

» WORLD'S 50 GREATEST LEADERS

FORTUNE



1

BILL & MELINDA GATES

HOW THEY'RE TRANSFORMING LIFE FOR BILLIONS IN THE 21ST CENTURY



JACINDA ARDERN • ROBERT MUELLER
JOSÉ ANDRÉS • TIM COOK • MICHAEL J. FOX
TRICIA GRIFFITH • JORDAN PEELE
GRETA THUNBERG • PONY MA & MORE

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Text by MATT HEIMER; graphic by NICOLAS RAPP

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HOPE AND COURAGE MOVE THE WORLD

THERE IS SOMETHING remarkably powerful about listening. Those who know Melinda Gates well—and even some of those who have met her just once—remark at how good she is at this skill. Geeta Rao Gupta, a former staffer for the Bill & Melinda Gates Foundation, who is now at the United Nations Foundation, vividly remembers the first time she met with Gates in her office, way back in 2010: “She was literally leaning in, listening very attentively, not interrupting, but acknowledging that she had heard. You know how sometimes people just have a blank face and you don’t know whether you’re being heard?” It was wholly different with Melinda, Rao Gupta says. “She acknowledges, she nods, she listens—and without interrupting, she asks really astute questions.”

I thought about that description a lot as I was reporting my feature story on Melinda and Bill Gates for our annual World’s Greatest Leaders list (please see page 44). Listening, after all, may be one of the most underrated and least acknowledged leadership skills. A few other qualities that sources used frequently to describe the Gateses might join that list as well: data-centrism, the ability to forge lasting partnerships, and one notion that came up more than any other—optimism.

“Bill and Melinda have always insisted on being optimistic,” says Helle Thorning-Schmidt, a former Prime Minister of Denmark who is now CEO of Save the Children International. “And that language of optimism,

I think, has been extremely important because it also shows that if you do something, you can change the course of the world.”

Kathy Calvin, CEO of the United Nations Foundation, brands the Gateses’ variety: “unabashed optimism.” It’s a “kind of relentless optimism,” she adds admiringly.

You’ll find that same driving, upbeat sentiment in Geoff Colvin’s marvelous introduction to this year’s list (see page 54), though he calls it by a different name: hardiness. As Geoff writes: “Hardy individuals don’t see the world as threatening or see themselves as powerless against large events; on the contrary, they think change is normal, the world is fascinating, they can influence events, and it’s all an opportunity for personal growth.”

It should go without saying that such hardy-souled stock tend to make the people they lead har-

dier, too. Consider Los Angeles Rams coach Sean McVay, who turned his underdogs into Super Bowl contenders—and University of Virginia basketball coach Tony Bennett, who rebounded from a mighty NCAA loss last year to reel in a big win in March Madness.

Hardiness, as our cover profile suggests, also means moving fast to help others, without waiting for permission: Consider José Andrés, who gets to disaster zones with his World Central Kitchen team, sometimes before the NGOs are even set up. They’ve served nearly 4 million meals in Puerto Rico since Hurricane Maria. “We don’t sit waiting for someone to tell us what to do,” he shares with Beth Kowitt (page 58).

Kapil Mohabir, meanwhile, is helping small farmers in Guyana band together to make a living wage. And Ellen Agler is seizing the initiative to coordinate people’s work on neglected tropical diseases.

But don’t stop there. You can get the full master class by reading entries one through 50 on the list.

CLIFTON LEAF
Editor-in-Chief, *Fortune*
@CliftonLeaf



Bill Gates’ first cover for *Fortune*, just after Microsoft’s IPO.



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SHIFTING FROM HARDWARE TO SOFTWARE WITH SD-WAN

As more employees depend on their own devices and the IoT grows, companies are looking for the speed and security **SD-WAN** can offer.



TO UNDERSTAND SD-WAN (SOFTWARE-DEFINED

WIDE-AREA NETWORKING), it is important to have a grasp of wide-area networks (WANs) generally, as well as an understanding of what it means to shift technology from hardware to software. WANs let companies share data between headquarters and data centers, as well as with their remote branch offices, employees, partners, and customers. But

WAN technology exists inside expensive hardware, so WANs are not agile in terms of innovation and new business demands.

SD-WAN peels off the hardware and extends the capabilities of the WAN software. By doing so, it enables the technology to solve a lot of the challenges that traditional WANs couldn't address. It also saves money by allowing companies to combine cost-effective broadband connections, such as the public Internet, with 4G and 5G wireless technology.

With SD-WAN, an organization can shrink the time it takes to make changes to a branch office network by 50% to 80%, according to research firm Gartner. This time savings is one way SD-WAN is more agile than traditional WAN. Companies can add native security measures inside the network, such as encryption, and save money that would otherwise be spent to bolt security onto a WAN separately. As a result, the implementation of SD-WAN is gaining momentum. Just consider that 61% of global end users will add SD-WAN in the next two years, according to business consulting firm Frost & Sullivan.

SD-WAN Adoption Drivers

There are a number of reasons that the market for SD-WAN is growing globally. Among them are the need to reduce the complexity of WANs, the rise in popularity of the bring-your-own-device (BYOD) phenomenon, and the growing adoption of the Internet of things (IoT), which connects devices, sensors, or products to a network. The acceleration of mobile data traffic and the increasing use of network virtualization technology, or moving networking into software, also play key roles.

SD-WAN enables an enterprise to automatically unite various network connections, including mobile wireless, the public Internet, and multiprotocol label switching (MPLS), while simplifying the WAN and making it more robust. For example, the public Internet offers a wider pipe for data to travel in than MPLS does, while 5G will provide many times more bandwidth than both. SD-WAN can add security to the public Internet to protect enterprise applications while they use it. And 5G will enable SD-WAN to manage policies and applications for mobile users and IoT devices that live on the network edge.

SD-WAN also complements and completes the software virtualization journey, which started with data centers and servers and is making its way through the network using software-defined networking (SDN) and network functions virtualization (NFV). (SDN reduces the hardware costs of running a network. NFV makes it possible to replace hardware such as firewalls with software versions, which allows the addition of these tools more easily.) Without SD,

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WAN remains the weakest link in the virtualization chain.

VMware, a leader in cloud infrastructure and digital workspace technology, is one vendor that completes the chain. VMware SD-WAN by VeloCloud simplifies, automates, and optimizes access to applications from the branch to the data center to any cloud, using a unique network of global cloud gateways that enable improved application performance and zero-touch deployments.

“Enterprises are already moving applications, compute, and storage to the cloud,” says Sanjay Uppal, vice president and general manager at VMware. “They have to ask themselves, ‘What about the network?’ We say the cloud is the network.” Uppal says VMware’s offering eliminates traditional complex WAN hardware requirements and management. “Your precious IT resources are able to focus on revenue-generating functions,” he adds.

Cloud Applications and the Digital Transformation

With advances in DevOps—the latest approach to better, faster software development—the evolution of new applications with rich features is constant and quick. Companies are automating manual processes in software and bringing digital technology into every area of the business to serve customers better and make employees more productive. Moving apps to the cloud is a big part of it, with 83% of organizations shifting workloads to the cloud by 2020, according to a survey from Logic Monitor.

For example, many enterprises are breaking up legacy software into smaller pieces so they can develop them quickly and offer them in the cloud. This approach lets them add customer-pleasing features fast so they can advance their position in the marketplace. Using policies, SD-WAN can juggle network



resources to meet the needs of every app, giving priority to specific traffic, services, users, features, and functions on the network under preset conditions. SD-WAN also enables security policies, secures access to applications, and satisfies service-level agreements that state the minimum service quality an app needs to function optimally.

