 per person, after Hawaii), points out Tyler Cowen of George Mason University.

Americans, at least, do not always believe that efforts to control covid-19 make life more worth living.

What if all these economic costs are the result not of government restrictions, though, but of personal choice? This too is argued by those who reject the idea of a trade-off. If they are correct, then the notion that simply lifting restrictions can boost the economy becomes a fantasy. People will go out and about only when cases are low; if infections start rising, then people will shut themselves away again.

A number of papers have bolstered this argument. The most influential, by Austan Goolsbee and Chad Syverson, two economists, analyses mobility along administrative boundaries in America, at a time when one government imposed restrictions but the other did not. It finds that people on either side of the border behaved similarly, suggesting that it was almost entirely personal choice, rather than government orders, which explains their decision to limit social contact; people may have taken fright when they heard of local deaths from the virus. Research by the IMF draws similar conclusions.

There are reasons to think these findings overstate the power of voluntary behaviour, however. Sweden, which had long resisted imposing lockdowns, eventually did so when cases rose—an admission that they do make a difference. More recent research from Laurence Boone of the OECD, a rich-country think-tank, and Colombe Ladreit of Bocconi University uses slightly different measures from the IMF and finds that government orders do rather a lot to explain behavioural change.

Moreover, the line between compulsion and voluntary actions is more blurred than most analysis assumes. People's choices are influenced both by social pressure and by economics. Press conferences where public-health officials or prime ministers warn about the dangers of the virus do not count as "mandated" restrictions on movement; but by design they have a large effect on behaviour. And in the pandemic certain voluntary decisions had to be enabled by the government. Topped-up unemployment benefits and furlough schemes made it easier for people to choose not to go to work, for instance.

Put all this together and it seems clear that governments' actions did indeed get people to stay at home, with costly consequences for the economy. But were the benefits worth the costs? Economic research on this question tries to resolve three uncertainties: over estimates of the costs of lockdowns; over their benefits; and, when weighing up the costs and benefits, over how to put a price on life—doing what Mr Cuomo refused to do.

The cure v the disease

Start with the costs. The huge collateral damage of lockdowns is becoming clear. Global unemployment has spiked. Hundreds of millions of children have missed school, often for months. Families have been kept apart. And much of the damage is still to come. A recent paper by Francesco Bianchi, Giada Bianchi and Dongho Song suggests that the rise in American unemployment in 2020 will lead to 800,000 additional deaths over the next 15 years, a not inconsiderable share of American deaths from covid-19 that have been plausibly averted by lockdowns. A new paper published by America's National Bureau of Economic Research (NBER) expects that in poor countries, where the population is relatively young, the economic contraction associated with lockdowns could potentially lead to 1.76 children's lives being lost for every covid-19 fatality averted, probably because wellbeing suffers as incomes decline.

Research is more divided over the second uncertainty: the benefit of lockdowns, or the extent to which they reduce the spread of, and deaths from, covid-19. The fact that, time and again, the imposition of a lockdown in a country was followed a few weeks later by declining cases and deaths might appear to settle the debate. That said, another recent NBER paper failed to find that countries or American states that were quick to implement shelter-in-place policies had fewer excess deaths than places which were slower to act. A paper published in the *Proceedings of the National Academy of Sciences*, a scientific journal, by Christopher Berry of the University of Chicago and colleagues, cannot find "effects of [shelter-in-place] policies on disease spread or deaths", but does find "small, delayed effects on unemployment".

Is the price right?

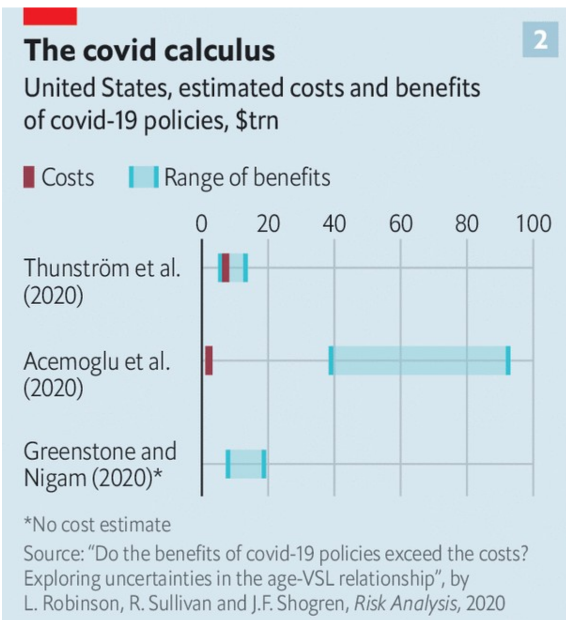
Running through all this is the final uncertainty, over putting a price on life. That practice might seem cold-hearted but is necessary for lots of public policies. How much should governments pay to make sure that bridges don't collapse? How should families be compensated for the wrongful death of a relative? There are different ways to calculate the value of a statistical life (VSL). Some estimates are derived from the extra compensation that people accept in order to take certain risks (say, the amount of extra pay for those doing dangerous jobs); others from surveys.

Cost-benefit analyses have become something of a cottage industry during the pandemic, and their conclusions vary wildly. One paper by a team at Yale University and Imperial College, London, finds that social distancing, by preventing some deaths, provides benefits to rich countries in the region of 20% of GDP—a huge figure that plausibly exceeds even the gloomiest estimates of the collateral damage of lockdowns. But research by David Miles, also of Imperial College, and colleagues finds that the costs of Britain's lockdown between March and June 2020 were vastly greater than their estimates of the benefits in terms of lives saved.

An important reason for the big differences in cost-benefit calculations is disagreement over the VSL. Many rely on a blanket estimate that applies to all ages equally, which American regulatory agencies deem is about $11m. At the other extreme Mr Miles follows convention in Britain, which says that the value of one quality-adjusted life-year (QALY) is equal to £30,000 (which seems close to a VSL of around £300,000, or $417,000, given how many years of life the typical person dying of covid-19 loses). The lower the monetary value you place on lives, the less good lockdowns do by saving them.

The appropriate way to value a change in the risk of death or life expectancy is subject to debate. Mr Miles's number does, however, look low. In Britain the government's "end-of-life" guidance allows treatments that are expected to increase life expectancy by one QALY to cost up to £50,000, points out Adrian Kent of Cambridge University in a recent paper, and allows a threshold of up to £300,000 per QALY for treating rare diseases. But it may be equally problematic to use the American benchmark of $11m for covid-19, which disproportionately affects the elderly. Because older people have fewer expected years left than the average person, researchers may choose to use lower estimates of the VSL.

The best attempt at weighing up these competing valuations is a recent paper by Lisa Robinson of Harvard University and colleagues, which assesses what happens to the results of three influential cost-benefit studies of lockdowns when estimates of the VSL are altered (see chart 2). Adjusting for age can sharply reduce the net benefits of lockdowns, and can even lead to a result where "the policy no longer appears cost-beneficial". Given that these models do not take into account the harder-to-measure costs of lockdowns—how to price the damage caused by someone not being able to attend a family Christmas, say, or a friend's funeral?—the question of whether they were worth it starts to look like more of a toss-up.



The Economist

Once you open the door to making adjustments, things become more complicated still. Research on risk perception finds that uncertainty and dread over an especially bad outcome, especially one that involves more suffering before death, mean that people may be willing to pay far more to avoid dying from it. People appear to value not dying from cancer far more than not dying in a road accident, for instance. Many went to extraordinary lengths to avoid contracting covid-19, suggesting that they place enormous value on not dying from that disease. Some evidence suggests that the VSL might need to be increased by a factor of two or more, writes James Hammitt, also of Harvard, in a recent paper. That adjustment could make lockdowns look very worthwhile.

The malleability of cost-benefit analysis itself hints at the true answer of whether or not lockdowns were worth it. The benefit of a saved life is not a given but emerges from changing social norms and perceptions. What may have seemed worthwhile at the height of the pandemic may look different with the benefit of hindsight. Judgments over whether or not lockdowns made sense will be shaped by how society and politics evolve over the coming years—whether there is a backlash against the people who imposed lockdowns, whether they are feted, or whether the world moves on. ■

Dig deeper

All our stories relating to the pandemic and the vaccines can be found on our coronavirus hub. You can also listen to The Jab, our podcast on the race between injections and infections, and find trackers showing the global roll-out of vaccines, excess deaths by country and the virus's spread across Europe and America.

A version of this article was published online on June 29th 2021

On the simmer

Does America's hot housing market still need propping up?

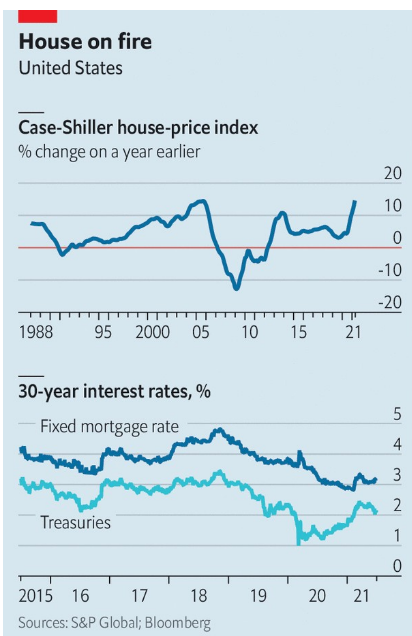
Fed officials debate whether and when to taper support

Jul 1st 2021 | New York

"TRULY EXTRAORDINARY." That was how Craig Lazzara of S&P Global, the firm that compiles a widely watched measure of house prices in America, described its reading for the month of April, released on June 29th. House prices rose by 14.6% year over year, the fastest rate in the 34-year history of the index (see chart, top panel). Houses listed for sale are on average snapped up in just 17 days, a record low. On Reddit, a social-media site, would-be buyers bemoan missing out on house after house because they are unwilling to forgo inspecting the property on which they plan to spend hundreds of thousands of dollars, something that most successful buyers are apparently doing.

The Federal Reserve still has monetary policy on ultra-loose mode. Interest rates are anchored at zero and the central bank is buying $120bn-worth of assets each month—$80bn of Treasuries and $40bn of mortgage-backed securities—in order to depress long-term interest rates. This stance is in many ways still justified. There are 7.6m fewer jobs in America than there were before the pandemic. A large minority of adults remains unvaccinated. And yet consumer-price inflation has climbed to an annual rate of 4.9%, and commodities and labour are in short supply. A real-time estimate of economic output compiled by the Federal Reserve Bank of Atlanta puts annualised GDP growth in the second quarter at a heady 8.3%. If true, America has recovered all the output lost during the pandemic and even added more.

The case of the housing market aptly illustrates how different corners of the economy are pulling the Fed along at different speeds, if not in different directions. The current property craze is at least in part spurred on by loose monetary policy. Low mortgage rates, which are a function of prevailing yields on mortgage-backed securities, tend to entice would-be homebuyers. Given that the housing market is already fired up, it might seem odd that the Fed is juicing it further by buying mortgage-backed securities and suppressing mortgage rates.



