Bloomberg Businessweek

June 21, 2021

- Hello from Bitcoin Beach 62
- Ready for a brain helmet? 56
- Criminals love commodities 32

AIRBNB'S NIGHTMARE

Violent crimes, millions of dollars in settlements, and a stressed-out team that keeps the bad things quiet 48

Tech Goes Green

Giving New Life to Old Smartphones

What happens to old Galaxy smartphones once consumers upgrade to the newest model? There's a chance they've been upcycled to be part of a medical exam platform or connected home device.

The benefits of upcycling are numerous. Not only does it keep materials out of landfills, but it can also reduce the cost of creating something new. When Samsung Electronics wanted to find a way to reduce e-waste by giving older devices a new life, its mobile business division and in-house incubator, C-Lab, came up with several upcycling programs that transform old smartphones into devices as varied as a medical exam system and a baby monitor.

Phones for Medical Use

Early diagnosis is critical to halting the progression of severe eye conditions that can lead to blindness. Yet, in Vietnam, many people have limited access to eye exams. That's partly what drove Samsung, together with Yonsei University Health System (YUHS) in Seoul and the International Agency for the Prevention of Blindness, to create a fast and affordable eye exam

20K+

examinations administered

system that can detect early warning signs of various eye diseases.

The system, called the EYELIKE fundus camera, uses a Galaxy smartphone camera to capture images of the eye, then connects to an app that uses an AI-based algorithm to help diagnose ophthalmic conditions such as diabetic retinopathy, glaucoma or age-related macular degeneration, and suggests treatment plans.

The platform "created an affordable medical device that was just as capable as a fundus camera used by medical professionals," says Dr. Sangchul Yoon of YUHS.

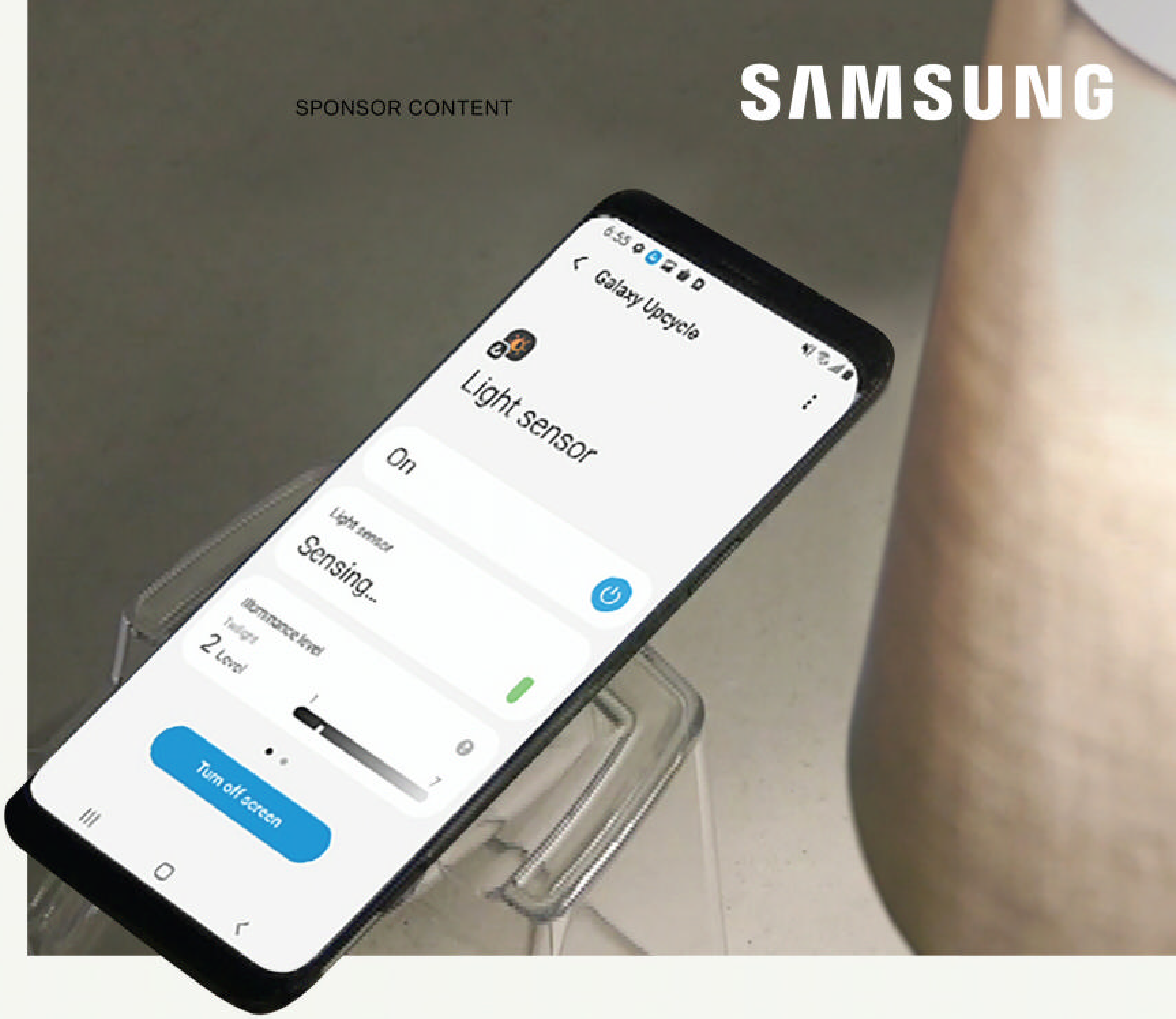
For the rollout in Vietnam, Samsung partnered with local health centers and NGOs to provide 90 such systems. More than 20,000 people got examinations, and 1,500 were diagnosed with eye disease and were referred for treatment and preventive care. The program has since expanded to India, Morocco and Papua New Guinea.

"The images allow for early screenings for eye diseases, improving the quality of care for low-income patients and minimizing the number of people suffering from visual impairment caused by eye diseases," says Dr. Lê Đuc Khiên at the Vinh Thanh Commune Health Center in Vietnam. The health center organized screenings for more than 250 people in the community and successfully caught a few early eye disease cases.

Eye exams are just the start. Samsung is now looking to create devices that can screen for other diseases, such as cervical cancer. The company, along with YUHS, is upcycling Galaxy devices to create a smartphone-based colposcope that can improve access to quality health care. The system collects images of the cervix and enables non-gynecologists to screen and diagnose cases of cervical cancer. It's also priced significantly lower than conventional devices.

New Uses at Home

Samsung is also helping consumers upcycle their devices to create their own connected devices. Most retired smartphones still connect to the internet and have a working built-in camera and light and sound sensors. Samsung's Galaxy Upcycling at Home program lets users transform their device into a childcare monitor or pet monitor after a simple software update. If the device hears a baby crying, a dog barking or a knock on the door, it can send an alert to the user's smartphone. If the user chooses, the detected sound can be recorded and sent along with the alert. People can also set the device to automatically turn on the lights when it gets dark. To conserve battery life, the software update optimizes battery use.



"Through Galaxy Upcycling at Home, users can join our journey toward a more sustainable future."

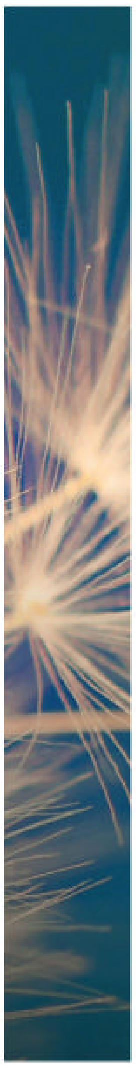
– Sung-Koo Kim
Samsung Electronics

"The program transforms Galaxy devices into SmartThings devices and demonstrates the power of our intelligent IoT platform to broaden the possibilities of what users can do with their old phones," says Jaeyeon Jung, VP & Head of the SmartThings Team, Mobile Communications Business at Samsung Electronics.

The upcycling programs are part of Samsung's commitment to the United Nations' 2030 Agenda for Sustainable Development. It's also just the start: Samsung plans to expand the program to other countries, and with additional creative reuses.

"The key to upcycling is to enable solutions that transform old technology into something new by adding value," says Sung-Koo Kim, VP of the Sustainability Management Office, Mobile Communications Business at Samsung Electronics. "We are committed to integrating sustainable practices into our day-to-day lives, and through Galaxy Upcycling at Home, users can join our journey toward a more sustainable future."

INVESTING TO ADVANCE TECHNOLOGY IN TRANSPORTATION AND LOGISTICS



As an industry leader engineering the future of transportation and logistics, Ryder has long been in the driver's seat with a forward-thinking mindset for the impact emerging trends have on supply chains. This holds true with RyderVentures, the company's newly launched venture capital fund. With it, Ryder is investing $50 million over the next five years in start-ups that are tackling disruption in supply chain and transportation by developing new technologies.

In an industry traditionally fraught with manual processes, technology is disrupting operations in every sector. Ryder recognized the time was ripe to launch RyderVentures, and help find and unleash disruptive technologies that drive value. Additionally, Ryder's footprint that includes more than 63 million square feet of managed warehouse space, more than 235,000 vehicles, $7 billion in freight under management, and 50,000 customers, gives start-ups a perfect place to pilot and perfect these technologies.

Ryder has a rich history in leveraging start-ups that help make businesses and, ultimately, its customers' businesses better and more competitive. In 2018, the company launched its own disruptive technologies COOP® by Ryder, a platform for commercial truck sharing that connects lenders and borrowers alike. And, in 2020, it launched RyderShare™ a collaborative logistics platform that breaks down industry silos and gives visibility to all products moving across the supply chain.

Becoming the Disruption

With a growing list of emerging technologies such as blockchain, 3D printing, machine learning, AI, asset sharing, and autonomous and electric vehicles, Ryder took a focused approach at picking what areas of disruption it would target.

Ryder pinpointed its focus on e-commerce fulfillment, asset sharing, next-generation vehicles, automation, and data analytics. While these areas may seem broad, each has a huge impact and opens up a world of possibilities to what Ryder can do to create value for its customers.

Since the launch of RyderVentures in October 2020, Ryder has invested in Baton, a logistics technology platform that eliminates dwell and detention for long-haul carriers, and in the long-term aims to pave the way for the adoption of autonomous vehicles in trucking. Baton's technology platform enables long-haul truckers to drop off and pick up loads at Baton drop zones in major metro areas, and then a network of local fleets does the first and final mile of delivery to warehouses. This would eliminate the wasted hours associated with detention, in-transit dwell, and inter-appointment dwell for long-haul trucks.

RyderVentures also invested in SmartHop, a Miami-based artificial intelligence-powered platform for small trucking companies. Its solution helps owner-operators compete with the big carriers by reducing operational costs, streamlining load booking and providing access to the vast broker networks previously only available to large carriers. SmartHop's platform targets the estimated 91% of U.S. trucking companies that operate six or fewer trucks.

RyderVentures has also invested in three more companies that have yet to be announced.

With the initial success of RyderVentures, Ryder continues to solidify its position as the future of logistics. The company is able to identify early stage technologies that address customers' pain points, and work alongside the start-ups developing the technologies to speed the solutions to market. This investment in the future will help disrupt the disruption coming to the industry, and drive value for start-ups creating the technology to the businesses using it.


EVER
INNOVATING
Investing in the future of supply chain logistics & transportation
In business, new companies, technologies, and innovation are the seeds that sprout growth for the future. These seeds need to be nurtured to branch out and make a strong impact in the industry. At Ryder, through our venture capital fund, RyderVentures, we're creating an environment for these companies to grow. Together we will dramatically advance the industry with solutions linked to asset sharing, e-commerce fulfillment, next generation vehicles, data & analytics, and automation. Discover how Ryder can invest in your business at ryder.com/ryderventures.
Ryder®
Ever better.™
SUPPLY CHAIN | DEDICATED TRANSPORTATION | FLEET MANAGEMENT SOLUTIONS

◀ Bryan Johnson, a 43-year-old with the body of a 30-year-old, says brain data from his helmets could unlock the next health revolution

PHOTOGRAPH BY DAMIEN MALONEY FOR BLOOMBERG BUSINESSWEEK

FEATURES

CORRECTION

The caption accompanying "The Glow of Summer" (Pursuits, June 14) should have identified Twinkly as the maker of the light tubes.

How to Contact *Bloomberg Businessweek*
EDITORIAL 212 617-8120 ● AD SALES 212 617-2900, 731 Lexington Ave. New York, NY 10022 ● EMAIL bwreader@bloomberg.net ● FAX 212 617-9065 ● SUBSCRIPTION CUSTOMER SERVICE URL businessweekmag.com/service ● REPRINTS/PERMISSIONS 800 290-5460 x100 or email businessweekreprints@theygsgroup.com ● Letters to the Editor can be sent by email, fax, or regular mail. They should include the sender's address, phone number(s), and email address if available. Connections with the subject of the letter should be disclosed. We reserve the right to edit for sense, style, and space ● Follow us on social media ▶ FACEBOOK facebook.com/bloombergbusinessweek/ ▶TWITTER @BW ▶ INSTAGRAM @businessweek

■ COVER TRAIL

How the cover gets made

❶

"So this week we have a story about Airbnb—"

"Oh, good! A summer travel story!"

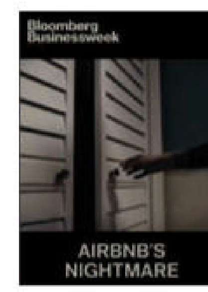
"Yeah, not quite. It's about how they handle the really dark stuff guests and hosts sometimes encounter."

"Like that joke of a listing I booked once?"

"Think violent crime."

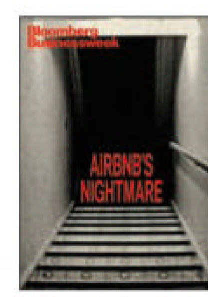
"No dearth of imagery to draw from there…"

❷



"Spooky, but a closet is maybe too specific."

❸



"Terrifying! I don't want to go down those stairs! But this is almost too much, we're not talking kill rooms here."

"Ah. More *Scream*, less *Silence of the Lambs*?"

"Exactly."

"I think I know the perfect image."

Cover: Illustration by Justin Metz

ECONOMICS: PHOTOGRAPH BY XYZA CRUZ BACANI FOR BLOOMBERG BUSINESSWEEK. CLOSET: INDIEGOGO. BASEMENT: ERIC BOYLE/YOUTUBE

● Global coronavirus cases have topped 176 million and deaths have passed 3.8 million, while more than

2.4b

vaccine doses have been administered. The U.K. extended its final lockdown rules by four weeks to fight the rapid spread of the delta variant. Now the dominant strain in the country, it was first discovered in India.

● Naftali Bennett replaced Benjamin Netanyahu, who's on trial for corruption, as Israel's prime minister.

The Jewish nationalist joined centrist Yair Lapid to form a ruling coalition. Commanding only 61 of the Knesset's 120 seats, the coalition also includes an Arab party for the first time in the country's history. Netanyahu denies the allegations.

● A Greenpeace protester glided into Munich's stadium as it was hosting a Euro 2020 match between France and Germany on June 15. Two people were hurt when the man lost control of his paraglider. France went on to win 1–0.

● The U.S. and the EU overcame a 17-year trade dispute involving subsidies given to Boeing and Airbus. The conflict led to duties on $11.5 billion of exports. Under the deal, all passenger aircraft will be required to be developed without subsidies.

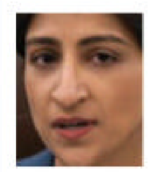
● Together, China, France, India, Israel, North Korea, Pakistan, Russia, the U.K., and the U.S. possessed

13,080

nuclear warheads at the start of 2021, according to the Stockholm International Peace Research Institute. While that's down from 2020, the number of operational warheads has grown slightly.

● Aung San Suu Kyi, the ousted leader of Myanmar, appeared in court on June 14 as her trial began on charges brought by the military junta that seized power in February. Her lawyer has described the allegations, which include violating Covid restrictions, as groundless.

● Lina Khan was



named chair of the Federal Trade Commission on June 15.

The 32-year-old, a prominent advocate of an aggressive antitrust crackdown on technology giants, will now lead antitrust enforcement in the U.S.

● "It would be better if disproportionate wealth were not concentrated in a small number of hands."

MacKenzie Scott, ex-wife of Jeff Bezos, said on June 15 that she's given an additional $2.7 billion to 286 charitable organizations. That brings her total donations to $8.5 billion in less than a year, likely a record one-year distribution by a living person.

● The U.S. Federal Reserve on June 16 decided to hold interest rates near

0%

while signaling it expects two increases by the end of 2023. Fed officials are projecting a faster-than-anticipated pace of tightening as the economy recovers.

● Emirates airline got a $3.1 billion cash infusion from the government of Dubai after recording its first annual loss in more than three decades.

The world's largest airline for international travel was forced to idle most of its A380 jumbo jets when long-haul flights fell during the pandemic.

PROTEST: IMAGO/ZUMA PRESS. KHAN: GRAEME JENNINGS/AP PHOTO. SCOTT: CLEMENS BILAN/EPA-EFE/SHUTTERSTOCK

Alzheimer's Drug Furor Shows Two Failures in The U.S. Health System

Patients and their families may see hope in the news that the U.S. Food and Drug Administration has approved a drug to slow the pace of Alzheimer's disease. Aducanumab is the first medicine authorized to treat what might be an underlying cause: clumps of a protein, amyloid beta, that accumulate in the brain. Yet the evidence from clinical trials that the drug reduces Alzheimer's is incomplete; it may be only minimally effective, if it works at all. The FDA's expert panel strongly objected to the drug's approval.

All of which makes the agency's announcement this month perplexing and wrong. It threatens to mislead millions of Alzheimer's patients. At the same time, because Biogen Inc. plans to price the drug at $56,000 a year for the average patient, it also stands to cost Medicare and other insurers a bundle. This underlines the need for two kinds of reform. First, the FDA needs to rethink its processes for approving drugs. Second, the rules controlling how Medicare chooses and pays for medicines need a thorough overhaul.

The FDA has failed to fully explain why it overruled its advisory panel on aducanumab. The agency didn't deny that the clinical trial evidence was poor. It simply ignored the problem and used different reasoning to grant the drug "accelerated approval." To the public, this term suggests urgent endorsement of an especially valuable treatment. In fact, it's a more limited signoff than ordinary approval, indicating that the drug has not proved a "real effect on how a patient survives, feels or functions," in the FDA's words, but nevertheless acts on an underlying disease process in a way that might predict such a benefit.

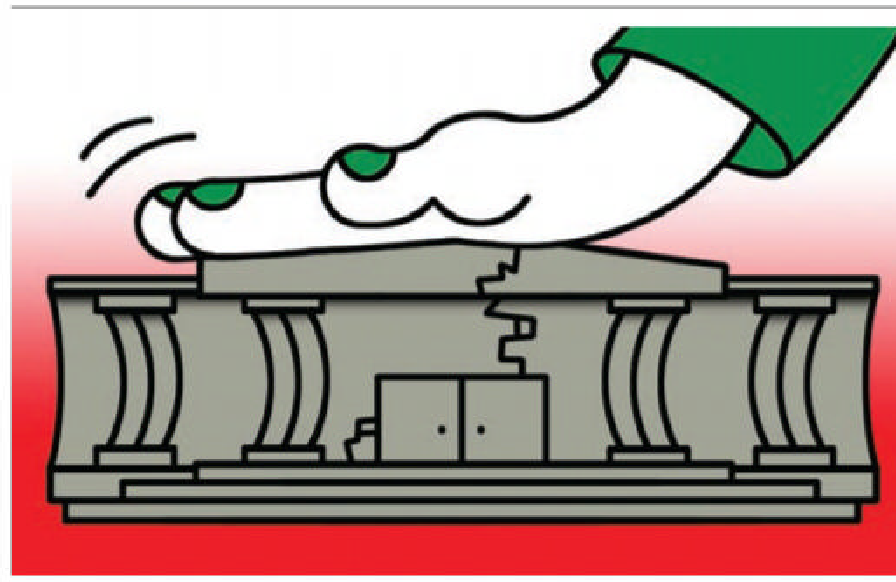
The agency has asked Biogen to conduct another trial within eight years—and says if no real benefit is seen, it may withdraw approval. That won't be easy. Now that the FDA seems to have said aducanumab works, it will be difficult to recruit subjects for a trial in which half the patients are given placebos. For this reason alone, the essential first step is for the FDA to help patients understand that accelerated approval doesn't mean the drug is necessarily any good.

Despite that, Biogen will sell aducanumab—under the brand name Aduhelm—at an exorbitant cost. An estimated 1.2 million to 1.4 million Americans with Alzheimer's who have mild cognitive impairment and plentiful amyloid deposits stand to get the medicine. It would be absurd to spend so much on a drug that remains essentially unproven. Yet that's what Medicare is poised to do. It's forbidden to negotiate prices, and it's expected to pay for medicines the FDA approves unless a special exception is made. Both of those strictures should be changed. Legislation championed by House Speaker Nancy Pelosi would give Medicare the negotiating power it now lacks. And if, in addition, Medicare was generally under no obligation to buy drugs before full clinical trials are done, drugmakers would have a powerful incentive to conduct those trials as quickly as possible. In effect, the current arrangement allows pharmaceutical companies to charge and collect high prices until a merely promising drug is proved to be of no use.

The aducanumab story highlights systemic failures in U.S. health care. Some FDA employees worry that the agency has reacted to public pressure by too readily endorsing questionable drugs, including the failed Covid-19 treatment hydroxychloroquine last spring. Maybe so, but the problem is more deeply entrenched than this suggests. The U.S. needs to take a good, hard look at its system for approving and pricing medicines. And Medicare should be freed to exercise intelligent discretion and deploy all the bargaining power at its command.

For more commentary, go to bloomberg.com/opinion

■ AGENDA



▶ Under Pressure

The Fed publishes the results of its annual stress test of the largest U.S. banks on June 24. Lenders that don't pass the analysis of how their portfolios would perform in a downturn can be barred from paying dividends or buying back shares.

▶ The Milken Health Summit on June 22-23 features more than 200 online speakers. They'll discuss such topics as vaccine development, pandemic prevention, and long-term care.

▶ At Softbank's June 23 annual meeting, founder Masayoshi Son will speak to shareholders. With the implosion of Greensill Capital and startup Katerra, it's been a tough year.

▶ New York's mayoral primaries, the city's first to use a ranked-choice voting system, will take place on June 22. The winners will advance to the general election on Nov. 2.

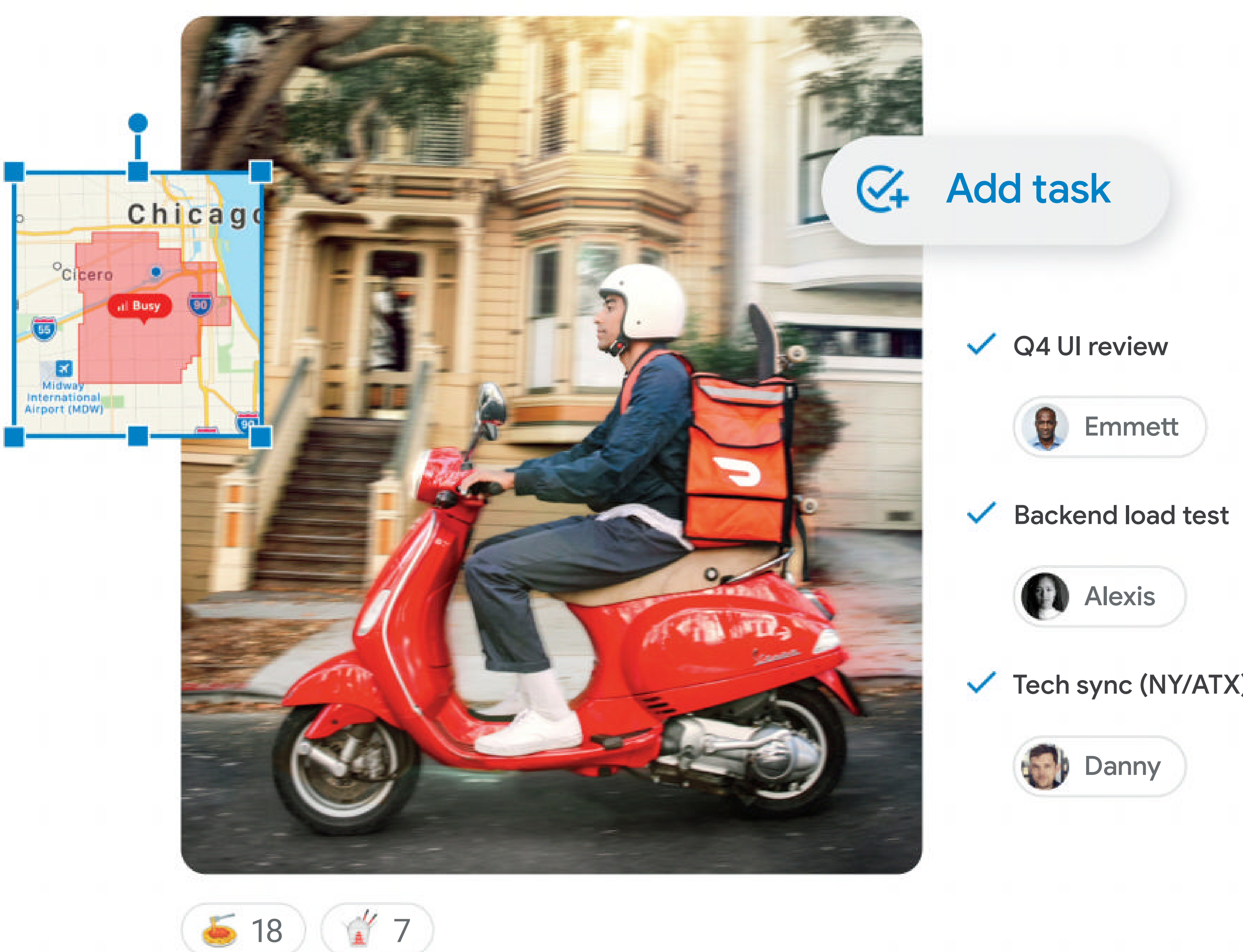
▶ Germany's CDU votes on its final campaign platform on June 21-22. The party hopes to remain in power after September's election, when Chancellor Angela Merkel steps down.

▶ Former Minneapolis police officer Derek Chauvin, convicted in April of murdering George Floyd, will be sentenced on June 25. He faces several decades in prison.

▶ The Tour de France sets off on June 26 in Brest on the Atlantic coast. Among those on the starting line will be defending champion Tadej Pogacar from Slovenia.

ILLUSTRATION BY FRAN CABALLERO

How DoorDash kept delivering during lockdown



We Owe You One, Xi

● China has awakened U.S. politicians in both parties to the need for more state intervention in the economy

● By Michael Schuman

With the Chinese government oppressing Uighurs in Xinjiang, jailing democracy advocates in Hong Kong, and harassing Taiwan, gratitude isn't something you'd think the U.S. owes it right now. But credit should go where it's due. Americans should give their most threatening competitor their heartfelt appreciation—for fixing U.S. economic policy.

The U.S. Innovation and Competition Act, co-sponsored by Senate Majority Leader Chuck Schumer and Republican Senator Todd Young of Indiana, passed the Senate on June 8 by a 68-32 vote. It's known as the "China bill" for good reason: It was inspired and made possible by Beijing. The legislation mimics aspects of the Chinese state-led economic model, with $250 billion to fund scientific research and support semiconductor manufacturing. Only China's rise and hostile foreign policy, and the fear and concern they're fomenting in Washington, could have bonded otherwise irreconcilable Democrats and Republicans into bipartisan action.

Chinese officials, of course, blasted the bill, though they have no one but themselves to blame. It was probably inevitable that the U.S. and other countries would respond to China's extensive subsidization of cutting-edge industries—including electric vehicles, artificial intelligence, and chips—with similar state programs of their own. Unable to pressure the Chinese into curtailing their largesse through talks or tariffs, the U.S. has effectively decided that if you can't beat 'em, join 'em. A spokesperson for China's Ministry of Foreign Affairs complained that the Senate bill "slanders China's development path." In fact, it offers high praise.

It's also a major breakthrough in U.S. economic policy. China has succeeded where many economists and policymakers have failed: It convinced an ideologically paralyzed Washington that the state can play a positive role in economic progress. U.S. politicians used to believe that. Taxpayer cash helped build the transcontinental railroad, the interstate highway system, and the U.S. semiconductor industry. But since the Reagan Revolution, metaphysical certitude in the free market has dominated policymaking, and state investment in the economy has withered. Anyone who's recently navigated the crumbling New Jersey Turnpike understands the consequences. Yet despite these obvious detriments, many politicians have insisted that every and any economic problem can be solved with a tax break.

Now the state is back. On top of the Senate bill, which heads next to the House of Representatives, President Joe Biden's American Jobs Plan also envisions an activist government, with a China-like $174 billion earmarked to jumpstart the U.S. EV industry. Such lofty, state-promoted goals represent a significant shift from the notion that man cannot outthink the market. Some die-hard conservatives

PHOTO ILLUSTRATION BY 731; PHOTOS: GETTY IMAGES (2) may squirm, but thanks to China, the ideological tide is turning against them.

This shift in U.S. policy reveals China's growing influence in the global economy. Its power has already been felt in trade and technology; now it's entering the critical realm of ideas. For much of the past two centuries, China has borrowed everything from constitutions to dating habits from the Western powers. Modern China is built to a great degree on the imported philosophies of Marxism and capitalism. When the country opened to the world in the 1980s and introduced free-market reforms, its policymakers were heavily influenced by Western economists and economic theory.