But even SD-WAN has a finite amount of bandwidth to offer, which begs for WAN optimization to make sure limited bandwidth goes as far as possible. Although there has been a lot of talk about SD-WAN replacing WAN optimization, 67% of those surveyed in the U.S. want WAN optimization with their SD-WAN, according to Frost & Sullivan. SD-WAN must include WAN optimization so that cloud applications can thrive in the era of digital transformation. Otherwise, more bandwidth will need to be purchased to support all of those apps.

SD-WAN, the Mobile Employee, Security, and IoT

With the growth of a mobile workforce and IoT, remote offices have more requirements than ever. But perimeter security that surrounds a company’s data center or headquarters won’t protect mobile employees or IoT. They need additional protection, and SD-WAN and the cloud can help.

Enterprises everywhere want more cloud with their SD-WAN deployments. When the network can be managed from the cloud, downtime from unwieldy applications and connections—which can dampen the user experience and steal some of the productivity achieved by remote, mobile, or traveling employees—can be limited.

Cloud-based network management using SD-WAN also increases the reliability of business communications and ensures that mobile employees can rely on their network connections whenever and wherever they work. SD-WAN can manage Voice over Internet Protocol (VoIP) calls so that they have plenty of bandwidth, eliminating the risk of dropping important conversations.

SD-WAN is essential to the new network perimeter, which is the mobile user. The cloud makes it possible to push SD-WAN benefits right up next to the mobile worker, supporting application performance needs wherever employees roam. Encryption and other security technologies meet mobile users where they



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connect, in the cloud, thanks to SD-WAN.

In particular, SD-WAN enables security by encrypting traffic from one end of the network to the next, including data center and branch traffic as well as cloud traffic. SD-WAN leverages encryption keys that lock and unlock the encryption to authenticate and authorize endpoint devices, such as smartphones, laptops, and IoT devices, securing communications between them.

Addressing Security

Security is one of the market's biggest concerns, according to experts at 128 Technology, a networking solutions provider focused on

making clients' networks smarter. The 128 Technology Session-Smart SD-WAN promotes security, denying network access by default, apart from explicit access rights to the network. As a software solution that runs in many of the top cloud marketplaces, 128 Technology's Session-Smart SD-WAN connects at lower costs by removing special hardware requirements. "Session-Smart SD-WAN gives you 30% to 50% more bandwidth because it doesn't use tunneling to connect," says 128 Technology CEO Andy Ory. "Our technology meets the needs of the changing shape of the network and cloud mobility."

But let's not forget IoT, which is part of this new boundaryless network. SD-WAN benefits IoT by opening up transparency into IoT traffic and the behavior of IoT devices and users across the network, while enabling troubleshooting and security and supporting improvements over time.

Information technology must maintain an inventory of IoT devices to secure and support them. Where many IoT devices aren't easy to catalog and manage, enterprises can map from these devices to the SD-WAN. In this way, SD-WAN enables the enterprise to reach IoT deployment goals by scaling the deployment more quickly.

Security at Speed

Enterprises often find it challenging to implement SD-WAN at the highest possible speeds, especially with the gamut of security applications bolted onto it. By the time a company's information passes through the security gauntlet that stands between its cloud apps and users, WAN speed may have slowed significantly.

Fortinet, a top-rated infrastructure security company, offers

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Leading the Transformation at the Network Edge

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cutting-edge SD-WAN security, combined with extended networking capabilities, without all the usual performance degradation issues of traditional solutions. Fortinet's FortiGate SD-WAN uses custom-built ASIC computer chips that accelerate SD-WAN and security functionality. By addressing this common security performance bottleneck, Fortinet is able to provide accelerated SD-WAN application identification and network speeds for an optimum user experience, while providing comprehensive security through the wide portfolio of security functions integrated into its FortiGate Next-Generation Firewalls that screen and protect network traffic.

"These new SD-WAN chips enable SD-WAN functions to run at digital speeds with a minimal appliance footprint," says John Maddison, executive vice president, products and solutions at Fortinet. "The network edge requires high performance to meet the needs of today's critical SaaS and unified communications business applications, including videoconferencing and VoIP. These new silicon chips are integrated into all of the FortiGate Next-Generation Firewalls that support our FortiGate Secure SD-WAN solution. As a result, we are able to provide consistent deployment and accelerated performance to our customers.

"Maintaining the performance of business-critical applications is especially critical when you're rolling out SD-WAN solutions

across thousands of locations, as is single-pane-of-glass management that integrates networking and security policies and topologies into a single console," adds Maddison.

SD-WAN and the Basic Use Case

Despite cloud migrations, many companies prefer or have a need for

on-premise SD-WAN for privacy and control. The basic use case for SD-WAN—in an appliance, on premise—suits users who must comply with industry and governmental regulations in areas such as health care and finance.

Ecessa, a solution provider focused on secure, flexible, and resilient infrastructure for clients of every size, specializes in providing precisely that. "Ecessa's full-service, midmarket, premises-based SD-WAN solution avoids reliance on third-party cloud services, gateways, or controllers, ensuring maximum security and control for a Never Down™ network that's regulatory compliant," says Ecessa CEO Mike Siegler.

No matter the WAN use case, SD-WAN is quickly becoming the solution of choice. It finalizes delivery on the promise of virtualization, which makes its way full circle through the virtualized network, back to the virtualized cloud application, sitting in the virtualized server. SD-WAN is the last piece of the puzzle, making digital transformation a success for employees, partners, and customers as they enjoy applications everywhere. ■





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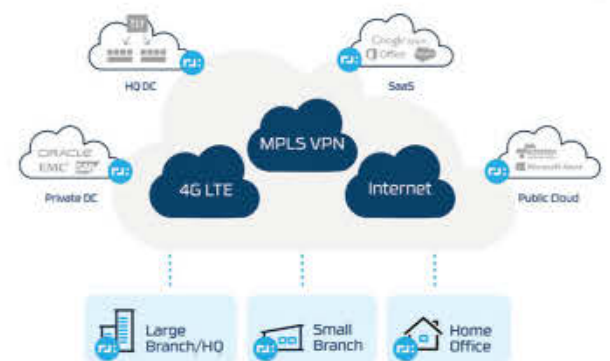
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THE
WORLD IN
7
PAGES

BRIEFING



Disney's Latest Blockbuster Isn't in Theaters

Robert Iger enlists Stormtroopers and X-Men in a bid to win the streaming wars.

By Adam Lashinsky

MEDIA

ON THE MID-APRIL DAY that Disney hosted a show-of-force presentation for investment analysts, the entertainment giant converted its cavernous Soundstage 2 in Burbank, Calif., where *Mary Poppins* and *Pirates of the Caribbean* came to life, into an auditorium for knowledge workers. Wall Street types sat rapt as Disney opened with a video splicing its decades-old film and TV library with that of 21st Century Fox, recently acquired for \$71 billion. The key dramatic moment: a shot from the stunning rock climbing documentary *Free Solo*—from formerly Fox-owned National Geographic—with the

BRIEFING

heroic Alex Honnold perched untethered on the rock face, another climber intoning: “There’s incremental advances that happen in all kinds of things. But every once in a while, there’s just this iconic leap.”