The Economist

Even some Fed officials are discomfited by this turn of affairs. In an interview with the *Financial Times* on June 27th Eric Rosengren, the president of the Boston Fed, said that America could not afford a "boom-and-bust cycle" in the housing market that would threaten financial stability.

He is not alone. Robert Kaplan, the head of the Dallas Fed, has said that there are “some unintended consequences and side-effects of these [mortgage-backed-security] purchases that we are seeing play out”, including contributing to rocketing house prices. James Bullard, the president of the St. Louis Fed, told CNBC on June 18th that “maybe we don’t need to be in mortgage-backed securities with a booming housing market.”

At the Fed’s monetary-policy meeting on June 15th and 16th Jerome Powell, its chairman, made clear that the central bank is not yet ready to stop buying assets, but has begun to discuss when might be appropriate. One option might be to do what Mr Rosengren called a “two-speed taper”, slowing mortgage purchases more quickly than purchases of Treasuries. If housing needs less support than the wider economy this seems a sensible step. The Fed has already begun to offload corporate bonds bought through an emergency programme launched in spring 2020, because the liquidity crunch that prompted intervention has abated.

A two-speed taper probably would not dent the housing market by much. For a start, the heat seems also to reflect a fall in supply during the pandemic, rather than low rates alone. And in any case, it is not as if the mortgage-backed-security market operates in isolation from broad monetary conditions. Yields tend to closely track those of Treasuries, even when the Fed is not buying up assets (see chart, bottom panel). If the central bank is not ready to tighten monetary policy yet, then a hot housing market might be a side-effect it has to live with. Still, it probably does not need to egg property prices on. ■

A version of this article was published online on June 30th 2021

Culture clash

Hong Kong's regulators try to push back against Chinese market practices

A proposal to codify banking conduct could stir controversy

Jul 3rd 2021 | HONG KONG

HONG KONG is where China meets the outside world. The territory has long been a training ground for mainland Chinese bankers hoping to take on the planet. But recently it is Wall Street banks that are being schooled in Chinese practices. As companies from the mainland have come to dominate initial public offerings (IPOs) and bond issuances in the territory, so too have mainland methods crept into the underwriting process behind the deals.

Western banks have decried the shift, claiming it hampers price discovery. Global investors are also up in arms about what they say are inflated stock and bond offerings. Hong Kong's Securities and Futures Commission (SFC) is attempting to address the clash. It has released a consultation paper that proposes codifying Western norms. The results of the consultation are expected in coming weeks and could add a new set of rules to the SFC's existing code of conduct for bankers. Whatever the outcome, it is sure to stir controversy.

The process of bringing an IPO or bond to investors is generally defined by many unwritten practices shaped by the market where the deal is underwritten. Hong Kong's investment-banking culture borrowed heavily from the Eurobond market that developed in London in the 1970s and 1980s. Companies issuing securities have usually appointed a lead bank among the syndicate of institutions underwriting the deal at an early stage in the process. The role of the banks, and the purpose of their fees, has been clear. Crucially, the lead bank can advise the company on pricing and allocating shares to investors. This helps ensure the demand for securities is genuine. The setup also brings in investors with experience in valuing securities, and keeps out speculative cash.

All this has been changing, however. Today many companies, mainly ones hailing from mainland China, do not assign roles to the banks until the last possible moment, allowing for a scrum of investment banks to vie for supremacy—and fees—in the syndicate. In some recent bond deals dozens of banks have ended up on the ticket, each scrapping for a puny fee. Instead of a co-ordinated pricing process, the result is muddied price discovery.

Banks knowingly take inflated orders, driving up the price of the security. In one case the SFC found that the heads of an IPO syndicate spread misleading information that overstated the demand for shares. In debt deals some banks submit "X orders" that do not disclose the identity of their clients and make it harder to assess true demand. It is these newer practices that Hong Kong's regulators want to push back against, while acknowledging the older methods as best practice.

Many global banks support the establishment of a set of standards. "We all have to be singing from the same hymn sheet," notes one banker. Mainland institutions, though, have a different tale to tell. They say the griping from Western rivals mainly reflects sour grapes. Chinese companies have gone from issuing about $20bn in US-dollar denominated bonds in 2011, or about 1% of global issuance, to about $209bn in 2019, or 6% of the global market, according to Dealogic, a data provider. They have also made Hong Kong one of the world's largest IPO venues for a decade. Mainland banks have shot up in the league tables for such offerings in that time. It is only natural, a banker at one such firm says, that they have greater control over market practices.

The SFC is in the unenviable position of having to pick sides. Its proposed rules implicitly reject the creeping influence from mainland financial institutions and could disadvantage Chinese companies seeking to raise capital in Hong Kong and their mainland bankers, while giving Wall Street banks and global investors an edge. No wonder, then, that it only reluctantly took up the case for a code, after years of lobbying by global investment managers and banks. But there are worse imaginable scenarios for the regulator—such as one in which opacity slowly engulfs the market, and investors see little distinction between Hong Kong and the mainland. ■

Buttonwood

The return of the carry trade

Interest-rate rises in some big emerging markets will entice foreign capital

Jul 3rd 2021

I F YOU LIKE a central bank that responds to inflation surprises by—and here's a retro touch—raising interest rates, then the Banco de México might be the one for you. On June 24th it surprised the markets by increasing its benchmark rate from 4% to 4.25%. Although it said in its statement that much of the recent rise in inflation was "transitory", the scale and persistence of inflation was worrying enough to warrant higher interest rates.

Mexico is no outlier. Brazil's central bank has pushed up interest rates to 4.25% from a low of 2% in March. Russia has raised its main rate to 5.5% in three separate moves. These countries belong to the high-yielders, a group of biggish emerging-market economies, where interest rates are some distance from the rich-world norm of zero. All three believe a lot of today's inflation will fade. But none is taking any chances.

Scan the central banks' statements, and a clear concern emerges: keeping expectations of inflation in check. This is in part, or even mostly, about exchange rates. Higher interest rates keep domestic savings onshore in the local currency. They also entice capital from yield-starved foreigners. This is called the carry trade—and it is coming back.

High interest rates are now so rare in large economies that where they occur they require explanations. Latin America has a history of inflation. It is hard to get people to trust a currency when memories of betrayal linger. A related explanation is high public debt. Brazil's burden is nearing 100% of GDP. Fiscal incontinence in developing countries often leads to inflation. High yields are needed to compensate for that risk. But such explanations only get you so far. Though Poland has suffered an episode of hyperinflation in living memory, it is a low-yielder. Turkey's yields are high even though its public-debt burden is well below the emerging-market average.

High yields are in the end a reflection of a lack of domestic savings, says Gene Frieda of PIMCO, a fixed-income fund manager. A telltale sign is a country's current-account balance. As a matter of accounting, a deficit means that domestic savings are not sufficient to cover investment. Foreign capital is needed and high yields are the lure. Much of emerging Asia runs a surplus on its current account and has high domestic savings—and thus low yields. Poland and the Czech Republic, both low-yielders, were able to reliably augment their domestic savings with EU grants and direct investment from Western European firms. Russia, which has high yields and a current-account surplus, looks like an exception. But the surplus reflects its ultra-conservative monetary and fiscal policies, says Mr Frieda. The net effect is to raise yields and lower GDP growth but strengthen the balance of payments. Russia's rulers accept this to avoid being beholden to foreign capital.

That brings us to the carry trade. Policymakers in emerging markets are galled by the vagaries of capital flows. But carry traders are their friends. The inflation expectations that central bankers bang on about are entwined with the exchange rate. A weakening currency can be a sign of anxiety about inflation. And in the past year, currency weakness has also been a source of emerging-market inflation, says Gabriel Sterne of Oxford Economics, a consultancy. So when a central bank raises interest rates, it is in part because it wants a stronger currency to curb import costs. This might be the quickest way to bring inflation down.

For their part, carry traders like a yield curve that is steep—meaning five- or ten-year bond yields are a lot higher than short-term interest rates. A steep curve captures expectations of future rises in policy rates. Traders also hope to bet on an appreciating currency. Factors other than interest rates then come into play. One is valuation. If a currency has fallen a long way recently, it has greater scope to rise again. Another is a country's terms of trade, the prices of its exports relative to imports. Oil exporters are in favour now because of high oil prices. Carry traders must be mindful of influences that could blow up a currency. Turkey has attractively high yields, but its erratic monetary policy creates a minefield.

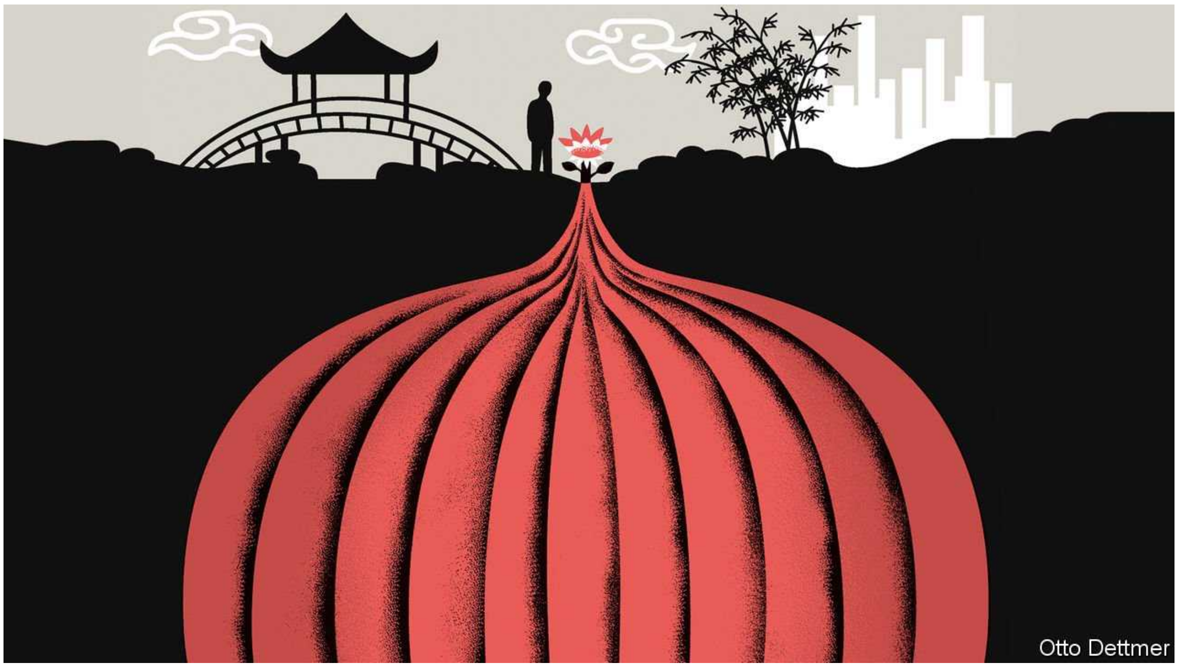
Brazil, Mexico and Russia are at the leading edge of a new trend. Economists at JPMorgan Chase, a bank, reckon that Chile, Colombia and Peru will soon be raising rates. South Africa will join them before the year is out. The Banco de México and company are not going to hang out a sign saying "carry traders welcome". But they might as well put one up. The more their currencies rise, the less work they have to do. ■

Free exchange

Stubborn optimism about China's economy after a decade on the ground

Even as the tenth year of Xi Jinping's rule approaches, China is still dynamic and restless

Jul 3rd 2021



PICTURE THE moment of confusion in a taxi in Guiyang, a city in south-western China. Your columnist had asked the driver to go to the new district. "The new new district or the old new district?" he asked. It was, it emerged, the old new district—a place that seven years ago, on an earlier visit to Guiyang, had looked like the sort of ghost town then dominating horror stories about China's economy, full of giant empty buildings. This time, however, the problem was the exact opposite. What was meant to be a quick jaunt turned into a traffic-clogged headache, the taxi crawling along in a sea of red tail lights. The old new district had filled in, and then some.