Now the flow is beginning to reverse. President Xi Jinping's administration has generally spurned calls for deeper market liberalization in favor of greater state control. Policymakers around the world, meanwhile, have watched China's astronomical ascent and figured Beijing has concocted some kind of special sauce to promote prosperity—a recipe worth copying. The Senate bill is a result.

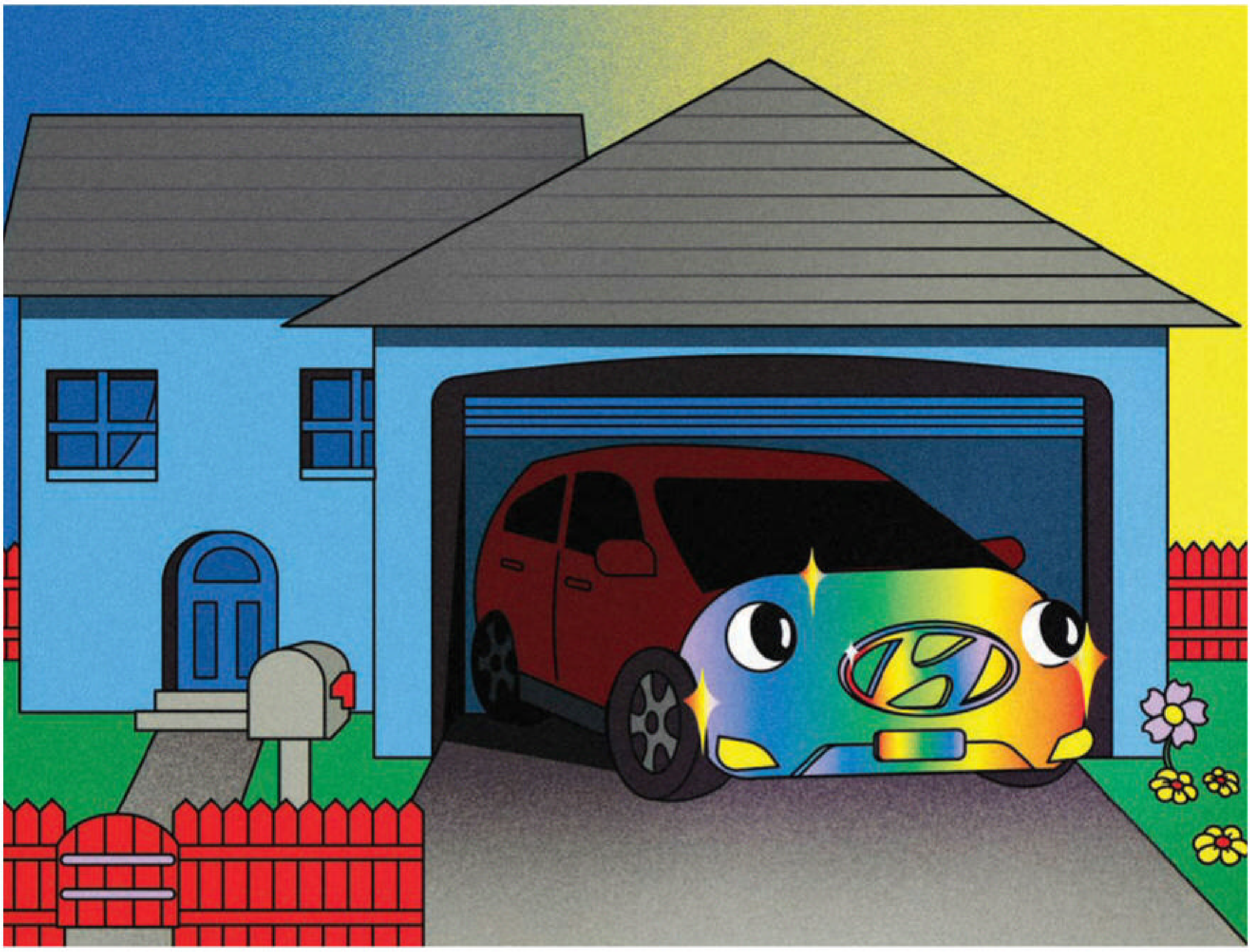
Although China has reminded the U.S. that government action isn't all bad, its example also warns against too much of it. The free-market guys are right that state intervention can distort as well as develop. Despite the persistent American fascination with Asian state-led industrial policies going back to the 1970s, their beneficial effects have often been exaggerated.

In Japan, where government ministries tried to pick winners and nurture them with protection and financing, the record is, at best, spotty, with a long list of failures as well as successes. As with China today, the rise of Japan in the 1980s convinced many U.S. experts that Washington policymakers had to adopt similar state-led industrial policies or else more competitive Japanese companies would continue kicking American butt. Back then, Washington demurred, and based on the divergent fates of the two economies, it's hard to say that wasn't the wise choice.

China's extensive state programs also expose the deep downside to intrusive bureaucrats. Government support may have accelerated the development of certain industries, such as solar panels and electric cars, but it's also generated tremendous excess capacity and waste and produced uncompetitive companies. China's mania for EVs, for instance, spawned 119 manufacturers, according to a November 2020 study by the Center for Strategic & International Studies, obviously an unsustainable horde. Many of the country's most severe economic problems—its high debt, low productivity, property bubbles, and endemic corruption—can be traced to the overly heavy hand of the state. And the verdict is still out on its current batch of industrial policies. It's not at all clear that expensive efforts to create world-beating technologies will succeed. Despite much energy and many billions, China remains as dependent on imported chips as ever.

A better approach for the U.S. would be to avoid the penchant of Chinese technocrats to target certain industries and national champions in favor of setting broad goals that can reshape the economy and its direction. Jake Sullivan, now Biden's national security adviser, and Jennifer Harris, a Roosevelt Institute fellow, explained it well last year in *Foreign Policy*: "Rather than focusing on picking winners in specific sectors, there is an emerging consensus that suggests governments should focus instead on investing in large-scale missions—like putting a man on the moon or achieving net-zero emissions—that require innovations across many different sectors." Biden just happens to have embraced both those projects.

Perhaps we should thank China twice over, for alerting us not only to the potential economic benefits of state intervention but also to its dangers. As Clyde Prestowitz, author of the book *The World Turned Upside Down: America, China, and the Struggle for Global Leadership*, wrote me: "It is a case of the Chinese putting too much faith in the state and the U.S. too little." Both sides have a lot to learn. Ⓑ



Loud and Proud—Except at Home

● Vocal supporters of LGBTQ rights in the U.S., Asian automakers are quieter in their own nations

South Korea's Hyundai Motor Co. has courted the American LGBTQ community for years, backing a film series in 2019 that featured Shangela—a breakout star of the reality show *RuPaul's Drag Race*—and sponsoring the Outfest Fusion QTBIPOC Film Festival for queer artists of color. In April the company unveiled a 60-second commercial, *Chosen Family*, made by a gay-owned production company with a cast including drag queens and a male couple expecting a baby with a pregnant woman.

A longtime sponsor of Glaad's annual media awards, Hyundai received a perfect score in this year's Human Rights Campaign Foundation ranking of the best places for LGBTQ people to work. The company is "proud to partner with organizations that fight for LGBTQ rights every day," said Angela Zepeda, chief marketing officer for Hyundai Motor America, in an April statement.

But while Hyundai may be out and proud in the U.S., at home in Korea—where discrimination against gay and transgender people is widespread—there's little sign of forthright allyship or support for diversity from the automaker. It doesn't promote slick, uplifting commercials starring Korean LGBTQ performers and doesn't offer high-profile sponsorships for Korean LGBTQ organizations.

Hyundai sits out the fight back home, says Lee Dong-geol, general director of Korea Gay Men's ▶

ILLUSTRATION BY EMMA ERICKSON

Edited by James E. Ellis

◀ Human Rights Group Chingusai. "One would think if they believe in acknowledging and working with the LGBTQ community, they would do the same at home, but they know it won't help them at all," he says. "Everyone keeps silent." When asked about its policy for LGBTQ employees, a Hyundai spokesperson said it guarantees the same benefits and opportunities to all employees as required by law. However, South Korea doesn't recognize same-sex marriages or partnerships.

With Pride Month celebrations taking place across the U.S. in June, many companies are trumpeting their commitment to diversity and equality. That's good business: LGBTQ consumers account for about 8% of the country's total disposable income, or $1 trillion, according to a 2019 report by research firm Kearney.

Hyundai isn't the only Asian automaker that's worked hard in America to woo those consumers and make its workplace more inclusive for LGBTQ employees. The U.S. subsidiaries of Toyota Motor Corp. and Subaru Corp. also received perfect scores as employers in HRC's 2021 Corporate Equality Index, which measures which companies are taking concrete steps to implement policies to ensure LGBTQ equality. Neither Ford Motor Co. nor General Motors Co. managed that feat.

Toyota, which in 2018 started hanging a rainbow flag in front of its U.S. headquarters in Plano, Texas, during Pride Month, backs the Trevor Project, an organization that focuses on suicide prevention among LGBTQ youth. In the early months of the Covid-19 pandemic, Toyota North America donated more than $300,000 to gay and trans organizations, acknowledging that members of the community were particularly at risk. Nissan Motor Co. is sponsoring Pride events in Baltimore, Denver, New York, San Francisco, and Washington.

"Japanese companies overseas are trying to abide by the local rules, not Japanese ones, in marketing to LGBTQ+ consumers and supporting LGBTQ+ employees," says Masami Tamagawa, a professor of Japanese at Skidmore College in Saratoga Springs, N.Y., and author of *Japanese LGBT Diasporas*. Their behavior, he says, is summed up by a Japanese expression: "When entering a town, go with the town."

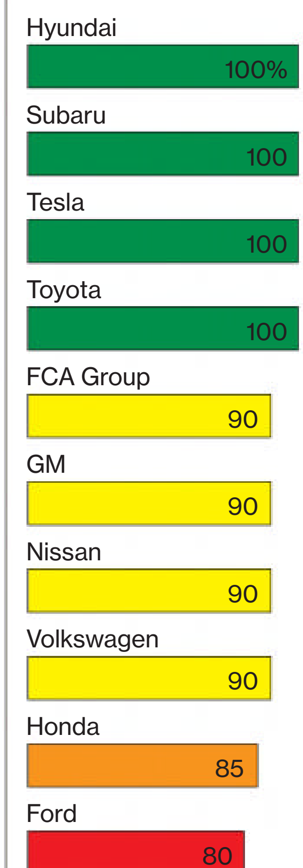
But like Hyundai in Korea, Japanese automakers aren't as supportive of a pro-equality agenda at home, says Gon Matsunaka, founder of Pride House Tokyo, Japan's first LGBTQ center, and president of a group that publishes Japan's Pride Index of employers. "Japan's automakers aren't doing much when it comes to promoting LGBTQ awareness and rights outside of their companies," he says. "In American indexes they're receiving top points for their LGBTQ efforts, but in their own backyard, Japan, there's much less being done."

Subaru America, for example, was a pioneer in marketing to the American LGBTQ community, using gay-friendly advertising long before most other brands. The company first offered domestic-partner benefits to employees in 2000, earlier than many rivals, and in 2009 it won Glaad's award for outstanding corporate responsibility. Subaru sponsors PFLAG, which represents LGBTQ people, family members, and allies; Dining Out for Life, an annual fundraiser for people living with HIV/AIDS in the U.S. and Canada; and other groups supporting the community.

The company has moved much more slowly in Japan. Responding to questions about its policies, a spokesperson pointed to just one initiative: a training session last December for managers to deepen their understanding of LGBTQ issues and learn how to handle cases of harassment. There might soon be some more: "This year, we are considering opening a consultation window for employees and revising our work regulations," Subaru said in an emailed statement.

For now, the automakers' LGBTQ employees in Asia miss out on the support their U.S. counterparts enjoy, but there are signs of progress, albeit slow. Toyota, which in 2002 introduced domestic-partner benefits for same-sex couples in the U.S., last year implemented a similar policy in Japan. Honda

▼ U.S. Corporate Equality Index for LGBTQ workers



◀ A still from Hyundai's commercial featuring Shangela; Subaru at Miami Beach's Pride Festival

HYUNDAI: COURTESY HYUNDAI. SUBARU: JEFFREY GREENBERG/UNIVERSAL IMAGES GROUP/GETTY IMAGES. DATA: HUMAN RIGHTS CAMPAIGN

Motor Co. did, too. Nissan, which made the policy change in 2019 in Japan, mandates that employees at all its units worldwide be respected regardless of gender identity and sexual orientation, according to its *2020 Sustainability Report*.

Toyota is installing gender-neutral bathrooms at its headquarters near the city of Nagoya in central Japan and in some of its other offices. Last year the company launched an LGBTQ ally registration network for its Japanese workforce, wherein workers can register their support for their LGBTQ colleagues. "We aim to create a workplace in which we can properly understand and accept LGBTQ individuals," says a Toyota spokeswoman.

Companies haven't gotten lots of help from the governments of Japan or Korea. Conservative Japanese lawmakers in May blocked a bill that would have labeled anti-LGBTQ discrimination unacceptable. And Korean President Moon Jae-in has not actively supported proposals to protect equal rights for LGBTQ people.

Still, businesses will likely find pro-equality efforts easier to promote as support among the population grows. A Pew Research Center survey last year found 79% of Koreans age 18 to 29 said homosexuality should be accepted by society, vs. only 23% of those 50 and older; in Japan, 92% of young people supported acceptance, and even 56% of those 50 and older did. Matsunaka, the Tokyo-based activist, says he's been hearing from more automakers that want to be included in his Pride Index. "It's a global industry that needs to rely increasingly on markets overseas," he says, "and that's bringing about a certain amount of change." *—Bruce Einhorn, Kyunghee Park, and River Davis*

THE BOTTOM LINE Asian carmakers trumpet diversity in the U.S., but lukewarm support of LGBTQ rights from governments and older people back home means their efforts there are often muted.

The New King of Fast Fashion

● By turning out styles faster than Zara or H&M, Shein became China's first global fashion brand

On May 17, Shein—pronounced "she-in"—ended Amazon's 152-day streak as the most downloaded shopping app in the U.S., a remarkable feat for any 7-year-old clothing brand, let alone one most Americans older than 30 still haven't heard of. The kids, though, are all over it. Gen Z and young millennial shoppers have propelled Shein's rise, in thrall to the company's never-ending, always-changing catalog of clothes at prices that stretch even the most meager allowance.

One recent Thursday, the app introduced 6,239 items, including a floral backless halter top ($5), purple dinosaur-print pajamas ($10), and a prom-perfect fitted butterfly-sleeve dress with pearl bead trim ($22). Earlier this year, a U.K. blogger crowed that she'd paid just £100 ($141) for more than 30 Shein bikinis. Anything you want at prices so low you can afford two (or 30) has provided a rush approximating freedom for many fiscally constrained teens. Their enthusiasm has made Shein the first big fashion success from China—though it doesn't offer its products domestically and its national origins are nowhere to be found on the app. After doubling in 2019, its annual sales really took off during the pandemic, more than tripling last year, making Shein the world's biggest web-only fashion brand, according to Euromonitor.

Global investors such as IDG Capital and Sequoia Capital have already piled in. A person familiar with its funding says Shein is valued at as much as $30 billion, and last year it hired Goldman Sachs Group, Bank of America, and JPMorgan Chase as advisers on a potential initial public offering, according to others acquainted with its plans. The company itself is vague, saying reports about it are "often incorrect" and putting its valuation last year at "several billions of dollars." There are no IPO plans in the short term, says a spokeswoman.

What is clear is that Shein has ambition. In January it was a bidder for iconic British clothing retailer Topshop, and while it lost to Asos Plc's £295 million offer, the move was a "red flashing light for existing brands," says Jonathan Reynolds, academic director of the Oxford Institute of Retail Management at the Saïd Business School.

China doesn't have the global fashion cachet ▶

▲ Steve Aoki performs onstage during Shein Together Fest 2021 in Los Angeles in May

◀ of France, Italy, or Japan, but Shein is upending a $36 billion industry by beating Inditex SA's Zara and Hennes & Mauritz AB's H&M at their own game, supercharging the fast-fashion phenomenon they invented. To do that, it's using a combination of supply-chain savvy, data-driven clothing design, and tax loopholes in China and the U.S.

In 2018, China responded to a new round of U.S. tariffs by effectively waiving export taxes for direct-to-consumer companies. Because Shein ships most of its orders from its warehouses in China, it was already in a good position in the U.S., where packages worth less than $800 have been able to enter the country duty-free since 2016. When the Trump administration later imposed tariffs to make Chinese products more expensive, the small-value shipments remained exempt.

Shein's sales almost doubled from 2018 to 2019, according to an investor presentation reviewed by Bloomberg. In 2020, with the added lift from shoppers stuck at home during lockdowns, its sales rose 250%, to $10 billion, according to people familiar with its operations. That's far more than Zara brought in through its online channels last year.

Today, Shein pays neither export taxes on most of its products nor, in the case of the U.S., import taxes, an advantage that tilts the playing field heavily against its rivals, particularly as more consumers move online. It's not the only Chinese retailer to benefit from the trade war, and it won't be the last. Thanks to the government's support, China's online retail exports, known as "cross-border e-commerce," rose 67% in 2018, according to Chinese customs data. The sector has swollen beyond $265 billion and is growing faster than before the Trump assault began. In a statement, Shein said that China "encourages cross-border companies like ours," adding that the company abides by local tax regulations in all of its markets.

Michael Horowitz, a partner at Retail ROI Ltd., a consultant based in Hong Kong, says it's nearly impossible for international rivals to compete given the current tax situation. Technically, any company willing to register a subsidiary in China and ship products directly to U.S. consumers in small-value packages could get the same tax advantages as Shein. But that's unlikely to happen, he says. "If you're Zara, there's no way you're going to get around U.S. import duties, because you're not shipping to individuals, you're selling to stores and importing in bulk," Horowitz says. "They have too much of a physical presence—they can't get away with it."

According to one of the company's rare news releases, Shein was founded by Xu Yangtian in 2008. Also known as Chris, or Sky, Xu didn't start his career in fashion or retail but in search engine optimization at a digital marketing company that worked with exporters. He declined repeated requests from Bloomberg for an interview.

Shein's clothes aren't available in China. Its customers have always come from elsewhere, attracted by a network of influencers and celebrity tie-ins. Katy Perry and Lil Nas X headlined a virtual concert for the brand during the early days of the pandemic. Instagrammers now put up a wealth of hashtags; some 850,000 posts are tagged #sheingals. On its app, product shots are styled as social media selfies with indeterminate backdrops.

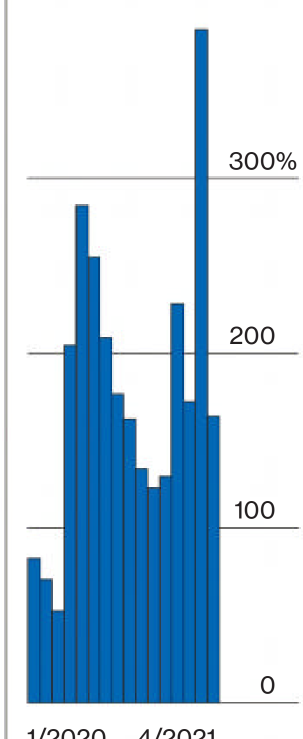
That's deliberate, says Charles Shen, founder of Shanghai-based Meetsocial, which works on Shein's social media marketing. "It takes national confidence to show where you're from," Shen says. "The competitiveness of a Chinese brand image, or the capability of building a brand, is still not there."

Yet the company benefits from its proximity to the world's most vast and well-developed supply chain. Shein requires that manufacturers contracted to make its clothes be located no more than a five-hour drive from its sourcing hub in Guangzhou, according to company documents seen by Bloomberg. Suppliers must also be able to complete design and production in about 10 days—faster than Zara's famous three-week turnarounds, and much quicker than the three- to six-month lead time at traditional apparel makers.

Shein has also developed proprietary technology that shares some sales data with suppliers, to help guide decisions about design and production. All this—plus not having to worry about store inventory—means Shein can respond almost immediately to shopper preferences. "If something works, you know about it really quick," Horowitz says. "If something fails, you only have a couple of hundred units, so how much are you really going to get hurt?" —*Bruce Einhorn and Daniela Wei*

THE BOTTOM LINE Chinese online retailer Shein, which doesn't sell in its home market, has hit $10 billion in annual sales because of tax preferences, technology, and continual updating of its styles.

▼ Shein's U.S. sales, year-over-year change



AOKI: EMMA MCINTYRE/GETTY IMAGES. MILTON: JOE PETRO/ICON SPORTSWIRE/GETTY IMAGES. DATA: BLOOMBERG SECOND MEASURE

College Athlete Pay Is Down to the Wire

● At least six states will allow players to make money soon, pushing the start of national rules

For years, talk of college athletics revolved around high-minded ideals like the love of sport and competition, not money. But that didn't keep schools or their athletic conferences from making billions from players' efforts. Now athletes are finally on the brink of profiting from their success, thanks to a wave of state laws taking effect soon. That's set the clock ticking for Congress and the National Collegiate Athletic Association to roll out their own changes or risk letting others reshape the world of college sports.

On July 1, student athletes in at least six states—including Alabama, Florida, Georgia, and Texas—will be able to earn money by doing things such as marketing themselves on social media and selling autographs. The uneven spread of name, image, and likeness (NIL) legislation has drawn the ire of the NCAA, which argues that a jumble of state rules will sow confusion and create unfair advantages for schools in states where top athletes can be paid.

At the behest of the NCAA, a divided Congress is working to advance a federal law that would immediately establish national standards for all college athletes. However, given several competing congressional bills and disagreement over the scope of the proposals, the state-level rollouts may be the ones that establish the initial rules.

"We could be in a position where it'd be a lot less chaotic, but it's the selfishness and inability to evolve and relinquish some control from college coaches, athletic directors, and presidents," says Dave Ridpath, a college sports expert and past president of the Drake Group, an organization that says it aims to protect academic integrity from the corrosive influence of commercialized college sports.

The laws have spooked officials across the collegiate landscape, from coaches to recruiters to administrators. At a Senate Commerce, Science, and Transportation Committee hearing on June 9, Mark Few, the men's basketball coach at Gonzaga University, argued that a scattering of state-level NIL laws would make it impossible to run "competitive, fair championships." He added: "Only action here by Congress can maintain some sort of semblance of a level playing field."

Texas on June 14 became the latest state to pass a bill allowing athletes to be compensated by outside businesses for the use of their name and likeness. Others, including Arizona, California, and Michigan, will have NIL legislation take effect over the next two years. Still, swift action from the NCAA could result in a deal that leads to a national standard before the state rules kick in. The NCAA Division I Council is expected to vote on NIL legislation at its June 22-23 meeting. "The NCAA could at that meeting come up with a national standard," Ridpath says. "I just don't think the membership is going to be liberal enough to really give the athletes the control over their name, image, and likeness that they deserve."

Whatever happens on the national level, student athletes in some states will soon be able to make thousands of dollars posting on Twitter and Instagram and signing autographs. Both University of Miami quarterback D'Eriq King and Florida State University quarterback McKenzie Milton have tweeted that players should have the right to profit from their name and likeness if they wish.

That's where marketplaces like OpenSponsorship and Playbooked come in. The companies offer platforms that enable athletes to connect with marketing partners and brands. OpenSponsorship's platform has facilitated more than $2.3 million in deals over the past year for thousands of professional athletes, taking a 20% cut from marketing deals. Playbooked, focused solely on college athletes, has had success with players in the National Association of Intercollegiate Athletics (NAIA), a group of small schools that last year agreed to allow its student athletes to be compensated.

The temptation to make big bucks sooner has already shaken up the world of basketball. A number of top high school prospects who want to forgo their college eligibility have chosen to play for the NBA's G League Ignite, go overseas, or join new programs such as Overtime Elite, a league for young players. Bypassing college sports can sometimes result in a six- or seven-figure salary and success in the big leagues. Charlotte Hornets guard LaMelo Ball, the NBA's likely Rookie of the Year, left high school early to play in Lithuania and Australia before joining the league. Teenagers Jalen Green and Jonathan Kuminga, who both played for the Ignite, are consensus top 5 picks for next month's NBA draft.

"Eventually this will all be figured out. But there are going to be bumps, and this will be a dynamic process," Ridpath says. "College sports are not minor league. They are major league, and it's time to be less restrictive." —*Bailey Lipschultz*

THE BOTTOM LINE Colleges have long profited from their student athletes, who cannot take compensation for playing. New state laws could allow them to share in the bounty.

● The NCAA's annual revenue from broadcast rights to the March Madness men's basketball tournament

$770m

▼ Milton

A One-Hit Wonder Looks for No. 2

● Niantic teams up with Hasbro and Nintendo to find life beyond Pokémon Go

Pokémon Go—a game based on people using their smartphones to chase virtual characters through public spaces together—probably should have died during the pandemic. Instead, Niantic Inc., the company behind the game, tweaked the experience of playing indoors and managed to pull its already committed user base in even deeper. Monthly active users increased 15% in the year through May, and consumer spending on the app soared 49% over the same period, to $1.4 billion, according to data from Sensor Tower.

The success has been a boon for Niantic, which was founded inside Alphabet Inc.'s Google in 2010 and spun off into an independent company five years later. It also presents a challenge: The company depends deeply on the game but knows it needs a new hit. On June 14 it announced a deal with Hasbro Inc. for a Transformers game, the

Edited by Joshua Brustein

PHOTO ILLUSTRATION BY 731; PHOTOS: ALAMY (1); GETTY IMAGES (2). TEST VERSION: COURTESY NIANTIC (2) most recent result of a series of partnerships with content companies. Simultaneously, Niantic is looking to transform itself into something more than a game studio while it's still a leader in the nascent but heavily hyped augmented reality industry.

For years, tech and video game companies have enthused over the potential of AR, the technology of producing digital imagery that appears to interact with the physical world. Companies are developing new headsets, making funny filters for smartphone videos, and trying to adapt the technology to everything from interior decoration to city planning.

When it comes to one of the most obvious uses, gaming, there's really nothing but Pokémon Go. The game accounted for about 85% of the $1.5 billion in revenue augmented reality games generated in 2020, according to market-research firm Omdia. Niantic's short-term priority is to be the company that makes the next hit, too. It released *Wizards Unite*, a Harry Potter-themed game, in 2019, but performance has been lackluster. The company is working with a handful of high-profile content companies to build AR games for other recognizable franchises.

Niantic has about a dozen games in development, targeting different types of gamers. Having held up some public releases during the pandemic, it's beginning to roll them out as normal life returns in parts of the world. "Some of it has been ready for a while. We were just sort of waiting for the right time to start introducing that—as people will kind of reconnect with the real world," says John Hanke, Niantic's chief executive officer. The company has announced a collaboration with Nintendo to adapt its *Pikmin* game and a title based on the board game *Settlers of Catan*. Users are testing both games, which are slated for general release later this year.

Transformers: Heavy Metal, which Seattle-based game developer Very Very Spaceship is building for Niantic, is also scheduled for a full release in 2021. It will allow groups of players to battle digital robots, and Niantic will begin testing a pared-back version—the robots appearing against a static background instead of looking like they exist in the real world—with a limited group of players in New Zealand in June.

Niantic has been talking for about eight years with Hasbro, the toymaker that owns the rights to the Transformers franchise, about an AR adaptation. "It's almost as if it was designed for augmented reality," says Hanke. "This isn't battle on a distant planet in a galaxy far, far away. It's about giant robots coming to Earth and having battles in the middle of Los Angeles. For us, giant robots walking around the real world is just too good to pass up."

Creating a game in which groups of smartphone-toting players battle huge digital robots in city streets is a significant technical challenge because it means rendering large, constantly changing images and understanding how each player is interacting with them. But technical wizardry alone is unlikely to keep anyone engaged, according to Julie Ask, an analyst at Forrester. "Consumers aren't interested in augmented reality. They are interested in what augmented reality can do for them," she says.

Reopenings in the U.S. and some other countries are giving Niantic a chance to return to limited outdoor events. Hanke has said the company's annual Pokémon Go Fest would be completely virtual, but he's aiming to have smaller in-person events, and the company is changing the gameplay to give incentives to play outdoors. Niantic is also introducing new social features in its games to let players coordinate meetups, which they currently do mostly through Discord and Facebook.

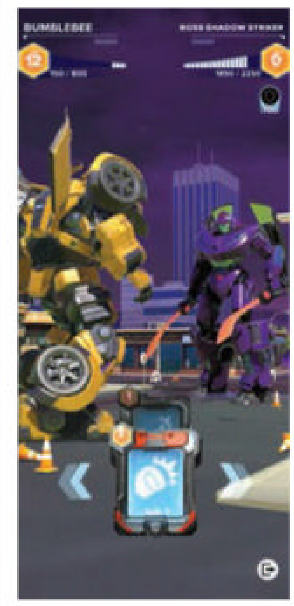
In addition, Niantic is building an AR platform to provide other developers with technology to build games and apps. In May it released a toolkit that several hundred independent developers are testing. It's working with Qualcomm on a design for AR glasses, although Hanke says the company hasn't decided if it will turn the glasses into a consumer offering. Niantic also wants to work on an advertising marketplace for AR games and apps. Taken together, the plan is to help shape the broader AR world while it's still in its early stages. "This moment is similar to that of a completely new console—or even the early stages of the PC—as we look at what is becoming spatial computing," says Kellee Santiago, who runs Niantic's external publishing operation. "It's a whole new paradigm."