Subtle, it wasn’t. Disney is taking a meticulously planned leap itself into the market for Internet video streaming, simultaneously offering new products while forgoing billions of dollars in revenue by removing its content from rival entertainment platforms like Netflix. It is easily the boldest attempt in years by any established behemoth to shift its business model while operating an enterprise that’s forecast to bring in \$72 billion in fiscal year 2019.

The particulars wowed investors, who bid up Disney’s shares 13% in the days after the event. Its new service, Disney+, debuts Nov. 12 in the U.S. It will offer the prodigious libraries of its Disney, Pixar, Marvel, Lucasfilm, and National Geographic brands in one bundled service for \$7 a month—half Netflix’s subscription price—or \$70 a year. And Disney projected 60 million to 90 million subscribers in five years, two-thirds from outside the U.S. Long-time Disney CEO Robert Iger, who unexpectedly avowed he’ll step down



Disney’s share price has increased fivefold in Robert Iger’s 14-year tenure.

when his contract expires in late 2021, bragged that “no content or technology company can rival” a catalog that includes *Snow White*, every *Star Wars* movie, and 30 seasons of *The Simpsons*.

Disney’s move is bold—and costly. It will immediately forgo \$2.5 billion in revenue by removing Disney content from rival services. Todd Juenger, an analyst with brokerage Bernstein, reckons the pain will be bigger. He estimates the combined Disney and Fox collect up to \$8 billion annually from licensing revenue, including from Netflix, and that Disney will eventually say goodbye to all of it. Juenger also frets that Disney will suffer by comparison with Netflix’s constant influx of new material. “We

don’t think there will be any websites dedicated to ‘What’s new to watch on Disney+ this week,’” he says.

Disney’s opening pricing gambit was shocking. Richard Greenfield, an analyst with independent research firm BTIG, thinks Disney made a mistake. Given the discounted annual price, Greenfield estimates Disney’s per-user revenue will be about \$6.25. “It’s tough to make money at that level,” he concludes.

Cynics assume Disney’s rock-bottom price won’t last, and the company has more than a few financial levers to pull in the meantime. Disney+ is just part of its new strategy. The Fox acquisition gives Disney control of the rapidly growing Hulu streaming service, which makes money from ads and subscriptions, to add to the similarly ambi-

tious streaming service run by Disney’s ESPN sports franchise. Disney also has no plans to stop collecting non-streaming revenue from its biggest properties, most of which will continue to debut in movie theaters.

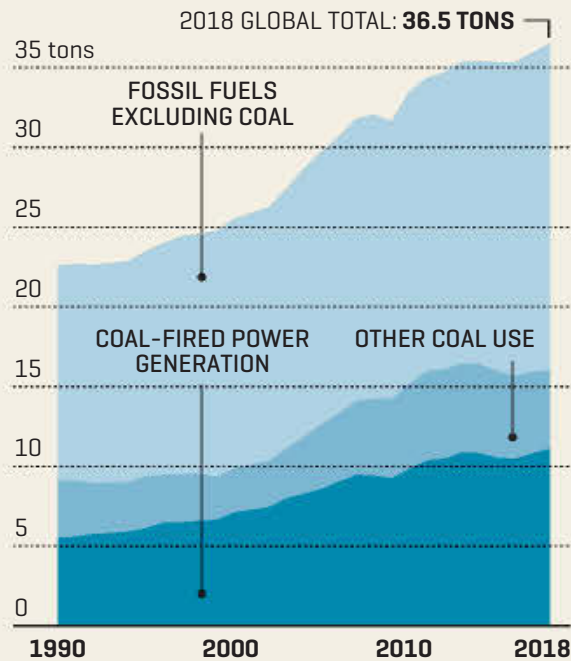
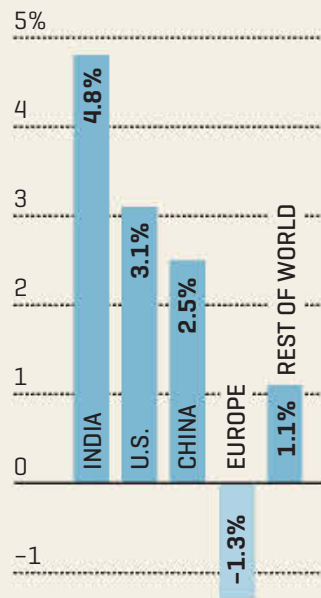
Everyone watching the upcoming streaming fracas understands that at some point consumer “subscription fatigue” will set in. Amazon’s Prime Video, Apple’s upcoming Apple+ service, Netflix, and expected offerings from Comcast’s NBCUniversal and AT&T-owned WarnerMedia will all test the tolerance of the most avowed binge-watcher. That’s on top of cable and satellite bills for those who haven’t yet cut the cord.

For its part, Disney will apply maximum pressure to ensure its services are among those users choose. “There is no bigger priority for the Walt Disney Company going forward,” Ricky Strauss, head of marketing for Disney+, told investors near the end of the three-and-a-half-hour event. The company, he said, will push Disney+ in its theme parks, on its cruises, across its broadcast networks, and through social media and paid advertising.

After all, the 96-year-old industry icon has no intention of attempting a daring feat without a safety net.

ENERGY-RELATED CO₂ EMISSIONS FROM FUEL COMBUSTION

CHANGE 2017-2018



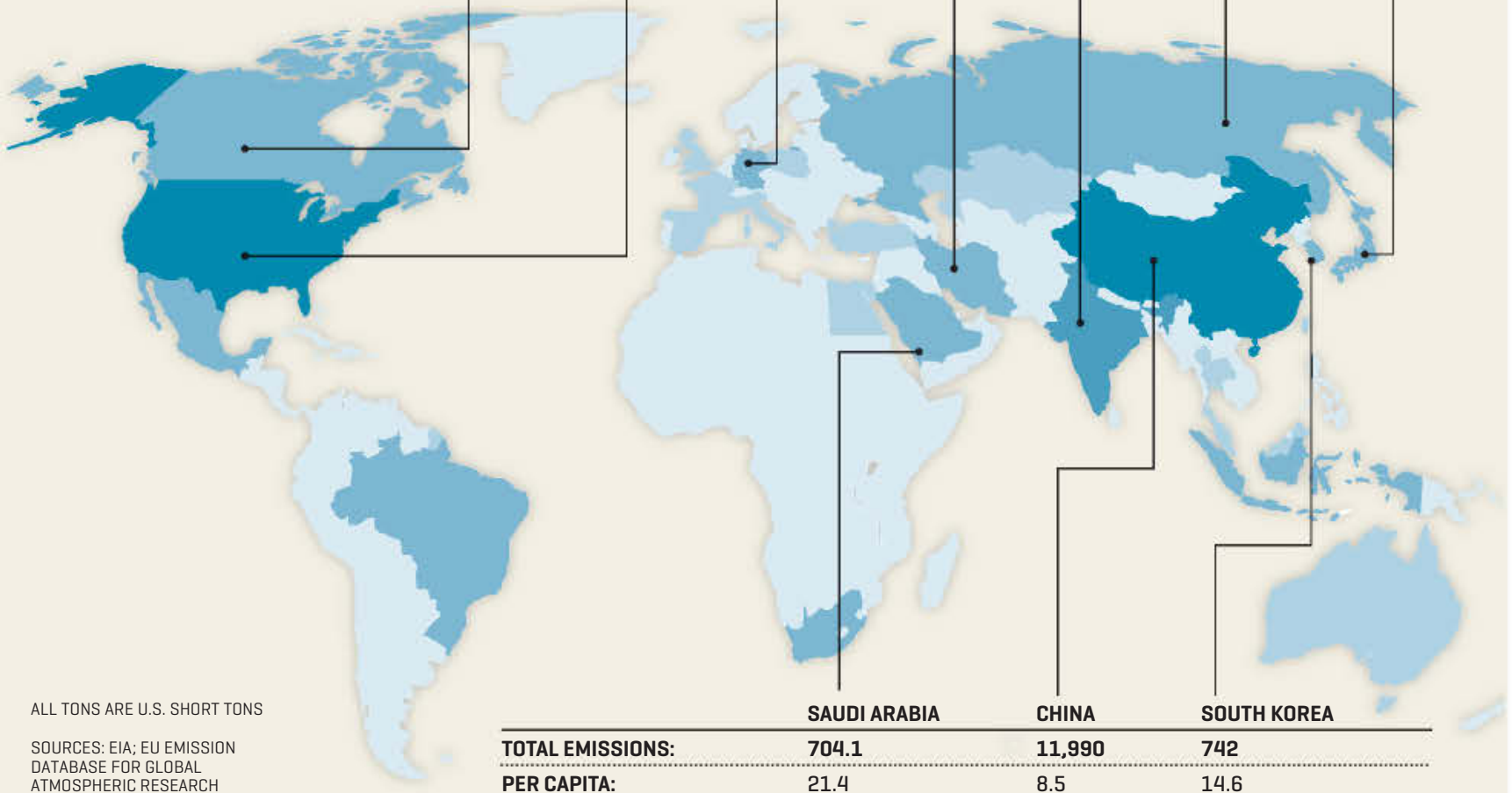
GLOBAL CARBON DIOXIDE EMISSIONS INCREASED IN 2018