One reason why it is good for journalists to stay in a country for a long stint is that it helps breed humility. Assumptions that once appeared iron-clad gather rust as the years roll by. That is true for most places. But it is especially so when covering something as complex as China's economy, which your columnist had the privilege to do over the past decade.

This, to be clear, is not a mea culpa for being overly gloomy. There were also times of excess optimism about China's capacity for change. Take rebalancing. As far back as 2007 Wen Jiabao, then China's prime minister, decried its economy as "unstable, unbalanced"—evidence, it seemed, that leaders grasped the problem and were ready to act. Yet the economy only became more unstable, culminating in a nearly epic meltdown in 2015. And it is as unbalanced as ever, with investment running far ahead of consumption. Nevertheless, it is hard to escape the conclusion that in the economic realm, China got more right than wrong over the past decade. How else to score its performance when, despite many predictions of doom, it doubled in size during that time?

A common riposte is that this success is illusory—that the government has simply delayed the comedown from its debt-fuelled high. The deferral of pain is certainly part of the mix. Perhaps the safest bet in economics is that when growth slows sharply, China will unveil yet more infrastructure projects and call on banks to make still more loans. And if those projects or loans fail, officials have few qualms about orchestrating bail-outs and roll-overs.

What is less appreciated is that China's ability to engage in such engineering is itself a measure of success. The government can lean on its banks because they are enormously profitable to begin with. The telltale signs of an overdrawn economy—high inflation, rampant unemployment and corporate malaise—exist in pockets in China, but they are the exception, not the rule.

This point was driven home when your columnist moved from Beijing to Shanghai in 2014. Each city has its charms, but Shanghai unquestionably offers a more flattering picture of the economy. Beijing, a showcase for political power, is blotted by the hulking headquarters of state-owned enterprises. Day trips take reporters to China's greatest economic calamities, from overbuilt Tianjin to coal-mine carnage in Inner Mongolia. In Shanghai, which functions remarkably well for a city of 25m, reporters instead hop over to see high-tech innovators in Hangzhou, nimble exporters in Wuxi and ambitious entrepreneurs in Wenzhou. They show that even as the tenth year of Xi Jinping's rule approaches, two of the fundamental underpinnings of China's economic dynamism remain intact: red-blooded competition in the private sector and the restless quest of millions upon millions of ordinary people to improve their lot in life.

These days, saying nice things about China's economy comes with baggage, not least because of the Communist Party's insistence that its growth record is proof of its superior political system. It is true that the government has had a crucial hand in the country's development, starting with the fact that it has been "Infrastructure Week" just about every week in China since 1990.

The correct response to the party's boasting is not to deny China its success, but to insist on proper attribution. Japan, South Korea and Taiwan were its forerunners in using repressed financial systems to enable investment and in relying on exports to become more competitive. China has repeated all this, albeit at a far greater, and arguably more impressive, scale. At the same time, its sustained rapid growth of the past four decades has less to do with the wisdom of the Politburo than with the work of a brilliant Saint Lucian economist, Sir Arthur Lewis, who in the 1950s explained that shifting labour from low-value farming to higher-value industry can, if managed right, engender just such a catch-up process.

And now for something completely different

The coming decade is sure to prove more challenging. With 65% of Chinese people already in cities and the population close to peaking, Mr Lewis would point out that there is little scope for further gains from turning farmers into factory workers. Parallels between China and the Asian dynamos of yesteryear are breaking down. China is older and more indebted than they were at the same stage. Whereas most countries seek to strengthen the rule of law as they mature, Mr Xi is cultivating stronger party control.

Add to that a treacherous external environment. Faced with the threat of economic decoupling from the West, it is only rational for China to pursue greater self-reliance. Thanks to its size and sophistication, it may well triumph in key sectors, from semiconductors to robotics. But the sorry history of import substitution globally should make clear that this is a sub-optimal strategy involving much waste and eventually leading to lower growth.

All this is almost enough to turn you into a China bear: to predict not an almighty crash but rather an ineluctable slide towards stagnation. In conversations with analysts and investors, versions of this narrative crop up again and again. That it has become something like the consensus view is the single biggest reason why your columnist, after a long run in China, suspects that its economy will fare considerably better. ■

Science & technology

Urban environments

Could miniature forests help air-condition cities?

A Japanese botanist thinks the answer is "yes"

Jul 1st 2021

CITY AIR is in a sorry state. It is dirty and hot. Outdoor pollution kills 4.2m people a year, according to the World Health Organisation. Concrete and tarmac, meanwhile, absorb the sun's rays rather than reflecting them back into space, and also displace plants which would otherwise cool things down by evaporative transpiration. The relentless spread of buildings and roads thus turns urban areas into heat islands, discomforting residents and exacerbating dangerous heatwaves, which are in any case likely to become more frequent as the planet warms.

A possible answer to the twin problems of pollution and heat is trees. Their leaves may destroy at least some chemical pollutants (the question is debated) and they certainly trap airborne particulate matter, which is then washed to the ground by rain. And trees cool things down. Besides transpiration, they provide shade. Their leaves have, after all, evolved to intercept sunlight, the motor of photosynthesis.

To cool an area effectively, though, trees must be planted in quantity. In 2019 researchers at the University of Wisconsin found that American cities need 40% tree coverage to cut urban heat back meaningfully. Unfortunately, not all cities—and especially not those now springing up in the world's poor and middle-income countries—are blessed with parks, private gardens or even ornamental street trees in sufficient numbers. And the problem is likely to get worse. At the moment, 55% of people live in cities. By 2050 that share is expected to reach 68%.

Under the greenwood tree

One group of botanists believe they have at least a partial solution to this lack of urban vegetation. It is to plant miniature simulacra of natural forests, ecologically engineered for rapid growth. Over the course of a career that began in the 1950s their leader, Miyawaki Akira, a plant ecologist at Yokohama National University, in Japan, has developed a way to do this starting with even the most unpromising derelict areas. Dr Miyawaki (pictured above) retired from his university post in 1993, but is still going strong. And the Miyawaki method, as it has become known, is finding increasing favour around the world.

Dr Miyawaki's insight was to deconstruct and rebuild the process of ecological succession, by which bare land develops naturally into mature forest. Usually, the first arrival is grass. Shrubs sprout later, followed by small trees and, finally, larger ones. Incipient and mature woodlands therefore contain different species. The Miyawaki method skips some of the early phases and jumps directly to planting the kinds of species found in a mature wood.

When starting a Miyawaki forest, those involved, who often refer to themselves as gardeners, first analyse the soil in which it will grow. If necessary, they improve it by mixing in suitable fertilisers. These need not be expensive. Chicken manure and press mud (the solid residue left behind when sugar-cane juice is filtered) are effective and essentially free. They then select 100 or so local plant species to deploy. These are chosen by surveying the nearby area on foot instead of relying on published guidebooks, which have a habit of being out of date or even simply wrong.

Using a wide mix of species, not all of them trees, is important. Most plantations, having been created for commercial purposes, are monocultures. But trees, shrubs and ground-covering herbs all coexist in natural forests, and the Miyawaki versions therefore have this variety from the start. Not only does that pack more greenery into a given space, it also encourages the plants to grow faster—for there are lots of positive ecological relations in a natural forest. Vines rely on trees for support. Trees give shade to shrubs. And, beneath the surface, plants' roots interact with each other, and with soil fungi, in ways that enable a nutrient exchange which is only now beginning to be understood.

After selecting their species, the gardeners gather seeds and plant them at random, rather than in rows. And they plant at high density. The seedlings therefore have to fight for sunlight, so only the fastest-growing survive. Trees planted in this way can shoot up as much as 14% more rapidly than normal. For three years, the gardeners water and nurture their handiwork. Then it is left to fend for itself. A couple of decades later the whole thing reaches maturity.

Dr Miyawaki has supervised the planting of more than 1,500 of these miniature forests, first in Japan, then in other parts of the world. Others are now following in his footsteps. India is particularly keen. In Mumbai, more than 200,000 trees are found in Miyawaki forests throughout the city and its suburbs. In Bangalore, more than 50,000 (see before-and-after picture below, for a forest planted near the city's airport). A group in Chennai has set up 25 such forests. The authorities in Tirunelveli, in the country's south, use the Miyawaki method to create green cover in the city's schools. Hyderabad started growing the largest individual forest of the lot, across four hectares, in 2020.

My! How you've grown! A Miyawaki forest, three months after planting

Over India's western border, in Pakistan, people are following suit. The Ministry of Climate Change claims the country has 126 Miyawaki forests, with 51 in Lahore, 20 in Islamabad and five in Karachi. And to India's north, in Nepal, the city of Janakpur is likewise planning a Miyawaki blitz.

The method is becoming popular outside Asia, too. In Europe, Belgium, France and the Netherlands are all home to Miyawaki forests. There are also a handful in Latin America. Wherever they are planting, though, gardeners are not constrained to follow nature's recipe book to the letter. Miyawaki forests can be customised to local requirements. A popular choice, for example, is to include more fruit trees than a natural forest might support, thus creating an orchard that requires no upkeep.

One such pomologist is Shubhendu Sharma. Mr Sharma has, through Afforestt, a firm he founded in 2011, become a leading proponent of the Miyawaki method. He was once an engineer at Toyota's factory in Bangalore and has brought his experience building cars to bear on the question of tree planting. He is particularly hot on time and motion. He has measured how long, on average, it takes to plant each sort of seed or seedling and uses that information to schedule their sowing. Since its foundation, Afforestt has created 138 forests in ten countries in this way, and is currently setting up four more. It has also spawned at least 15 imitators, in places as disparate as Australia, Chile and Iran.

Here's one I prepared earlier

Mr Sharma's epiphany came one day in 2009, when Dr Miyawaki arrived at his workplace to plant a forest there. He was so impressed by this that he decided to transform his own backyard in like manner, with a planting that featured especially guava trees. When he began, only seven types of bird lived in the yard. Two years later he counted 17. Beforehand, rain used to gather in puddles, forming a breeding ground for mosquitoes. Once the trees were established, the soil opened up and the puddles disappeared. The forest also successfully cooled the air. Mr Sharma found that the temperature under his trees was 5°C below that of the surrounding area. As to guava, the forest grew so many of them that his mother had to give them away to neighbours.