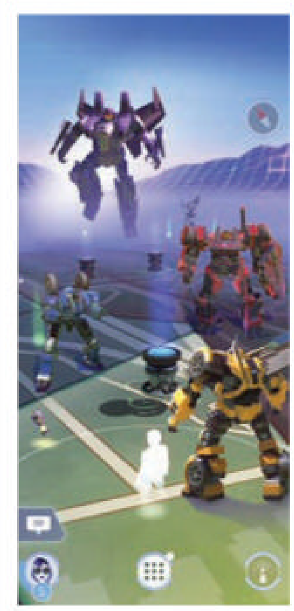
This could draw it into direct competition with Microsoft, Amazon.com, and Apple, which have their own AR-related ambitions. But the company has also seen tech's behemoths as potential buyers. Within the past year, Niantic has engaged with multiple companies in acquisition talks, according to two people with knowledge of those discussions, who requested anonymity to discuss private business dealings. One company was Microsoft Corp., which declined to pursue a deal, according to one of the people. A Microsoft spokesperson declined to comment. Hanke says there are always talks between companies and declined to comment further, except to note that Niantic is focused on being an independent company.

In October, Niantic hired Brian Benedik, Spotify's former chief revenue officer, as vice president for global revenue. The company has already signed deals with consumer brands such as Starbucks ▶

● Pokémon Go's share of $1.5 billion revenue for AR games in 2020

85%





▲ A test version of *Transformers: Heavy Metal*—in the final release, battles will take place in real-world surroundings

◀ and Verizon to pay to have their store locations featured within Pokémon Go, as well as to provide both in-game rewards and real-world coupons. Benedik is working with additional retailers that want to use the game to help draw players back into physical stores. Clothing designers such as Gucci and North Face have offered virtual outfits in which people can clothe their avatars.

Benedik says he's already elicited interest in ads for the Transformers game. A stable of new AR games from Niantic and independent developers would provide more opportunities for partnerships with brands, which Niantic is betting will view augmented reality as a novel form of marketing. "They're starting to understand," he says. —*Dina Bass*

THE BOTTOM LINE Niantic is rolling out new games featuring familiar franchises, while also increasing its focus on making tools for other developers.

This Algorithm Wants to Buy Your E-Commerce Website

● OpenStore aims to identify and purchase Shopify retailers that would be more valuable if combined

In 2014, Keith Rabois co-founded OpenDoor Technologies Inc., a startup whose main product was an algorithm that would determine the value of homes based on data such as the ZIP code and the material of the countertops, then make cash offers to the owners, sight unseen. He's now trying a similar model–right down to the name–with OpenStore, a startup that makes automated purchase offers to small e-commerce businesses.

Although flipping online storefronts may not be as familiar as the all-American activity of house-flipping, OpenStore is jumping on a trend that has been gaining momentum in the past few years. Private equity firms and other investors have been raising large sums to buy storefronts that operate on Amazon.com Inc. or Shopify Inc., then combining them in an attempt to make them more valuable. The eventual goal of these operations, known as roll-ups, is to take the merged entities public.

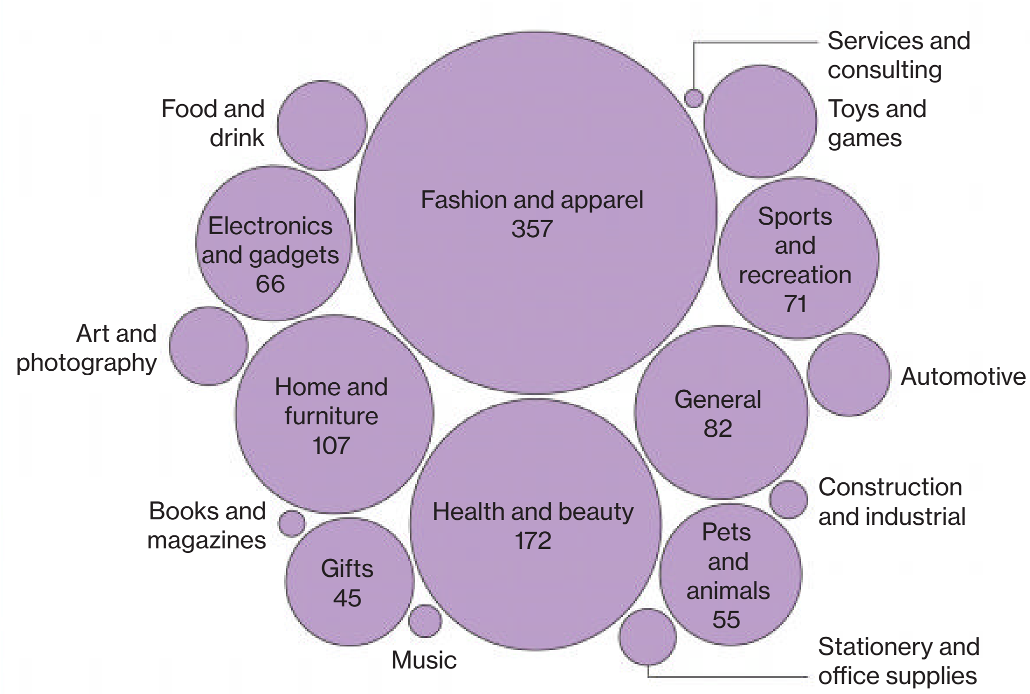
On June 11, Bloomberg reported that Thrasio, which has raised $760 million to roll up private-label merchants operating on Amazon, was in talks to go public through a merger with a special purpose acquisition company. The deal could value Thrasio at more than $2 billion, people familiar with the deal told Bloomberg. Another large roll-up operation, Whele LLC's Perch, has raised $775 million to execute a similar strategy.

For now, OpenStore is operating on a much smaller scale. Rabois has raised $17.5 million, though he says he plans to raise considerably more by year's end. The backing comes mostly from Founders Fund, where he's a partner, and Atomic, the venture capital firm whose founder Jack Abraham came up with the idea for OpenStore. Over the next year Rabois is planning to purchase dozens of companies, creating an entity with $1 billion in annual sales.

A major distinction for OpenStore is that it's eschewing Amazon sellers to focus on those who operate chiefly through Shopify. Businesses that use Shopify software pay a monthly fee for services to run an online store, starting at $9 to simply add a "buy" button to an existing web page and extending

The Shopify Market

Stores for sale on Shopify's exchange with revenue of more than $500 a month, by category



DATA: EXCHANGE MARKETPLACE, AS OF 6/14

PHOTOGRAPH BY MARY BETH KOETH FOR BLOOMBERG BUSINESSWEEK to $2,000 for access to dedicated account managers and automated reordering of critical products. Shopify's revenue almost tripled from 2018 to 2020, and companies like Allbirds and Death Wish Coffee have built huge brands on the platform.

Shopify remains much smaller than Amazon and doesn't have a centralized shopping website, one reason that Shopify merchants often also sell through Amazon. But Shopify sellers can build relationships with customers when they sell to them directly. Rabois says the trade-off makes Shopify a better target. "We want to have control about how we stitch these together," he says. "And obviously Amazon is not going to just let us do whatever we want."

Shopify is embracing roll-ups. It has built its own exchange for its storefronts, where businesses sell for a few thousand dollars to more than $1 million. Rabois sees the most value in Shopify sellers that are having trouble breaking through—those with less than $5 million in annual sales who likely can't line up a bank loan or venture money. "These are businesses that need a new option," he says. In other words, their lacklusterness lends them appeal.

Prospective merchants are judged on factors such as revenue and customer acquisition cost, similar to the numbers Rabois looks at when evaluating companies as a venture capitalist. But instead of bringing in potential acquisitions to pitch their businesses, OpenStore invites Shopify retailers to talk to its bots. The retailer hands over its log-in credentials, allowing OpenStore to verify sales, inventory, and other data, and the bots come up with an offer by the next business day. Even if merchants decline, OpenStore ends up with additional data it can use to tweak its formula. Rabois says that by the end of June any Shopify merchant will be able to log on and get an offer.

There's evidence retailers are interested. Elaine Eason was spending more and more of her energy selling hoops, silk ropes, and equipment for people who like to exercise while suspended aloft through Uplift Active, her Shopify storefront. It first occurred to her that she could sell the business two years ago, when a broker approached her at a trade show. "I didn't even know that was possible," she says.

Eason was soon thinking all the time about selling Uplift Active, mostly because the market for storefronts like hers was hard to ignore. This year she struck a deal with Teneo, another roll-up operation focusing solely on Shopify brands. After she sold, she bowed out of running the business.

OpenStore plans to take over operations of the businesses it buys, saving money by automating customer support, shipping, and other functions and

▲ Rabois

looking for volume discounts. Rabois says decisions to keep on existing staff will be made case by case.

Rabois doesn't plan to restrict his purchases to a specific type of merchandise. "They can sell furniture, they can sell ice cubes for soup," he says. But combining retailers into a kind of general store may dampen their appeal, says Jason Boyce, founder of Avenue7Media, a consultant for online retailers. "The allure of the Shopify sites is the brand story—it's unique, it's quirky," he says. He also questions how much sustainable efficiency is to be gained by roll-ups, which will still have to market products and fulfill orders.

The long term may not be OpenStore's priority. As an investor and entrepreneur, Rabois has consistently striven to take companies public as quickly as possible, guaranteeing an early return while passing risks on to public-market investors. A comparison to OpenDoor may serve as a note of caution. The company went public through a SPAC in December, raising more than $1 billion at a $16 billion valuation. Since then, its shares have lost 40% of their value. —*Sarah McBride*

THE BOTTOM LINE E-commerce roll-ups aim to create efficiencies by combining small stores, with the aim of taking them public as fast as possible.

Nasdaq. NYSE. SushiSwap?

Decentralized finance uses crypto to build a new, unregulated kind of market

ILLUSTRATION BY INKEE WANG

Edited by Pat Regnier

Money manager Vladimir Vishnevskiy can earn a negative interest rate for holding a European government bond. Or he can pocket the annual equivalent of a 20% yield for locking up money in one of the wilder corners of the cryptocurrency market, known as decentralized finance, or DeFi.

He decided to go for the 20%. "You can't get those yields in the traditional space," says the co-founder of Swiss-based St. Gotthard Fund Management, which runs a portfolio designed to squeeze income out of crypto assets. The strategy is so new that even Wall Street pros may have trouble wrapping their heads around it. Take what you might know about Bitcoin—that it's a digital currency that exists only on an online ledger governed by computer code. Now make it even more mind-bending, and imagine the code isn't just recording transactions. It's running lending platforms, insurers, and financial markets with little human intermediation. That's DeFi.

Traders like Vishnevskiy can collect yields by committing in the form of crypto tokens the capital that's needed to make these disembodied and largely unregulated financial institutions run. At the peak last month, investors put as much as $86 billion into various DeFi programs, compared with just under $1 billion a year ago, according to data from DeFi Pulse, a website that tracks the industry.

It's a young, volatile, and hack-prone system. (One of the first decentralized projects, a fund called the DAO, was the victim of a spectacular $55 million theft by someone taking advantage of a flaw in its code to siphon off funds.) And for now, it's mostly a crypto world built for the crypto universe. The decentralized lenders are largely taking crypto deposits to make loans to people looking for leverage on crypto bets; the decentralized exchanges are used for trading crypto coins; the decentralized insurers cover crypto hacks.

The big yields investors can earn are denominated not in dollars or euros but in often-obscure tokens. Critics of DeFi say some projects can resemble a Ponzi scheme: Early investors depend on others piling into tokens that still have limited real-world utility. If returns are high, it's largely because of investors' voracious appetite for more digital assets. And because DeFi projects don't need to live in any physical location, they're difficult to regulate, making the space vulnerable to scams and money laundering schemes. Still, DeFi's advocates think it has the power to open up markets and build new kinds of financial products.

To see how a DeFi program works, look at SushiSwap, a decentralized cryptocurrency exchange that started last year. It's based on the code of another DeFi exchange called Uniswap. Like any exchange—from better-known crypto trading apps such as Coinbase to stock markets like Nasdaq—SushiSwap depends on liquidity, or the ability to make sure buyers can find the tokens they want and sellers can get a price they think is fair. To do that in a decentralized way, SushiSwap creates liquidity pools that pair any two coins that traders might want to swap—for example, Ethereum, the second-most-popular cryptocurrency and DeFi's backbone, and the exchange's own token, Sushi.

"You can't get those yields in the traditional space"

Investors like Vishnevskiy buy both tokens and then temporarily lock them into the pool, where they're available to traders. An algorithm adjusts the prices of both tokens to reflect relative changes in demand. The exchange also charges a fee for trading. When Vishnevskiy gets his tokens back, he also gets a portion of the fees generated from transactions made in the pool, as well as free additional Sushi tokens. (The added Sushi tokens can be earned on other trading pairs, not only those involving Sushi.) That, the exchange's software surmises, amounts to an annualized 20% yield.

Other DeFi protocols may pay yields to people who make their crypto available for someone else to borrow. For example, traders might want to borrow stablecoins—tokens whose value is linked to that of a traditional currency such as the dollar—to buy more Bitcoin on platforms that don't take traditional currencies.

If that sounds complicated, it is. Yields in DeFi are mostly projected from recent market trends and could drop quickly. Some investors who call themselves yield farmers are constantly moving their money trying to generate income, but crypto transaction costs called "gas fees" can eat up profits. Moreover, the cryptocurrencies these yields get paid in can fluctuate wildly in value. When Bitcoin slid as much as 10% on one recent day, popular DeFi coins such as Uniswap's fell almost 20%.

Other risks that come with any cryptocurrency still apply: Regulatory scrutiny will probably grow, which might shut down or hamper some projects and blow up the value of associated tokens. Founders of DeFi projects who've hoarded the coins created to run them could suddenly cash out, causing prices to drop. SushiSwap's pseudonymous creator, Chef Nomi, sold tokens worth roughly $13 million in September before reversing course amid community outrage.

The history of crypto is filled with cautionary tales about investments riding a wave of hype and then falling apart. Around 2018, so-called initial coin offerings raised billions of dollars for projects, most of which turned out to be duds. DeFi

PHOTO: ANDREA MIOTTO

converts say the difference now is that applications such as exchanges and lenders are generating revenue, even if just from crypto speculation. Uniswap, which announces its user statistics in real time, had trading volume of $813 million in one recent 24-hour period, generating $1.8 million in fees for those staking their tokens in its liquidity pool.

What about the value of the tokens many DeFi projects give out? These coins aren't exactly equity and don't always confer any direct claim to profits. Often they give holders voting rights on the future of the project; investors may be hoping that as the protocols they're associated with grow in popularity, so will the coins. But some DeFi platforms might not be as successful as they seem. Aleksander Kloda, who co-manages a DeFi fund at Nickel Digital Asset Management, says participation may be driven less by the value of a service than by the promise of free tokens. "In the short term, they can really make the picture a lot more difficult to read," he says. "The logic is not quite correct if the volumes are only there because of the additional motivation the protocol gives you to participate." As an investor, he tries to identify projects that have built up sustainable volume even without tantalizing yields.

Advocates of DeFi say the idea is in its infancy, and it could eventually broaden its uses and reach into more traditional areas of finance. Their dream is a financial system run on the internet that doesn't involve a credit officer at a JPMorgan branch, or a Citadel Securities investing in high-frequency infrastructure to keep stock trading liquid.

But Elaine Ou, a blockchain engineer at Global Financial Access, argues that there's nothing wrong with DeFi being used only for crypto trading, either. "Look at Vegas and Macau–part of the reason they're so valuable is that they allow you to do what other jurisdictions have banned," says Ou, who also writes for Bloomberg Opinion. "It is possible to build an entire industry up around speculation." *—Justina Lee*

THE BOTTOM LINE DeFi uses automated protocols to run financial products on the internet with little human intervention, but it's still mainly for crypto traders.

Working Abroad Is Easy. Taxes Aren't

● More companies make remote work a job perk, but that can mean a paperwork nightmare

Imagine for a second that the pandemic is over. Global travel has resumed, Covid-19 hot spots are a thing of the past, and companies are keeping a promise some have been making lately to attract top talent: to allow remote work from anywhere in the world, at least for a few months a year.

Then envision a Londoner, a New Yorker, and a Hong Konger walking into a bar. Let's say it's in Rio de Janeiro. They all make the same salary–$100,000–and have been allowed to work remotely from Brazil for two months.

Once they've put down their caipirinhas and returned home from their stints abroad, who will owe the most in taxes? According to Robert Salter of tax and advisory firm Blick Rothenberg, our remote worker from New York could face the highest bill, while the Londoner could have nothing extra to pay. This assumes, however, that all three fill out their Brazilian taxes on time in accordance with regulations and–perhaps most important, to avoid costly mistakes–in Portuguese.

And Salter warns of a worst-case scenario for this new generation of jet-setters: being required to file multiple tax forms in different countries while also losing any benefits from tax treaties between jurisdictions. "It could be a disaster," he says. "You could have to do four or five tax returns."

Employees who work abroad even for just a few weeks may find themselves liable for taxes in ▶

▼ Andrea Miotto in the Canary Islands

overseas jurisdictions, Salter says. Many countries have double-taxation agreements in place to avoid excess taxation. But such agreements may apply only to federal taxes and not to city or state obligations that are common in many parts of the U.S. or social security liabilities common in Europe.

Ten years ago the likes of Uber, Facebook, and Instagram differentiated themselves from Wall Street firms by offering free lunches, kooky office setups, and a casual dress code. Now companies from London to New York and Toronto to Berlin are formalizing and even extending their Covid-era flexible-work options, often with liberal limits on where employees can log on from and how long they can do it for.

"The remote job is the new pingpong table," says Andrea Miotto, a 29-year-old iOS developer who works at Droplet, a startup in Cambridge, England. A native of Venice, Italy, Miotto was hired by Droplet last year. Since then he's worked all across his native country, from Puglia to the Alps. Over the past few months he's been hopping across Spain's balmy Canary Islands, with stints on Fuerteventura, Gran Canaria, Lanzarote, and Tenerife. "This is more than a gimmick," says Nick Bloom, an economics professor at Stanford who's studied work-from-home trends. "This is a pretty valuable lifestyle offering that may be the only way you can hire good people."

Revolut, one of Europe's leading startups, this year announced that its 2,000-odd staff would be allowed to work from abroad for as long as two months a year. Chiara Baroni, a communications manager at Revolut who's usually based in Berlin, says she took advantage of the policy change to work from the island of Tenerife this spring.

Paddle, a London-based startup with about 130 employees in the U.K., is also shifting to let employees work from anywhere, including abroad, according to senior people partner Alison Owens. The company will manage its nondomestic employees via a professional employer organization, which performs certain human resources functions for businesses.

Many companies are turning to such outside firms for help. Payroll startup Deel has seen demand surge in the past year for its services managing staff abroad with a mix of software, local accounting experts, and even foreign exchange hedging. "Hundreds of companies are coming to us a day," says Dan Westgarth, chief operating officer. "It's operationally intensive."

Untested at a large scale, such perks come with big risks for staff and companies at a time when governments are wising up to cross-border commutes and are in dire need of tax revenue. "There can be some quite nasty situations out there," says tax adviser Salter. Besides being taxed in multiple jurisdictions, cash flow could become a problem if countries promise refunds but only after you've paid in multiple countries, Salter says. And companies that allow too many employees to work from the same foreign country could find themselves obliged to pay local corporate taxes. His advice? Consult carefully with your employer and avoid taking advice from the proverbial person in the pub. "A lot of times you hear this myth that if I don't spend 180 days in a country, I'm safe," he says. "That's nonsense and is very, very dangerous."

▲ Baroni near Tenerife

With all these issues in mind, Salter calculated the obligations of that hypothetical Londoner, New Yorker, and Hong Konger working for two months in Brazil, taking into consideration the different reciprocity rules between these jurisdictions.

● Tax rate for nonresidents in Brazil

25%

The New Yorker could end up paying $1,648 more than if he'd simply remained in New York for the two months. That's largely because Brazil's 25% flat tax rate for nonresidents is higher than the U.S. federal rate of 24%, and because New York state and New York City don't provide tax relief for Brazilian liabilities. The Hong Konger could owe an additional $1,334 for working two months in Brazil because of the latter's higher taxes. For the lucky Londoner, the 40% U.K. tax rate for her salary is higher than Brazil's, and the U.K. could provide full relief for the Brazilian taxes paid.

Miotto, the iOS developer, says he's watching his tax status carefully. His company gave him the option to live in the U.K. and become a tax resident there, or to work as a contractor based in Italy. He chose the latter, which has meant not having to grapple with Brexit uncertainty. Miotto, however, is looking to go farther afield—Indonesia, South Africa, and Thailand are all on his list. —*Charlie Wells and Ivan Levingston*

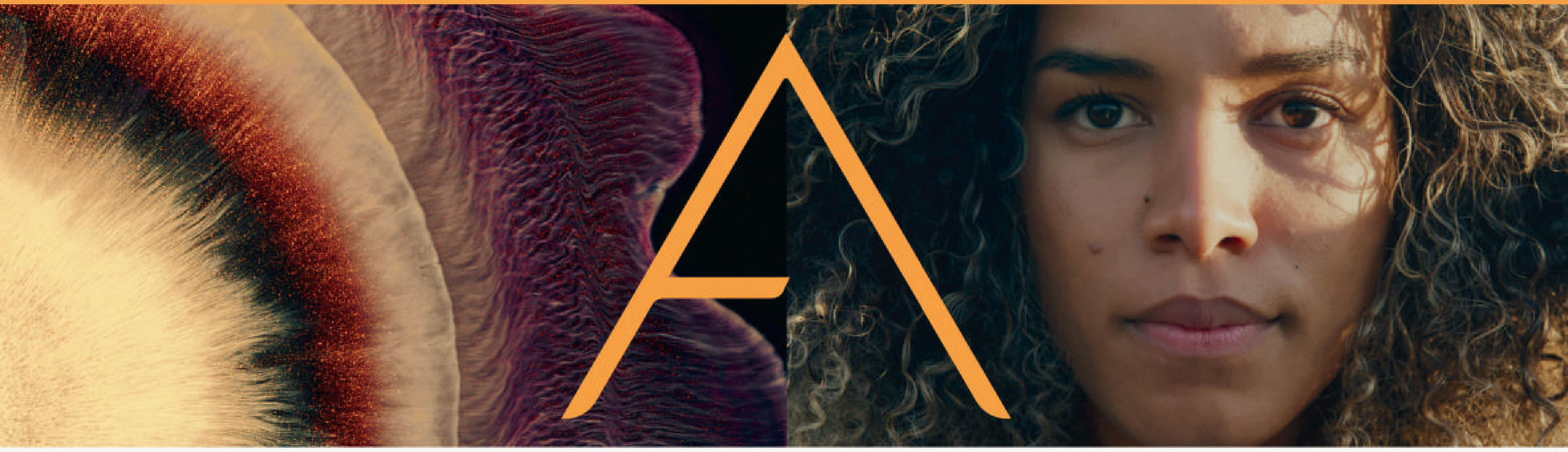
THE BOTTOM LINE Working even a few months abroad can have surprising tax consequences, and companies haven't really tested work-from-anywhere programs at a large scale.

PHOTO: CHIARA BARONI

CRYPTO FOR THE 100%

RECODE THE ECONOMY. ONE TOKEN AT A TIME.

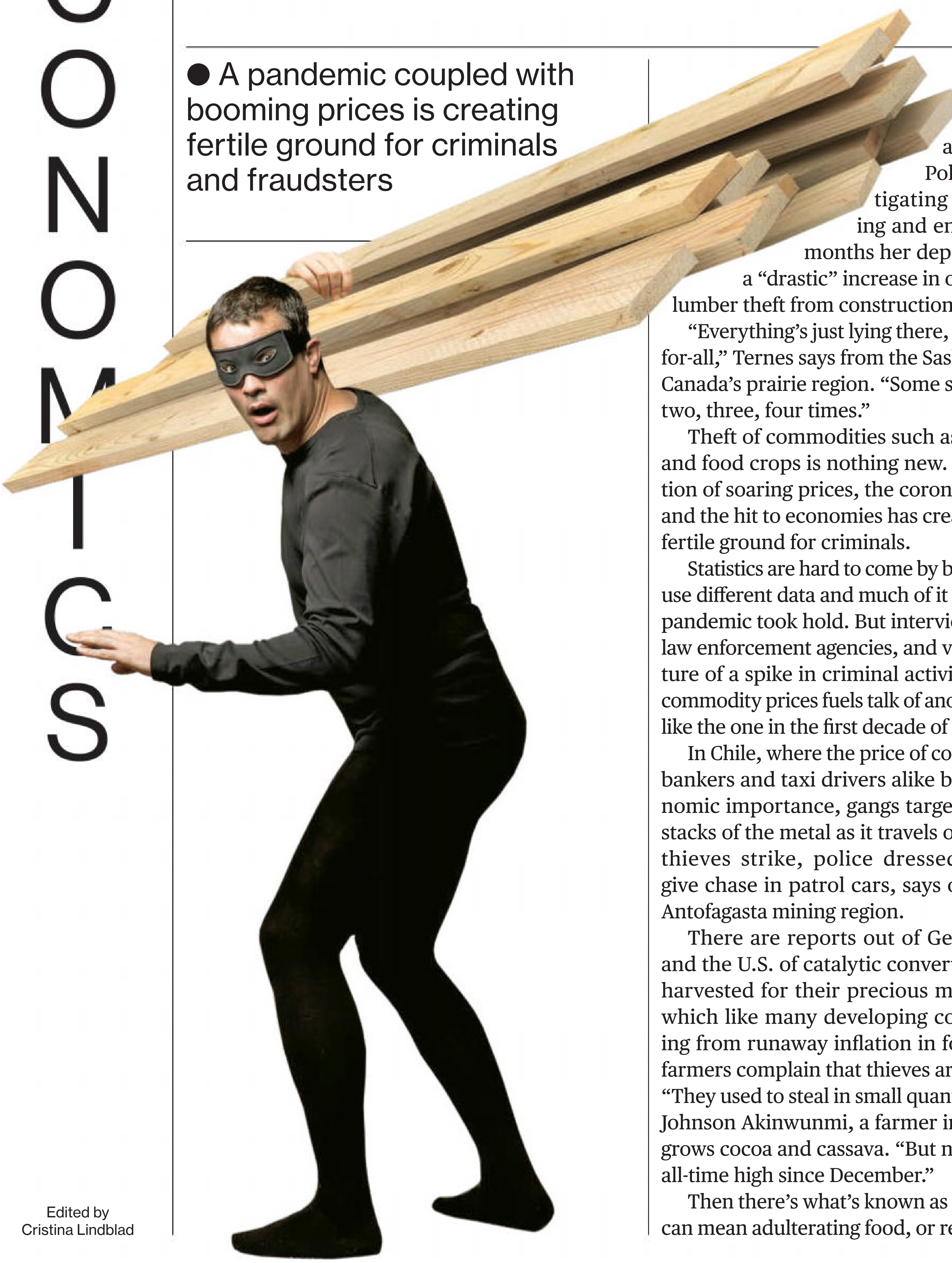
ANATHA.IO



In the right hands, money has the power to change the world. ANATHA is a new kind of cryptocurrency that connects people to real value on a platform that is 100% accessible to 100% of everybody. As more of us join and use ANATHA tokens, more value is returned to the network. It is an economic system designed from the ground up to put value in the hands of its participants. As you do well, we all do well. One token at time.

To Catch a (Commodity) Thief

● A pandemic coupled with booming prices is creating fertile ground for criminals and fraudsters



Sergeant Tosha Ternes spends most of her time at the Saskatoon Police Service investigating cases of breaking and entering. In recent months her department has seen a "drastic" increase in one type of crime: lumber theft from construction sites.

"Everything's just lying there, kind of like a free-for-all," Ternes says from the Saskatchewan city in Canada's prairie region. "Some sites have been hit two, three, four times."

Theft of commodities such as lumber, metals, and food crops is nothing new. Yet the combination of soaring prices, the coronavirus pandemic, and the hit to economies has created an unusually fertile ground for criminals.

Statistics are hard to come by because authorities use different data and much of it is from before the pandemic took hold. But interviews with experts, law enforcement agencies, and victims paint a picture of a spike in criminal activity as the jump in commodity prices fuels talk of another "supercycle" like the one in the first decade of the century.

In Chile, where the price of copper is tracked by bankers and taxi drivers alike because of its economic importance, gangs target freshly smelted stacks of the metal as it travels on rail cars. When thieves strike, police dressed in "war gear" give chase in patrol cars, says one officer in the Antofagasta mining region.

There are reports out of Germany, the U.K., and the U.S. of catalytic converters in cars being harvested for their precious metals. In Nigeria, which like many developing countries is suffering from runaway inflation in food prices, some farmers complain that thieves are targeting crops. "They used to steal in small quantities before," says Johnson Akinwunmi, a farmer in Ondo state who grows cocoa and cassava. "But now it's been at an all-time high since December."

Then there's what's known as food fraud, which can mean adulterating food, or replacing it with an

Edited by Cristina Lindblad

PHOTO ILLUSTRATION BY 731; PHOTOS: GETTY IMAGES (2). DATA: UN FOOD AND AGRICULTURE ORGANIZATION; BLOOMBERG

inferior product, or faking its origin. In Malaysia, some criminals are repackaging used cooking oil in tins or painted bottles to pass it off as palm oil, a staple that's become more costly.

In India at least 500 people fell ill in April after consuming adulterated buckwheat flour. Police say there's a notable increase in the common practice of cutting spices such as turmeric and chili with cheaper–and often toxic–substances, including rice flour and aniline dyes.

Amarendra Panda, an assistant commissioner of police in Cuttack in the eastern Indian state of Odisha, says his officers have raided about 20 premises recently and confiscated what he calls "adulterated commodities" worth millions of rupees, or tens of thousands of dollars. "Their motive was to earn huge profits by investing as little as possible," he says.