Despite increased calls to reduce global emissions in light of climate change, energy-related carbon dioxide emissions worldwide went up by 1.7% last year, hitting a record high, according to the International Energy Agency. It's the largest rate of growth seen since 2013. While emissions declined in Europe, they were up in big economies like the U.S., China, and India. Coal, especially in Asia, played a significant role in the increase. At the same time, it's worth noting that according to 2017 data, the U.S. still produces twice as much carbon dioxide per capita as China and nearly nine times as much as India, highlighting the increased environmental impact of a higher standard of living. All of this means the Paris climate agreement's goal of limiting global temperature increase to 1.5°C could be a pipe dream if energy use worldwide doesn't change. —RADHIKA MARYA

ANNUAL CO₂ EMISSIONS PER COUNTRY (TONS OF CO₂, 2017)

0-250 TONS 250.1-500 500.1-2,500 2,500.1-5,000 5,000.1-12,000

10 LARGEST-EMITTING COUNTRIES	CANADA	U.S.	GERMANY	IRAN	INDIA	RUSSIA	JAPAN
TOTAL EMISSIONS:	680	5,630	878	740	2,706	1,945	1,456
PER CAPITA:	18.6	17.4	10.7	9.1	2.0	13.5	11.4



ALL TONS ARE U.S. SHORT TONS

SOURCES: EIA; EU EMISSION DATABASE FOR GLOBAL ATMOSPHERIC RESEARCH



HEALTH

A LITTLE STRESS CAN BE GOOD FOR YOU

STRESS, says psychologist and author Lisa Damour, “happens any time humans are operating at the edge of their abilities.” This includes doing new things like taking on a project, moving into a house, and welcoming a baby into your life. Speaking at *Fortune*’s recent Brainstorm Health conference in San Diego, Damour compared stress to weightlifting. Going through it makes you stronger. But you also can’t be stressed all the time, any more than you can lift weights continuously. It’s important for people to restore themselves—to de-stress, in other words—and everyone does that differently.

But the mistake is to assume that just because it hurts—in the same way rigorous exercise hurts—it’s bad. Says Damour: “If your life is interesting at all, you’re going to have stress.”

—ADAM LASHINSKY



Making Green

Here’s what people actually get paid in the high-growth industry of legal marijuana.

By Chris Morris

WEED

THE LEGAL MARIJUANA INDUSTRY is making billions of dollars in sales and raising hundreds of millions of dollars in tax revenue for states. But how’s it working out financially for people who work for companies that deal in cannabis?

Pretty well, it turns out.

The trade publication *Marijuana Business Magazine* compiled a salary study and found that average industry salaries are rising steadily. Researchers looked at data from a number of staffing sites and job boards and found that cannabis-themed salaries grew more than 16% between August 2017 and August 2018. And the number of six-figure positions is on the rise, potentially luring people with more advanced degrees, which could continue to fuel the salary escalation.

That said, cannabis compensation isn’t always competitive with pay in other, straighter industries. *Fortune* took a closer look at how those salaries stack up against comparable jobs.

CEOs \$528,090

- The average salary of a cannabis company CEO at one of the industry’s five major firms is over half a million dollars [\$285,113, if you discount the \$1.5 million annual salary of MedMen Enterprises’ Adam Bierman]. Compare that with the national estimate for CEOs of \$196,050.

DISPENSARY MANAGER \$68,333

- Running a cannabis shop, whether medical or recreational, means keeping a close eye on local laws. Still, the salary is just over half that of the average pharmacist, who makes \$128,000 per year, per Glassdoor.

EDIBLES PRODUCER \$46,640

- The Mary Berrys of the weed world bring in considerably less than the average food production manager, who makes \$68,000 per year.

BUDTENDER \$32,240

- The person behind the counter at a dispensary acts as both a concierge and a cashier. On average, a budtender earns \$6,000 less per year than a New York City bartender.

BUD TRIMMER \$29,667

- Trimming is an essential step in harvesting. It’s not an easy job, but it doesn’t require an advanced degree. The position pays a salary comparable to farming jobs for those with five to 10 years of experience.



Hubert Joly hands over the keys to Corie Barry in June.

Can Best Buy Keep Winning?

The blue-and-yellow big box turns to a trusted lieutenant of its turnaround CEO. By Phil Wahba

RETAIL

BEST BUY'S best guy is stepping down. Frenchman Hubert Joly, who has overseen a remarkable transformation at the electronics retailer, will be succeeded by its chief financial officer Corie Barry on June 11.

A 20-year veteran of Best Buy, Barry has been an instrumental part of the executive team that has helped Joly pull off one of the most dramatic reinventions of a major retailer, ever. Joly will stay on as executive chairman and advise Barry on matters

of strategy.

Joly took a company posting quarter after quarter of sales declines and carved out a new place for Best Buy in shoppers' routines. He pushed the retailer to add many services, giving customers a reason to come to stores, and, in a show of pragmatism, teamed up with brands, most notably Amazon, to have shop-in-shops.

His strategies, for

which Barry was a key architect, have paid off handsomely: On his watch, shares have more than quadrupled in value, with Best Buy's market capitalization reaching nearly \$20 billion. In February, Best Buy reported its eighth straight quarter of comparable sales growth.

To build on that momentum, Best Buy will need to continue to diversify its business. Barry was the force behind its entry into digital health care and wearables, an area of potential growth, especially as a retiring population gets increasingly tech-savvy. More plays like that will be needed to maintain a strong pulse.

Barring changes at other companies, Barry will be the 30th woman serving as a *Fortune* 500 CEO.



BREXIT

MAY'S HALLOWEEN NIGHTMARE

After failing to meet an extended deadline for Brexit, Theresa May has been given until Oct. 31 to deliver one of these three outcomes.

DEAL

May needs the support of the opposition Labour Party, which favors a "soft Brexit," to deliver her preferred outcome. The risk? Her own party ousts her first.