What Mr Sharma and others like him offer looks like a modern version of the 19th-century movements that brought city parks and their associated health benefits to the industrialising West. In those days the prevailing attitude towards nature was to try to tame it, and the parks created reflect that in their controlled, formal design. Now, greenery and environmentalism are the fashion, and the quasi-wild Miyawaki approach reflects this to a T. The purpose is the same as before—to introduce *rus in urbe*. But the means are completely in tune with the times.

The Miyawaki method will never work for large-scale reafforestation. It is too labour intensive. Relying on nature and the passage of time is probably the best bet for replanting extensive areas of damaged woodlands, though technophiles dream of speeding things up by distributing seeds by drone. But if your goal is to better your immediate locale, rather than to save the planet from global warming—and maybe to grow a few guava on the side—then Dr Miyawaki might well be your man. ■

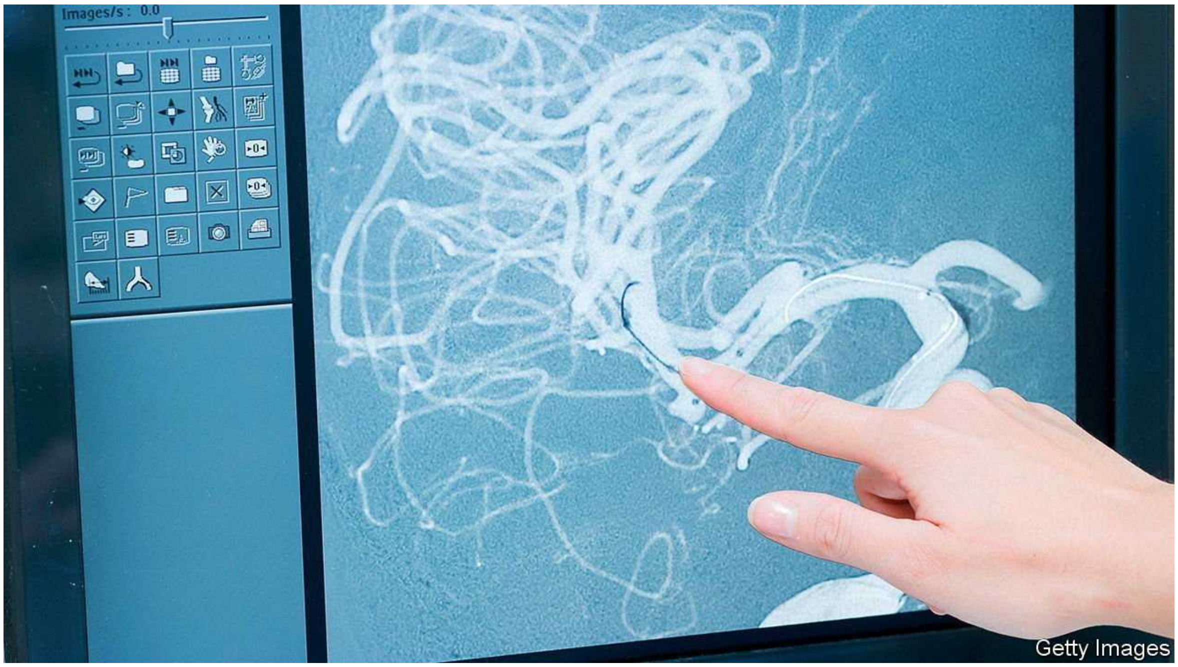
A version of this article was published online on June 30th 2021

Medical testing

Virtual clinical trials are on their way

They will save on volunteers, and be cheaper

Jul 1st 2021



CLINICAL TRIALS are expensive, time-consuming and risky for those taking part. The hunt is therefore on for computer models good enough to replace warm bodies for at least the preliminary phases of trials. In a paper in *Nature Communications*, Alejandro Frangi of the University of Leeds, in Britain, and his colleagues have published the results of the most comprehensive such virtual trial yet attempted.

Dr Frangi and his team are investigating stent-like devices called intracranial flow diverters. These control the passage of blood through brain arteries and are often used to treat cerebral aneurysms—bulges that form in an arterial wall, in which blood then accumulates. If a cerebral aneurysm bursts, it causes a so-called haemorrhagic stroke, damaging surrounding tissue by engulfing it in blood. Inserting a flow diverter directs the bloodstream away from the aneurysm, permitting blood already within the bulge to stay in place and clot, thus blocking the aneurysm up.

The researchers' experimental "subjects" were computer models derived from detailed three-dimensional scans of the brains of 82 volunteers with cerebral aneurysms. The team inserted software representations of flow diverters into these models and recorded the consequences for virtual blood flow through the virtual brains in question. They then compared their results with those from three trials of the procedure carried out in the real world in recent years. They confirmed what these real trials had found—that the flow diverters do indeed encourage clots to form in aneurysms—and they rated the stents' effectiveness at this task as similarly good.

Besides confirming what was already known, Dr Frangi's virtual trial also investigated previously untested phenomena. For example, past reports in the literature have suggested that for aneurysms near places where arteries fork into two branches, inserting a flow-diverter actually increases the risk of a second type of stroke, ischaemic strokes. But this has never been definitely proved.

Ischaemic strokes are a consequence of a vessel getting blocked. This stops blood flowing to the part of the brain distal to the blockage, which then dies. The virtual trials showed that the risk of an ischaemic stroke did indeed rise if a flow-diverter was fitted near an arterial fork. It also predicted that patients with higher than normal blood pressure were at even greater risk of such fork-related strokes—a finding that had not (and still has not yet) been shown in the real world.

Trial offer

Though it is hard to imagine virtual trials of this sort completely replacing real ones, they could certainly reduce their number by suggesting in advance which avenues are worth exploring. They might also reduce the need for animal trials—and might indeed be more effective than these if they proved better models of human physiology than the laboratory mice now popular for the purpose.

Virtual trials bring other advantages, too. One is that the same procedure can be tested over and over again in the same "patient", but with different variables. The observation about blood pressure which emerged from Dr Frangi's work was made this way. And procedures that would be hard to get past an ethics committee if proposed for trial on people can be tested first in a computer, so that only those reckoned most likely to work will need to undergo ethical scrutiny.

Preliminary virtual trials of this sort would also reduce the cost of real-world trials, which clock in at around $40,000 per patient. Regulators would clearly need persuading that virtual tests were reliable enough to yield appropriate data, but successful “hindcasting” of the sort Dr Frangi has just demonstrated will presumably help that happen. ■

A version of this article was published online on June 30th 2021

Palaeoanthropology

A new human species may have been identified

Or perhaps the first cranium of one already known

Jul 1st 2021

TWO NEW studies add further pieces to the jigsaw puzzle that is human evolution. One reports a potential extra member of the genus *Homo*. The other casts light on possible interbreeding between three human species in the Middle East.

Homo longi—"Dragon man" as translated into English from Chinese, via Latin—is not a novel find, but a reinterpretation of an existing one. The cranium in question was dug up in Harbin in 1933 and is held at Hebei GEO University, in Shijiazhuang. It is 146,000 years old and was originally badged as an archaic form of *Homo sapiens*. But Ni Xijun and Ji Qiang, who work at the university, disagree. As they report in the *Innovation*, the cranium would indeed have contained a brain similar in size to a modern human's, but the fossil is too large to be *sapiens* and has molars and eye sockets which dwarf those of people today. Dr Ni and Dr Ji also realised that it is too long and low to be *sapiens*. It lacks the roundness of a modern human cranium.

This is good news for supporters of the recent-African-origin theory, which holds that most non-African human beings alive today are descendants of a small number of migrants who crossed to Asia from the Horn of Africa about 60,000 years ago, meaning that any non-African human fossil from before that date is probably of another species descended from earlier, non-*sapiens* departures from Africa.

The question was, which earlier species did the Harbin fossil represent? By comparing it with known archaic humans, including *Homo erectus*, *Homo floresiensis*, *Homo heidelbergensis* and *Homo neanderthalensis*, Dr Ni and Dr Ji concluded that it was none of them, and must therefore be new to science and so worthy of its own name. There is, however, one other possibility—for there is a now-extinct type of human of which no cranium has yet been identified. *Homo denisova*'s existence was established by the extraction of DNA from a finger bone, and traces of that DNA, a remnant of interspecies breeding, still exist in modern humans, notably in China. Since one of the Harbin fossil's molars perfectly matches the size and root structure of a molar from the Denisova cave in Russia, after which *Homo denisova* is named, it may be that Dr Ni and Dr Ji have actually identified the first Denisovan cranium.

The other study, published in *Science* by Israel Hershkovitz of Tel Aviv University, also speaks to the question of interspecific interbreeding. Even supporters of the recent-African-origin theory recognise that there was, in addition, an earlier "leakage" of *Homo sapiens* from north-east Africa into the Levant. Dr Hershkovitz and his colleagues have been examining fossils of relevant antiquity—120,000-140,000 years—collected from Nesher Ramla, a site in Israel. These, they found, have *sapiens*-like jaw bones, Neanderthal-like molars and crania similar to those of *Homo erectus*. This suggests to them that they are the product of miscegenation between all three.

That so much interbreeding went on between groups of people who had evolved separately for hundreds of thousands of years is intriguing. Besides the imprint of Denisovan genes in modern Asians, it is also known that modern Europeans bear traces of Neanderthals and that some modern Africans similarly bear the imprint of a "ghost" hominid for which no fossil evidence has yet been found. The ancestry of *Homo sapiens*, it seems, is less a family tree than a worldwide web. ■

A version of this article was published online on June 25th 2021

Books & arts

The settlement of the Pacific

In the sweep of history, the Pacific is far from remote

No man is an island. Nor are islands themselves, as the story of Oceania shows

Jul 1st 2021

Voyagers: The Settlement of the Pacific. By Nicholas Thomas. *Basic Books; 224 pages; $25. Apollo; £18.99*

I N 1686 WILLIAM DAMPIER, an English pirate with an unlikely literary flair and an appetite for scientific and human observation, anchored the *Cygnet* off the coast of Guam, an island in what is now known as the Micronesia region of the western Pacific Ocean. He was profoundly impressed by the Chamorro people he encountered there, in particular by their voyaging canoes, which were unlike any craft he knew.

"The Natives", he wrote in his account of the visit, "are very ingenious beyond any people, in making Boats, or Proes", now known as proas. "These are built sharp at both ends; the bottom is of one piece…very neatly dug, and left of a good substance." Dampier went on to describe "the little boat", that is, the vessel's outrigger, meant "to keep the great Boat upright from oversetting". These twin-hulled vessels in effect reversed direction to pass through the eye of the wind—unlike any European or American craft. They were also supremely swift. "I do believe", Dampier concluded of the islanders, "they sail the best of any Boats in the World."