U.S. lumber prices soared to an all-time high in May and are now more than double what they were a year ago. Copper is up 70% over the same period, having also hit a record last month. Global food prices increased for a 12th straight month in May to the highest in almost a decade. "The value on the black market of commodities changes just like they do above the board," says Jim Yarbrough, who leads a team at the British Standards Institution, which monitors supply chain risks, including terrorism. "That's going to drive criminal activity just like all other forms of supply and demand."

While soaring prices have provided an incentive for commodity-related crime, the pandemic has furnished fresh opportunities. Disruptions to supplies and reduced availability of some materials mean managers must at times resort to doing business with previously untested suppliers, says Kimberly Carey Coffin, global technical director at Lloyd's Register, a quality assurance company.

Even seasoned buyers are in danger of being duped. Last summer, Swiss commodities trading firm Mercuria Energy Group Ltd. struck a deal to buy $36 million of copper from a Turkish supplier but got a load of painted paving stones instead.

In Chile copper robberies in the northern province of Antofagasta, part of a region that's home to some of the world's biggest copper mines, have increased about 30%, according to Egidio Ojeda, an officer with Chile's investigative police.

While some of that can be attributed to the remoteness of the mines and a surge in social unrest that preceded the pandemic, it also reflects the huge runup in the market price for the metal. "The operations are like a movie," Ojeda says. "It's a business that moves a lot of money, and even more now that prices have shot up."

Thieves in trucks chase and try to intercept rail cars that depart from mines such as BHP Group's Escondida or Zaldivar, which is operated by Antofagasta Plc, according to Ojeda. They pilfer one or two bundles of copper cathode sheets at a time, each valued at about 20 million Chilean pesos ($28,000).

In March police apprehended three people near train tracks. In their truck they found tools strong enough to cut through the metal straps that fasten the copper slabs.

Many business owners are beefing up their own security. Olusegun Olaniyi, a farmer in Osun state in southwestern Nigeria, is paying for guards to patrol his property to curb theft of cassava, corn, plantain, and other crops. The thieves come at night and in the afternoon when workers are on break, he says.

Akash Homes in Edmonton, Alta., has endured repeated heists of lumber, with losses totaling C$100,000 ($82,915) since February, according to vice president Hersh Gupta. The company installed security cameras at its construction sites and joined forces with other builders on nearby lots to hire guards to patrol overnight and on weekends. "It's getting pretty crazy, to the point that thieves are starting to hot-wire zoom booms to load their own trucks," he says, referring to a type of forklift.

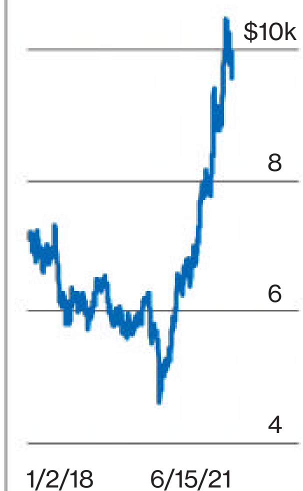
The company now uses spray paint in a sky-blue shade that matches its corporate logo to tag its lumber with the letter "A" to help identify it if it's stolen. But though some victims of lumber theft monitor online sales platforms such as Facebook Marketplace in search of stolen goods, markings are easily shaved off, making the wood unidentifiable.

Tackling food fraud, estimated to cost the food industry as much as $40 billion a year in lost sales, product recalls, and legal bills, is even tougher. Because of complex supply chains, products change hands several times, often across borders, before they arrive on supermarket shelves.

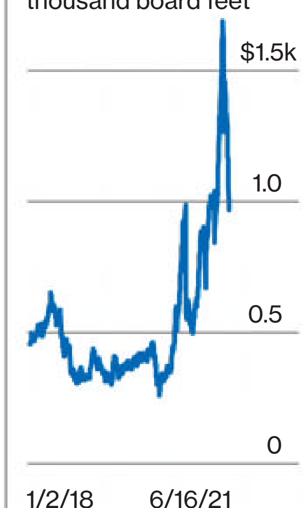
Cases tagged as fraud, adulteration, or authenticity-based jumped 38% in the final quarter of 2020 from the same period in 2019, according to Food Forensics Ltd., a U.K. company that carries out testing and has a database mainly focusing on Europe. "We are as busy as we have ever been, particularly with white flaky fish, tomatoes, rice, and other core commodities that are usually vulnerable to fraud," says Rick Sanderson, business development director at Food Forensics.

The pandemic has complicated efforts to crack down on criminal activity. Police resources ▶

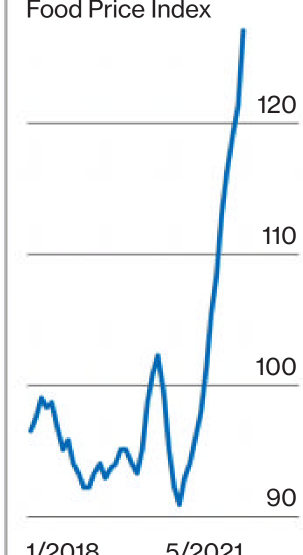
▼ Copper, price per metric ton



▼ Lumber, price per thousand board feet



▼ The UN's FAO Food Price Index



◀ have been diverted, government or food safety inspectors can no longer visit factories in places like India, and sampling is difficult. At the same time, online marketplaces and delivery platforms are creating more opportunities for illegal goods to be sold, says Coffin, of Lloyd's Register.

"There is no likelihood my goods will get to their final destination, and when they do, there is high chance of pilfering of the goods during transit," says Anugboba Ebhodaghe, whose food export company in Lagos, Nigeria, deals in everything from cashew nuts to cassava chips. "Everybody is like a hawk, looking for what to take at the slightest advantage." *—Agnieszka de Sousa, Marcy Nicholson, Tope Alake, and Daniela Sirtori-Cortina*

THE BOTTOM LINE Around the world, businesses are enlisting law enforcement to battle a wave of robberies and scams triggered by surging prices for lumber, copper, and other commodities.

A Bittersweet Homecoming

● Filipino migrant workers repatriated during the pandemic face a dearth of job opportunities

Lala Abalon spent five years bouncing between temporary office jobs in Dubai before she found steady work as a customer service agent at a real estate company. Then the pandemic struck, and she, along with hundreds of thousands of other Filipino guest workers in the Persian Gulf and elsewhere, was sent packing.

Nine months after returning to her parents' home in the Philippines, she can't wait to go back overseas. "I don't see a future here," says Abalon, 33, who now manages her family's noodle shop north of Manila. "Life is difficult in the Philippines. The pay is better and everything is more accessible abroad."

As countries began closing their borders in an attempt to keep out the novel coronavirus, President Rodrigo Duterte's government launched an operation to repatriate Philippine migrant workers stranded abroad. At last count, more than 560,000 have returned. It hasn't been an ideal homecoming, though: The economy contracted 9.6% last year, the most of any country in Southeast Asia, and a spike in Covid-19 cases is hampering the recovery.

"The workers I send abroad often tell me, 'We'll die of hunger here if we stay with our families,' " says Alicia Devulgado, president of the Overseas Placement Association of the Philippines, a trade group that represents recruitment agencies. A survey released last month by the International Organization for Migration shows that almost half of the returnees intend to leave again.

"I don't see a future here. Life is difficult in the Philippines"

Since the start of the year, about 60,000 Filipinos per month have been leaving the country to take jobs in other nations, though that's only one-third of the pre-pandemic average. The departures bode well for an economy that's reliant on remittances. Money sent home by Filipinos working abroad amounted to 9% of gross domestic product in 2019. Those flows declined by 0.8%, to $29.9 billion, last year—the first annual drop since 2001. The central bank predicts they'll rise 4% this year.

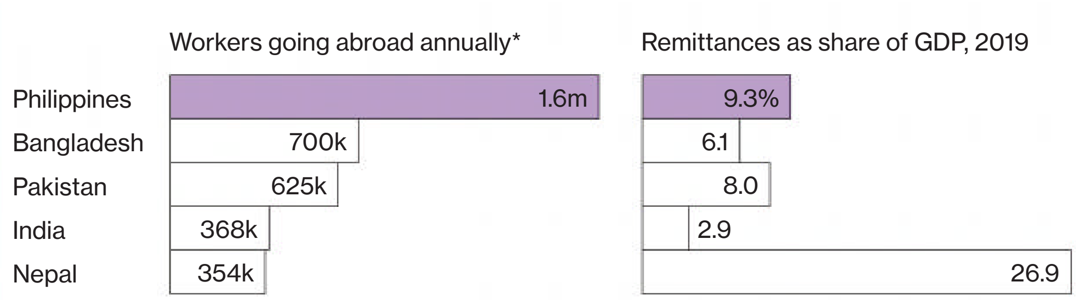
The Philippines has been exporting workers for years, but the trend picked up in the 1970s as neighboring Asian economies opened up and growth took off. Nowadays, Persian Gulf countries also host large numbers of Filipino migrants. Across the globe, the Filipino diaspora numbered 10 million in 2019. Many are employed in construction, nursing, and household work. "Filipinos are the preferred labor across the globe in a number of skills, with their work ethic and knowledge of English," Philippine Central Bank Governor Benjamin Diokno said in April.

There's a downside, however: The exodus of so many citizens—including scientists and engineers—has hollowed out the domestic workforce, causing a shortage in skilled professionals. Health-care workers also are leaving for better pay abroad, even as many localities lack doctors and nurses.

Demand for Philippine workers has picked up in recent months, particularly from Saudi Arabia, the U.K., and the U.S., according to Devulgado of the Overseas Placement Association. The government has prioritized Covid vaccinations for those flying out soon, which is also enticing some to leave.

Den Cantara left her job as a domestic worker

Itinerant Workers



*2019 OR MOST RECENT YEAR AVAILABLE. DATA: COMPILED BY THE UN ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC; WORLD BANK

PHOTOGRAPH BY XYZA CRUZ BACANI FOR BLOOMBERG BUSINESSWEEK in Lebanon last year when that country's economy descended into crisis. On her return, she briefly worked as a security guard but quit when her employer didn't pay her salary on time. "The money I had quickly dried up," says the 29-year-old single mother. "It's really difficult choosing to be away from my children again, but I need to work abroad so that they can finish school."

The pace of departures would be higher if not for local movement curbs designed to halt the spread of the virus and a cap the government imposed on health-care worker exits. Additionally, some host countries such as Taiwan have tightened border controls in response to Covid outbreaks.

"We need to take into account that some employers have closed down," says Bernard Olalia, head of the Philippine Overseas Employment Administration. The Duterte administration has identified Germany, Russia, and nations in eastern Europe as countries that have potential to admit more Filipino workers.

Advocacy groups are concerned that the economic straits caused by the pandemic may erase years' worth of work in boosting protections for guest workers. "This can roll back gains in promoting decent wages and work conditions, as people may take on jobs with employers that don't make these a priority," says Ellene Sana, executive director of the Center for Migrant Advocacy in Manila.

The government is encouraging returnees who want to stay in the country to retrain for jobs in call centers and education. Some have been hired to build a railway linking a nearby province to the capital, part of a national infrastructure drive. Loans of as much as 100,000 pesos ($2,100) are being offered to former expats who want to set up businesses.

● Size of the global Filipino diaspora in 2019

10m

With presidential elections due next year, the Duterte administration has a vested interest in catering to the needs of overseas Filipino workers—almost 2 million were eligible to vote in the last election. Also, as breadwinners, they can sway their families' votes, says Maria Ela Atienza, a political science professor at the University of

◀ Abalon at her family's restaurant

the Philippines. "They will consider, among several other factors, how they were treated by the government agencies and other citizens and whether there are other opportunities or economic alternatives provided to them," she says.

Since returning from Dubai, Abalon has been weighing retraining to become a caregiver in the U.S. or applying for a waitressing job in Canada. "Maybe I'll consider staying in the Philippines if another pandemic happens, or once I have enough money to retire," she says. "For now, I have to work abroad for my future." *—Andreo Calonzo and Siegfrid Alegado*

THE BOTTOM LINE Filipinos are going overseas in search of work at a rate of about 60,000 a month as countries reopen. The cash they send home will bolster what's been a faltering recovery.

JOIN US. TAKE THE PLEDGE.

MAKE JUNETEENTH A PAID HOLIDAY

THE TIME FOR CHANGE IS NOW.

How can we measure progress against freedom if we do not acknowledge, recognize and remember globally the events of 1865 in Texas? They must be celebrated, just like the end of Apartheid in South Africa and the Civil Rights movement in the United States. We have reached a pivotal moment in history, where the private sector has an opportunity and a mandate to be a force for good. These are our United Stakes.

PW

PHARRELL WILLIAMS

Founder, The Juneteenth Pledge

www.juneteenthpledge.com/

Latin America Turns on The Establishment

Pedro Castillo's victory in Peru signals a regionwide fury at incumbents, a boon for the left

The apparent narrow electoral win in Peru of Pedro Castillo, a rural union activist from a Marxist party, over conservative Keiko Fujimori signals what may be a far-reaching shift to the left in a region ravaged by Covid and filled with fury at ruling elites.

Candidates on the left appear poised for victory in Chile, Colombia, and Brazil over the next 16 months. With leftists already running Argentina, Mexico, Venezuela, and Bolivia, it could resemble the "pink tide"—the spread of leftist governments kicked off by Venezuela's election of Hugo Chávez—at the start of this century. "You may have to start thinking about a radically different-looking Latin America," says Brian Winter, vice president of Americas Society/Council of the Americas. "There are deep implications for these countries' relations with the U.S. and China and their policies toward things like the drug war."

A dozen regional analysts consulted by *Bloomberg Businessweek* agree that the public mood is surly and that incumbents, mostly on the right, are in trouble. They're divided on where things are headed and whether what happened two decades ago offers useful guidance. "Given the devastating economic and health impact of the pandemic and accompanying corruption, the public mood is 'Throw the bums out,'" says Cynthia Arnson, who heads the ▶

ILLUSTRATION BY CRISTINA DAURA

Edited by Amanda Kolson Hurley

◀ Latin America program at the nonpartisan Wilson Center in Washington, D.C. "Expect outsiders to win elections. The word that comes to my mind is not so much 'left' as 'volatile.'"

The pandemic hit Latin America harder than any other region and continues to take an unspeakable toll. Some 35 million cases of Covid-19 have been reported, and more than 1 million people are dead. But the pandemic didn't create misery; it exacerbated it. Much of the region was aflame in late 2019, with hundreds of thousands in Chile protesting a public-transportation fare increase and in Colombia demonstrating against a range of policies. Those in the streets spoke of disenchantment over inequality and inherited privilege. The coronavirus pushed many of them indoors; now they are back outside, even more fired up.

These countries are heavily dependent on exports of soy, oil, and copper, and commodity prices are rising, as they did during the pink tide. But this time, governments are so deeply in debt that even the extra revenue from exports won't allow them to spend much. "The right hasn't provided or delivered," says Sergio Guzmán, director of Colombia Risk Analysis, a political risk consulting firm in Bogotá. "They promised rural education, infrastructure, equality, water, and sanitation, and, lo and behold, we haven't had any of those things. So the next step is rejection of the business class and the current economic model."

● CHILE

Perhaps the biggest change looming is in Chile, which for three decades has been South America's investor standout, a laissez-faire laboratory whose rewards have been unequally distributed. Daniel Jadue, a communist, is leading the polls for November's presidential election.

In an interview with Bloomberg News on June 9, Jadue, 53, urged international investors to "think about the role they've played in the mess and problems of the region." He said only those willing to contribute to the well-being of Chileans will be welcome to operate there if he's elected. He added that the change under way in Chile is the result of "people coming to the realization that neoliberal policies are incompatible with democracy."

In mid-May, elections were held for drafters of a new Chilean constitution to replace the dictator-era one of the 1980s. Most of the drafters chosen are newcomers to electoral politics and include feminists, indigenous advocates, and leftist activists.

Outgoing President Sebastián Piñera, a conservative, said in a recent speech that he hoped water and property rights would be safeguarded in the next constitution. The drafters are pushing to reduce inequality and increase inclusiveness, and it's unclear if they can do that without sacrificing economic growth and investor confidence.

● COLOMBIA

Raúl Gallegos, based in Bogotá for Control Risks, a global risk consulting firm, says he expects that next May, leftist candidate Gustavo Petro will win the presidency of Colombia. Petro came in second to conservative President Iván Duque in 2018. He's firmly ahead in polls now.

In his youth, Petro, 61, joined the M-19 guerrilla group—infamous for its violent 1985 takeover of the Colombian supreme court—then helped dismantle it and entered more conventional politics. He was elected mayor of Bogotá, where his tenure got mixed reviews. A senator, he's twice run for president, losing by 2 million votes last time.

Colombia is a rarity in the region—it's never had a leftist government. This is generally attributed to three things: the decades-long terror campaign by the Marxist guerrillas known as the FARC, or the Revolutionary Armed Forces of Colombia; the Cold War, during which the country was firmly allied with the U.S.; and aid to the FARC and other terror groups from neighboring Venezuela, which led many Colombians to reject the leftists as foreign invaders.

But all of those phenomena have shifted. The FARC was essentially dismantled in the 2016 peace accords, the Cold War ended three decades ago, and Venezuela is in such crisis that it can't afford the same level of interference.

Between the pandemic and an influx of almost 2 million Venezuelan refugees, Duque was dealt an awful hand. But he's made a hash of it, spending his first year trying to redo the FARC deal, the second sending troops to quell protests, the third in lockdown, and now the fourth as a lame duck after proposing a tax increase that caused major unrest and the resignation of his finance minister.

● BRAZIL

Finally, there is Brazil, a wild card. Covid has killed almost half a million Brazilians, and President Jair Bolsonaro has taken plenty of blame for denying its threat and failing to obtain vaccines promptly. Tens of thousands of people have taken to the streets against him recently. Luiz Inácio Lula da Silva, who served as president from 2003 to 2011, is polling as the favorite to win in October 2022.

"They were completely spontaneous and disorganized demonstrations," says Thomas Trauman, a researcher at Fundação Getulio Vargas, a Brazilian think tank. "It's very hard to know where things are headed. We are at the beginning of a new commodity

"The right hasn't provided or delivered.... So the next step is rejection of the business class"

*NOT INCLUDING PUERTO RICO. DATA: U.S. ENERGY INFORMATION ADMINISTRATION, MARCH 2021 cycle. There's a decent chance that by the end of the year, vaccines will be plentiful, and growth will be at 5%."

Bolsonaro, who's on the far right politically, spent like a leftist during the pandemic. This brings up another point some analysts make: Politics are less about ideology and increasingly about personalities. Nayib Bukele, the president of El Salvador, came from the left, moved sharply right, and is now removing institutional obstacles to his growing authoritarian rule. And his approval rating hovers around 90%.

One regional outlier is Ecuador, where last month Guillermo Lasso took office as the first conservative in a generation. To win, however, he pivoted to a center-left audience that had picked social democrats and indigenous party candidates in the first round. His inauguration was greeted by a major bond rally. But as Andrés Mejía Acosta, an Ecuadorian political scientist at Kings College in London, notes, Lasso "faces the challenge of a difficult economic situation and slow vaccine rollout." He says the clock is ticking against him.

"The way to think about what is happening may be less a shift to the left than the exhaustion of the political party model," says Alejandro Velasco of New York University. "Look at Peru. Castillo has very little support in congress. He will be a weak president with a limited mandate. He may not last. And then everything is up for grabs again." —*Ethan Bronner, with Stephan Kueffner*

THE BOTTOM LINE The high toll of Covid across Latin America has made voters restless for change. The anti-incumbent tide may soon bring leftists to power in Chile, Colombia, and Brazil.

Puerto Rico's Power Struggles

● Protests, a fire, and a cyberattack complicate a management change for the electrical grid

Puerto Rico's attempts to overhaul its troubled public power utility are off to a rough start.

Luma Energy LLC, the private consortium that began managing the grid for the Puerto Rico Electric Power Authority, or Prepa, on June 1, has been besieged by protests, a cyberattack, and a major fire that briefly knocked out power to 900,000 customers on the island of 3.3 million.

Improving the electrical system is key to pulling the U.S. territory out of a deep economic slump and stopping rampant population decline. Blackouts and appliance-frying voltage spikes are common, even as customers pay rates that are higher than on the U.S. mainland. Hurricane Maria in 2017 decimated the already weak grid, and this year's Atlantic hurricane season began just as Luma took over.

Francisco Santana runs Grupo Vesan, a hydroponic farm in southern Puerto Rico that can produce 10,000 heads of lettuce a month. His operation depends on 1,000 LED lights, air-conditioned grow rooms, and a network of water pumps that make him hostage to the electrical system. Power to his farm has been unreliable for years.

"Let's not even talk about hurricanes—it just has to rain a little bit, and we have power outages," he says. A few years ago, he lost his entire crop when his backup generator and air-conditioning system failed amid outages and voltage spikes.

While Santana is in favor of a strengthened grid, he's also wary of the Luma deal. Like many people on the island, he fears the contract will eventually lead to price hikes, and he's already paying $5,000 a month for electricity. "There's a lot of uncertainty about what's going to happen," he says. "All our costs are increasing, and we're getting to the point that we can't compete as a country." (Luma has said it won't initially seek a rate increase.)

Proponents of the deal, including Governor Pedro Pierluisi, say new private management—along with $10 billion in federal reconstruction funds—will help modernize the grid. They also hope it will revive a deal to restructure the utility's $9 billion in debt and attract desperately needed businesses.

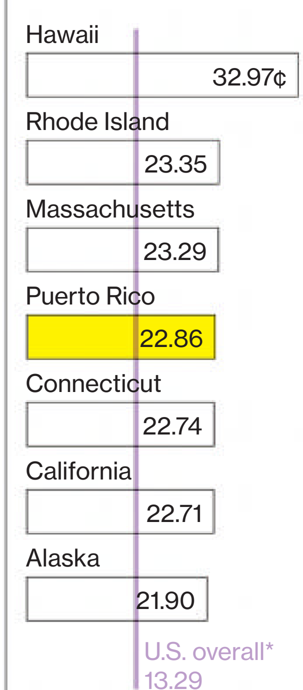
"If people feel they have the proper infrastructure to stay here, work here, create businesses here, raise their kids here, they will stay here, but if that doesn't happen, people will continue leaving Puerto Rico, and that hurts the economy," says Yandia Perez, executive vice president of the Puerto Rico Manufacturers Association.

From 2010 to 2020, Puerto Rico lost 11.8% of its population, more than any other U.S. jurisdiction. Its economy has shrunk by 17% since 2008.

Both the commonwealth and the power utility are in bankruptcy. Prepa's bankruptcy began in 2017, after its unwillingness to raise rates led to infrastructure decay and forced it to borrow to cover operating expenses. Critics of the agency say its management became politicized, with key jobs going to party loyalists.

"I am looking forward to a better day in Puerto Rico in terms of the performance of our energy sector—enough," Pierluisi said in May during a ▶

▼ Highest residential electricity prices in the U.S., per kilowatt-hour



▲ Old San Juan during a power outage on June 10

◀ meeting of the island's financial oversight board. "We've had a bankrupt public utility for too long; we've had an incompetent public utility for too long. I know the transformation that is under way will make a difference."

Luma—a consortium of Canada's Atco and Texas-based Quanta Services, working with Innovative Emergency Management—won the 15-year contract in a bid last year with promises to upgrade the grid. Prepa will continue to own its infrastructure.

The utility's main labor union and some politicians tried to delay the changeover, and Luma has faced sporadic protests for months. On a Spanish-speaking island sensitive to the erosion of its identity, the fact that a U.S.-Canadian consortium now controls the grid is a sore spot. "We're here to tell Luma that they shouldn't get comfortable," Carlos Rodriguez, the coordinator of a truckers' union, said at a recent anti-Luma protest. "We're not going to let them be in peace until they get out of Puerto Rico."

On June 10, the same day that the substation fire broke out, the company's customer web portal came under a distributed denial of service, or DDoS, attack that made it unavailable to many of its clients. Authorities are still investigating the incidents. Luma's President and Chief Executive Officer Wayne Stensby seemed perplexed by the number of obstacles the company has encountered so soon. "This is not normal," he said on June 11 at a press conference about the fire. "The system is very fragile, and that's why it's important to be prepared, but I would not expect events like this to happen very often."

Rafael "Tatito" Hernandez, president of Puerto Rico's House of Representatives, criticizes the Luma contract as too generous and is unhappy it was drafted behind closed doors. The agreement was only announced after the contract was signed. Many question Luma's claim that it will save the utility $110 million by 2024.

Stensby has said Luma will find "efficiencies" through the way it dispatches and responds to outages. The company has also pledged to reduce power interruptions by 30%, the length of outages by 40%, and workplace accidents by 50%. In exchange, Luma will earn more than $1.5 billion over the life of the contract.

One of the most contentious parts of the deal is that Prepa's public employees didn't automatically qualify for jobs at Luma. The powerful Utier electrical workers' union claims the arrangement violates local labor laws and urged its members not to make the switch. Luma says Prepa employees account for about half of the 2,200 workers it's already hired.

Tomas Torres, a Prepa board member who serves as its customer representative, says it's clear that Luma is understaffed and the contract needs to be amended to transition more Prepa employees into Luma. "They are trained, they know how to work in the system, and they have the knowledge and experience," Torres says.

As Puerto Rico enters hurricane season, much is riding on how Luma performs. Despite beginning operations understaffed, the company says it has hired 790 linemen and field technicians and has access to 800 additional contractors—more field staff than Prepa had. But fewer than 120 of those linemen are experienced Prepa workers, Efran Paredes, the public utility's executive director, told local legislators on June 14.

The company has $140 million in inventory and supplies—transformers, power poles, repair equipment—that will cover a two-month-long emergency, Mario Hurtado, Luma's vice president for regulation, told Puerto Rico's legislature on June 8. When Hurricane Maria hit in 2017, the island had supplies of just $30 million.

If Luma can't recover from its rocky debut and improve service, pressure to amend the contract may grow. In the worst-case scenario, Puerto Rico could be back where it started, with a decrepit grid that's vulnerable to future storms even after paying Luma millions of dollars in fees.

In the municipality of San Sebastian, in western Puerto Rico, Mayor Javier Jimenez Perez declared a state of emergency the weekend of June 5 and reactivated a volunteer electricity company as about 1,000 families spent days without power.

"That the lights go out is a constant—it has nothing to do with Luma—that's just the way our system is," he says. "But we're going two, three, four days without power. Luma needs to make some changes quick, or it's not going to last long." *—Michelle Kaske and Jim Wyss*

THE BOTTOM LINE Puerto Rico's spotty electrical service is badly in need of improvement. Still, some doubt that the public utility's recent deal with a private operator will fix its problems.

RICARDO ARDUENGO/AFP/GETTY IMAGES

Sustainability

Fixing Fish Farming

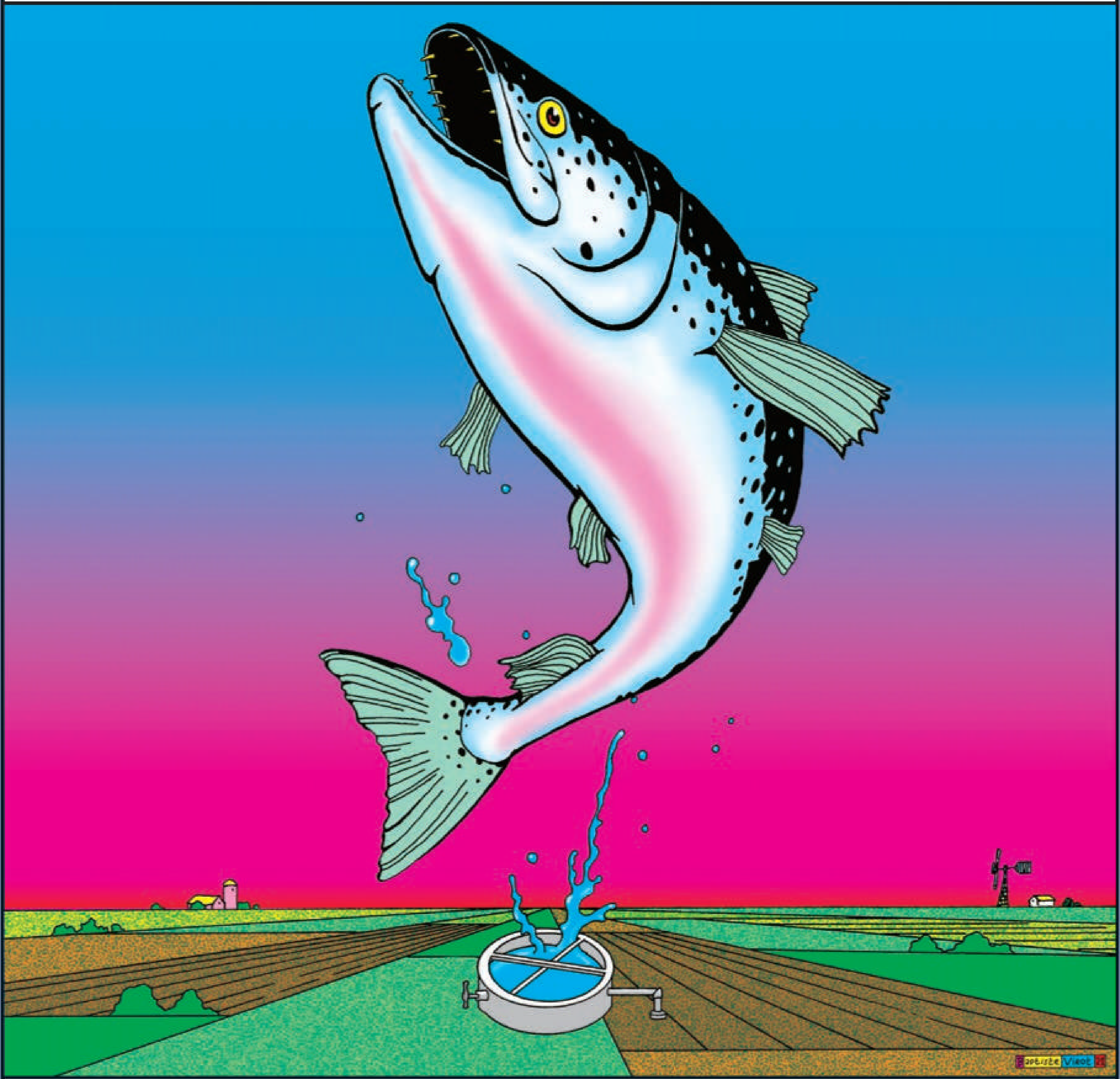


ILLUSTRATION BY BAPTISTE VIROT

There's a cleaner way to raise salmon, and it's heading toward profitability

June 21, 2021

Edited by Rebecca Penty and David Rocks

In a small town near the coast of Nova Scotia, Canada, 200,000 Atlantic salmon—lean, firm, their persimmon-colored flesh endorsed by a famed Canadian chef for quality and taste—are being carefully tended for next year's harvest. Some 2,000 miles south in a suburb of Miami, 2.5 million fish—10,000 metric tons—are being raised in saltwater pens for the same purpose. Nova Scotia's Sustainable Blue and Florida's Atlantic Sapphire ASA differ widely in scale but share a common ambition. Both are on the verge of doing something long considered almost impossible: turning a profit raising a premium Atlantic salmon that's never touched the sea.