NO DEAL

Favored by hardliners but considered economic suicide by the mainstream, a "No Deal" Brexit would cause national chaos. As such, it's the unlikeliest outcome.

REVOKE

Revoking Article 50—formally ending Brexit—would tear May's Conservative Party apart. But it may be her last option to save the British economy if no deal is agreed to.



When Plus Is a Minus

Experts weigh in on the growing use of the arithmetic symbol in product names.

By Aric Jenkins

BRANDING **TWO PLUS ONE EQUALS THREE.** In the span of that many weeks, consumers were introduced to a trio of subscription services promising to add to their lives: Apple News+ and Apple TV+, plus one from Disney, aptly titled—Disney+. (See our article on page 13.) They'll complement a growing roster of arithmetic-branded media services, joining Disney-owned ESPN+ and following in the footsteps of the original "plus" brand in tech, Google+.

Things didn't work out so well for the latter. The

Internet giant shut down the social network in April after seven years. And while Google+ ultimately failed because of competition with Facebook and a massive privacy breach, its name didn't do much to encourage engagement in the first place, branding experts say.

"That's the biggest problem with [this type of name]," says Laurel Sutton, cofounder of brand-naming agency Catchword. "It doesn't tell you anything at all. It doesn't tell you what you're getting; it doesn't say why it's different. It's just adding a superlative on the end—like saying 'ultra' or 'supreme' or 'better.'"

Of course, "better" is the exact message companies like Apple and Disney want to convey. When you use the + "in conjunction

with a really strong, well-known parent brand, it reminds people, like ... this is Disney—we're not going to try to reinvent the wheel," says the Naming Group founder and president Nina Beckhardt. But the problem, she adds, is that brands then miss a chance to differentiate themselves, and they expose themselves to copycats with vague symbols that aren't easily trademarkable. Just look at the knockoff electronic brands beginning with a lowercase *i*.

So is the simplicity of the + effective or obscure? It's a missed opportunity, says Sutton. "Look at Disney—its brand is all about magic and wonder. The name 'plus' doesn't do any of that stuff. It doesn't appeal to the essence of the brand."



AFTER ZUCK: THE WINKLEVI'S NEXT CHAPTER

BOOK REVIEW

READERS OF 2009'S *The Accidental Billionaires* (and viewers of the film adaptation, *The Social Network*) might have thought that Tyler and Cameron Winklevoss got short shrift—both in what happened at Facebook and in having a smaller slice of the narrative. Now author Ben Mezrich is back to give the entrepreneurial twins the lead roles in a new book, *Bitcoin Billionaires: A True Story of Genius, Betrayal, and Redemption* (Flatiron Books), tracing their lives and work since the late-aughts' legal battle with Mark Zuckerberg. Cryptocurrency followers should already be familiar with the pair's digital currency fund as Bitcoin has blown up and gone haywire in recent years. But Mezrich's account of their past decade is gripping from the opening pages, potentially setting the twins up for yet another portrayal by Hollywood. —RACHEL KING

INVESTING

THEY MISSED
ON LYFT
(AND OTHERS)

EVEN THE MOST SAVVY INVESTORS HAVE WHIFFED ON LUCRATIVE OPPORTUNITIES.



MARK SUSTER

Upfront Ventures

"I didn't understand why helping people share rides from Palo Alto to SF was a big idea. I was very wrong."



JOHN BORTHWICK

Betaworks

"I got an introduction to [Snapchat's] Evan Spiegel ... and didn't take the meeting because what I saw was a sexting app. Shortsighted. I suspect if I had met him, I would have realized it wasn't that."



KAL VEPURI

Brainchild Holdings

"Spent half a day at Pinterest's condo/office and had a few follow-up discussions. I won't make that mistake again. I ended up participating later at [much] higher valuations."

Neue Batterien

The German government has made a big bet on batteries. But is the investment in the right place? By David Meyer

GOING ELECTRIC

THE AUTOMOTIVE INDUSTRY is vital to the German economy, and cars are going electric. So, the thinking goes, Europe—and Germany in particular—should be making more electric car batteries.

It's certainly a booming industry; electric car battery sales are projected to hit \$60 billion by 2030. But the companies making the batteries are overwhelmingly Chinese—fostered by state subsidies for electric-car makers and predicted to take 70% of the market. There are also big Japanese and South Korean players, such as Panasonic (Tesla and Toyota's battery partner), LG Chem, and Samsung SDI.

Germany wants some of that action. In November, the government announced a 1 billion euro (\$1.12 billion) fund for German companies to develop and build battery cells. Germany's National Industrial Strategy 2030, unveiled in February, fretted that "if the digital platform for autonomous driving with artificial intelligence were to come from the USA and the battery from Asia for the cars of the future, Germany and Europe would lose over 50% of value added in this area." The solution? State assistance for battery cell production.

AUDI E-TRON
204 MILE RANGE
(EPA)
BASE PRICE
\$74,800



PORSCHE TAYCAN
300+ MILE RANGE
PRICING TBA



But not everyone is convinced this approach makes sense. "It's burning taxpayers' money," says Ferdinand Dudenhöffer, professor of automotive economics at the University of Duisburg-Essen and a veteran of car firms such as Opel and Porsche. "It's stupid. It's crazy what our ministry of economics is doing."

According to Dudenhöffer, the government is looking for value in the wrong place. He suggests European companies forgo battery production—ceding that business to Asia—and instead research new materials that overcome the limitations of current lithium-ion batteries like, for example, cold-weather performance.

"The value does not exist in the manufacturing process in which they want to spend 1 billion euros," he says. "The value is in the materials."

USING INNOVATION TO NARROW THE INFRASTRUCTURE GAP

Crucial repair and rebuilding efforts have fallen dangerously behind. Technology offers a solution.

THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) GAVE THE U.S. a D-plus on its 2017 Infrastructure Report Card—the same dismal grade it received four years earlier.

The ASCE has estimated that by 2025, \$4.5 trillion in additional spending will be required to repair or replace the country's crumbling or outdated infrastructure. Without those fixes, the nation is more vulnerable to grave threats, including natural disasters, cyberattacks, unsafe roads, unclean drinking water, increased income inequality, and depressed economic growth.

The issue is critical—and global—but there are bright spots. Facing the monumental task of recovery after incurring hurricane damage of \$90 billion in 2017, Puerto Rico partnered with the Smart Cities Council to rebuild with smart technologies that offer greater resilience and economic opportunity. The approach “will create an innovative pathway for a better Puerto Rico,” said Governor Ricardo Rosselló, when the partnership was announced.

As Infrastructure Week devotes May 13–20 this year to promoting awareness of infrastructure challenges, it's clear that addressing them requires action on multiple fronts, from policy leadership to new models of financing—and cutting-edge tech. “The technology exists today for the

industry to help government turn the corner and close the infrastructure gap,” says Theo Agelopoulos, senior director of infrastructure business strategy and marketing at software company Autodesk.

Drones, 3D printing, augmented reality, and other technologies are poised to transform infrastructure, along with software solutions like building information modeling (BIM), an optimized process that leverages an intelligent 3D digital model to streamline all phases of construction projects, including planning, design, and build-through operations, which will increase productivity and support collaboration. The benefits can be substantial. Nearly two-thirds of architectural, engineering, and other firms using BIM have seen a positive return on investment (ROI), with about half of those reporting an ROI of 25% or more, according to a 2017 Dodge Data & Analytics report.