Dampier's voyage came roughly midway between the European discovery of Guam, 500 years ago this year, by Ferdinand Magellan, during the Portuguese explorer's circumnavigation of the world, and the extraordinary Pacific voyages of Captain James Cook between 1768 and 1780. Magellan's stumbling upon Guam as a trans-ocean way-station between continents in effect launched the global age.

On board Cook's cruises through the vast region of scattered atolls, archipelagoes and "high" islands, today called Oceania, were some of Europe's finest natural philosophers and artists, eagerly recording everything they saw or experienced. But Cook's mission was also an imperialising one. His voyages were way-stations of a kind, towards Oceania's formal colonisation; the enslavement and kidnapping of islanders for work elsewhere; the plundering of natural resources, from whaling to mining; the ravaging effects of imported diseases on island communities; and the transformation of the Pacific Ocean into an arena for global conflict.

After the second world war, the atolls were used as sites for nuclear tests. Today some island nations are acutely vulnerable to climate change and rising sea levels, wider forces once again intruding roughly on Pacific lives. From a world-historical perspective, then, the Pacific is much less remote than outsiders make it out to be.

When the story of this watery crucible is told, modern island thinkers understandably tire of the prominence often given to Cook and other Europeans. But as Nicholas Thomas, an Australian historian and anthropologist at the University of Cambridge, highlights in his concise new book, some of the questions that Cook and his companions asked remain pertinent, for islanders above all. Who were these extraordinary people who first reached specks of land across an ocean that covers a third of the Earth? Where did they come from? A new inquiry might be added to those old ones: where, in a figurative sense, are Pacific islanders now heading?

Into the unknown

From a surprisingly early date, Mr Thomas argues, islanders themselves have collaborated with outsiders in the search for answers. Tupaia, a navigator and priest from the Society Islands (today part of French Polynesia), seized the chance to join Cook on his departure from Tahiti. A chart Tupaia produced has become a symbol of cross-cultural encounter in the Pacific. As well as navigation, he shared knowledge of Polynesian customs and history. He acted as a go-between in Cook's first meetings with the Maori of New Zealand, whose tattoos were similar to those of the Polynesians of Tahiti. They welcomed him as a *tohunga*, or learned man, and conversed with him in a shared tongue. Had Tupaia survived the journey to England rather than dying in Batavia (modern Jakarta), he might have shared much more.

The quest for origins has been complicated by the size of the Pacific region, and environments that are not often conducive to preserving the archaeological record. The earliest voyaging craft lacked iron fastenings, and no traces of them survive. Yet the author highlights a dizzying burst of new research that draws on advanced genetics, linguistics and, not least, a revival of voyaging itself by indigenous navigators. Some lineaments of the past are now incontrovertible. Whereas the ancestors of the Chamorro people settled western Micronesia from the Philippines, today's Polynesians are descended from the Lapita people, named after their distinctive pottery. The Lapita moved through archipelagic South-East Asia from Taiwan and, a little over 3,000 years ago, launched into the Pacific from the easternmost tip of what is today Papua New Guinea.

These could not have been accidental voyages, made, for example, by coastal fishermen blown offshore. The craft setting off for new lands must have carried women, yams for cultivation and the pandanus tree for making rope and sails, plus dogs, pigs and chickens. What is more, vessels sailed by the same peoples plied back in the opposite direction too—not least, the sweet potato, native to South America, was brought westward across the Pacific.

Modern islanders have built traditional sailing craft and shown how it might be done (see picture). Eschewing compasses, like their forebears they use the stars, clouds, drifting seaweed, the flights of birds and even the smell of the air and ocean as navigational tools, overlaid by mental maps that were passed down the generations. In his book “We, the Navigators” the late David Lewis, a doctor and sailor from New Zealand, recounted how local navigators rested their testicles on the hull to gauge the pattern of the swells. Such modern seafarers have mirrored the astounding voyages of their ancestors, including between Hawaii, Tahiti and New Zealand, making their landfalls with uncanny accuracy.

Other answers, however, remain tantalisingly out of reach. In the *longue durée* of human history, Mr Thomas writes, Pacific settlers “expanded their range almost suddenly”, in two rapid waves. The first was to western Polynesia, and the second, a millennium ago, into central and eastern Polynesia. Very little long-distance settlement seems to have taken place in between. Since population pressures do not appear to have been a major push factor, the motivation of the settlers remains one of the great enigmas of history. Perhaps the founders of new communities gained great *mana*, or spiritual power, from launching out into the unknown, while their descendants secured high status.

The revival in voyaging is of a piece with an awakened sense of Pacific identity, in which a view of the island states as minuscule and impoverished is replaced with something broader, a cosmopolitan character defined by the vast sea. Capturing this gathering pride, the late Fijian-Tongan author Epeli Hau’ofa invoked “the ocean in us”. Its waters are a fluid metaphor for separation, loss and grief for all those voyagers who never returned. Water is also central to Oceania’s myths of origin and returning—and to both a new sense of environmental danger and a revived desire among Pacific islanders to connect. ■

Home sweet home

A quest for stability and identity in "Three Rooms"

Jo Hamya's narrator negotiates the obstacles of young adult life today

Jul 3rd 2021

Three Rooms. By Jo Hamya. *Houghton Mifflin Harcourt; 208 pages; $25. Jonathan Cape; £12.99*

VIRGINIA WOOLF reckoned that a woman needed money and a room of her own if she were to write fiction. The nameless female narrator of Jo Hamya's debut novel aspires to more living space, but for more prosaic reasons: the "end goal I wanted, through any job necessary, was to be able to afford a flat, not just a room, and then to settle in it and invite friends to dinner". Over a fraught year involving precarious employment, low wages and rented digs, she becomes painfully aware that her modest dream might be unattainable.

The story begins in autumn 2018, when the narrator arrives in Oxford to start a nine-month contract as a post-doctoral research assistant. She moves into a "borrowed room" in a university-owned house and spends her days working and wandering the city. She knows that she has come far—“you are a woman, you are brown, you have made it here”—yet despite her efforts to fit in, she feels like an outsider.

She doesn’t fare much better when she swaps Oxford for London and academia for a “real-world job”. Once again she has no permanent work or fixed abode, just a stranger’s sofa and a short-term gig as a copy editor on a society magazine. She finds herself sidelined by colleagues, scorned by her flatmate and increasingly anxious about her dwindling resources and vanishing prospects. When her contract is not renewed, and she outstays her welcome as a lodger, she moves into her third room—in her parents’ home outside the capital. Now she feels defeated, but lowering her expectations and re-evaluating her plans may be her only chance to advance.

“Three Rooms” exhibits some of the excesses typical of debuts. The narrator’s reflections can border on navel-gazing; her fascination with a glamorous Oxford student becomes tiresome. Nevertheless, the novel evolves into an intelligent, original examination of privilege and belonging in 21st-century England. Its account of thwarted progress proves absorbing, enriched as it is by shrewd observations and insightful meditations on the trials of modern life and the state of the nation.

And the narrator’s candour is refreshing. Acquaintances highlight the ironies of ambitions like hers, as when her flatmate asks her: “Don’t you think it’s weird that you spent a year giving yourself to the place that started the careers of people that openly disdain you, and now you’ve gone to work for a publication that exalts them?” This is a nuanced portrait of a woman’s search for stability and an adult identity in an obstacle-strewn world.

Memory and mourning

An exhibition at Stanford explores its startling origin story

How an American teenager's death in 1884 changed the world

Jul 3rd 2021 | PALO ALTO

THE WORLD might look different had a wealthy teenager not died of typhoid fever in Florence in 1884. An avid collector of curios, Leland Stanford junior was 15 and on his second European tour when tragedy struck, depriving his parents of their only child. To honour him, a year later they founded what would become one of the world's best universities. Without Leland Stanford Junior University in Palo Alto, California, there might be no Silicon Valley, nor the revolutions it has fostered in work and life, observes Mark Dion, an artist commissioned to commemorate this dramatic sequence of events. A single death helped beget a whole new age.

Mr Dion is known for probing the ways natural and human history are presented in institutions. His installation at the Cantor Arts Centre at Stanford is a *Wunderkammer* stuffed with objects that illustrate the university's origin story. The centrepiece is a huge Victorian "mourning cabinet" containing part of Leland junior's childhood collection, complete with a portrait of the lost boy. But the exhibition, called "The Melancholy Museum" and now re-opened after a covid-induced hiatus, also tells other tales—about the Gold Rush, the Gilded Age and the labour that underpinned the Stanfords' vast wealth.

The young, doomed Stanford enjoyed all the privileges of the very rich, and used them to fill a private museum at the family mansion in San Francisco that he started at the age of 14. His curiosity extended to the birds he shot and stuffed; Native American mortars and pestles that workers dug up on the Stanford estate in Palo Alto; toy boats and carriages; weapons and armour and battlefield relics. The Tiffany Company gave him a case of paste replicas of the Koh-i-Noor and other famous diamonds.

Part shrine, part eccentric display, the cabinet is a powerful embodiment of the acute grief of Jane Stanford, Leland junior's mother. She was determined to immortalise her son by founding not just a university but also what was then the world's largest private museum, originally to house his miscellany. After his death, Leland Stanford senior reportedly said that "the children of California will be my children."

In collaboration with Stanford students, Mr Dion picked 700 objects from the family's hoard, out of some 6,000 that survived the two earthquakes to strike the museum in the 20th century. He balances this quirky abundance with a roomful of items that allude to the sources of the Stanford fortune. They include a broken shovel and a dynamite plunger; the "Golden Spike" that symbolically united the two halves of the transcontinental railroad, constructed by Chinese workers; and pay slips from labourers on the Palo Alto estate and horse-breeding farm.

The room is a reminder that, before he became a railroad baron, the elder Leland Stanford made his money not in gold, but by selling the tools that goldminers used—just as some of today's tech tycoons made their billions not in glitzy goods but internet routers and databases. The objects are mute; the installation is an artwork, says Mr Dion, not a lecture. But it spurs the visitor to ask more questions—as if Stanford's history, like all history, were an ornate cabinet with compartments begging to be opened, revealing a more nuanced truth. ■

The future of war

A thought-provoking reflection on how AI will change conflict

Algorithms may make proficient soldiers but poor generals

Jul 3rd 2021

I, Warbot. By Kenneth Payne. *Oxford University Press; 336 pages; $29.95. Hurst; £20*

THE UN'S Panel of Experts on Libya rarely grabs the headlines. But its valedictory report in March caused a furore. It noted that in a battle around Tripoli last year, Libya's government had "hunted down and remotely engaged" the enemy with drones—and not just any drones. The Kargu-2 was programmed to attack "without requiring data connectivity between the operator and the munition". The implication was that it could pick its own targets.

Was this a true autonomous weapon, or just a clever missile? In June the Turkish manufacturer insisted that, contrary to its own marketing, for now the drone required a human to push the button. This sort of technology is at the heart of "I, Warbot" by Kenneth Payne, a thought-provoking reflection on how artificial intelligence (AI) will change conflict.