Expensive, technically difficult, and plagued with its own environmental challenges, salmon farming on land has so far been a niche industry producing a relatively expensive product. But its proponents say it offers the best shot over the long term at making a core food source if not fully sustainable, at least much more so than traditional marine-based farming.

Human per capita fish consumption has more than doubled over the past six decades, to 20.3 kilograms (44.8 pounds) in 2017, propelled by changing dietary preferences and population growth, according to the United Nation's Food and Agriculture Organization, even as the planet's supply of wild fish is falling. About 87% of the 179 million metric tons (197 million tons) of fish produced through wild capture and farming in 2018 ended up on our plates, and that share is growing, according to the organization. Aquaculture, or seafood farming, now supplies the majority of the fish we eat, and salmonids—an illustrious family whose members include trout and char—account for almost a fifth of that market, but at a steep environmental cost.

It's one thing to farm sustainable bivalve mollusks, which consume plankton through their gills while filtering their habitat water. It's quite another to manage hundreds of thousands of carnivorous salmon caged in open-net pens suspended in the ocean, the typical salmon aquaculture operation. The worst problems created by such farms are analogous to those of piggeries and battery chicken cages: high rates of death and disease, threats to wild native species, algae blooms, and feces, so much feces. "You have under the cage, one meter—three feet or more—composed of fecal matter and rotting food, and that is the most disgusting thing you can imagine," says Daniel Pauly, professor of fisheries at the University of British Columbia. "And sometimes that stuff, in a storm, gets stirred up and kills all the fish."

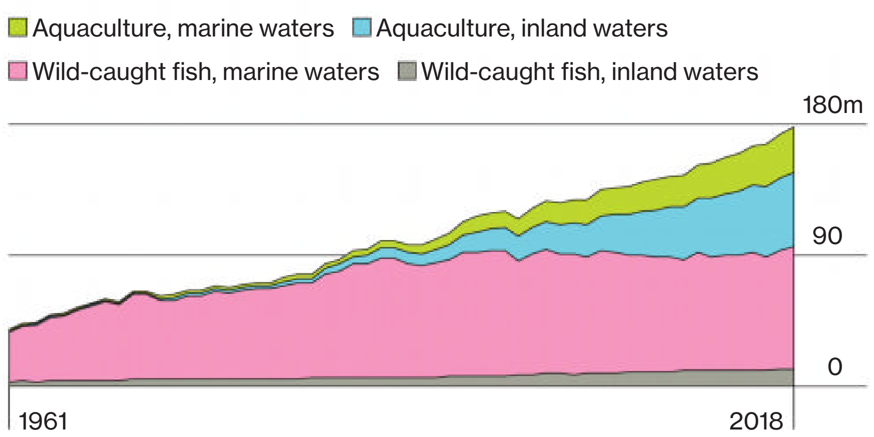
Much of the world's farmed salmon is flown to customers to keep it fresh, resulting in hefty transport emissions. And it doesn't even put a dent in global food insecurity. That's because the feed required to ensure farmed salmon contains the same heart-healing omega-3 fatty acids as their wild cousins is made with smaller oily fish such as anchovies and sardines, which people also eat. Land-based farms are studying if they can feed the salmon insects, instead.

A chameleon that changes from speckled or silvery blue and brown to crimson and orange with green heads or stripes, a wild salmon enjoys a rather epic life cycle. After hatching in fresh water, the juvenile fish make their way to the ocean, where they reach maturity, before battling their way back upstream to spawn at their birthplace, heroic journeys of hundreds or even thousands of miles, marked by acrobatic leaps along the way. Land-based fish farms try to mimic that process in fresh and saltwater tanks while minimizing interaction with local ecosystems to avoid the worst contagions caused by open-net-pen farms.

The complexity of keeping large numbers of salmon healthy in recirculated water has, until now, limited the land-based sector's ability to grow. Sustainable Blue's technology, developed over 20 years, discharges no water into the environment, keeps salmon in salt water longer for taste, and converts solid waste to biofuel. The smallest miscalculation—letting carbon dioxide levels build up too much, over-stressing the filtration system, introducing bacteria into the water that changes the flavor profile, or even a minor power hiccup—can be disastrous.

Sourcing the World's Fish

Global production, in metric tons



EXCLUDES AQUATIC MAMMALS, CROCODILES, ALLIGATORS, AND CAIMANS, SEAWEEDS AND OTHER AQUATIC PLANTS. DATA: UN FOOD AND AGRICULTURE ORGANIZATION

For Sustainable Blue and other land-based salmon farms, the biggest sustainability challenge is ensuring the energy used to filter and recirculate huge amounts of water is renewable, or clean. With Nova Scotia beginning to draw renewable hydroelectric power from neighboring Labrador, management is optimistic the facility's carbon footprint can be significantly reduced. It's producing a salmon that poses no threat to wild fish and ecosystems, requires no growth hormones or antibiotics, and is free of viruses and sea lice, says Kirk Havercroft, chief executive officer.

Sustainable Blue's salmon fillets sell for C$18 to C$20 ($14.80 to $16.50) per pound, compared with about ▶

◀ C$13 a pound for ocean-farmed Atlantic salmon. That gap is expected to narrow as the operation scales up production to 1,000 tons next year, from previous harvests of 100 to 150 tons, Havercroft says.

The company expects to cross into profitability in 2022, plans to expand to 5,000 tons a year, and is in active talks to potentially license its technology to other producers, he says.

Feeding units for young salmon in the Miami-area facility of Atlantic Sapphire, which runs the largest land-based salmon farms in the world

There are fewer than 100 land-based salmon projects in the works globally, some attracting significant interest from private equity and investment banks. Backers say the potential for growth is enormous, with marine-based salmon farms under mounting pressure to clean up or close down. The Canadian government is phasing out open-net-pen farms in British Columbia, despite industry pushback. Pauly, the fisheries professor, says the land-based sector is a sustainable, specialized option—especially if insect feed is used—but is skeptical it can be done at scale.

A major ecological benefit of land-based salmon farming is that it removes the fish from natural marine habitats, eliminating the risk that they pass on a host of viruses and parasites. Recently published research by Gideon Mordecai, a viral ecologist at the University of British Columbia, shows that open-net-pen Atlantic salmon are continually infecting British Columbia's wild Chinook salmon with Piscine orthoreovirus, associated with kidney and liver damage in wild fish. Because the virus can survive weeks in the water, it can spread with tidal movements as well as with escaped Atlantic salmon, infecting a range of fish species including herring, Mordecai says.

When Donald Wesley, a hereditary chief of the Gitwilgyoots tribe, began his fishing career 45 years ago, the icy waters around Port Simpson, B.C., teemed with wild sockeye salmon. "These big rivers that we had were the most bountiful rivers in all the world in my time, and now they're gone to the point of extinction," he says. "Even the herring is gone. And the herring is the fish that keeps the whole ecosystem alive." About 15 years ago, a major open-net-pen salmon producer tried to start a farm nearby, but the community sent its executives packing, Wesley says. He's skeptical about land-based farming, too, doubting large conglomerates will ever spend the money when the alternative is so much cheaper. For him, the only solution is to restore the wild population so it can be fished responsibly.

Atlantic Sapphire says it has the financing to do large-scale sustainable salmon farming on land. And its Florida project may be the industry's best test. "As long as we don't have a negative environmental footprint, then we are free to grow as much as we can," says Chief Financial Officer Karl Oystein Oyehaug. The company has facilities in Denmark and the U.S. that are already the largest of their kind. The bigger Florida site is expected to produce 10,000 tons of Atlantic salmon next year, pushing the company to its first full-year profit, and by 2031 it's aiming for 220,000 tons—far more than most open-net farms.

Atlantic Sapphire benefits from the state's geology, drawing contaminant-free salt water from an ancient aquifer. Less than 1% of the project's water is discharged as nontoxic wastewater into a boulder zone 3,000 feet down, the same way Miami gets rid of human wastewater. Over thousands of years, the water is filtered through the rock and eventually flows back to the ocean completely clean, Oystein Oyehaug says. "We're producing salmon in tropical Florida, a cold-water species, with absolutely zero impact on the ocean," he says.

Processed on site and shipped to customers by road, the fish can be on a Floridian's plate within 24 hours, selling for a 50% premium to farmed ocean salmon, at about $15 per pound. Atlantic Sapphire is working on using 100% renewable energy, including solar, and looking to remove fish from its feed by 2025.

Some critics question all the hoops being jumped through in the name of serving sustainable pink fish. "So carnivorous salmon should be domesticated and fed a plant-based diet in service of omnivorous humans?" says Jennifer Jacquet, an associate professor in the Department of Environmental Studies at New York University. Mordecai says he recently discovered a company that makes artificial smoked salmon using carrots. "I actually tried it when I was out in a restaurant, and it was pretty good." —*Danielle Bochove*

THE BOTTOM LINE The world needs more fish, but conventional salmon aquaculture is harmful. Raising them on land may soon be a viable option.

ILLUSTRATION BY BAPTISTE VIROT. PHOTO: ATLANTIC SAPPHIRE

More Peas, Please

Beyond Meat's vegan burger craze spurred an insatiable demand for vegetable protein

For investors, Beyond Meat's May 2019 stock market foray was the most successful initial public offering since the 2008 financial crisis. For the food industry, it was the start of an obsession with one key ingredient: the humble yellow pea.

Flush with cash, Beyond Meat soon brought the newest version of its pea-based vegan Beyond Burgers to supermarkets across the U.S., added Beyond Beef to the store lineup, and tested Beyond Sausage with its biggest partner yet, Dunkin'. By the end of that summer, pea protein prices had more than doubled from a year earlier, says Morten Toft Bech, founder and chief executive officer of Meatless Farm Co., a British maker of plant-based meats. Copycats quickly followed, and now pea protein is being used to make fake chicken, seafood, cheese, and even rice.

Yellow pea is the fastest-growing source of protein for plant-based meat alternatives, a market that's expected to be worth $140 billion globally by 2029, up from $14 billion in 2019, according to data from food technology company Benson Hill and Barclays Plc. Eco-conscious consumers are drawn to imitation meats because, pound for pound, their environmental footprint, measured in water or greenhouse gas emissions, is a fraction of beef's.

Soy is still a major alt-meat ingredient, but consumers have soured on it; it's often genetically modified, and it's allergenic for some. Soy's reputation has also been harmed by concerns about its connections to deforestation in the Amazon rainforest and misconceptions about its estrogen content. Wheat was also a go-to vegan protein source, but it went out of style when gluten-free diets became all the rage.

Agrifood companies are expected to expand the 2019 global pea protein market by about 42% this year, to 340,000 metric tons, with new plants in Canada, Germany, the U.S., and China—which is becoming a major supplier, according to Henk Hoogenkamp, an adviser and board member for several food companies. Soy protein, however, remains dominant, at least for now: Production for human consumption is expected to be about 1.25 million tons this year. Yet pea protein prices continue to rise. Some consumer companies, Meatless Farm and the dairy alternatives maker Ripple Foods among them, make their own pea protein so they don't have to worry about the volatility of the market. "It is a mad rush," says Lisa Pitka, a senior food technologist at food advisory company Mattson. "Everybody is trying to procure these ingredients."

Puris, which began as a soybean company in the 1980s, has become the biggest producer of pea protein in the U.S. It introduced a pea product in 2014, spurred by the ingredient's popularity in energy and performance foods, and now that's the company's largest source of growth. "We've been supertight on supply ever since we started up," says Tyler Lorenzen, a pro football player turned chief executive officer of Puris Proteins, the company's ingredient division. Puris refurbished a 200,000-square-foot former dairy facility in Dawson, Minn., to handle peas, and it's getting ready to bring it online in the third quarter. It has the help of an unlikely investor: meat giant Cargill Inc., which has put more than $100 million into a joint venture with Puris to build the plant.

Cargill isn't the only meat company investing in alt-meat foods: Tyson Foods Inc., an early investor in Beyond Meat, this year unveiled a lineup of 100% vegan meat products including fresh patties, ground "beef," fake bratwurst, and Italian sausage. And JBS SA, the world's largest meat supplier, announced plans in April to acquire Dutch plant-based food producer Vivera BV for €341 million ($410 million). The meat industry's newfound interest in plant-based proteins either signals a more sustainable future, in which companies that got rich on beef, pork, and chicken shift to foods that are less resource-intensive, or it's simply Big Meat tapping ▶

◀ into growing consumer appetite for vegan foods to complement its meat-driven profits. "Personally, it makes me a bit uncomfortable," says Jennifer Molidor, a senior food campaigner at the Center for Biological Diversity, an advocacy group for the environment and endangered species. Peas are good for the environment, but Molidor stresses that displacement of meat needs to be a key focus of building a sustainable food system; not only more food production. Although sales of plant-based alternatives are growing, meat consumption is, too. "No individual protein can feed the expected global population of 9.8 billion people by 2025," says Mike Wagner, a managing director for Cargill in North America.

Makers of fake meat favor pea protein because it's versatile and malleable. But there's a problem: Some of it tastes like dirt. Talk to companies about it, and you'll hear the words "masking" and "neutralizing" a lot. And consumers perusing nutrition panels may notice high sodium levels.

Cleaned peas at the Puris processing facility in Minnesota

"How you process it, how you use it, apply it in your finished product, makes all the difference," says Jitendra Sagili, head of research and development at Greenleaf Foods SPC, which makes vegan brands Lightlife and Field Roast. These brands "deflavor" naturally, he says, using ingredients such as garlic, lemon, lime, and, yes, salt. Puris, other breeders, and processors have made some progress. Lorenzen takes pride in his product hardly having any taste at all. "Better-tasting to us is bland," he says. "It tastes like nothing."
—*Deena Shanker*

THE BOTTOM LINE Food suppliers are rapidly expanding output of pea protein, because of soaring demand for plant-based meat, dairy, and seafood alternatives that don't contain soy or wheat.

Putting Steaming Hot Data on Ice

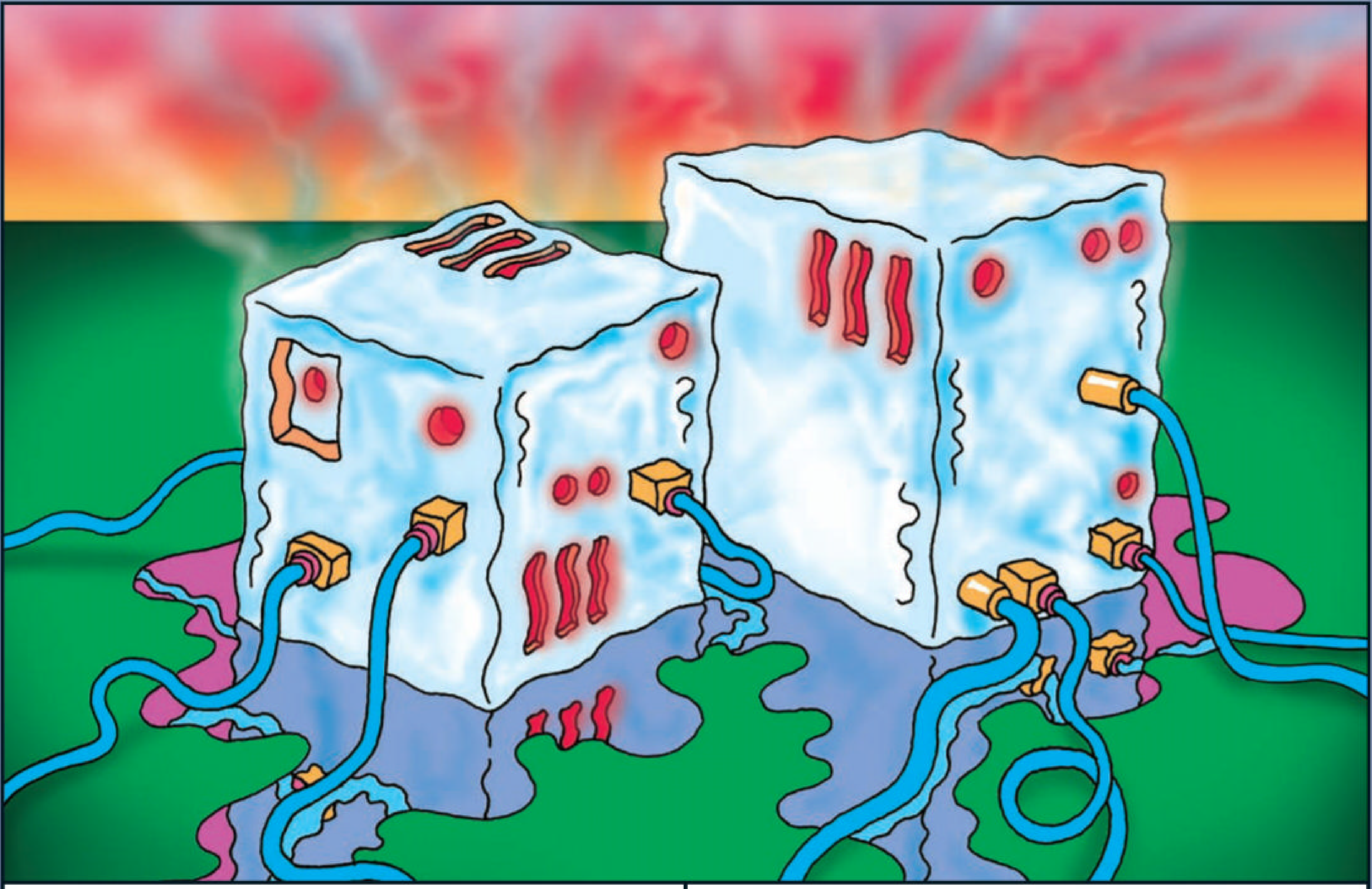
Cooling the world's server farms is becoming a big business

All those videos, emails, bank statements, photos, shopping carts, airline reservations, and so, so, so much more sluicing around the internet eventually end up in the millions of data centers scattered across the globe. With all that stuff coming and going, those places are getting crowded—and hot. David Craig can't do much about the congestion, but he says he's got a fix for the heat: A liquid that bathes the cores of processors to keep things at a relatively chilly 50C (122F). "As we process much more data, the chips are becoming three, four, five times hotter," says Craig, chief executive officer of Iceotope Technologies Ltd., a U.K. startup focused on cooling strategies for computing.

Data centers consume 2% to 4% of the world's electricity, and almost half of that power goes to cooling, according to the Uptime Institute, a consulting firm in Seattle. Early on, most data was kept on-site at the banks, universities, or corporations that generated it, where cooling often meant little more than opening the window. Today, a growing share of the world's data is consolidated in megacenters with thousands of processors, and the vast majority of them use traditional air conditioning. Although some heat is good for computers, too much can cause systems to crash, and with each generation of computer chips running faster and hotter, the systems will soon be too hot for even the most efficient air conditioner. Finding better ways to keep temperatures down could save the industry some $10 billion a year on electricity alone, according to Uptime. "Air just isn't a very effective medium for transferring heat," says Rabih Bashroush, global head of IT advisory services at Uptime.

The market for equipment used to cool computer gear hit $10.5 billion in 2019 and is growing 13% a year, according to Allied Market Research, sparking a race among companies ranging from startups such as

ILLUSTRATION BY BAPTISTE VIROT. PHOTO: BEN BREWER/BLOOMBERG



Iceotope to the likes of Facebook, Google, and Microsoft. Newer strategies focus mostly on liquid technologies, including circulating specially formulated fluids through tubes, submerging processors in the stuff, and even building data centers under the sea. Market researcher PitchBook reports that venture capital investment in data-center-cooling startups more than doubled last year, to $34 million. “Liquid cooling can provide more service in less space,” says Arman Shehabi, a research scientist at Lawrence Berkeley National Laboratory, who studies power consumption in computers.

Microsoft Corp., which runs more than 200 data centers globally, is testing systems in which servers are bathed directly in a fluid that doesn’t conduct electricity. It estimates liquid cooling could allow it to fit 10 times as much computing power in the same space. “We’re just starting down the liquid path,” says Christian Belady, chief of the unit that develops technology for data centers. “You’re going to see a lot of rapid change in how we do things.”

At least a dozen smaller startups have joined the fray. Spain’s Submer Technologies SL sells sealed pods that are filled with servers bathed in a nonconducting liquid and can be plugged directly into a network. The company says the excess heat can be used to warm nearby buildings, and the technology extends the life of the computer because no dust reaches the processor. Netherlands-based Incooling BV uses a fluid that gets boiled into a gas by the processors before being cooled back into a liquid and recirculated, which the company argues is the most efficient way to absorb heat. “We’re able to maximize the potential of every component,” says co-founder Helena Samodurova.

Iceotope, based in Sheffield, a three-hour drive north of London, has raised more than $10 million from venture capital backers since its founding in 2005. It initially sought to manufacture its own cooling systems, but about five years ago it shifted to developing the underlying technology. Iceotope is raising another round of funding from strategic investors that it expects will give it better entrée to more customers, and last year it opened an office in the U.S., aiming to expand its business there. Although the company had less than £10 million ($14 million) in 2020 sales, Craig says he aims to at least double revenue this year as partnerships with computer manufacturer Lenovo Group Ltd. and some smaller companies start to bear fruit. “The market is getting hot, fast—no pun intended,” he says. “If we don’t deal with cooling efficiently, we’ll be in real trouble.” —*Ivan Levingston and Will Mathis*

THE BOTTOM LINE Data centers consume as much as 4% of global electricity, almost half of that for cooling. Better ways to keep temperatures down could save the industry $10 billion a year.


AIRBNB HAS

A NIGHTMARE PROBLEM

WHEN VIOLENT CRIMES HAPPEN DURING STAYS, THE COMPANY'S SECRETIVE SAFETY TEAM IS CALLED ON TO SOOTHE GUESTS, HELP FAMILIES—AND PREVENT PR DISASTERS

BY OLIVIA CARVILLE
ILLUSTRATION BY JUN CEN

THE APARTMENT BUILDING ON WEST 37TH STREET

The first-floor apartment on West 37th Street, a few blocks south of Times Square, was popular with tourists—so popular that a set of keys was left at the counter of a nearby bodega for Airbnb renters to pick up. That's where a 29-year-old Australian woman and a group of her friends retrieved them, no identification needed, when they arrived in Manhattan to celebrate New Year's Eve in 2015. The apartment had been advertised on Airbnb even though most short-term rentals are illegal in New York. The city, prodded by powerful hotel unions, was at war with the company, which was listing thousands of apartments in the five boroughs despite some of the strictest regulations in the country.

Soon after ringing in the new year, the woman left her friends at the bar where they'd been celebrating and returned to the apartment on her own. She didn't notice anything amiss or see the man standing in the shadows as she walked into the bathroom. By the time she realized she wasn't alone, the blade of a kitchen knife was pointing down at her. The stranger grabbed her, shoved her onto a bed, and raped her. Drunken revelers were wandering the streets outside, but the woman was too scared to scream.

The attacker fled with her phone, but she managed to reach her friends with an iPad, and they ran into the street to find a police officer. The cops were already in the apartment an hour or so later when the man returned and peered into the doorway. They caught him and emptied his backpack, pulling out three incriminating items: a knife, one of the woman's earrings, and a set of keys to the apartment.

That morning a call came in for Nick Shapiro. A former deputy chief of staff at the Central Intelligence Agency and National Security Council adviser in the Obama White House, Shapiro was two weeks into a new job as a crisis manager at Airbnb Inc. "I remember thinking I was right back in the thick of it," he recalls. "This brought me back to feelings of confronting truly horrific matters at Langley and in the situation room at the White House."

Shapiro notified other Airbnb executives, including Chief Executive Officer Brian Chesky. Meanwhile safety agents from the company's elite trust-and-safety team sprang into action. They relocated the woman to a hotel, paid for her mother to fly in from Australia, flew them both home, and offered to cover any health or counseling costs.

The duplicate keys posed a particular problem for the company and a mystery for investigators. How had the man gotten them? Airbnb doesn't have a policy for how hosts exchange keys with guests, and its reputation for safety, and possibly its legal liability, hinged on the answer. Shapiro (who's since left the company) helped coordinate an investigation into the matter.

A week later, a staff member was sent to court to see if Airbnb was mentioned during a proceeding. It wasn't. The local media didn't report on the crime either, despite the lurid details, and the company wanted to keep it that way. The story remained unreported until now, in no small part because two years after the assault, Airbnb wrote the woman a check for $7 million, one of the biggest payouts the company has ever made. In exchange she signed an agreement not to talk about the settlement "or imply responsibility or liability" on the part of Airbnb or the host.

Details of the crime, the company's response, and the settlement were reconstructed from police and court records and confidential documents, as well as from interviews with people familiar with the case. The woman, whose name was redacted in court documents and who asked through her lawyer not to be identified, declined to comment. So did her lawyer. Ben Breit, an Airbnb spokesman, says that the company doesn't have the power to keep stories out of the media and that, despite the wording of the settlement agreement, the woman "is able to discuss whether she holds anyone responsible." He adds that Airbnb's goal following the incident was to support the survivor of a "horrific attack" and that local political issues had nothing to do with its response.

The way Airbnb has handled crimes such as the New York attack, which occurred during a bitter regulatory fight, shows how critical the safety team has been to the company's growth. Airbnb's business model rests on the idea that strangers can trust one another. If that premise is undermined, it can mean fewer users and more lawsuits, not to mention tighter regulation.

For all its importance, the safety team remains shrouded in secrecy. Insiders call it the "black box." But eight former

BUILDING: PHOTOGRAPH BY JEFF BROWN FOR BLOOMBERG BUSINESSWEEK. CHESKY: JUSTIN SULLIVAN/GETTY IMAGES members and 45 other current and former Airbnb employees familiar with the team's role, most of whom spoke on condition of anonymity for fear of breaching confidentiality agreements, provided a rare glimpse into its operations and internal struggles. The job, former team members say, is a nerve-wracking one, balancing the often conflicting interests of guests, hosts, and the company. "I had situations where I had to get off the phone and go cry," a former agent recalls. "That's all you can do."

Founded in 2008 by design students Chesky and Joe Gebbia, along with engineer Nate Blecharczyk, Airbnb has grown from a funky couch-surfing alternative to one of the biggest hospitality companies in the world, with 5.6 million listings, more than the number of rooms in the top seven hotel chains combined. Its $90 billion market value—the share price has doubled since the company went public in December—shows just how much progress the founders have made in wooing investors since their ramen days. One of the first Silicon Valley venture capitalists they pitched was Chris Sacca, an early backer of Instagram, Twitter, and Uber. After their presentation, Sacca later recalled, he pulled them aside and said, "Guys, this is super dangerous. Somebody's going to get raped or murdered, and the blood is gonna be on your hands." He didn't invest.

From the outset, Airbnb has encouraged strangers to connect online, exchange money, and then meet in real life, often sleeping under the same roof. It's somewhere between a tech platform and a hotel operator—unable to disavow responsibility for ensuring its users are safe, as some tech companies might, or to provide security guards and other on-site staff, as a hotel would. What makes trust and safety at Airbnb more complicated than at Apple or Facebook "is that you are dealing with real people in real people's homes," says Tara Bunch, Airbnb's head of global operations. Bunch has overseen the safety team since being hired away from Apple Inc. last May. "People are naturally unpredictable, and as much as we try, occasionally really bad things happen," she says. "We all know that you can't stop everything, but it's all about how you respond, and when it happens you have to make it right, and that's what we try to do each and every time."

In the early days, the co-founders answered every customer service complaint on their mobile phones. When that became unmanageable, they hired support staff to field calls. It wasn't until three years in, after more than 2 million booked stays, that the company faced its first big safety crisis. In 2011 a host in San Francisco blogged about returning from a work trip to find her home ransacked. Her "guests" had trashed her clothes, burned her belongings, and smashed a hole through a locked closet door to steal her passport, credit card, laptop, and hard drives, as well as her grandmother's jewelry.

In a follow-up post, the host wrote that an Airbnb co-founder had contacted her and, rather than offering support, asked her to remove the story from her blog, saying it could hurt an upcoming funding round. Soon #RansackGate was trending on Twitter, and the incident snowballed into a crash course in crisis management. The result: a public apology from Chesky, a $50,000 damage guarantee for hosts (since increased to $1 million), a 24-hour customer-support hotline, and a new trust-and-safety department.