BIM is among the solutions that Silicon Valley-based Autodesk offers its customers worldwide. “We are all about using technology to drive automation to support companies doing

“The technology exists today for the industry to help government turn the corner and close the infrastructure gap.”

more, and doing better, with less impact on the environment,” says Agelopoulos. “The U.K. has taken the lead on BIM by mandating its use on government-funded projects,” he adds, “with European countries following.”

Advances in artificial intelligence and machine learning will drive the growth of BIM and other tech in infrastructure, but Agelopoulos believes that government and private industry must join forces to exploit their full potential.

Convincing owners to invest more up front to reap efficiencies in the long term is challenging, he says, even though they're promised higher quality, more sustainable assets, and significant savings in operating costs. “It's a culture change that owners have to overcome,” Agelopoulos says, “but doing so will help to ensure our country is built for the future.” ■



DRIVING VALUE, INNOVATION, AND GROWTH WITH BIM FOR INFRASTRUCTURE

INFRASTRUCTURE WEEK IS

not only an opportunity to shine a light on the country's pressing infrastructure needs but also a chance to take stock of the momentum in the industry to seek solutions. It's important to remember that an innovative, resilient, and competitive infrastructure industry is a key driver of U.S. economic growth. Yet government funds for repair and rebuilding have been shrinking. One emerging trend with the cost-saving potential to offset that decline is the industry's move to digitalization.

Digital technology in construction is nothing new—surveyors, mappers, and engineers have been using it for decades to design infrastructure. What is new is the larger-scale utilization of building information modeling (BIM) in infrastructure projects. BIM is an optimized process of project delivery that enables a more seamless transfer of information through planning, design, construction, and operations phases. BIM has already resulted in cost savings, productivity gains, and operational efficiencies across the building sector, and now governments and engineering companies

across the globe are establishing it as a valuable tool for infrastructure projects too.

At the core of BIM is 3D digital modeling that provides the rich information needed to allow stakeholders across all functions to more efficiently complete each phase of creating and operating a physical asset, regardless of whether it is a building, highway, bridge, or any other type of infrastructure. The latest technology can even provide a connected BIM experience that lets surveyors, drafters, designers, and construction professionals work on the same model in real time via the cloud. Connected BIM communication can also improve risk mitigation.

In 2011, the U.K. issued a Government Construction Strategy that included a mandate to phase in BIM usage on all government-funded projects; it also created a task group to determine the best ways to propel its adoption. (The European Union formed a BIM Task Group in 2016 to develop a common approach for the introduction of BIM into European public infrastructure projects.) In the U.K., BIM contributed to billions of pounds of savings



between 2011 and 2015. And the U.K.'s Construction 2025 Strategy sets out an even more ambitious vision, with efficiency targets of up to 33% lower costs and 50% faster delivery. Savings of this magnitude could go a long way toward bridging the infrastructure gap we face in America.

Now is the time to launch our own version of the BIM Task Group here in the U.S. to accelerate the adoption of BIM in infrastructure projects at all levels of government. By bringing together key federal agencies, state and

local leaders, and private-industry experts, we could fuel innovation and take advantage of homegrown technologies to shore up infrastructure across the nation. It would be one of the best ways to build better, more sustainable, and more resilient infrastructure—and reduce the costs of doing so. ●

—**Nicolas Mangon**
is vice president of business strategy and marketing for architecture, engineering, and construction at Autodesk, a global 3D design, engineering, and construction technology leader.



DON'T TELL ANYONE

How nondisclosure agreements became one of the tech industry's favorite tools—and why free speech may still be a long way off. By Jeff John Roberts

ACCEPT A JOB AT ANY SILICON VALLEY COMPANY, and chances are someone will ask you to sign a nondisclosure agreement. These documents, dubbed “contracts of silence” by academics, were once only required of senior managers, but today they are as common in the tech world as fleece vests.

At companies like Google, Apple, and Amazon, every low-level employee or contractor is expected to sign an NDA, and so are vendors and visitors. The contracts typically don't specify a dollar figure for violating the terms, but they do make one thing clear: Anyone who talks too much—about anything from their salaries to their manager's weird behavior—may be sued.

NDAs have played a central role in a number of recent tech industry controversies, raising new questions about their prolifera-

tion and scope. While businesses insist the agreements are necessary, critics say they scare people from talking about the darker sides of the industry.

When sexual harassment allegations roiled companies, including Uber, some tech workers blamed the agreements for preventing victims from speaking out. When employees at blood-testing startup Theranos grew suspicious about potential fraud by executives, they feared sounding the alarm publicly.

In February, tech-news site the Verge published an article about how Facebook modera-

tors earning \$15 a hour felt traumatized after trying to cleanse the service of porn, violent threats, and harassment. None would agree to reveal their real names, citing their NDAs.

It wasn't always this way. According to Orly Lobel, a University of San Diego law professor who studies the agreements, NDAs became common in the 1970s as a way for tech firms to protect trade secrets, and that remains their main stated objective. Since then, however, they've morphed into an all-purpose cudgel to control employees and suppress criticism.

In recent years, Lobel says, companies have even started using them to prevent employees from publicly disclosing their salaries—a subtle attempt to cap wages. The muzzle could also thwart women and minorities from exposing unequal pay, a problem that many tech companies have, until recently, downplayed.

“The companies are trying to signal to employees that everything is off-limits and is proprietary,” says Lobel.

This situation is unlikely to change anytime soon. While legal experts suggest judges would declare many broad NDAs unenforceable, and federal laws protect employees' right to discuss working conditions, the issue has barely been tested in court. The reason is obvious enough.

“These agreements have the effect of terrorizing people,” says Widener University law professor Alan Garfield, a longtime critic of NDAs. “Maybe you do have a good public policy claim, but who wants to risk having high-powered lawyers threatening to sue you?”

NDAs are not impregnable, of course. Garfield points to recent “breaches of the dam.” Under pressure last year, for example, Uber stopped requiring employees to enter private arbitration or sign separate NDAs in cases involving alleged sexual harassment, practices critics had linked to tech's overuse of NDAs.

However, such examples are outliers. As for companies like Facebook, Google, Apple, and Amazon, all of which declined to comment for

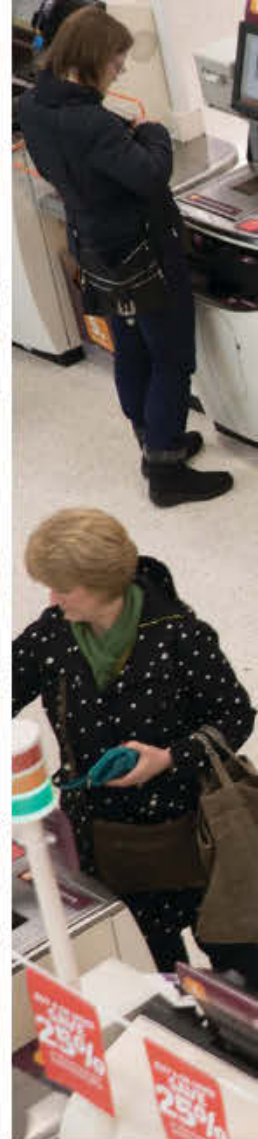
this story or did not respond, they have every incentive to impose NDAs as widely as possible. Even if the contracts are on shaky legal ground, the possibility of a court challenge is remote, and there is no punishment for asking people to sign even the most outlandish NDAs. And while prospective employees could demand less restrictive NDAs as part of their salary negotiations, only the most brave (or foolish) would do so.