In some ways, the story is familiar. It involves the entwined histories of computing and warfare; the recent evolution of new, powerful forms of AI modelled on the neurons of the brain rather than the logic of the mind; and the ensuing possibilities for weapons to see what is around them—and strike with superhuman speed and precision. Mr Payne, an academic at King's College London, is especially bullish on the potential of swarms, "a menagerie of specialist robots" that can concentrate to attack and melt away just as quickly.

"The tactical implications are profound," he predicts. The offence will dominate. Defenders will have to rely on deception, generating clouds of decoy targets, rather than on protections like armour and fortification. Martial virtues such as courage and leadership will give way to technical competence. Dividing armed forces into services optimised for land, air and sea may look increasingly strange in a world of machines that can range across them.

Above all, though, "I, Warbot" is a reminder that war is about more than tactics. It is about choosing which battles to fight, how to knit them into a successful campaign and how to connect military victories to political aims—in short, war is about strategy. And soldiery and strategy are fundamentally different. Computer programs can already defeat human pilots in simulated dogfights. But could they come up with the bold, swift and visionary attacks that let Napoleon Bonaparte knock out one European army after another?

Algorithms can certainly outwit opponents in games that blend skill, chance and psychology. In 2017 Libratus, a computer program, saw off four poker stars. AI can also innovate: in 2016 AlphaGo, another program, thrashed a world champion of Go, an ancient Chinese board-game, with moves that dazzled onlookers.

But, argues Mr Payne, this is a simulacrum of genius, not the real thing. These gizmos exhibit "exploratory creativity"—essentially a brute-force calculation of probabilities. That is fundamentally different from “transformational creativity”, which entails the ability to consider a problem in a wholly new way, and requires playfulness, imagination and a sense of meaning. All that may depend on emotion, and thus on parts of human biology alien to computers. “AI is a statistical processor par excellence”; but in essence it remains “a wonderfully sophisticated abacus”.

A proficient soldier, the warbot may thus be a limited general. The problem is that the line between tactics and strategy can blur. Battlefield decisions can have geopolitical ramifications. Consider the case of B-59, a Soviet submarine pounded by American depth-charges during the Cuban missile crisis of 1962. The frazzled captain ordered the use of a nuclear-tipped torpedo. Conscious of the stakes, Vasily Arkhipov, the second-in-command, refused to authorise the launch.

Would a computer have done so? “A warbot is likely to be more accurate, proportionate and discriminate” than humans, says Mr Payne. The risk is that “a machine is undeterred by the sobering fear of things getting out of hand.” ■

Johnson

Culture-war terms can compress complex ideas in an unhelpful way

In discussions of group differences and grievances, nuance is vital

Jul 3rd 2021

IF YOU SET out to design a drearily predictable identity-politics ding-dong in a laboratory, you could do little better than the one that broke out in Britain on June 22nd. A parliamentary committee released a report into underperforming working-class white pupils. It was long and in places thoughtful, but one seven-paragraph section hogged all the attention after it was released.

That bit of the introduction fretted that the use of the phrase "white privilege" may harm poor white youngsters who, by definition, are nearer the bottom of the socioeconomic pyramid than the top. It argued that the term may lead to divisions among students and distract them from the real causes of their hardships. The appendices to the report reveal that four MPs, all from the opposition Labour Party, disagreed with this characterisation of "white privilege". The other six, all from the ruling Conservative Party, approved of it.

As is often the case, the two sides of this debate seem to mean very different things by this concise but explosive term. Sensible folk who give credence to the idea of “white privilege” argue that, whatever their other problems, white people do not face the same race-based disadvantages as ethnic minorities, from the minor (a shopkeeper training a wary eye on them) to the more serious (teachers reflexively judging them to be less capable than they really are). But some sceptics of “white privilege” think it implies that every white person is privileged in an overall way—or even that, merely by existing, white people are complicit in the discrimination suffered by minorities. For some who interpret it this way, the concept is discredited by the existence of poor white people.

One reason the idea of “privilege” may be so divisive is that its meaning has shifted over time. Its first use was to describe special exemptions from religious law, given to very few. It was then extended to similar non-ecclesiastical privileges, and later to the general condition of being at the top of the socioeconomic pile, as in phrases such as “bastions of privilege”. The entry for the word in the Oxford English Dictionary includes only senses in which “privileges” accrue to a minority. *The Economist*’s style guide, following this logic, says the word “underprivileged” is an absurdity, as it is not normal or standard to be privileged.

In recent years, however, the word has been widely used to refer to the advantages enjoyed by the white majority in countries such as Britain and America. In the raging culture wars, “white privilege” is now among the many phrases lobbed like online grenades between opposing camps. Since the combatants cannot agree on what it means, it is not surprising that there is no consensus on whether it exists and what should be done about it.

It is not alone. To take another contemporary bugbear, consider “toxic masculinity”. To those who encounter this in passing, it may appear to mean something like “all masculinity is toxic”. This sounds like a counsel of despair, and naturally upsets plenty of men and boys.

For some feminists and others, though, the expression is really meant to highlight the influence of a certain, pernicious type of masculinity, in which men and boys compete to be dominant, and put each other down as well as keeping women in their supposed place. “Toxic masculinity” in its best sense thus points to the availability of other, more expansive and positive kinds. As commonly understood, it is just another blunt blast of identity politics.

The problem with these terms is their compression. They are signposts rather than arguments, only making sense in the context of more elaborate reasoning. Those who use them often seem to hope that the catchphrases invoke all the nuances of the underlying concepts. In the vituperative, tweet-length exchanges that now pass for political debate, that is usually wishful thinking.

Good style requires omitting needless words. But talking about big demographic groups warrants patient, careful language, even at the expense of zingers. That may involve statistical caution, signalled with “on average” and the like; after all, variation within groups (white people, men) is often greater than between them. That fact may not be headline-friendly, but it bears repeating in every discussion of grievances and difference. If you think a concept like white privilege has some validity, best to explain carefully what you mean by it, and what you don’t. If you do that, you might find that you no longer need those combustible buzzwords after all.

Economic & financial indicators

- [Economic data, commodities and markets]

Economic data, commodities and markets

Jul 1st 2021

Economic data

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	Gross domestic product % change on year ago: latest		quarter*	2021†	Consumer prices % change on year ago: latest		2021†	Unemployment rate %	
United States	0.4	Q1	6.4	6.0	5.0	May	3.1	5.8	May
China	18.3	Q1	2.4	8.5	1.3	May	1.6	5.0	May[‡§]
Japan	-1.6	Q1	-3.9	2.2	-0.1	May	-0.2	3.0	May
Britain	-6.1	Q1	-6.2	5.8	2.1	May	3.0	4.7	Mar[††]
Canada	0.3	Q1	5.6	5.4	3.6	May	2.2	8.2	May
Euro area	-1.3	Q1	-1.3	4.3	1.9	Jun	1.7	8.0	Apr
Austria	-5.5	Q1	-12.6	3.4	2.7	Jun	2.2	5.6	Apr
Belgium	-0.5	Q1	4.5	4.3	1.6	Jun	1.5	5.3	Apr
France	1.2	Q1	-0.4	5.5	1.5	Jun	1.4	7.3	Apr
Germany	-3.1	Q1	-7.0	3.5	2.3	Jun	2.5	4.4	Apr
Greece	-1.4	Q1	18.9	5.4	0.1	May	nil	15.8	Dec
Italy	-0.8	Q1	0.6	4.6	1.3	Jun	1.3	10.7	Apr
Netherlands	-2.4	Q1	-3.1	3.4	2.1	May	2.2	3.3	May
Spain	-4.2	Q1	-1.7	5.9	2.7	Jun	1.5	15.4	Apr
Czech Republic	-2.6	Q1	-1.4	3.6	2.9	May	2.6	3.4	Apr[‡]
Denmark	-0.9	Q1	-3.9	3.0	1.7	May	0.7	4.0	May
Norway	-1.4	Q1	-2.5	2.6	2.7	May	2.9	4.9	Apr[‡‡]
Poland	-1.3	Q1	4.5	4.6	4.4	Jun	4.1	6.1	May[§]
Russia	-0.7	Q1	na	3.2	6.0	May	5.5	4.9	May[§]
Sweden	-0.1	Q1	3.4	3.6	1.8	May	1.8	9.8	May[§]
Switzerland	-0.5	Q1	-2.0	3.0	0.6	May	0.3	3.0	May
Turkey	7.0	Q1	na	3.9	16.6	May	14.5	12.9	Apr[§]
Australia	1.1	Q1	7.3	4.4	1.1	Q1	2.1	5.1	May
Hong Kong	7.9	Q1	23.5	4.9	0.9	May	1.6	6.0	May[‡‡]
India	1.6	Q1	6.0	10.4	6.3	May	5.2	9.2	Jun
Indonesia	-0.7	Q1	na	3.9	1.7	May	2.4	6.3	Q1[§]
Malaysia	-0.5	Q1	na	4.4	4.4	May	2.4	4.6	Apr[§]
Pakistan	4.7	2021**	na	3.8	10.9	May	9.0	5.8	2018
Philippines	-4.2	Q1	1.2	5.1	4.5	May	4.2	8.7	Q2[§]
Singapore	1.3	Q1	13.1	4.6	2.4	May	1.8	2.9	Q1
South Korea	1.9	Q1	7.1	3.8	2.6	May	2.0	4.0	May[§]
Taiwan	8.9	Q1	12.8	6.0	2.5	May	1.6	3.7	Apr
Thailand	-2.6	Q1	0.7	2.9	2.4	May	2.1	1.5	Dec[§]
Argentina	2.5	Q1	11.0	6.2	48.8	May	47.3	10.2	Q1[§]
Brazil	1.0	Q1	4.9	4.8	8.1	May	6.8	14.7	Apr[§‡‡]
Chile	0.3	Q1	13.4	6.7	3.6	May	3.4	10.0	May[§‡‡]
Colombia	2.0	Q1	11.9	6.0	3.3	May	3.0	15.6	May[§]
Mexico	-3.6	Q1	3.1	5.9	5.9	May	4.5	4.1	May
Peru	3.8	Q1	8.3	10.1	2.5	May	2.9	9.7	May[§]
Egypt	2.9	Q1	na	3.3	4.8	May	5.2	7.4	Q1[§]
Israel	-1.1	Q1	-6.2	4.2	1.5	May	1.5	5.5	May
Saudi Arabia	-4.1	2020	na	2.9	5.7	May	2.4	6.5	Q1
South Africa	-3.2	Q1	4.6	3.0	5.2	May	4.0	32.6	Q1[§]

Source: Haver Analytics. *% change on previous quarter, annual rate. †The Economist Intelligence Unit estimate/forecast. §Not seasonally adjusted. ‡New series. **Year ending June. ††Latest 3 months. ‡‡3-month moving average.