CHESKY

"WE ALL KNOW THAT YOU CAN'T STOP EVERYTHING, BUT IT'S ALL ABOUT HOW YOU RESPOND.... YOU HAVE TO MAKE IT RIGHT"

As Airbnb grew, so did the number of dangerous incidents—everything from hosts hurling suitcases out of windows to concealed cameras, gas leaks, and sexual assaults. Many of the crimes taking place inside short-term rentals listed on its platform and others could have happened in any apartment or hotel room. But in some cases hosts used the platforms to commit them. In one October 2011 incident, an Airbnb host in Barcelona plied two American women who'd booked a stay at his home with alcohol, then raped them. When the women went to the police the next morning, the host threatened to upload videos of the attack to the internet if they didn't drop the case, according to local media reports. Police searched his apartment and found hundreds of similar photos of other victims. The man received a 12-year prison sentence. Airbnb, which declined to comment about the case for this story, paid the two women an undisclosed amount and banned the host for life.

By 2016 the safety team was overwhelmed with calls, many of them minor in nature, and Airbnb started training contractors in call centers around the world to handle the flood of complaints. Airbnb says that fewer than 0.1% of stays result in a reported safety issue, but with more than 200 million bookings a year, that's still a lot of trips with bad endings. Only the most serious problems are transferred to the internal safety team.

That team is made up of about 100 agents in Dublin, Montreal, Singapore, and other cities. Some have emergency-services or military backgrounds. Team members have the autonomy to spend whatever it takes to make a victim feel supported, including paying for flights, accommodation, food, counseling, health costs, and sexually transmitted disease testing for rape survivors. A former agent who was at Airbnb for ▶

◀ five years describes the approach as shooting "the money cannon." The team has relocated guests to hotel rooms at 10 times the cost of their booking, paid for round-the-world vacations, and even signed checks for dog-counseling sessions. "We go the extra mile to ensure anyone impacted on our platform is taken care of," Bunch says. "We don't really worry about the brand and image component. That stuff will take care of itself as long as you do the right thing."

Former agents recall cases where they had to counsel guests hiding in wardrobes or running from secluded cabins after being assaulted by hosts. Sometimes the guests were the perpetrators, as with an incident when one was found in bed, naked, with his host's 7-year-old daughter. Agents have had to hire body-fluid crews to clean blood off carpets, arrange for contractors to cover bullet holes in walls, and deal with hosts who discover dismembered human remains.

The work can be so stressful that agents have access to cool-down rooms with dimmed lighting to create a soothing atmosphere for answering harrowing calls. And it can take a heavy toll. Some former agents say they suffer from vicarious trauma. On the job they tried to remember that everything that happens in life can happen in an Airbnb. That perspective was drilled into new recruits during 12-week training sessions: Just as nightclubs can't eliminate sexual assaults and hotels can't stop human trafficking, Airbnb can't prevent bad actors from using its platform.

The company says its safety agents are taught to prioritize customers in crisis, yet many understood themselves to have a dual role to protect both the individual and Airbnb's public image. In sensitive cases, according to some former agents, they were encouraged to get a payout agreement signed as quickly as possible. Until 2017, other insiders say, every agreement came with a nondisclosure clause that barred the recipient from talking about what had happened, making further requests for money, or suing the company. That practice ended when the #MeToo movement showed how nondisclosure agreements were being used to shield high-profile individuals and companies from fallout over allegations of misconduct. Airbnb replaced the NDA section of its payout agreement with a narrower clause that says recipients can't discuss the terms of their settlement or imply that it's an admission of wrongdoing.

The company declined to comment on the terms of settlements or the safety team's budget. But a confidential document seen by *Bloomberg Businessweek* shows that in recent years, Airbnb spent an average of about $50 million annually on payouts to hosts and guests, including on legal settlements and damage to homes. (The company says that most of its payouts are related to property damage under its host-guarantee insurance program, and that even six-figure settlements are "exceptionally rare.")

Former safety agents also describe tension with the trust side of the department, whose job is to develop policies to prevent bad things from

happening, whether it's bed bugs, loaded guns, or kidnappings. Safety agents, who clean up only after disaster strikes, say they felt like the unloved side of the department. There was also tension between the safety and sales teams about professional hosts who manage multiple properties and whose removal from the platform for a safety violation could cost Airbnb hundreds of listings.

The hardest part of the job, the former agents say, was making peace with their role in keeping cases quiet and ensuring that victims and their families didn't blame the company. Sometimes they were told to prioritize less traumatic situations involving reality-TV stars and others with big social media followings, which they say made them uncomfortable. Breit, the Airbnb spokesman, says that all safety incidents are treated "appropriately and consistently."

Like many Silicon Valley companies, Airbnb rose on the strength of a growth-at-all-costs ethos—rolling into cities, skirting regulations, winning the popular vote, and catching on so fast that by the time officials noticed what was going on, they had no chance of controlling it. Regulatory battles blew up around the world, the most toxic of which played out in New York in 2015. The city conducted sting operations to expose illicit rentals of shorter than 30 days and ordered the company to provide addresses of its listings, sparking years of legal fighting. Airbnb hired opposition researchers to dig into the backgrounds of its critics and paid for attack ads.

In early 2016, after the assault near Times Square, safety agents did what they were trained to do: provide comfort and assistance to the victim. But the possibility of a lawsuit raised the stakes. Chris Lehane, a former political operative for President Bill Clinton, had been hired by Airbnb as head of global policy and communications a few months before the incident. Company insiders say Lehane, the author of *Masters of Disaster*, a 2014 book about "the black art of damage control," was afraid the case could be used by opponents to run Airbnb out of town. (Lehane declined to be interviewed.)

The issue with the keys wasn't easily addressed. Arrangements such as the one used by the host on West 37th are common in the short-term rental ecosystem—a luggage store next door to the building advertised itself online as a "convenient spot for picking up Airbnb lockbox keys." But these practices can be dangerous, with keys passing through an unknown number of hands.

William Delaino, a long-term tenant on the third floor of the West 37th Street building, recalls that the woman's friends rang his buzzer that night after getting no answer from her. "There were quite a few Airbnb units in the building, and I was used to this kind of thing from foreign travelers," he says. He estimates that 4 of the building's 12 units were being rented out on Airbnb at the time. Its owner, Kano Real Estate Investors LLC, declined to comment. But after the attack, tenants say, it updated its leases to forbid them from listing their apartments on Airbnb.

Detectives were lucky that the alleged rapist, Junior Lee, had returned with the keys. He was charged with predatory sexual assault, which carries a maximum sentence of life in prison. A prosecutor told the judge that Lee, 24, was a "career criminal" with 40 misdemeanor convictions, according to court transcripts. Lee pleaded not guilty, and bail was set at $250,000.

Airbnb escaped mention not only in the media and in the indictment but also in the police report and the complaint filed by prosecutors. Nor is there anything in the public record about how Lee got the keys. His Legal Aid lawyer, Evan Rock, declined to comment on the case. Lee, who's been deemed mentally unfit, is in custody awaiting further examination, but even if he goes to trial it's not clear whether the company's role will be an issue, or whether the mystery of the keys will ever be solved.

Airbnb's potential liability for not enforcing a stricter key-exchange policy won't be an issue thanks to the $7 million settlement, which came about after the woman's lawyer, Jim Kirk at the Kirk Firm in New York, sent a letter threatening legal action. Although the settlement doesn't bar the woman from cooperating with prosecutors, it does prevent her from blaming or suing the company. That was especially important for Airbnb because the woman wasn't the one who'd rented the apartment, so she hadn't signed the company's 10,000-word terms of service agreement—another important way Airbnb keeps incidents out of court and out of the public eye.

Anyone registering on the site is required to sign this agreement, which bars legal claims for injury or stress arising from a stay and requires confidential arbitration in the event of a dispute. Former safety agents estimate the company handles thousands of allegations of sexual assault every year, many involving rape. Yet only one case related to a sexual assault has been filed against Airbnb in U.S. courts, according to a review of electronically available state and federal lawsuits. Victims' lawyers say the terms of service are an important reason.

The case that did make it through was filed in 2017, when Leslie Lapayowker, a 51-year-old woman, sued Airbnb after allegedly being assaulted by a host in Los Angeles. Lapayowker was moving to the city from New Mexico and had booked a 30-day stay while she searched for an apartment, according to court documents. The lawsuit says that after she decided to leave because of the host's bizarre behavior, he followed her into the studio unit she'd rented, locked the door, held her in a chair against her will, and masturbated in front of her, ejaculating into a trash can. As Lapayowker fled, according to the complaint, the host said, "Don't forget to leave me a positive review on Airbnb." The man, who said the encounter was consensual, wasn't charged.

Lapayowker's lawyer, Teresa Li, says the suit was able to proceed, despite the arbitration requirements in Airbnb's terms of service, because the company hadn't done a thorough background check of the host. Airbnb only flags prior convictions, and though the host had previously been charged ▶

ILLUSTRATION BY JUN CEN

◀ with battery, he wasn't convicted.

In her filing, Li argued that Airbnb created a false sense of security by using the words "trust" and "safety" on its website. The company moved to settle, offering Lapayowker an undisclosed amount of money in exchange for dropping the case. It also banned the host from its platform. Airbnb declined to comment, as did Lapayowker. Li says she's barred from discussing the negotiations or the amount her client received. She's also settled another assault case against the company, brought by a U.S. citizen raped in India by a host's relative who was out on bail after being charged with murder.

A similar process played out when the family of Carla Stefaniak, a Florida woman murdered while celebrating her 36th birthday in Costa Rica in 2018, filed a lawsuit against the company later that year. Stefaniak's decomposing remains were discovered half-buried and wrapped in plastic about 1,000 feet from her Airbnb rental. A security guard at the complex where she was staying was convicted of her murder. The suit claimed that Airbnb had failed to perform a background check on the security guard, who was working in the country illegally. The company settled the case for an undisclosed amount.

The result of all these settlements, combined with the terms of service provisions that prevent lawsuits in the first place, is that the courts have never established the extent to which short-term rental operators might be liable, if at all, for crimes that take place in the properties they list. "The law around these platforms is unclear," Li says. "Everything is getting sent to arbitration, so nobody really knows."

Airbnb's desire for secrecy also makes it difficult to understand what impact short-term rentals have on the overall safety of neighborhoods. The company doesn't make the addresses of listings public, to protect the safety and privacy of its users. And though some U.S. cities require hosts to list their units on short-term-rental registries, most don't release the data, citing the same privacy concerns. Those that do often don't disclose apartment numbers, making it all but impossible to check many addresses against police calls or arrest records. The registries also don't include units rented illegally.

Businessweek obtained registries for Austin, Miami Beach, and Los Angeles through public records requests, seeking to cross-reference them with public databases of police calls or crimes. Police responded to thousands of incidents at short-term rentals in the three cities over the past two years. In Miami Beach, the registry showed 1,071 police calls to addresses listed in 2019, including 40 for violent crimes. But police reports don't say which platform the unit was on or whether it was being rented at the time, making it difficult to draw useful conclusions about the correlation between the short-term rental industry and crime. Academic researchers say similar limitations have frustrated their efforts to study the link. Only about a half-dozen scholarly studies have been carried out on the subject, and their findings are contradictory.

With cities and police forces unable to gather data, and with cases rarely reaching the courts, high-profile incidents have tended to drive the political conversation around short-term rentals. Mindful of this, since 2018, Airbnb has escalated such incidents to its global crisis management team, which was formed by Lehane and other executives and initially headed by Shapiro, the former CIA official. Airbnb "can't control everything," says Shapiro, who now runs his own consulting company. "But after something bad happens, how they respond to make it better or not is 100% in their control, and they can't mess that up."

Several deadly incidents took place in 2018 and 2019, in addition to Stefaniak's murder, as the company was gearing up for an initial public offering. One was in November 2018, when a retired New Orleans couple died after inhaling toxic fumes while they slept at an Airbnb in Mexico. Their son appeared on television afterward, pleading for Airbnb to do more to protect its users.

Chesky, who declined to be interviewed for this article, wanted to know why cases like this kept landing on his desk and why the company was mishandling or delaying its safety responses, according to people familiar with his reaction. The answer to the second question was that the safety team was understaffed. When executives realized this, a shakeup ensued. In early 2019 the safety team was split from trust, placed under the community-support division, and given additional engineering resources and staff.

But tragedies kept happening. That May six Brazilian tourists, two of them children, died of carbon monoxide poisoning inside an Airbnb rental in Santiago, Chile. A relative had called the company before they died, but the response was delayed because no one at the call center spoke Portuguese. Chesky was furious, former employees say.

Then, that Halloween, Airbnb faced one of its deadliest incidents: a shootout at a $1.2 million four-bedroom home in Orinda, Calif., about 20 miles east of San Francisco. The house, which had been the subject of numerous complaints to police and the city, had been booked for one night. The guest, who'd been reported to Airbnb for leaving a bullet at another listing just days before, triggering an internal safety warning, then advertised a "mansion party" on social media. More than 100 people were there when a gunman opened fire, killing five.

Chesky expressed his condolences via Twitter and announced new safety measures, including a ban on party houses and a promise to verify the photographs, amenities, cleanliness, and safety of all the listings on Airbnb. (This effort is still under way.) But the company didn't reach out to the mother of one victim,

"THE ONLY THING THAT REALLY MOTIVATES THEM IS THE THREAT ... OF BAD PR OR A NIGHTMARE IN THE PRESS"

POLICE INVESTIGATE THE SHOOTING IN ORINDA; THE HOUSE IN ORINDA WHERE FIVE PEOPLE WERE SHOT AND KILLED

RAY CHAVEZ/GETTY IMAGES (2)

23-year-old Raymon Hill, for a week, until her lawyer, Jesse Danoff, wrote a letter and issued a statement criticizing Airbnb for providing little more than prayers. Even some of the company's own safety agents were upset. They say that party houses had been a problem for years.

Airbnb subsequently offered to pay for the funerals, but Danoff says that when some of the families sent bills of more than $30,000, the company started haggling. "They don't care anymore, because the news cycle has moved on," Danoff says. "The only thing that really motivates them is the threat or potential threat of bad PR or a nightmare in the press." (Airbnb says it paid the bills. Danoff says he's still negotiating a settlement.)

"They need to be held accountable for what happened," Hill's mother, Cynthia Taylor, says of Airbnb. "My son's life was taken away at a property they allowed to keep renting on their service after multiple complaints."

That December, Airbnb announced $150 million of additional trust-and-safety spending. It's introduced a 24/7 hotline that offered renters immediate access to a safety agent; created a system to flag high-risk reservations; banned users who were under 25 and didn't have a history of positive reviews from booking an Airbnb in the area where they live; and stopped allowing one-night stays over Halloween, July Fourth, and New Year's Eve. Many of these measures were focused on the U.S.—rolling them out globally has been a challenge, given differing cultures, customs, and regulations in the 191 countries where Airbnb operates. The company has also debated whether to force users to provide government-issued identification, but it decided against doing so to avoid excluding hosts and guests in countries where ID is difficult to obtain.

In early 2020, the pandemic hit, wiping out travel as countries closed borders and the world went into lockdown. Airbnb lost 80% of its business in eight weeks. The safety team was inundated with calls relating to infections. To make matters worse, professional party promoters started turning Airbnb rentals into nightclubs, offering live DJs and bottle service. Hundreds of intoxicated, unmasked revelers were let loose in U.S. suburbs, straining police resources, infuriating public health officials, and overwhelming the safety team.

Last May, Chesky cried into his webcam during a companywide meeting at which he announced that 25% of the workforce would be cut. The layoffs were expected. What came as a shock to many was that the entire safety team in Portland, Ore., including 25 of the company's most experienced agents, was let go. Some were told they could keep their job if they took a pay cut and moved to Montreal, where Airbnb was relocating its North American safety operations, lured by favorable tax breaks and lower real estate and labor costs.

In emails and question-and-answer sessions with employees, Chesky was criticized for betraying the Airbnb community and its safety agents, who said they'd laid their mental health on the line for the company. He acknowledged the misstep and offered to rehire some of the agents temporarily, at time-and-a-half pay, until the Canada-based team was fully trained. About 15 returned.

None of this was reported at the time, and it didn't interfere with the IPO. After trading opened in December, Airbnb scored one of the biggest first-day rallies on record, boosting the wealth of each founder to more than $10 billion. Sacca, the investor who'd rejected the startup 13 years earlier, tweeted his congratulations. "I let the worst case keep me from seeing the likely case," he wrote. "Every platform will have some bad actors, but most humans are good people. They knew that. I didn't listen."

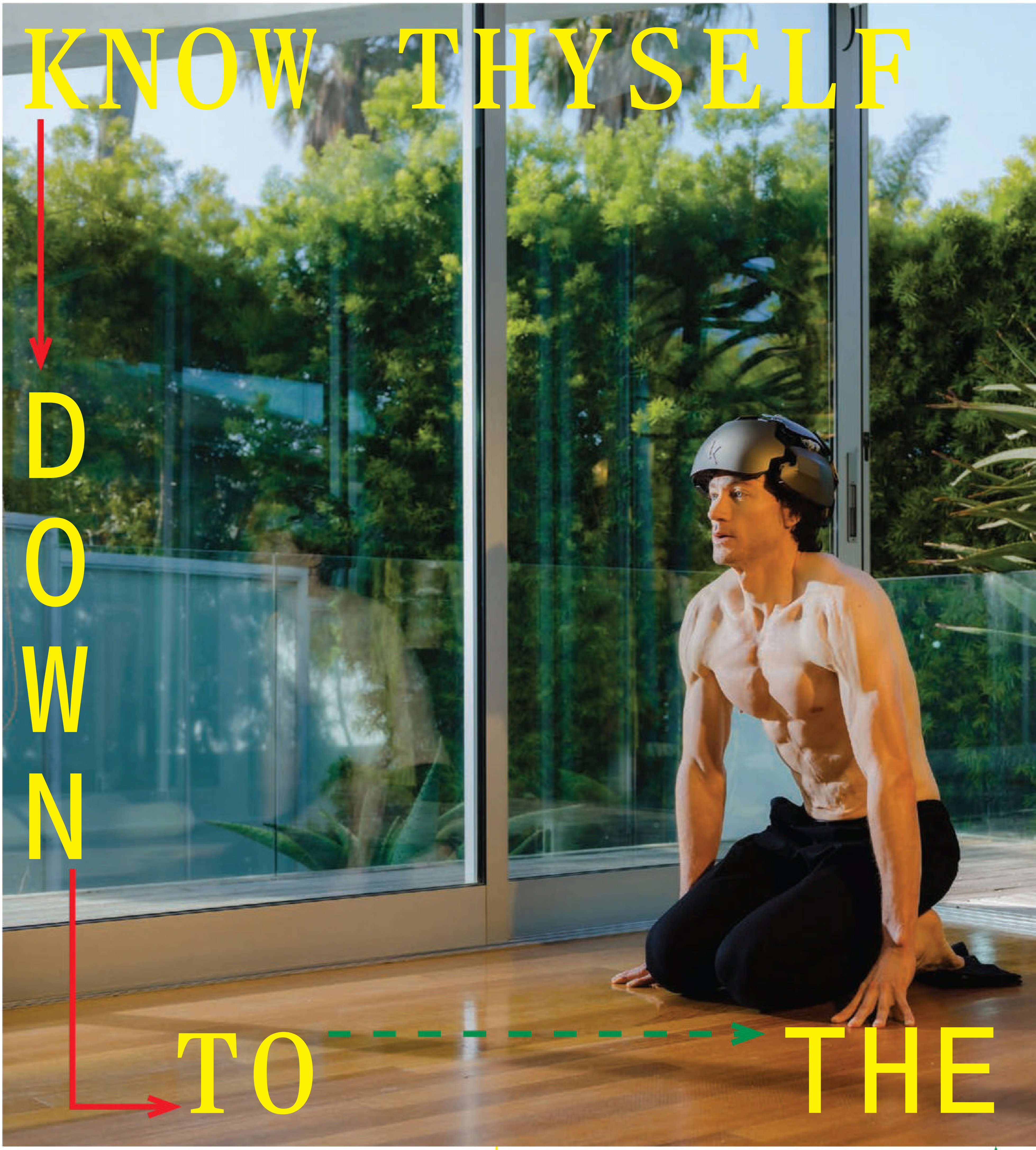
Airbnb still has safety crises to face, assaults to respond to, and regulatory battles to fight. On May 31, as part of an agreement to settle a lawsuit with New York City, the company started turning over information about its hosts, including names, addresses, and whether they're renting their entire apartment. The data will make it easier to track illegal listings.

More than five years after the attack on West 37th Street, Airbnb still hasn't set any clear rules regarding keys. The case set off a yearslong internal debate about keyless entry. If hosts could be compelled to use digital keypads and change the code after each stay, a situation like that might be avoided in the future. Even requiring them to disclose whether they had keypad entry could make a difference. Shapiro, the former head of crisis management, recalls pushing for more keyless entry. "I remember trying to talk about the key-exchange process and ways to prevent hosts leaving them at shops," he says.

In the end, little was done beyond posting information about keyless entry online and working with several lockmakers to reduce the cost of implementation. Doing more would have been difficult because Airbnb can't dictate how hosts enter their own homes, and it might have discouraged them from listing on the platform. The business case won out. You can see the evidence in cities around the world: small lockboxes hanging on fence railings, ready for the next Airbnb guest to collect their key.

—With David Ingold

KNOW THYSELF DOWN TO THE



Johnson’s doctors say that, according to their tests, he’s made 43 the new 30

WITH KERNEL, BRYAN JOHNSON IS BETTING $110 MILLION THAT ACTIVELY MONITORING OUR BRAIN ACTIVITY WILL HELP US ALL LIVE BEYOND OUR YEARS. HE’S STUDYING EVERYTHING ELSE IN HIS BODY, TOO

BY ASHLEE VANCE
PHOTOGRAPHS BY DAMIEN MALONEY

Over the next few weeks, a company called Kernel will begin sending dozens of customers across the U.S. a $50,000 helmet that can, crudely speaking, read their mind. Weighing a couple of pounds each, the helmets contain nests of sensors and other electronics that measure and analyze a brain's electrical impulses and blood flow at the speed of thought, providing a window into how the organ responds to the world. The basic technology has been around for years, but it's usually found in room-size machines that can cost millions of dollars and require patients to sit still in a clinical setting.

The promise of a leagues-more-affordable technology that anyone can wear and walk around with is, well, mind-bending. Excited researchers anticipate using the helmets to gain insight into brain aging, mental disorders, concussions, strokes, and the mechanics behind previously metaphysical experiences such as meditation and psychedelic trips. "To make progress on all the fronts that we need to as a society, we have to bring the brain online," says Bryan Johnson, who's spent more than five years and raised about $110 million—half of it his own money—to develop the helmets.

Johnson is the chief executive officer of Kernel, a startup that's trying to build and sell thousands, or even millions, of lightweight, relatively inexpensive helmets that have the oomph and precision needed for what neuroscientists, computer scientists, and electrical engineers have been trying to do for years: peer through the human skull outside of university or government labs. In what must be some kind of record for rejection, 228 investors passed on Johnson's sales pitch, and the CEO, who made a fortune from his previous company in the payments industry, almost zeroed out his bank account last year to keep Kernel running. "We were two weeks away from missing payroll," he says. Although Kernel's tech still has much to prove, successful demonstrations, conducted shortly before Covid-19 spilled across the globe, convinced some of Johnson's doubters that he has a shot at fulfilling his ambitions.

A core element of Johnson's pitch is "Know thyself," a phrase that harks back to ancient Greece, underscoring how little we've learned about our head since Plato. Scientists have built all manner of tests and machines to measure our heart, blood, and even DNA, but brain tests remain rare and expensive, sharply limiting our data on the organ that most defines us. "If you went to a cardiologist and they asked you how your heart feels, you would think they are crazy," Johnson says. "You would ask them to measure your blood pressure and your cholesterol and all of that."

The first Kernel helmets are headed to brain research institutions and, perhaps less nobly, companies that want to harness insights about how people think to shape their products. (Christof Koch, chief scientist at the Allen Institute for Brain Science in Seattle, calls Kernel's devices "revolutionary.") By 2030, Johnson says, he wants to bring down the price to the smartphone range and put a helmet in every American household—which starts to sound as if he's pitching a panacea. The helmets, he says, will allow people to finally take their mental health seriously, to get along better, to examine the mental effects of the pandemic and even the root causes of American political polarization. If the Biden administration wanted to fund such research, Johnson says, he'd be more than happy to sell the feds a million helmets and get started: "Let's do the largest brain study in history and try to unify ourselves and get back to a steady state."

Johnson is something of a measurement obsessive. He's at the forefront of what's known as the quantified-self ▶

Johnson eats once a day, first thing.
Yes, including the wine

movement. Just about every cell in his body has been repeatedly analyzed and attended to by a team of doctors, and their tests now cast him as a full decade younger than his 43 years. Along those lines, he wants to let everyone else analyze, modify, and perfect their minds. No one knows what the results will be, or even if this is a good idea, but Johnson has taken it upon himself to find out.

Unlike many of his tech-millionaire peers, Johnson grew up relatively poor. Born in 1977, he was raised in Springville, Utah, the third of five children. "We had very little and lived a very simple life," says his mother, Ellen Huff. A devout Mormon, she stayed home with the kids as much as possible and earned a modest income from a rental unit on the other side of the family's duplex.

Johnson remembers his mother knitting his clothes and grinding wholesale batches of wheat to make bread. "We were not like my friends," he says. "They would buy things from stores, and we just did not do that." His dad, a trash collector turned lawyer, had a drug problem and an affair, which led to his divorce from Huff. Later, delinquent child support payments, missed pickups on the weekends, and legal troubles contributed to his disbarment. "After some time of challenge, my father successfully overhauled his life 20 years ago," Johnson says. "Throughout his struggles, we remained close and without conflict. He has been a unique source of wisdom, counsel, and stability in my life."

Johnson had little idea what to do with his life until he served a two-year church mission in Ecuador, where he interacted with people living in huts with dirt floors and walls made of mud and hay. "When I came back, the only thing I cared about was how to do the most good for the most people," he says. "Since I didn't have any skills, I decided to become an entrepreneur."

While at Brigham Young University, he started his own business selling cellphones and service plans, making enough money to hire a team of salespeople. After that, he invested in a real estate development company that collapsed and left him $250,000 in debt. To get out of the hole, he took a job selling credit card processing services to small businesses door to door. Soon he was the company's top salesman.

This was the mid-2000s, and Johnson's customers kept complaining about the hassle of setting up and maintaining credit card payment systems on their websites. In 2007 he started Braintree, a software company focused on easing the process with slick interfaces. It succeeded—and had good timing. After signing up a slew of restaurants, retailers, and other small businesses, Braintree became the middleman of choice for a profusion of startups premised on ordering services online, including Airbnb, OpenTable, and Uber. The company also made a great bet on mobile payments, acquiring Venmo for only $26 million in 2012. The next year, EBay bought Braintree for $800 million in cash, a little less than half of which went to Johnson.

Despite his newfound fortune, Johnson felt miserable. He was stressed out and overweight. He'd gotten married and had kids at a young age, but his marriage was falling apart, and he was questioning his life, religion, and identity. He says he entered a deep depressive spiral that included suicidal thoughts.

The decision to sell Braintree well before it peaked in value had been motivated in part by Johnson's need to change those patterns. "Once I had money, it was the first time in my life that I could eliminate all permission structures," he says. "I could do whatever I wanted." He broke with the Mormon church, got divorced, and moved from Chicago, where Braintree was headquartered, to Los Angeles to start over.

Arriving in California, Johnson consulted with all manner of doctors and mental health specialists. His bodily health improved with huge changes to his diet, exercise, and sleep routines. His mind proved a tougher puzzle. He meditated and studied cognitive science, particularly the ways people develop biases, in an effort to train himself to think more rationally. By late 2014 he was convinced his wealth would be best spent advancing humanity's understanding of the brain. He took a large portion of his windfall and started OS Fund, a venture firm that has invested in several artificial intelligence and biotech companies. These include Ginkgo Bioworks, Pivot Bio, Synthego, and Vicarious, some of the most promising startups trying to manipulate DNA and other molecules.

Mostly, though, Johnson staked his fortune on Kernel. When he founded the company, in 2015, his plan was to develop surgical implants that could send information back and forth between humans and computers, the way Keanu Reeves downloads kung fu into his brain in *The Matrix*. (In the early days, Johnson discussed a potential partnership with Elon Musk, whose company Neuralink Corp. has put implants in pigs and monkeys, but nothing came of it.) The idea was, in part, to transfer thoughts and feelings directly from one consciousness to another, to convey emotions and ideas to other people more richly than human language allows.

Perhaps more important, Johnson reckoned, AI technology was getting so powerful that for human intelligence to remain relevant, the brain's processing power would need to keep pace.

Johnson and I began discussing brains in mid-2018, when I was working on a story about the overlap between neuroscience and AI software. During an initial interview at his company's headquarters in L.A.'s Venice neighborhood, Johnson

SILICON VALLEY PEOPLE AND INVESTORS WOULD NOT EVEN TALK TO US"

was cordial but somewhat vague about his aims. But at the end of the visit, I happened to mention the time I underwent a mental healing ritual that involved a Chilean shaman burning holes in my arm and pouring poisonous frog secretions into the wounds. (I do mention this a lot.) Excited, Johnson replied that he had a personal shaman in Mexico and doctors in California who guided him on drug-induced mind journeys. Based on this common ground, he decided to tell me more about Kernel's work and his own adventurous health practices.