The upshot is that, for now, any checks on the use of NDAs may have to come from political leaders. In the same way that state attorneys general have begun to target the misuse of noncompete agreements that limit employees when switching jobs, lawmakers theoretically could punish companies that use NDAs for anything other than protecting bona fide trade secrets.

Both Garfield and Lobel also point to whistleblower laws and so-called anti-SLAPP statutes (which typically let targets of frivolous libel lawsuits collect attorney fees) as other examples of legislation aimed at promoting transparency and free speech. Such reforms take time, however, meaning tech companies will continue to require NDAs of all comers. ■

Facebook moderators working under NDAs feared revealing their names in an article about the trauma they suffered from policing the social network.





WHEN TECH AND LABOR COLLIDE

As technology pushes deeper into the workplace, some employees are pushing back. By Jonathan Vanian

TECH A FEW YEARS AGO, MARRIOTT debuted a new app at hotels in five cities that was supposed to save housekeepers time by telling them which rooms to clean. It was a disaster.

Housekeepers ended up yo-yoing between rooms on different floors, ignoring messy rooms just down the hall. If anything, the cleaners felt that the app made them less efficient, and they worried about being disciplined by their bosses for failing to finish their work on time. “A wild-goose chase” is how Rachel Gumpert, a spokeswoman for Unite Here, the labor union that represents Marriott’s housekeepers, describes the episode.

Several months after the union became aware of the problems the app was causing, Marriott’s hotel workers went on strike, partly because of new technologies like the housekeeping app. In December, after intense negotiations, the hotel workers won a remarkable concession—a new contract that requires management to tell them 150 days in advance about new

technology so they can raise any concerns.

The Marriott agreement highlights how unions are increasingly pushing to protect employees from the unrelenting march of technology into the workplace. Recently, casino workers and even professional basketball players have negotiated contracts that dictate terms like retraining workers who are displaced by technology and limiting how businesses can use data they collect about employees from their devices.

Corporations have said little publicly about the phenomenon. Marriott, for example, declined to comment beyond a statement that it has since modified its housekeeping app so that employees have more control over their daily work assignments. “It is customary for us to work with our associates and solicit feedback when implementing new procedures at our hotels,” Marriott said.

Matthew Scherer, a lawyer who specializes in technology for law firm Littler Mendelson, which represents corporations in labor matters, says that most businesses are oblivious to employees’ increasing worries about tech. When talking with corporate clients, Scherer says he recommends that they take worker misgivings seriously so that managers can address them before they



The growing use of technology in the workplace is impacting jobs of all kinds. It's becoming a bigger battleground in collective bargaining.

bubble over and disrupt business.

"It's not entirely clear to me how corporate America is going to respond or when it's going to have its Sputnik moment, as it were," says Scherer, who declined to discuss specific companies his firm represents.

Whatever the case, everyone agrees that innovation will eliminate some jobs while opening the door to newer ones. The battle is over how to cushion the impact of, say, stores switching to using self-checkout systems instead of employing human cashiers.

In the past, workers have often organized to resist new technology and, in some cases, even to rebel against it, as in the 19th century when tailors in Europe burned down factories filled with new-fangled power looms. But these days, union leaders are taking a more measured approach.

"Work is not going away," says Damon Silvers, the director of policy and special counsel for the AFL-CIO, the largest union federation in the U.S. "There will be new jobs created, and the content of existing jobs will change."

To be sure, unions have negotiated over technology and automation for years. (Just look at the auto industry.) But now the

fight is increasingly over software rather than industrial robots, a big job killer for decades.

In its contract negotiations in 2017, the National Basketball Players Association, which represents NBA players, targeted wearable devices. The union was able to establish rules that prohibit teams, in certain situations, from using player health and performance data that they glean from fitness trackers.

Heart rate information collected during training or games may show that a player is out of shape, for instance. Under the rules, teams can use this data to help strategize during games. But they can't factor it in when negotiating individual NBA player contracts because, as the NBA union's deputy general counsel David Foster explains, the information may be inaccurate.

The reality, of course, is that most U.S. workers don't have the bargaining power of NBA stars. Nevertheless, Marriott's housekeepers were able to win some protections in their recent contract, which was similar to one their union negotiated last year on behalf of Las Vegas casino workers. In addition to requiring that Marriott give the union a heads-up about any new technology, it guarantees job training for anyone who is displaced.

A housekeeper could become a cook, for example, and be put to work at the same hotel or one nearby. The contract language covers disruption from both futuristic scenarios like robots that can clean rooms, to more present-day ones like the app that infuriated the hotel's housekeepers, says Anand Singh, a Unite Here president in San Francisco.

"We don't have all the answers," he concedes. However, "you can't just count on some magical apparatus to reposition and retrain Americans." ■

IN INDUSTRIES AS VARIED AS PLASTICS, MANUFACTURING, AND

freight shipping, appetites for petroleum products are insatiable. And when the underlying commodity—oil—is notoriously volatile, the search for stable costs is ongoing.

Enter: Noil Petroleum. The Chicago-based distributor leverages economies of scale, coupled with know-how rooted in a family business, to serve a clientele that includes various hedge funds, Southwest Airlines, and the U.S. Department of Defense, to name a few. And it's on track to grow revenue from \$400 million in 2018 to a projected \$3 billion in 2019.

The concept is simple: Fewer middlemen means lower costs. Noil Petroleum represents oil majors such as Shell, Exxon-Mobil, Vitol, and Phillips 66, and it sells to wholesalers that supply gas stations and other customers.

But Noil also sells directly to an array of organizations that need gasoline, diesel, jet fuel, lubricants, and other petroleum products. One major trucking company in the Northeast, for example, recently signed a \$1.4 billion annual contract with Noil to supply fuel via 12 East Coast terminals. This obviously helps the two companies, but their customers benefit as well.

"They were going through suppliers who would buy fuel from us rather than going through someone at the top of the supply chain," says Noil Petroleum President and CEO Steve Neely. "By coming under our umbrella, we're able to save them about \$12 million annually."

Noil has a hard-earned sense of what customers need, partly because Neely has been in the trenches with them. Neely's father, Spencer, bought his first Chicago gas station in 1967 and built it into a multifaceted enterprise with 32 gas stations, more than 100 tow trucks, and a heating-oil delivery arm. As a young man, Steve Neely drove a tow truck for his dad, repaired transmissions, and placed fuel orders. "Back in the old days, you'd go out there with a long stick, and stick the gas to see what the levels were," Neely says. "Ordering the fuel was very complicated because it dealt with a lot of math, but that's what we had to do every day." These days, ordering fuel is often an automated process, and Neely is no stranger to tech

solutions. Prior to founding Noil in 2011, he worked in telecommunications and helped launch the T-Mobile brand in the U.S.

Being a nimble player allows Noil to move quickly on a global stage, and the company stepped into the spotlight this past year as an understudy supplier as Mexican refineries shut down. Noil's solution involves sending hundreds of thousands of barrels of fuel over the U.S.-Mexico border daily.

With the capacity to solve problems on such a large scale, Noil plans to continue scouting new opportunities aggressively. Positioning at the top of the supply chain clearly has its advantages. ■



FUELED FOR SUCCESS

NOIL PETROLEUM LEVERAGES PRICING POWER TO CUSTOMERS' ADVANTAGE □

Noil Petroleum Corporation

FUELING THE NATION.

EMPOWERING THE FUTURE.