The Economist

Economic data

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	Current-account balance % of GDP, 2021†	Budget balance % of GDP, 2021†	Interest rates 10-yr gov't bonds latest,%		change on year ago, bp	Currency units per $ Jun 30th	% change on year ago
United States	-3.0	-13.5	1.4		79.0	-	
China	2.8	-4.7	2.9	§§	36.0	6.46	9.4
Japan	3.5	-8.9	nil		-8.0	111	-2.8
Britain	-4.5	-11.5	0.8		58.0	0.72	12.5
Canada	-2.0	-9.0	1.4		86.0	1.24	9.7
Euro area	3.2	-6.6	-0.2		25.0	0.84	6.0
Austria	3.0	-7.6	nil		23.0	0.84	6.0
Belgium	-0.7	-6.6	0.1		25.0	0.84	6.0
France	-1.7	-8.7	0.2		28.0	0.84	6.0
Germany	6.8	-3.6	-0.2		25.0	0.84	6.0
Greece	-3.7	-5.8	0.8		-37.0	0.84	6.0
Italy	3.2	-11.8	0.8		-52.0	0.84	6.0
Netherlands	11.0	-1.9	-0.2		17.0	0.84	6.0
Spain	1.3	-8.7	0.5		6.0	0.84	6.0
Czech Republic	2.6	-5.6	1.8		108	21.5	10.3
Denmark	7.4	-1.3	0.1		40.0	6.27	5.9
Norway	2.5	-1.0	1.4		77.0	8.61	12.1
Poland	2.2	-6.9	1.6		26.0	3.81	3.9
Russia	3.7	-1.7	7.2		115	73.0	-2.5
Sweden	4.3	-2.3	0.3		40.0	8.55	9.0
Switzerland	7.4	-4.0	-0.2		24.0	0.92	3.3
Turkey	-2.2	-2.8	16.7		523	8.69	-21.2
Australia	1.6	-5.9	1.5		62.0	1.33	9.0
Hong Kong	3.6	-4.1	1.2		56.0	7.77	-0.3
India	-1.0	-7.2	6.0		16.0	74.3	1.6
Indonesia	-0.1	-5.7	6.5		-64.0	14,500	-1.5
Malaysia	4.7	-5.9	3.3		23.0	4.15	3.4
Pakistan	-2.0	-7.1	9.9	†††	120	158	6.5
Philippines	-1.1	-7.6	4.0		122	48.8	2.1
Singapore	17.8	-4.4	1.6		68.0	1.34	4.5
South Korea	4.6	-3.2	2.1		72.0	1,126	6.8
Taiwan	15.5	-0.6	0.4		-3.0	27.9	5.9
Thailand	3.7	-6.5	1.5		44.0	32.0	-3.6
Argentina	1.9	-6.0	na		na	95.7	-26.4
Brazil	-0.2	-7.3	9.1		242	5.02	9.4
Chile	-0.2	-7.1	4.5		212	728	12.7
Colombia	-3.4	-8.9	7.1		137	3,734	0.1
Mexico	1.4	-2.8	7.0		113	19.9	16.1
Peru	-0.2	-5.8	5.3		155	3.83	-7.6
Egypt	-3.1	-8.1	na		na	15.7	2.9
Israel	3.8	-7.7	1.1		48.0	3.26	6.1
Saudi Arabia	2.8	-2.6	na		na	3.75	nil
South Africa	1.5	-9.4	8.9		-36.0	14.3	21.7

Source: Haver Analytics. §§5-year yield. †††Dollar-denominated bonds.

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Markets

In local currency	Index Jun 30th	% change on: one week	% change on: Dec 31st 2020
United States S&P 500	4,297.5	1.3	14.4
United States NAScomp	14,504.0	1.6	12.5
China Shanghai Comp	3,591.2	0.7	3.4
China Shenzhen Comp	2,466.2	1.6	5.9
Japan Nikkei 225	28,791.5	-0.3	4.9
Japan Topix	1,943.6	-0.3	7.7
Britain FTSE 100	7,037.5	-0.5	8.9
Canada S&P TSX	20,165.6	nil	15.7
Euro area EURO STOXX 50	4,064.3	-0.3	14.4
France CAC 40	6,507.8	-0.7	17.2
Germany DAX*	15,531.0	0.5	13.2
Italy FTSE/MIB	25,102.0	0.1	12.9
Netherlands AEX	729.5	0.6	16.8
Spain IBEX 35	8,821.2	-1.5	9.3
Poland WIG	66,067.2	-1.0	15.9
Russia RTS, $ terms	1,653.8	-0.7	19.2
Switzerland SMI	11,942.7	0.4	11.6
Turkey BIST	1,356.3	-3.3	-8.2
Australia All Ord.	7,585.0	0.4	10.7
Hong Kong Hang Seng	28,828.0	nil	5.9
India BSE	52,482.7	0.3	9.9
Indonesia IDX	5,985.5	-0.8	0.1
Malaysia KLSE	1,532.6	-2.1	-5.8
Pakistan KSE	47,356.0	-1.1	8.2
Singapore STI	3,130.5	0.4	10.1
South Korea KOSPI	3,296.7	0.6	14.7
Taiwan TWI	17,755.5	2.4	20.5
Thailand SET	1,587.8	-0.3	9.6
Argentina MERV	62,372.0	-5.6	21.8
Brazil BVSP	126,801.7	-1.3	6.5
Mexico IPC	50,289.8	0.2	14.1
Egypt EGX 30	10,256.6	-0.2	-5.4
Israel TA-125	1,764.6	-0.2	12.5
Saudi Arabia Tadawul	10,984.2	0.8	26.4
South Africa JSE AS	66,248.8	0.7	11.5
World, dev'd MSCI	3,017.2	0.6	12.2
Emerging markets MSCI	1,374.6	1.0	6.5

US corporate bonds, spread over Treasuries

Basis points	latest	Dec 31st 2020
Investment grade	111	136
High-yield	336	429

Sources: Refinitiv Datastream; Standard & Poor's Global Fixed Income Research. *Total return index.

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Commodities

The Economist commodity-price index

2015=100	Jun 22nd	Jun 29th*	% change on month	% change on year
Dollar Index				
All Items	181.8	181.9	-3.7	70.4
Food	129.0	128.9	-6.8	43.7
Industrials				
All	231.0	231.4	-2.0	88.7
Non-food agriculturals	151.0	151.7	-8.5	68.3
Metals	254.8	255.1	-0.7	92.8
Sterling Index				
All items	199.4	200.7	-1.3	52.2
Euro Index				
All items	169.4	169.5	-0.9	60.8
Gold				
$ per oz	1,780.8	1,758.5	-7.4	-1.4
Brent				
$ per barrel	74.9	75.0	6.6	81.9

Sources: Bloomberg; CME Group; Cotlook; Refinitiv Datastream; Fastmarkets; FT; ICCO; ICO; ISO; Live Rice Index; LME; NZ Wool Services; Thompson Lloyd & Ewart; Urner Barry; WSJ. *Provisional.

The Economist

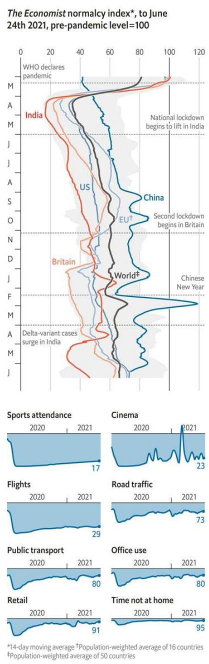
Graphic detail

Back to the future

Our normalcy index shows life is halfway back to pre-covid norms

Activity tightly regulated by governments has been disrupted more than has behaviour reflecting individuals' choices

Jul 3rd 2021



Keep track of which countries are returning to pre-pandemic life with our [interactive normalcy tracker]()

IN 1920 WARREN HARDING won America's presidency promising a "return to normalcy", following the first world war and the flu pandemic in 1918-20. A century on, his goal sounds more appealing than ever. It also looks frustratingly hard to achieve.

In theory, vaccines should end the covid-19 pandemic. Already, one-third of people aged 12 and over have at least one shot. Yet many places are sliding backwards. Australia, Bangladesh and Thailand have all imposed new restrictions. Even Chile, where 77% of over-12s have a vaccine dose, locked down its capital last month.

Such cases do not cast doubt on vaccines' effectiveness. In countries like Israel, where most adults have two jabs from Pfizer, life now goes on much as it did in 2019. But in other places, even with the end in sight, normalcy remains a long way off. And differences in vaccination rates do not fully explain why some countries enjoy more of it than others.

Covid-19 has changed life in too many ways to count. Yet any effort to assess how much its impact has receded requires a measure of what normalcy is. We have thus devised a normalcy index, tracking three types of activity. The first is travel, split between roads, flights and public transport. Next comes leisure time, divided among hours spent outside of homes, cinema revenues and attendance at sporting events. The last is commercial activity, measured by footfall in shops and offices.

For each variable, we obtained daily or weekly data for 50 countries, which account for 76% of the world's population and 90% of its GDP. We combine them by measuring the change in each factor from its pre-covid level; averaging the changes in each category; and then averaging the grouped results together. Our global figure weights each country by its population.

We calculate the index relative to a pre-covid norm of 100. When the pandemic was declared in March 2020, China had already locked down, bringing the index down to 80. As the disease spread, the index reached a low of 35. Since last July it has oscillated around 60. It now sits at 66, implying that only half of the disruption caused by covid-19 has been reversed.

Most Western countries are close to this average. America is at 73, the EU 71, Australia 70 and Britain 62. Elsewhere, the range is wider. Both Hong Kong and New Zealand, the leaders at 96 and 88, enjoy nearly full normalcy. In contrast, since April Malaysia's value has fallen from 55 to 27.

Of the eight activities in the index, three were subject to legal orders that ground them to a halt last March: cinemas, sporting events and flights. All three remain 70-85% below the pre-covid baseline today.

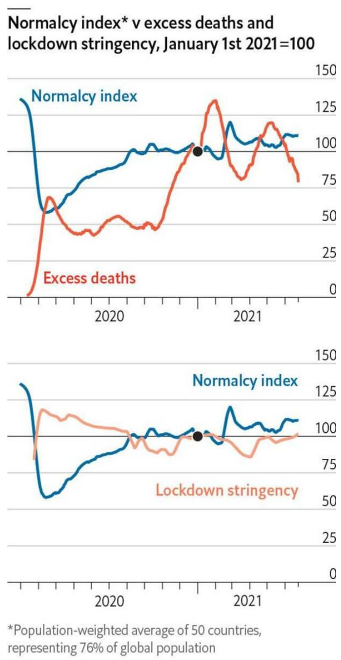
Although many cinemas are now open, studios have begun selling content directly to streaming services (see International). Save for a film-going boom in China during New Year festivities in February—when week-on-week revenues rose by 3,600%—the industry has languished between 20% and 40% of its takings from 2019.

The picture for sport and air travel is a bit rosier. At sporting events, capacity limits have kept crowds at around 20% of their pre-covid baseline. Similarly, there are just 30% as many planes in the sky today as in 2019, owing largely to travel bans and quarantine rules. However, America is an encouraging exception. With robust demand for domestic flights and mass vaccination making attendance limits unnecessary, air travel and baseball stadiums there are at 70% and 90% of their levels from 2019.