By then, Johnson had abandoned neural implants in favor of helmets. The technology needed to make implants work is difficult to perfect—among other things, the human body tends to muddy the devices' signals over time, or to reject them outright—and the surgery seemed unlikely to go mainstream. With the helmets, the basic principle remained the same: put tiny electrodes and sensors as close as possible to someone's neurons, then use the electrodes to detect when neurons fire and relay that information to a computer. Watch enough of these neurons fire in enough people, and we may well begin to solve the mysteries of the brain's fine mechanics and how ideas and memories form.

On and off for almost three years, I've watched as Kernel has brought its helmets into reality. During an early visit to the company's two-story headquarters in a residential part of Venice, I saw that Johnson's team had converted the garage into an optics lab full of mirrors and high-end lasers. Near the entryway sat a shed-size metallic cube designed to shield its contents from electromagnetic interference. On the second floor, dozens of the world's top neuroscientists, computer scientists, and materials experts were tinkering with early versions of the helmets alongside piles of other electrical instruments. At that point the helmets looked less like 21st century gadgets and more like something a medieval knight might wear into battle, if he had access to wires and duct tape.

Despite the caliber of his team, Johnson and his odd devices were considered toys by outsiders. "The usual Silicon Valley people and investors would not even talk to us or poke around at all," he says. "It became clear that we would have to spend the time, and I would have to spend the money, to show people something and demonstrate it working."

A hospital or research center will typically employ a range of instruments to analyze brains. The list is a smorgasbord of acronyms: fMRI (functional magnetic resonance imaging), fNIRS (functional near-infrared spectroscopy), EEG (electroencephalography), MEG (magnetoencephalography), PET (positron emission tomography), etc. (et cetera). These machines measure a variety of things, from electrical activity to blood flow, and they do their jobs quite well. They're also enormous, expensive, and not easily condensed into helmet form.

In some cases the machines' size owes in part to components that shield the patient's head from the cacophony of electrical interference present in the world. This allows the sensors to avoid distracting signals and capture only what's happening in the brain. Conversely, signals from the machines need to penetrate the human skull, which happens to be well-evolved to prevent penetration. That's part of the argument for implants: They nestle sensors right up against our neurons, where the signals come in loud and clear.

It's unlikely a helmet will ever gain the level of information an implant can, but Kernel has striven to close the gap by shrinking its sensors and finding artful ways to block electromagnetic interference. Among its breakthroughs, Johnson's team designed lasers and computer chips that were able to see and record more brain activity than any previous technology. Month after month, the helmet became more refined, polished, and lightweight as the team made and remade dozens of prototypes. The only trick was that, to suit the different applications Johnson envisioned for the helmet, Kernel wound up needing to develop two separate devices to mimic all the key functions of more traditional machines.

One of the devices, called Flow, looks like a high-tech bike helmet, with several brushed aluminum panels that wrap around the head and have small gaps between them. Flip it over, and you'll see a ring of sensors inside. A wire at the back can be connected to a computer system.

This helmet measures changes in blood oxygenation levels. As parts of the brain activate and neurons fire, blood rushes in to provide oxygen. The blood also carries proteins in the form of hemoglobin, which absorbs infrared light differently when transporting oxygen. (This is why veins are blue, but we bleed red.) Flow takes advantage of this phenomenon by firing laser pulses into the brain and measuring the reflected photons to identify where a change in blood oxygenation has occurred. Critically, the device also measures how long the pulse takes to come back. The longer the trip, the deeper the photons have gone into the brain. "It's a really nice way to distill out the photons that have gone into the brain vs. ones that only hit the skull or scalp and bounced away," says David Boas, a professor of biomechanical engineering and director of the Neurophotonics Center at Boston University.

The other Kernel helmet, Flux, measures electromagnetic activity. As neurons fire and alter their electrical potential, ions flow in and out of the cells. This process produces a magnetic field, if one that's very weak and changes its behavior in milliseconds, making it extremely difficult to detect. Kernel's technology can discover these fields all across the brain via tiny magnetometers, which gives it another way to see what parts of the organ light up during different activities.

The helmets are not only smaller than the devices they seek to replace, but they also have better bandwidth, meaning researchers will receive more data about the brain's functions. According to the best current research, the Flow device should help quantify tasks related to attention, problem-solving, and emotional states, while Flux should be better suited to evaluating brain performance, learning, and information flow. Perhaps the No. 1 thing that has scientists gushing about Kernel's machines is their mobility—patients' ability to move around wearing them in day-to-day settings. "This unlocks a whole new universe of research," Boas says. "What makes us human is how we interact with the world around ▶

◀ us." The helmets also give a picture of the whole brain, as opposed to implants, which look solely at particular areas to answer more specific questions, according to Boas.

Once their Kernel helmets arrive, Boas and his colleagues plan to observe the brains of people who've had strokes or suffer from diseases such as Parkinson's. They want to watch what the brain does as individuals try to relearn how to walk and speak and cope with their conditions. The hope is that this type of research could improve therapy techniques. Instead of performing one brain scan before the therapy sessions start and another only after months of work, as is the practice today, researchers could scan the brain each day and see which exercises make the most difference.

Devices are also going out to Harvard Medical School, the University of Texas, and the Institute for Advanced Consciousness Studies (a California lab focused on researching altered states) to study such things as Alzheimer's and the effect of obesity on brain aging, and to refine meditation techniques. Cybin Inc., a startup aiming to develop therapeutic mental health treatments based on psychedelics, will use the helmets to measure what happens when people trip.

All of this thrills Johnson, who continues to harbor the grandest of ambitions for Kernel. He may have given up on computer-interfacing implants, but he still wants his company to help people become something more than human.

"WHEN YOU START QUANTIFYING THE MIND, YOU

A couple years ago, Johnson and I boarded his private jet and flew from California to Golden, Colo. Johnson, who has a pilot's license, handled the takeoffs and landings but left the rest to a pro. We were in Colorado to visit a health and wellness clinic run by physician-guru Terry Grossman and have a few procedures done to improve our bodies and minds.

The Grossman Wellness Center looked like a cross between a medical clinic and the set of *Cocoon*. Most of the other guests were elderly. In a large central room, about 10 black leather chairs and matching footrests were arranged in a loose circle. Each chair held a couple of fluffy white pillows, with a metal pole on the side for our IV drips. A few of the ceiling tiles had been replaced and fitted with pictures of clouds and palm trees. In rooms off to the side, medical personnel performed consultations and procedures.

Our morning began with an IV infusion of two anti-aging fluids: Myers' Cocktail—a blend of magnesium, calcium, B vitamins, vitamin C, and other good stuff—followed by a helping of nicotinamide adenine dinucleotide. Some of the IV fluids can trigger nausea, but Johnson set the drip to maximum and complemented the IV by having a fiber-optic cable fed into his veins to pepper his blood with red, green, blue, and yellow wavelengths of light for added rejuvenation. "I have to experience pain when I exercise or work," he said, adding that the suffering makes him feel alive.

A few hours later, Johnson went into one of the treatment rooms with Grossman to get a stem cell injection straight into his brain. Earlier he'd provided 5 ounces of his blood, which had then been spun in a centrifuge so Grossman could separate out the plasma and put it through a secret process to "activate the stem cells." Now, Johnson hopped onto a reclined exam table, lying on his back with his head angled toward the floor. Grossman pulled out a liquid-filled syringe. Instead of a needle at the end, it had a 4-inch-long, curved plastic tube, which the doctor coated with some lubricating jelly. He pushed the tube into one of Johnson's nostrils, told the patient to take a big sniff, then pinched Johnson's nose shut. They repeated the process for the other nostril. The procedure looked incredibly uncomfortable, but again, Johnson was unfazed, pulling in the stem cells with determination and excitement.

This snorting procedure—designed to improve mood, energy, and memory—was just a small part of Johnson's overall health regimen. Each morning the CEO took 40 pills to boost his glands, cell membranes, and microbiome. He also used protein patches and nasal sprays for other jobs. After all this, he did 30 minutes of cardio and 15 minutes of weights. At lunch he'd have some bone broth and vegetables foraged by his chef from the yards of houses in Venice. He might have a light dinner later, but he never consumed anything after 5 p.m. He went to bed early and measured his sleep performance overnight. Every now and then, a shaman or doctor would juice him up with some drugs such as ketamine or psilocybin. He'd taken strongly enough to these practices to tattoo his arm with "5-MeO-DMT," the molecular formula for the psychoactive compound famously secreted by the Sonoran Desert toad.

To make sure all his efforts were doing some good, Johnson had a lab measure his telomeres. These are the protective bits at the end of DNA strands, which some Nobel Prize-winning science has shown can be good indicators of how your body is aging. The longer the telomeres, the better you're doing. Johnson used to register as 0.4 years older internally than his chronological age, but a couple of years into his regimen under Grossman, when he was in his early 40s, his doctors were telling him he was testing like a man in his late 30s.

During one of our most recent conversations, Johnson tells me he's stopped snorting stem cells and experimenting with hallucinogens. "I got what I wanted from that and don't need to mess with it right now," he says. After many tests and much analysis, he's discovered he operates best if he wakes up at 4 a.m., consumes 2,250 calories of carefully selected food over the course of 90 minutes, and then doesn't eat again for the rest of the day. Every 90 days he goes through another battery of tests and adjusts his diet to counteract any signs of inflammation in his body. He goes to bed each night between 8 and 8:30 p.m. and continues to measure his sleep metrics. "I have done tremendous amounts of trial and error to figure out what works best for my health," he says. "I have worked very hard to figure these algorithms out."

In terms of what our birth certificates say, Johnson and I are the same age. He'll turn 44 in August, a month before

The Flux enclosure in the lab at Kernel's headquarters

MAKE THOUGHT AND EMOTION AN ENGINEERING DISCIPLINE”

I do. To someone like me, who prizes late nights with friends, food, and drink, Johnson's rigid lifestyle doesn't exactly sound romantic. But it does seem to be paying off: When he last got tested, he had the exercise capacity of someone in his late teens or early 20s, and a set of DNA and other health markers pegged his age at somewhere around 30. As for me, I lack the courage to ask science what it makes of my innards and will go on celebrating my dad bod.

As Johnson sees it, had he not changed his lifestyle, he'd have remained depressed and possibly died far too young. Now he does what the data say and nothing else. “I did a lot of damage to myself working 18-hour days and sleeping under a desk,” he says. “You might earn the praise of your peers, but I think that sort of lifestyle will very quickly be viewed as primitive.” He says he's at war with his brain and its tendencies to lead him astray. “I used to binge-eat at night and could not stop myself,” he says. “It filled me with shame and guilt and wrecked my sleep, which crushed my willpower. My mind was a terrible actor for all those years. I wanted to remove my mind from the decision-making process.”

The nuance in his perspective can be tricky to navigate. Johnson wants to both master the mind and push it to the side. He maintains, however, that our brain is flawed only because we don't understand how it works. Put enough Kernel devices on enough people, and we'll find out why our brain allows us to pursue addictive, debilitating behaviors—to make reckless decisions and to deceive ourselves. “When you start quantifying the mind, you make thought and emotion an engineering discipline,” he says. “These abstract thoughts can be reduced to numbers. As you measure, you move forward in a positive way, and the quantification leads to interventions.”

Of course, not everyone will want to make decisions based on what a helmet says their brain activity means. Taking the decisions out of thought patterns—or analyzing them for the purposes of market research and product design—poses its own, perhaps scarier, questions about the future of human agency. And that's if the Kernel devices can fulfill the company's broader ambitions. While the big, expensive machines in hospitals have been teaching us about the brain for decades, our understanding of our most prized organ has remained, in many ways, pretty basic. It's possible Kernel's mountain of fresh data won't be of the kind that translates into major breakthroughs. The brain researchers who are more skeptical of efforts such as Johnson's generally argue that novel insights about how the brain works—and, eventually, major leaps in brain-machine interfaces—will require implants.

Yet scientists who have watched Kernel's journey remark on how the company has evolved alongside Johnson, a complete outsider to the field. “Everybody he's recruited to Kernel is amazing, and he's been able to listen to them and motivate them,” says MIT neuroscientist Edward Boyden. “He didn't have scientific training, but he asked really good questions.” The test now will be to see how the company's devices perform in the field and if they really can create a whole new market where consumers buy Flow and Flux helmets alongside their Fitbits and Oura rings. “There's a lot of opportunity here,” Boyden says. “It's a high-risk, high-payoff situation.”

If Johnson's theories are correct and the Kernel devices prove to be as powerful as he hopes, he'll be, in a sense, the first person to spark a broader sort of enlightened data awakening. He recently started a program meant to quantify the performance of his organs to an unprecedented degree. Meanwhile, he's taking part in several experiments with the Kernel helmets and is still looking for ways to merge AI with flesh. “We are the first generation in the history of Homo sapiens who could look out over our lifetimes and imagine evolving into an entirely novel form of conscious existence,” Johnson says. “The things I am doing can create a bridge for humans to use where our technology will become part of our self.” B


bitcoin

beach

What happened when a surfing town in El Salvador went full crypto

BY EZRA FIESER
PHOTOGRAPHS BY CRISTINA BAUSSAN

EVENING SURF IN EL ZONTE, MAY 2021

Before the tears start falling, the subject gripping the room is inflation. "We're seeing [an] unprecedented amount of monetary expansion from central banks right now," says Jack Mallers, pacing the stage like an evangelist stoking his audience. "It's very scary." The scene resembles a tropical TED Talk, one given by a crisply tanned, hoodie-clad 27-year-old who looks like he washed ashore from a night of clubbing. It's Bitcoin 2021, a two-day confab in Miami in early June, where 12,000 techno-anarchists, Wall Street bankers, and the crypto-curious swarm to conspire about the future of Bitcoin.

Mallers, the founder of a Bitcoin money-transfer startup called Strike, swiftly maneuvers from inflation and the farce of the Federal Reserve to deliver the real subject at hand: financial injustice in the developing world. In El Salvador, he says, a country that two decades ago abandoned its own currency for the U.S. dollar, 70% of the population is unbanked and many get their income through remittances saddled with outrageous fees. Where, as he tells it, people are left with little choice but to flee their homeland, resorting to crime and violence. "But if you rewind those steps," Mallers says, "if you can fix the money—you can fix the world."

Now come the tears. Mallers, his voice cracking, explains that that's why he moved to a little town in El Salvador for three months, to help these people while also launching his company there. "I talked to the kids," he says, flashing photos of himself with young Salvadorans on the oversize screen. "I told them, 'Man, we got this. Bitcoin's here. We got this.' "

By the time he gets to the part about El Salvador's president asking him to help write the bill that would turn Bitcoin into legal tender—teeing up a video from President Nayib Bukele making the announcement—Mallers is practically weeping. Then he rips off his hoodie to reveal a Salvadoran soccer jersey gifted to him by the politician himself. The crowd goes wild.

The Bitcoinification of El Salvador has been under way for a while now. Bukele had been tinkering with the cryptocurrency even before winning office in 2019. The millennial politician and members of his Nuevas Ideas political party have owned Bitcoin for years, according to two people in the government who didn't want to be quoted commenting on the president's finances. Bukele even hinted at his desire to adopt the cryptocurrency in 2017, when he was San Salvador's mayor, tweeting, "we will use Bitcoin."

The best place to see where El Salvador is going with all this is El Zonte, a surfing village on the country's Pacific coast. In 2019, a small team of Salvadoran volunteers and an American expat started to transform the local economy to run on Bitcoin. Workers now receive their salaries and pay bills in Bitcoin, tourists can buy pupusas with a special Bitcoin payment app, and community projects are financed with Bitcoin donations. According to Jorge Valenzuela, an upbeat 32-year-old surfing aficionado who leads the volunteers, "it has changed my town."

In early May, a month before Bukele made the announcement, I spent four days in El Zonte. To get there from the two-lane highway that snakes along El Salvador's Pacific coast, you take a rutted-out road past corrugated-metal fencing and street dogs sleeping under mango trees. You'll see the black, volcanic sand beach, rolling waves, and a point break that has turned this town of 3,000 into a destination for foreigners with surfboards. But the most striking thing these days is the orange "B"—the international symbol for Bitcoin—splashed on garbage cans, near the entrance of the dirt-floor pizza joint, and hanging on the wall near the surf shack at the beachfront hotel. The town has never had a bank. Now the lone ATM buys and sells Bitcoin.

On a breezy, warm evening, Mallers and an international crew of Bitcoin influentials gather over freshly caught red snapper on the deck of Garten, a swanky modern hotel with sweeping views. In 2019 an American expat and a small team of Salvadoran volunteers started seeding El Zonte with Bitcoin. "Bitcoin Beach," as the project organizers have since dubbed it, has at once become a controlled alt-currency experiment, a philanthropic endeavor, and a capitalist calling with a whiff of savior complex.

The crew of foreigners came to town either to witness the experiment firsthand or figure out how to export it elsewhere. Peter McCormack, a tattoo-covered Brit who hosts *What Bitcoin Did*, the world's most popular Bitcoin podcast, is on an extended stopover before a trip to the U.S. Miles Suter, who helps run the Bitcoin business for Square Inc.'s Cash App, has lived intermittently in El Zonte since he came to check out the project last year. A guy who introduces himself only as "Dread" turns up, fresh from the airport, hoping to learn

EL ZONTE AT DAWN; A BITCOIN ATM; PETERSON AND FAMILY

the secrets of Bitcoin Beach so he can replicate them in the outskirts of Kingston, Jamaica, he says.

Over dinner, they share stories of becoming disillusioned with the global economic system, the vitriol and polarization among Bitcoiners on Twitter, and "shitcoiners"—what Bitcoin monogamists call people who trade in other cryptocurrencies. It's the contentious crypto debate common among those fortunate enough to be from a prosperous economy, where Bitcoin is as much about a belief system as it is about a financial one.

In El Zonte, Bitcoin is a possible solution to an actual problem, as opposed to a solution in search of a problem, which is how critics describe its role in, say, the U.S. Emerging economies adopting new technologies before more established ones is nothing new. Brazilians were early users of mobile banking because it was a faster way to move around money, which during the days of hyperinflation was a rapidly wasting asset. Digital wallet apps have taken off in countries such as India and Kenya, where a large proportion of the population is unbanked. Latin America, a region long afflicted by wobbly currencies, is particularly fertile ground. Three years ago, Venezuela became the first nation to launch a central bank-backed digital currency, dubbed the petro.

"What's different about what's happening down here in El Zonte is the level of adoption and the circular nature," Square's Suter says. "You see it spreading from family to family and down the coast from town to town." Suter is an Ivy League-educated former lacrosse player who was fired from his job as a Wall Street equities trader because he participated in the Occupy Wall Street protests. He found purpose in Bitcoin's potential, especially in countries in distress, and visited El Zonte last year on his way to check out how Argentines were using it. He continues: "Bitcoiners around the world have found a country to be rooting for." If anyone at the table knows that El Salvador will soon become the first country to deem Bitcoin as legal tender, nobody says so.

As the evening wears on, McCormack orders a bottle of red wine. Most of the hotel staff have packed up and gone. The group talks about Bitcoin Beach-type projects taking hold in other countries, perhaps Venezuela and Lebanon, where currency collapses robbed people of their savings. "What we need to do," McCormack says, glancing at Michael Peterson, a 47-year-old California native and the improbable father of Bitcoin Beach, "is clone this guy."

A day earlier, I visited Peterson's office just down the hill from the bustling highway in a two-story, off-white building that Bitcoin Beach now shares with Mallers's Strike. Peterson first came to El Zonte 17 years ago on a surfing trip, long before it was a tourist hot spot, and loved it. He was running a family food concession business in California. During the offseason, he and his wife, Brittney, and their children began splitting time between their home in San Diego and El Zonte. The Petersons supported missionaries they met through their evangelical Christian church in San Salvador ▶

“Bitcoin Beach” has become a controlled alt-currency experiment, a philanthropic endeavor, and a capitalist calling with a whiff of savior complex

◀ and started funding small development projects, working with local churches and community groups.

Then, in early 2019, Peterson—who still uses an old-school EarthLink account—was introduced to an unidentified donor through a connection he made at the church. The proposition he heard seemed more like a scam: An anonymous donor in California had purchased a cache of Bitcoin that was presumably now worth a fortune. Through an adviser, the donor told Peterson he wanted to create a local economy that ran on Bitcoin, the only condition being that it wouldn’t be cashed out into a fiat currency. Peterson thought about it, grew intrigued, and decided to go for it. “It allows everybody from the poorest to the richest to participate on the same playing field,” he says. “I really felt like, ‘Man, this is something that can change El Zonte.’ ” He says he still doesn’t know the donor’s identity.

By mid-2019, Peterson had drafted a plan to create a Bitcoin economy and recruited a small staff of El Zonte residents that he and Brittney had worked with for years. After an inauspicious attempt to convince older adults, they targeted the town’s presumably least tech-resistant—paying its teenagers in the digital coins to pick up trash along the river. Then Valenzuela, the project’s coordinator, persuaded a single store in town to accept Bitcoin as payment.

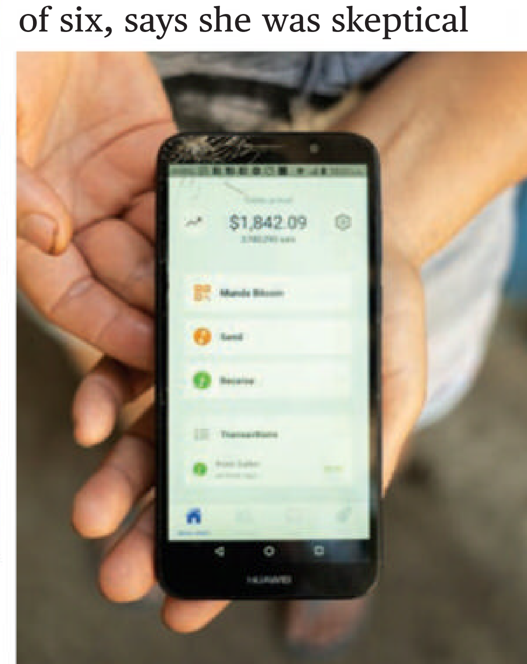
But it was the pandemic that ultimately jump-started the project. When El Salvador’s tourism industry and El Zonte’s economy collapsed, Peterson started making monthly transfers of about $35 in Bitcoin to 500 families around town. He used Wallet of Satoshi, one of the many existing smartphone apps created for small transactions using Bitcoin, which is notoriously impractical—expensive and slow—for everyday purchases.

As more stores began asking how they could accept Bitcoin, Peterson decided El Zonte needed its own app. The Bitcoin Beach Wallet, which launched in September, similarly uses technology that allows for small transactions. It shows users how much they hold in Bitcoin and greenbacks and where they can spend it. Shops in town price everything in dollars, whether the underlying transaction is in Bitcoin or not. A cappuccino always costs $3.50, even if Bitcoin’s value has just jumped or dropped. In this way, it behaves more like a token than a currency.

The town’s embrace of Bitcoin is apparent just by looking at the app. Peterson slides his finger across his iPhone, the screen blooming with red dots, each one representing one of the roughly four dozen businesses that accept Bitcoin as payment. The dots look like a rash spreading from Peterson’s headquarters across town and up and down the coast. He says that 18 months after the project launched, roughly 90% of El Zonte’s households are interacting with the currency regularly. “It’s crazy how fast Bitcoin has caught on,” he says. Businesses are using it on their own to pay bills and accept payments. Residents use transfers to the Strike app, the ATM, and peer-to-peer transactions to move money back and forth between Bitcoin and cash. There’s also a local woman who has turned into a market maker. She buys Bitcoin from town residents when they need cash and then dealing it to eager investors, many of whom come from San Salvador, where the digital currency has been next to impossible to purchase.

For some in El Zonte, the benefits of Bitcoin have been incremental at best. Many business owners say it makes up just a small fraction of sales. Although some 85% of families have access to smartphones, many still live in cramped houses with dirt floors and tin roofs. But for others, it’s clearly been life-altering. A construction crew chief pays his dozen or so employees in Bitcoin. He was sick of losing them for a half-day every month so they could travel to the nearest bank, an hourlong bus ride away, on payday. Adrian Torres, 62, one of the crew, tells me he fixed his teeth with the money he saved in Bitcoin, and now he’s saving up to buy a cow.

Maria del Carmen, a mother of six, says she was skeptical



about storing money on her phone. She reluctantly started accepting payments for her tiny eatery, run out of a kitchen in front of her home. Bitcoin now accounts for as much as half of her roughly $45 a day in sales. Four of her children have migrated to the U.S., where approximately 2.5 million Salvadorans live and send home $4.5 billion a year in remittances. Now, instead of receiving money from her daughter in California, del Carmen sent her $2,000 from Bitcoin savings, she says. She still has almost $2,000 in the account.

At the Point Break Café, owner Enzo Rubio says his strategy with all the Bitcoin payments that come in is to treat them as a savings account he doesn't plan to touch. The first order he accepted in Bitcoin was worth $10 back in November. When I was there, that value went up to $30, and it's now just above $22. He's ridden these bouts of volatility by paying close attention to Bitcoin's moving average, he says, already describing his strategy in crypto parlance: he's HODL, Bitcoiner language for "buy and hold."

El Zonte is among the longest-running experiments of its kind, but it's still largely untested. "I'd be very interested in seeing what happens if we enter a bear market," says McCormack, the British podcaster. "If you're a shop owner and you have $50 a day in Bitcoin sales and all the sudden that goes up to $60, that's cool. But what happens when it starts going down to $40 or $30?"

On May 12, Elon Musk tweeted that Tesla Inc. wouldn't take payment in Bitcoin over concerns about the environmental impact of mining the digital currency, which ignited a Bitcoin selloff. His tweet came as a surprise, given that just a few months earlier he said the carmaker *would* take Bitcoin, which sent the price soaring. The price eventually touched a low of $30,000, causing a commotion, to put it mildly. It has since rebounded to around $40,000 as of June 14—this time prompted by Musk changing course once again.

LIFEGUARD EDWIN VALENZUELA GETS PAID IN BITCOIN; THE BITCOIN BEACH APP; CONTERAS PHOTOGRAPHS SURFERS, CHARGING MORE FOR BITCOIN

Volatility is only one of many risks Bitcoin poses to a place like Bitcoin Beach, and, soon, the rest of El Salvador. After Bukele's June 5 announcement about turning it into legal tender, the 39-year-old went on Twitter Spaces to explain how El Zonte influenced his decision: "You guys demonstrated that a community can actually benefit from Bitcoin. Now we're going to demonstrate it on a countrywide scale." Two days after El Salvador passed a bill adopting it as a parallel currency, the International Monetary Fund was already pushing back, warning, "crypto assets can pose significant risks."

Since the bill passed, Peterson says he's been inundated with requests by banks, phone companies, and other businesses all asking for information about the project and Bitcoin in general. Downloads of Bitcoin Beach and Strike are now among the top three finance iPhone apps in El Salvador, and the number of transactions on the Bitcoin Beach app grew tenfold, to about 8,000 a day, Peterson says.

Peterson's plans have changed, too. He was eventually going to wind down the amount of Bitcoin he was sending to some small-scale projects—$5,000 for a lifeguard training program, $1,000 a month for a student scholarship program—letting the government take over some and seeing if others can operate on their own. Now he sees himself helping roll out the model to towns across the country. The idea is to help them build up capacity using a locally controlled version of the Bitcoin Beach model—kind of an online community Bitcoin bank. "There's been a crazy amount of interest in Bitcoin these last few days," Peterson says by phone, a few days after the bill was passed. "We want to help build up capacity, bring in Bitcoin jobs to El Salvador. That's really been our goal all along." Of course, the more the experiment grows, the less controlled it becomes.

Residents have experienced their share of panic, especially during the first dips in price, says Peterson, who's tried to reassure them by explaining the ups and downs of the market. His team is preparing residents for an extended down cycle by moving some holdings into U.S. dollars or making large purchases now, while prices are high.

Some locals are already a few beats ahead. An hour after sunrise on my last day in El Zonte, I walk to the beach entrance next to a community skate park. About a dozen surfers have paddled out to the break point to catch decent-size waves. Hugo Conteras, a shirtless twentysomething, stands on the shore with a long lens, photographing them. Later, he offers to sell them a series of the best shots for about $20. He tells me surfers sometimes ask if he'll take Bitcoin. He's taken it on a few occasions, but the dips in price burned him. "Now I tell them it's $25 if they want to pay in Bitcoin," he tells me. "You don't know when it's going to go down." B

The Basic Income Gospel

According to Andrew Yang

Whether or not he becomes New York's next mayor, Yang has brought his signature idea—to just give people money—into the political mainstream

By Claire Suddath Photographs by Dolly Faibyshev

When Andrew Yang said he was running for mayor of New York City in January, people were thrilled. This spring he'd do something like deliver a speech outside a Brooklyn catering company, and a passing jogger would see him, stop, and jog in place for half an hour just to listen to him talk. He'd be outside a food hall in Hell's Kitchen when a young woman would approach him and, her voice shaking with nervousness, ask him to sign the back of her cellphone case. On a subway platform, a teenage girl squealed when she saw him, then apologized for being too young to vote.

"Andrew Yang is pretty sick," Alex Arce, 20, a student at New York University, told me in April. Arce and a friend had happened upon Yang as he stood outside a boarded-up restaurant in Manhattan's East Village and called for a full reopening of New York's bars.

"We need commonsense regulations!" Yang was saying. "I don't know about you, but I miss sitting next to people in bars!" At the time, less than a third of the city had been fully vaccinated.

I asked Arce why he liked him.

"I don't know, he's just a cool guy," he said.

What about his policies, anything that he stood for?

Arce thought a minute. "The universal income thing?" he finally offered. "That's pretty great."

For someone who has never held government office and has campaigned only once before, when he ran for president in 2019, Yang is extraordinarily adept at getting people to like him. Early this year he was bumping elbows with strangers and leaning in close for photos—which may explain how he contracted Covid-19 in February, just weeks into his campaign.