Although many governments have required people to stay at home, such rules are hard to enforce. Last April, even though half of the world's population was subject to such orders, the global average of time spent outside homes fell by only 15%. Compliance rates appear similarly low today: around 14% of people are not allowed to venture out, yet time not at home is just 5% below the baseline of 2019.

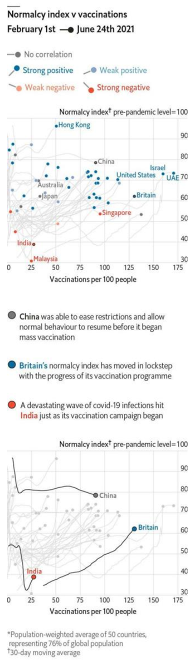
The final variables in our index depend mostly on choices by individuals or firms. All have largely recovered, suggesting that people are clawing back as much normalcy as governments will allow. Public transport, which cities generally kept in service, is now up to 80% of its pre-covid level. Driving is at 73%; visits to retail stores are at 91%; and attendance at offices is at 80%. Because many office employees can work remotely, the shortfall in this category probably reflects telecommuting more than unemployment.

The country-level values of our index vary widely, from 16 in Peru in April 2020 to 97 in Vietnam the previous month. A few patterns explain most of the differences, both between countries and over time.



Logically, places facing the worst outbreaks tend to be the least normal. Holding other factors constant, a one-standard-deviation increase in a country's official covid-19 deaths during the preceding month reduces normalcy by four points. Similarly, tightening lockdown rules by a standard deviation lowers normalcy by five points.

However, it takes time for behaviour to reflect the true spread of covid-19. Normalcy tracks official death tolls from the previous month—which could reflect infections from 60 days ago—much more closely than current case counts. It is also linked only weakly to indirect measures of uncounted cases, such as the share of tests that are positive or changes in deaths from any cause. And although vaccines increase normalcy, they do so only once they have had enough time to reduce deaths. Life remains abnormal in most countries where covid-19 outbreaks took off before enough people could obtain full protection.



Normalcy is also influenced by factors unrelated to the pandemic. In general, Asian countries have been less normal than you would expect. Counterintuitively, behaviour has changed more in places with robust civil liberties than in otherwise similar but less free countries. This would make sense if people in such places are unusually likely to trust their leaders, or if they feel more invested in fellow citizens' well-being. And richer countries, where lots of people can work from home, are more abnormal than poorer ones.

Our normalcy index does not track economic recovery closely. Some behaviour, such as air travel, is likely to recover eventually. Other variables, like cinema-going or working from home, could signal an enduring change. We will update our index online every week to keep track of the world's path towards normalcy.■

Our [interactive normalcy index] tracks which countries are returning to pre-pandemic life. To keep up with the rest of our coverage of the pandemic, visit our coronavirus [hub]. Some of our covid-19 coverage is free for readers of The Economist Today*, our daily [newsletter].*

Sources: afltables.com; baseball-freak.com; baseball-reference.com; Blavatnik School of Government, University of Oxford; Box Office Mojo;

Google; hockey-reference.com; JHU CSSE; Our World In Data; TomTom; pro-football-reference.com; UN ICAO; Transfermarkt; ultimatealeague.com; Wind; *The Economist*

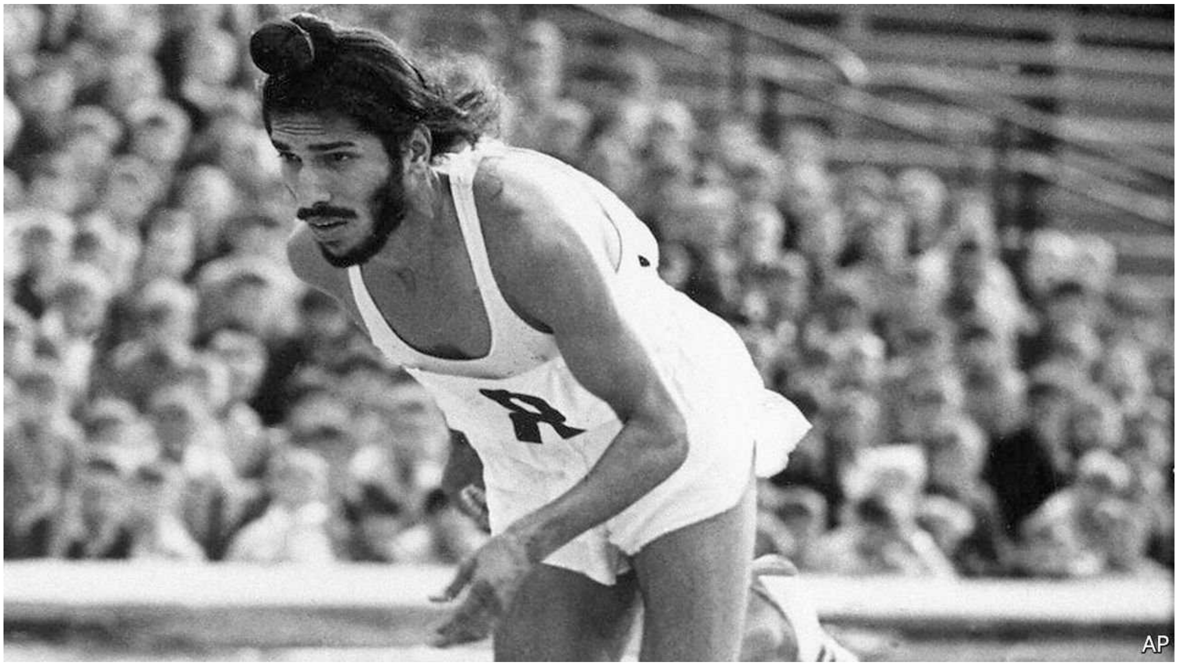
Obituary

Running as religion

Milkha Singh died on June 18th

India's champion sprinter, known as "The Flying Sikh", was 90 or 91

Jul 3rd 2021



BEFORE HIS best race, at the British Empire and Commonwealth Games in Cardiff in 1958, Milkha Singh was under far too much stress to sleep. That day he prayed, touched his forehead to the ground and promised to do his best; but the honour of India, he told God, was in His hands. This was, after all, the new India, independent of Britain for only a decade, striving to win gold in games where, as a part of empire, it had never done before.

On the track for the 440-yard sprint, Malcolm Spence of South Africa, the world-record holder, was the man he was watching. But if he ran as he planned to, Spence was no danger. He shot from the start as fast as possible, led in the final straight, thought Spence was nowhere near but then, in a second, sensed him over his shoulder. At the line, with six inches between them, Spence failed to pass him, and he won the gold. The stadium erupted. As the Indian national anthem was played and the tricolour ascended, it seemed that 100,000 Englishmen rose to their feet. The sister of Jawaharlal

Nehru, the prime minister, hugged him afterwards, telling him that he had made India the pride of the world.

Those Britishers who stood to salute him, however, knew almost nothing about him. To them he was just an exotic person, a village boy with a Sikh top-knot who ran with his arms gracefully waving and usually went barefoot, though for international meetings he wore shoes. They did not know that, for him, running was not a sport. It was everything, his religion, his beloved, life.

As a child, a farmer's son, he ran to escape the poverty of Gobindpura, in Punjab, and to get an education. The school was 10km away, across sands that burned so hot in summer that he and his friends would have to jump between cooling pads of grass. But at the age of 14 or 15 in the year of Partition, 1947, he ran to save his very life. The state of Punjab was being split then between India and Pakistan, and crowds of Muslim outsiders—not the gentle Muslims he knew as neighbours—suddenly arrived in the village. They began killing, leaving the mutilated bodies for dogs, and ordered his family to convert to Islam or die. One night they came, with swords and axes, to slash his parents' throats and hack his siblings to death. His father, dying, shouted: "Run, Milkha, run! *Bhaag, Milkha, bhaag!*" He raced for the forest, crying.

There followed a time of scrapes, when he hopped trains as a refugee, shoeless and starving, and became a petty thief, running from the police. Eventually the army took him on. There he discovered running of a new kind, with coaching, races over set lengths, and prizes. The first race he won rewarded him with nourishment, a daily glass of milk. The first track he saw, decked with flags, enchanted him. In his first cross-country ("What is cross-country?") he got stomach cramps and sat down whenever they gripped him, but still came sixth out of 400 runners.

Sixth was good; first was better. So began the hard, necessary work, six hours a day. He ran in fatigue time, when other *jawans* were doing chores, and at night, when they were playing cards. He laboured up steep hillsides and across loose sand to build his leg muscles, and honed his upper body with weights. He ran until he filled a bucket with his sweat, until he urinated blood or collapsed with exhaustion and had to go to the hospital. He took his body to the limit out of pride, and for India. His coaches and his doctors remonstrated every time, but it was no good. He would imagine a crowded stadium, the wild applause, his burst across the finish line, the Indian flag rising—and exhaust himself all over again.

Iron discipline paid off. He took four golds at the Asian games, besides the gold in Cardiff, and won more than 70 of his 80 international races. In 1956, at his first Olympics in Melbourne, he was eliminated in the heats but did not waste the trip. He asked the American gold medallist in the 400 metres, Charles Jenkins, to share his training schedule, and for the next four years a chit of paper with Jenkins's world-record time, 46.7 seconds, was propped beside his picture of Guru Nanak as the focus of his prayers.

In 1960, at the Rome Olympics, his time was 45.6. It was an Indian national record but not, alas, the world record, because he did not win that 400-metre sprint. Though he led for the first 200 metres or so, he then slowed, glanced back, and could not regain his rhythm. Three runners passed him. It was Spence who, by 0.1 of a second, pipped him for the bronze. It was the worst day of his life, excepting only that day when his parents had been killed. Even the national record he had set then was electrically retimed to 45.73, and in 1998 a policeman broke it. By then he had long retired from competition, unable ever to forgive himself for that lapse in Rome.

He did, however, manage to forgive others. In 1960 he was invited to Lahore for a meeting that would pit him against Pakistan's champion sprinter, Abdul Khaliq. At first, he refused to go. How could he? His childhood home was there now, still soaked with blood. It was Nehru who convinced him that there needed to be friendship between the two new, raw nations, so he went. The moment he crossed the border, to his surprise, he was welcomed with flags and flowers. And when he won his race, the Pakistani prime minister whispered to him, in Punjabi, that he had not run that day; he had actually flown. "Pakistan bestows on you", he said, "the title of 'The Flying Sikh'."

He took it up joyfully, and so did his fans. It gave wings to his celebrity, which peaked in 2013 with a top-grossing Bollywood film of his life. In retrospect "The Flying Sikh" was perhaps his favourite honour, though he had also received the Padma Shri, India's fourth-highest for civilians. (He was scornful of more common awards, like the Arjuna, that were handed out to almost anyone like *prasad* in a temple.) As an athlete, he had run for nothing more than his country and his countrymen's applause. And, despite everything that had happened, he had two countries. Wherever he ran, he said, both India and Pakistan ran with him. It was as if in Milkha Singh, for brief seconds, they found unity again. ■

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