When the weather was still cold he wore the same thing wherever he went: dark overcoat, blue and orange Mets scarf, and a black face mask with "Yang" printed in big white letters, a sort of *Where's Waldo* approach to getting his name out there. It's the same trick he used while running for president, wearing a lapel pin that said "MATH" to the Democratic debates and tying himself to one signature idea: that every American should get a basic income of $12,000 from the government, no strings attached.

Yang dropped out of the presidential race in February 2020, but more than a year later, 85% of New Yorkers still knew who he was and what he stood for.

"I love it! Basic income! Stimulus checks!" said Glen Kelly, outside the Mets' Citi Field, where Yang was meeting fans before the first home game of the season.

"That income idea," echoed Ramon Guadalupe, a few days later, when he ran into Yang at the reopening of Coney Island. "I like that he's for regular people."

The irony is that under a Yang mayorship, most New Yorkers wouldn't actually get any money. The concept that made Yang famous, the thing people love him for, isn't something he's proposing for New York. He can't—the city couldn't afford it. Instead, he's running on "cash relief," a payment one-sixth the size of his presidential proposal, targeting only the poorest 6% of New Yorkers.

"I want to be the antipoverty mayor," Yang told me. "I'm very excited about it." He led in the polls for months after he entered the race, and although he's recently been slipping, he could still win the Democratic primary on June 22 under the city's new ranked-choice voting system. If he does—and presumably goes on to win the general election in the heavily Democratic city—his plan would, as his campaign flyers proudly proclaim, make New York City the site of "the largest basic income program in history."

The question is, would it be enough?

Andrew Yang is easy to talk to. There's something familiar about him, something that makes people want to be his friend. When he speaks, his remarks come peppered with bursts of self-conscious laughter, a sort of guttural *huh-huh-huh* that erupts whenever he says something too personal or serious or that he thinks the other person might not like. In the two months I followed him around New York, he was almost always in a good mood—"Tell me more! Tell me more!" he once giddily exclaimed as a grocer in Queens explained the difference between city and state dining regulations—except for a few times when it was very obvious he was not.

Yang grew up a slightly nerdy kid, the son of Taiwanese immigrants, in mostly White suburban neighborhoods in Schenectady and Westchester County. He played Dungeons & Dragons and Atari and did well enough in school to both skip a grade and get a scholarship to the prestigious Phillips Exeter Academy. From there it was on to Brown University, Columbia Law School, then the corporate law firm Davis

Yang at the Bronx Rally Against Hate on May 21

Polk & Wardwell, where it took only a few months for Yang to discover he didn't want to be a lawyer after all. "They'd sit you at a desk and say, 'Here are a bunch of documents. Go,'" Yang says. "I said, 'OK, that is not what I want.'"

He was looking for something else to do when a friend he'd made at the firm, Jonathan Philips, came to him with an idea: What if, instead of wasting money on black-tie galas, a charity could hold an online auction for almost nothing, freeing it up to put more money toward its actual cause?

"Andrew immediately perked up," Philips says. "I remember his eyes just lit up. He's a problem solver, and he very much wanted to solve this problem." The two men quit their jobs and launched a company, Stargiving, an online platform for auctioning off celebrity meet-and-greets.

It didn't work. For one thing, they didn't know any celebrities. Also, the first dot-com bubble had just burst. "It failed miserably," Yang says. "I will never forget how that felt."

He spent the next few years hopping between jobs. He was in his early 20s and had $100,000 in student loan debt. He couldn't afford rent in New York, so he slept on friends' couches and ate a lot of free bread samples at the sandwich chain Così. For extra money he became the first instructor at a small GMAT test-prep company called Manhattan Prep.

Yang got the job because he knew Manhattan Prep's founder, Zeke Vanderhoek. In 2006, Vanderhoek left to start a charter school; he asked Yang to replace him as chief executive officer. Soon after that, Yang met his wife, Evelyn. "Things really clicked into place for a number of years," he says. "They were, I think, some of the happiest years of my life." He ran Manhattan Prep for about five years, taking it from $2 million in revenue to more than $17 million. In 2009 he sold the company to Kaplan Inc., a deal that earned him several million dollars, but stayed on as president.

Over time, though, a problem began to nag at him. The Great Recession had just happened, and yet here were all these college kids taking out massive loans for an MBA, even though there wouldn't be many jobs available when they graduated. At the same time, Yang was touring colleges across the U.S., visiting parts of the Midwest and South he'd never seen before. He was shocked at how economically depressed the regions were. He wondered if he could figure out a way to get college graduates to work in Middle America, boosting local economies.

Yang left Manhattan Prep in 2011 to start his attempt at a solution: Venture for America, a nonprofit modeled on Teach for America that would place college graduates at startups in cities such as Detroit and New Orleans. VFA fellows, as they were called, would get work experience and maybe go on to found companies of their own.

Yang launched VFA with the ambitious goal of creating 100,000 jobs in smaller U.S. cities by 2025. The nonprofit was immediately popular; Tony Hsieh, the late e-commerce entrepreneur, donated $1 million so VFA could help revitalize his hometown of Las Vegas. President Barack Obama named Yang one of his "Champions of Change" before the first class of VFA fellows had even been placed in their cities.

"The fundamental problem that VFA was trying to solve wasn't something most people were talking about," says Ethan Carlson, a former VFA fellow who graduated from Yale and was matched with a tech company in Providence. "By pointing it out and saying, 'I've designed a solution for it,' it felt very compelling. Of course, the real story is much messier than that."

VFA never achieved what Yang wanted it to, at least not on the scale he envisioned. The economic forces that had hollowed out the middle of the country were too big, too intractable, to be fixed by plopping a few hundred Ivy League graduates in Cleveland. Earlier this year the *New York Times* reported that only 150 people work at companies started by VFA fellows in their original cities. The Yang campaign disputes this figure; it says VFA created 4,000 jobs, though not necessarily in smaller cities. When contacted by *Bloomberg Businessweek*, Venture for America said it no longer tracks job creation as a metric of its success.

VFA's shortcomings bothered Yang. In 2016 he was driving across northwest Michigan, passing through small towns with boarded-up storefronts, when he stopped at a diner to eat. "I just thought, 'How am I talking about entrepreneurship?'" Yang says. "The scale of need for changes to the economy is so massive, it gave me a sense of how hollowed out communities really were."

He started reading books about job loss and automation. He fretted about the growing number of working-age adults receiving disability payments in lieu of a job. But it was *Raising the Floor*, written by Andy Stern, the former head of the Service Employees International Union, that pushed Yang into politics.

In his book, Stern argued that a $12,000 universal basic income could help offset the wage stagnation and job loss so many Americans faced. He called for a "huge public awareness advertising campaign" for the idea and said the best way to do that was for someone to run for president. Yang liked the book so much that he went to hear Stern talk and, when the event was over, asked him to lunch.

"He said, 'I'm going to make you an honest man. You said someone should run for president in 2020 on basic income, and I'm going to do that,'" Stern recalls.

"Andy was like, 'Who are you again?'" Yang says.

The idea behind basic income is simple: People need money to live, so the government should give it to them. Ideally, a thriving economy allows people to prosper on their own. But there are always some who are left behind. A basic income would ensure that everyone could afford food, shelter, and other necessities, no matter what.

The U.S. has never implemented a national basic income program, though it did come close. In 1969, Richard Nixon included what he called a "guaranteed minimum income" of $500 per adult (about $3,600 today) and $300 per child in his Family Assistance Plan; it passed the House of Representatives twice but died in the Senate and never became a law. A few cities launched pilot programs; the largest, in Denver, ran from 1971 to 1982 and involved 4,800 families. But by the time ▶

◀ Ronald Reagan took office in 1980, Washington was looking to curb welfare programs rather than expand them, and the political momentum for a minimum income petered out.

For the next 35 years, it was relegated to a niche idea occasionally floated by academics and policy wonks but rarely taken seriously. "You'd go to these conferences for basic income enthusiasts, and you'd be lucky to get 20 people in a room," Stern says. "And you'd never see a politician there." Then, in 2016, two things happened: Chris Hughes, one of the co-founders of Facebook Inc., created the Economic Security Project with the goal of funding what he calls "guaranteed income" programs, and Michael Tubbs, then the 26-year-old mayor of Stockton, Calif., decided to try it in his city.

Hughes and Tubbs were attracted to the idea as a way to alleviate poverty. Tubbs came to it from a practical standpoint—"I grew up poor, I saw how hard my mom worked and still didn't have enough money to pay the bills"—while for Hughes it felt more like a moral imperative. He looked at wage stagnation; the long decline of the middle class; that the U.S. was home to 40% of the world's millionaires yet still had the highest poverty level of any developed country. "We have the tools and wealth to eradicate poverty in the United States and stabilize much of the middle class in the process," Hughes says. "I think there is an ethical responsibility to do that."

In 2017, Stockton became the first U.S. city to announce a basic income program in almost 40 years. Partially funded by Hughes's Economic Security Project, 125 people were randomly chosen (given a few parameters) to receive $500 a month. Payments didn't start until 2019. Giving money to people, it turned out, was more complicated than it looked.

Some recipients didn't have a bank account, so the money was delivered on debit cards. Many of them were already receiving welfare, usually housing vouchers and food stamps, both of which had income limits. Stockton's experimenters had to figure out how to give them cash without kicking them off other programs. "The goal wasn't to remove something they were already receiving," says Sukhi Samra, director of the Stockton Economic Empowerment Demonstration (SEED). "If you do that, you aren't benefiting anyone."

Because the money came on a debit card, researchers could track how it was spent. About half went toward groceries and household supplies. Utilities and auto repairs came next. Then there were little things, small purchases that meant much more than they cost. One parent was able to afford a birthday cake for his child for the first time in years.

The payments also helped people find work. At the start of the program, only 28% of recipients had a full-time job, but by the end of the first year, 40% of them did. Some people bought suits for interviews. One man had been eligible to get his real estate license for more than a year but couldn't take the test because he couldn't afford to miss a shift at his hourly job. With an extra $500, he took—and passed—the test.

The Stockton experiment had just gotten under way when Yang ran for president; not many people knew about it yet. But he wasn't proposing a supplement to existing welfare programs. He envisioned something that could replace the "vast majority" of welfare altogether.

Yang called his version of basic income the Freedom Dividend because the name polled well with conservatives. (Liberals liked the idea no matter what it was called.) It looked an awful lot like what Stern proposed in *Raising the Floor*: a monthly payment of $1,000 for every American between the ages of 18 and 64, pegged to rise with inflation.

"It will help lighten up the bureaucracy of the 126 welfare programs we currently administer," Yang explained in a 2019 interview at LibertyCon, a convention for libertarians. As an example, he said that someone could choose between food stamps and the Freedom Dividend, but he stopped short of saying he wanted to eliminate food stamps completely.

This didn't make a lot of sense. For one thing, according to a 2013 Cato Institute analysis of the maximum amount of welfare available in the U.S., even Mississippi, the state with the paltriest programs, offered $17,000 in potential benefits. Most poor Mississippians were only getting a fraction of that, of course, but Yang wasn't necessarily offering a better deal.

On top of that, the program was going to cost $1.3 trillion. Yang's primary method of financing it was to institute a value-added tax similar to those found in Europe. He was, and remains, vehemently against raising income taxes on the wealthiest Americans. "I think an income tax is a poor way, an inefficient way, to generate revenue," Yang told LibertyCon in 2019, explaining that it penalizes people for working hard and earning money.

But a VAT, like a sales tax, is regressive. Poor people spend almost all of their income on goods and services because they have to, and a VAT would therefore capture a larger portion of their money, which means Yang would essentially be financing the Freedom Dividend by taxing the very people he was trying to help. Rob Hartley, an assistant professor at Columbia's School of Social Work, analyzed the Freedom Dividend and found that while it would bump many people above the poverty rate, it actually increased the number of children living in deep poverty, because their families would be getting fewer benefits and would be paying more in taxes to finance the program.

This kind of nuance was hard to parse when Yang was running for president. He got enough donations to make the Democratic debate stages, but as a minor candidate he was rarely given time to talk at length. It was only at places like LibertyCon or on Joe Rogan's podcast that he had time to elaborate beyond his elevator pitch.

In those venues, he took some unusual positions. He said he wanted to appoint a White House psychologist and turn April 15 into a holiday to "make taxes fun." At one point he told Rogan that he was most concerned about male unemployment figures because "men deal with joblessness very, very poorly," whereas "women are more adaptable" and can more easily find work.

"Joe put Andrew into another dimension," says Brian Yang, one of Yang's lifelong friends (they're not related) who worked

“Giving people $2,000 or $3,000, you’re not lifting huge numbers of New Yorkers above the poverty line”

with him at Stargiving and raised money for his presidential run. “The day after he went on the podcast, the donations started pouring in.” Yang raised more than $40 million during his campaign, inspired a #YangGang community on Reddit, and at one point had 3% of voters supporting him, which made him a little less popular than Pete Buttigieg but much more appealing than Amy Klobuchar and Kirsten Gillibrand.

Yang dropped out of the presidential race having achieved his goal: to teach Americans about basic income. He quickly formed a nonprofit called Humanity Forward, through which he planned to further advocate for the idea. “His exposure, his ability to grab people’s attention, his almost single-minded focus on basic income as his major policy proposal took the idea to a completely different level,” Stern says. “A lot of people set the table for basic income. But Andrew served the meal.”

Basic income might have faded into the background again, Yang’s candidacy relegated to a Trivial Pursuit question, if it weren’t for the Covid pandemic. The first lockdown orders came less than a month after he ended his presidential campaign. Huge sectors of the economy were shuttered overnight, pushing millions of Americans out of work. And New York City wasn’t just hit hard—it was gutted. More than 20,000 New Yorkers died from Covid that spring, so overwhelming hospitals that they ran out of places to store the bodies.

The number of payroll jobs in the city dropped almost 14% last year, more than twice the national decline, according to a study by the New School Center for New York City Affairs. Nearly 70% of the newly unemployed were people of color, and two-thirds of them were making less than $40,000 a year. Affluent New Yorkers fared better, of course, but many of them did it somewhere else: More than 330,000 people fled the city during the pandemic. Yang was one of them, moving his family from their Manhattan apartment to their second home outside the city. (“Can you imagine trying to have two kids on virtual school in a two-bedroom apartment, and then trying to do work yourself?” he later asked, essentially describing the living conditions of millions of New Yorkers.)

But he hadn’t given up on basic income—or politics. He stumped for Democratic candidates in Georgia. His nonprofit, Humanity Forward, repositioned itself as a Covid-relief organization, donating $1 million to 1,000 families in the Bronx and lobbying Congress on cash relief for Americans.

Yang doesn’t take credit for the three rounds of stimulus checks Congress ultimately approved, but he does consider it an extension of his original idea. “We’re essentially running a very, very large trial” for basic income, he says, pointing out that while the checks aren’t likely to continue past the pandemic, they are a rare example of the U.S. government giving people cash simply because they needed it.

Yang is cagey about why he decided to run for mayor. *New York* magazine reported that Bradley Tusk, who ran Michael Bloomberg’s 2009 mayoral campaign and is now a venture capitalist and a political strategist for clients such as AT&T Inc. and Uber Technologies Inc., had been casting about for a candidate who’d be amenable to his business interests and landed on Yang after his first choice fell through. (Michael Bloomberg is the owner of *Bloomberg Businessweek*’s parent company.) Yang puts it slightly differently. “My team talked to the Tusk team, and then we did an evaluation and figured out what the process would look like and a bunch of other things,” he says, an answer so vague it’s almost nonsensical. Either way, by January he’d returned to the city and announced his candidacy. Tusk Strategies would run his campaign.

Things got goofy almost immediately. Policies touted on his campaign website included luring TikTok stars to the city by letting them live in “hype houses” and throwing “The Biggest Post-Covid Party in the World.” When he delivered the necessary signatures to the Board of Elections to officially get on the ballot, he broke into a song from *Rent*.

At the beginning, the silliness paid off. “He’s very upbeat and positive, I think that’s resonating with voters,” says Christine Quinn, who ran for mayor in the 2013 Democratic primary but lost to Bill de Blasio. “It’s been such a dark time, I think people want to know things are going to get better.”

Yang knew people saw him as the basic income guy. He also knew that in New York, basic income wouldn’t work.

“My first thoughts were, ‘OK, we can’t do the Freedom Dividend,’” he says. Most cities and states are required by law to balance their budgets—something the federal government doesn’t have to do—and the Freedom Dividend would cost more than New York’s entire budget. “So what can we do instead? What’s a realistic commitment?”

He tasked Sasha Ahuja, a social worker and progressive activist who’d joined his campaign as co-manager, and another staff member, Jesse Horwitz, with crafting his official proposal. They settled on $1 billion, about one-tenth of New York’s projected 2022 budget. If they divided it up into average payments of $2,000, they could reach about half a million New Yorkers. Their goal is to bump “every New Yorker up to within 50%” of the city’s poverty threshold, Horwitz ▶

says. Homeless people, undocumented residents, and the formerly incarcerated would all qualify.

Getting money to people in these groups isn't easy, though. Many of them don't have bank accounts; Stockton got around this with debit cards, but Yang wanted to create what he called the People's Bank, a city-run system through which New Yorkers could use a municipal ID card to open an account and access their payments.

And how would the city find the 500,000 recipients? Ahuja says they'd work with agencies such as the Human Resources Administration, which administers many existing programs, to figure out who gets money and how much. But that's about as specific as she can get.

Then there was the question of how the money would interact with other welfare programs. "I only talked to them once, and it was to reemphasize to them that this has to be supplemental to existing benefits," says Samra, who designed Stockton's experiment. They took her advice; Yang's cash-relief proposal will supplement state and federal welfare. This is a major ideological shift from his original Freedom Dividend, but Yang insists it isn't a big deal to him.

"I know that people took me as being very anti-helping-people with the current safety nets, but really I'm anti-bureaucracy more than anything else," he says. "I think targeted cash relief to alleviate extreme poverty is great! I'm very excited about it."

Once Yang and his team settled on a plan, they had to figure out how to fund it. This is where things get hazy. Yang says some of the money will come from private donations, but he won't say how much or from whom. "I've talked to various individuals and philanthropists that led me to believe that we could have more resources," he says. The $1 billion figure is just what he expects the city to pay.

New York is home to 112 billionaires and an additional 7,700 people who have at least $30 million, but Yang still eschews raising income taxes, which for millionaires are already the highest in the country; a hike would require the state government anyway. Instead he'd target vacant commercial property, which is currently taxed below its assessed value. Early in his candidacy he also suggested that the city raise money by putting a casino on Governors Island—that is, until he learned it was prohibited by a federal deed. Then he floated the idea of eliminating tax breaks offered to places like Madison Square Garden, though, again, the state is in charge of that.

Yang assured me he could find $1 billion somewhere. "Am I confident that I'm going to find all sorts of things in the budget where I'm like, 'I could get rid of this and no one would notice?'" he asks. "Like spending $3 million on a city bathroom when you could get the same bathroom for $1 million?"

He estimates it will take as long as two years before his cash-relief program is up and running, mostly because he has to create the People's Bank first. So it will be a while before anyone benefits. And while 500,000 recipients sounds like a lot, that's still less than 6% of New Yorkers. By the city's own estimate it entered the pandemic with 41% of its population at risk of falling into poverty—and that was considered a good thing, because the figure used to be even higher.

To reach 500,000 people, Yang's offerings have to be relatively small. An average payment of $2,000 a year works out to just $167 a month. That's a third of what residents got in Stockton. In a city with one of the highest costs of living in the country, $2,000 is practically nothing. Yang's cash-relief plan is essentially offering the equivalent of a monthly MetroCard for the subway plus an extra $40.

Hartley, the Columbia professor, points out that the people Yang is targeting have so little money that even a seemingly negligible amount can improve their lives. "For some people it doubles their disposable income. That's substantial. That means something," he says. A recent analysis of Census Bureau studies showed that the federal stimulus checks, which provided as much as $3,200 per person, helped people buy food and pay their bills during the pandemic, reflecting just how close to the bone millions of Americans live.

Surprisingly, New York has tried something similar before. In 2007 the city launched what it called a "cash transfer" pilot program for 4,800 low-income families, who received about $2,900 a year for three years. It wasn't a basic income, because the cash was conditional; parents had to "earn" money by participating in job-training programs, for example. "In hindsight it was a huge headache," says Kristin Morse, then the executive director of the NYC Center for Economic Opportunity, which oversaw the program. "But families did earn the money. They spent it on food and rent and electric bills. In that sense it was a success. But giving people $2,000 or $3,000, you're not lifting huge numbers of New Yorkers above the poverty line."

This is the harsh reality of basic income. Giving money to people who need it really does work, but to do it on a grand scale is almost prohibitively expensive, especially for a city. "No city in the United States can afford a guaranteed income for its residents without support from other levels of government," says the Economic Security Project's Hughes. "Even with the fuzziest of fuzzy math, it still requires an economic investment at the state or federal level. I think it would be better for people if we're clear about that."

That's not to say a cash-relief program isn't worthwhile, or that it wouldn't work, just that the vast majority of New Yorkers won't notice its effect. Just as Venture for America was a noble but ineffectual answer to a struggling Middle America, so is cash relief a small gesture, one that gnaws away at the edges of poverty but doesn't come close to solving the deep, intractable inequities that cause it to endure.

Yang knows this. "Is a billion dollars enough? No," he admits. His cash-relief program needs to operate in tandem with other efforts. That's why he wants to equip homeless shelters with broadband internet so the children in them can do better in school; expand mental health services and inpatient psychiatric beds to reduce street homelessness; and give a $1,000 annual voucher to families with children who are living in poverty, are English language learners, or have a disability that requires specialized instruction.

But these are all small programs, one-off ideas that are unlikely to be enough, and Yang seems reluctant to make the kind of sweeping changes necessary to really be the "anti-poverty candidate," as he calls himself. New York's public school system is one of the most racially segregated in the country and serves 100,000 kids who are homeless. Although the city uses a weighted model that drives more money to schools with lots of low-income students, most of them aren't fully funded according to what the formula says they deserve. But Yang rarely talks about desegregation. "An extra $1,000 is important and good," Morse says, "but if families aren't getting their kids' needs addressed by the public education system, $1,000 isn't going to fix it."

Basic income has a life beyond Andrew Yang. Tubbs is no longer mayor of Stockton, but before he left office he created Mayors for a Guaranteed Income, a coalition of leaders interested in re-creating Stockton's experiment in their own cities. Samra is now director of MGI, helping municipalities design their own programs. "We're doing this to feed into one comprehensive agenda to make the case why this should be policy at the federal level," Samra says. "It's expensive, but budgets are just lists of a government's priorities. If you can't make a financial commitment to the most vulnerable communities, that's a moral problem. Not an economic one."

In fact, the idea is so popular that some of Yang's opponents have proposals of their own. His rival, Brooklyn Borough President Eric Adams, wants to do it through the earned income tax credit, raising the city's contribution in a plan that he says would cover 900,000 New Yorkers and get them $3,000 a year. Kathryn Garcia, the former head of the city's sanitation department, proposes free day care for babies and toddlers whose parents make less than $70,000 a year. That's certainly not basic income. But private day care costs close to $2,000 a month in New York; she'd be saving even some middle-class parents more than $10,000 a year.

Garcia's campaign is the polar opposite of Yang's. She can be awkward and stilted in speeches; she's never been, and probably never will be, a Reddit meme. But she knows what levers to pull to make the city's slow, bureaucratic machine come to life. Yang admires her so much that he said he wanted to hire her, until she began to eclipse him in polls.

Yang is not an expert on the mechanics of how the city operates, and as the mayoral campaign has intensified, he's increasingly seemed out of his depth. Speaking at a virtual forum dedicated to homelessness in May, he suggested the city should create shelters for victims of domestic violence, prompting the event's moderator to point out that they already exist. At a press conference he'd called to discuss police reform, he appeared unfamiliar with a recently repealed law that had shielded officers' disciplinary records from public view.

Maybe Yang was just having an off day at the homelessness forum. Maybe his mind went blank when asked about the records law. Mistakes happen. But that doesn't explain the press conference he held in late May outside the headquarters

Garcia before the mayoral debate on June 2

MARK PETERSON/REDUX

of the Metropolitan Transportation Authority, which oversees New York's subway, bus, and regional rail systems. Yang announced that as mayor he'd wrest control of the MTA away from the state, but he couldn't articulate how.

"The plan is to take the case to Albany and the people of New York," he said. "The plan is to ask for mayoral control." The MTA is a complex network of different transportation systems that collectively employ 75,000 workers and have an operating budget of $17 billion. It's also one of the largest issuers of municipal debt in the country. When pressed for more specifics, Yang deferred to his policy adviser, who said details weren't important. "It doesn't make a lot of sense to ask Andrew Yang or me or anybody else out here exactly how they're going to unwind the financing structure," said Jamie Rubin, the former director of operations for New York state.

When the press conference ended, Yang looked deflated. He knew it hadn't gone well. Hecklers had started to disrupt some of his events; a few days after the MTA debacle, I'd witness a woman call him names as he tried to eat his lunch.

Yang came in fourth in one June poll, behind Adams, Garcia, and progressive civil rights attorney Maya Wiley. But the city's new ranked-choice voting system—in which the least popular candidates are eliminated and their votes reallocated to supporters' second-choice candidates—means that if enough New Yorkers pick him second, he could win. Not because of anything he promises to do or not do as mayor, but because of what he represents.

"I met him a couple years ago when he was running for president. He really impressed me," Jenny Kam, one of the NYU students I met back in April, told me. She liked Yang's cash-relief plan fine, she said, but disagreed with a lot of his other positions, and as an Asian-American woman she was unimpressed by his plan to combat the rise in hate crimes with yet another police task force.

But she still liked him. He seemed honest and kind, and you couldn't say that about most politicians. "I think he could be something really great," she said. "Or he could turn into something disastrous."

There was only one way to find out. Ⓑ

With Bloomberg Opinion

The Russell 1000 Index Opens a Can of Memes

By Shuli Ren

Later this month, FTSE Russell, the global index provider, will rebalance its family of U.S. stock indexes, which serve as benchmarks for about $10.6 trillion in assets. The reshuffling opens the door to the slew of meme stocks that Reddit traders have driven skyward. The can of memes is open.

In general, stocks that had a market value greater than the 1,000th-ranked company–about $5.2 billion as of the May 7 cutoff–will be added to the large-cap Russell 1000 Index. According to Goldman Sachs Group Inc., there probably will be 57 new entrants. Among them are likely to be hot unicorns that went public in the recent SPAC frenzy, such as QuantumScape Corp., an EV battery maker. Reddit sensation GameStop Corp. will probably enter the list, though AMC Entertainment Holdings Inc., which had a $4.3 billion market value on May 7, may not.

At first glance, this looks a bit ridiculous. Reddit traders may love their meme stocks, but professional money managers frown upon their random volatility. For instance, Clover Health Investments Corp., which went public in January via one of Chamath Palihapitiya's special purpose acquisition companies, may join the smaller-cap Russell 2000 Index. On June 8 the stock almost doubled in market value when Reddit traders decided to bid it up to squeeze short sellers.

But markets change, and good indexes need to reflect that. Retail investors are no longer passive players who put money in via mutual funds and exchange-traded funds–they account for about a quarter of stock trading in the U.S., up from 10% a decade earlier, according to Bloomberg Intelligence. Their stock market presence is roughly as big as that of hedge funds and mutual funds combined. Shouldn't their viewpoints be reflected in broader indexes that aim to capture major characteristics of the marketplace?

Moreover, some meme stocks are due for an upgrade. Plug Power Inc., featured on Reddit's speculative discussion platform WallStreetBets, became the largest contributor to the performance of the widely followed Russell small-cap growth index in January, thanks to its 88% monthly gain. Plug Power is likely to enter Russell's large-cap category this month.

Similarly, GameStop and AMC have become the two largest components of the Russell small-cap value index, even though few people would consider either a value stock, often defined as one with a low price-to-book ratio. Those who bought the $17 billion iShares Russell 2000 Value ETF, thinking that value stocks would play catch-up as part of the post-pandemic reflation trade, might be buying something else altogether. Once GameStop enters Russell's large-cap indexes, it will be tiny compared with, say, Tesla Inc. Its price swings won't sway an entire index.

When meme stocks enter the major leagues, it's a validation for the Reddit traders. But it also helps to keep market indexes true to their labels. —*Ren is a columnist for Bloomberg Opinion*

ILLUSTRATION BY GEORGE WYLESOL

Bloomberg Businessweek (USPS 080 900) June 21, 2021 (ISSN 0007-7135) H Issue no. 4703 Published weekly, except one week in February, April, May, June, July, August, September, October and November by Bloomberg L.P. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Executive, Editorial, Circulation, and Advertising Offices: Bloomberg Businessweek, 731 Lexington Avenue, New York, NY 10022. POSTMASTER: Send address changes to Bloomberg Businessweek, P.O. Box 37528, Boone, IA 50037-0528. Canada Post Publication Mail Agreement Number 41989020. Return undeliverable Canadian addresses to DHL Global Mail, 355 Admiral Blvd., Unit 4, Mississauga, ON L5T 2N1. Email: contactus@bloombergsupport.com. QST#1008327064. Registered for GST as Bloomberg L.P. GST #12829 9898 RT0001. Copyright 2021 Bloomberg L.P. All rights reserved. Title registered in the U.S. Patent Office. Single Copy Sales: Call 800 298-9867 or email: busweek@nrmsinc.com. Educational Permissions: Copyright Clearance Center at info@copyright.com. Printed in the U.S.A. CPPAP NUMBER 0414N68830


dior.com – 800.929.dior
DIOR
ROSE DES VENTS COLLECTION
Pink gold, diamonds, mother-of-pearl and pink opal.