Capabilities:
Rail, Marine and Truck

Products:
Aviation Fuel, Refined Products
(gasoline & diesel), Crude Oil, Bio-Diesel

energy **API**
Proud Member

WHEN A SHUFFLED DECK MEANS A BETTER HAND

At the few companies with “staggered” boards, shareholders can replace only a few directors at a time. Here’s why that continuity has paid off for investors. By Ryan Drousseau



INVEST

THE ETERNAL BATTLE for control at public companies between executives and shareholders is one of the most important narratives in business. And on one front, shareholders have won decisively: They’ve sharply reduced the use of “staggered” boards of directors, which can help protect business leaders from the pressures of reform-minded investors.

But in winning the victory, did they lose the war? Seems so. Staggered boards may actually deliver better returns.

A staggered board is like the U.S. Senate: Directors are elected on a rotating basis, typically with one out of three facing election each year. A non-staggered board is more like the House: Every seat is up for grabs in each election. With

a Senate-like structure, it takes two elections to replace a majority of the board—making it far more difficult for shareholders to oust directors and demand a shift in strategy.

In 2009, 41% of S&P 500 boards used such setups. Today, only 54 companies in that index, or 11%, have non-annual voting, according to FactSet. For that sea change, you can partly thank Enron and WorldCom. The corruption-driven collapses of those companies made corporate-governance reform a cause célèbre—and the perceived coziness of staggered boards made them an easy target. Research at the time also suggested that firms that reelected all directors annually were better performers. By the early 2010s, shareholder-rights advocates were lobbying against staggering, on the grounds that it hurt value by shielding bad managers. Their efforts helped persuade more than 100 companies to abandon the practice.

But in recent years, staggered-board companies have wound up outperforming their peers—and significantly at that. For the five years through March, S&P 500 companies that utilized non-annual voting registered an average total return of 125%; for the index as a whole, the figure was 52%.

These figures may represent what economists call “survivorship bias”: A company that’s reaping lousy returns with a staggered board is more likely to ditch it. Still, more nuanced studies also suggest that the structure can pay off. Researchers Martijn Cremers, Lubomir Litov, and Simone Sepe looked at more than 3,000 companies that changed their boards from staggered to unstaggered or vice versa from 1978 to 2015. They found that those companies’ “firm values” increased by 3.2% to 6.1% under a staggered structure, as measured by Tobin’s Q, a metric that divides a company’s enterprise value by the value of its assets. Similarly, Harvard Business School professor Charles Wang and his coauthors evaluated companies headquartered in Massachusetts that were required to adopt staggered voting in 1990, owing to a change in state law. In the 15 years that followed, Wang found, their average Tobin’s Q value grew sharply.

What makes staggering a secret sauce? It appears to make it easier for *good* managers to innovate, free of outside pressure. Wang’s research found that businesses that spend heavily on R&D tend to perform better under alternating-election boards. “External influence is more likely bad for these types of innovative activities,” says Wang, because shareholders may lean on management for short-term results rather than giving an investment with a long time-horizon the support it needs. (Tellingly, of today’s staggered S&P 500 companies, 16 of 54 are in health care, including biotech and pharmaceuticals.)

IT’S POTENTIALLY A GOOD SIGN that companies launching initial public offerings are increasingly likely to have staggered boards. In 2008, 38% of IPO companies had such structures; in 2016 that figure was 81%. (This year’s best-known IPO debutant so far, ride-share company Lyft, has a staggered board.)

Still, investors shouldn’t assume staggering is a panacea. Building a moat around the board, says Wang, can have negative consequences as well, if companies use staggering to insulate themselves from justified criticism. (Dual-class share structures, which give “supervoting” rights to executives and founders, present even greater risks; see sidebar.) An unstaggered board can make it easier for investors to press for change if management

DUAL-CLASS DILEMMA

These companies may have bright futures, but the voting control their “dual-class” stock gives to their founders can make other investors uneasy.

FACEBOOK

[FB, \$176]

Founder and CEO Mark Zuckerberg controls about 60% of the shareholder vote through powerful B shares. That control has helped Facebook take profitable risks. It also insulates Zuckerberg from investor pressure as he battles questions about data security and privacy.

ESTÉE LAUDER

[EL, \$164]

The Lauder family controls 87% of shareholder voting power. They’ve shown a willingness to trust strong leaders like CEO Fabrizio Freda. But with family also accounting for 25% of the board, it’s clear where the final decisions lie.

UNIVERSAL HEALTH SERVICES

[UHS, \$135]

The hospital operator’s A and C shares, which account for 87% of voting power, are largely controlled by founder and CEO Alan Miller and his family. The stock has sharply underperformed the S&P 500 Health Care Index in recent years; any big course correction is in Miller’s hands.

starts to drastically disappoint.

Here are three companies that are in the middle of solid runs under staggered boards—and have so far avoided the moat mentality.

Few brick-and-mortar retailers have thrived in the e-commerce era like **Ulta Beauty (ULTA, \$354)**. Backed by a staggered board, CEO Mary Dillon has targeted “off-mall” locations like strip malls, which haven’t lost traffic as traditional malls have. Ulta has opened 313 new locations over the past three years, about 27% of its store count. It also emphasizes in-store experiences that online rivals can’t match, including exclusive products and sit-down “beauty bars.” “We’re very bullish on the company’s prospects,” says Oppenheimer analyst Rupesh Parikh, who says the stock trades in line with historical averages, despite climbing 67% over the past year.

For the past decade, health insurer **Anthem (ANTM, \$293)** outsourced its pharmacy benefits management (PBM) services to Express Scripts. That deal ended in March, and now Anthem is launching its own PBM service, a long-term strategic leap with benefits that management believes will far outweigh the risks. Barclays analyst Steven Valiquette says the move will give Anthem room to grow revenues between 10% and 12% annually over the next three to five years.

IDEXX Laboratories (IDXX, \$228), a leader in veterinary diagnostics, has benefited from our willingness to spend on our pets’ wellness. It also accounts for as much as 80% of the animal-health diagnostic market’s R&D spending, driving “almost all innovation in the industry,” says Mark Massaro, an analyst at Canaccord Genuity. The company boasts customer retention rates near 99%. Its stock is pricey, having jumped 183% over the past three years, but it deserves to trade at a premium, says Massaro. ■

THE SMARTER THE HOME, THE BETTER THE LIFE

Qingdao Haier is making smart appliances that help consumers live healthier, happier lives.

IMAGINE APPLIANCES THAT NOT ONLY speak to you but can also anticipate your needs and understand your lifestyle. Like a refrigerator that recommends recipes before you ask for them. Or a washing machine that orders laundry detergent before it runs out. Or an air conditioner that adjusts the temperature when it knows you feel hot.

A fantasy? Hardly. This exact scenario was showcased by Haier at the Appliance and Electronics World Expo (AWE) in Shanghai in March. The world's latest technologies and

devices were featured at the Haier booth at the N5 "Smart World" pavilion.

Entering the Haier pavilion, the first thing visitors encountered was the smart home series by Casarte, a global premium brand. Embedded in the dark background wall was the Internet of things-connected double-screen refrigerator. Users can activate the screens with facial-recognition technology and have a conversation with its built-in artificial intelligence. Then the refrigerator can act as a meal butler, analyzing a user's health

data to recommend recipes.

Next to the refrigerator, expo visitors found the Casarte fusion washing + care machine. The machine's door opens in response to knocking, and with normal wash, air wash, and dry settings, it can launder delicate clothing at home.

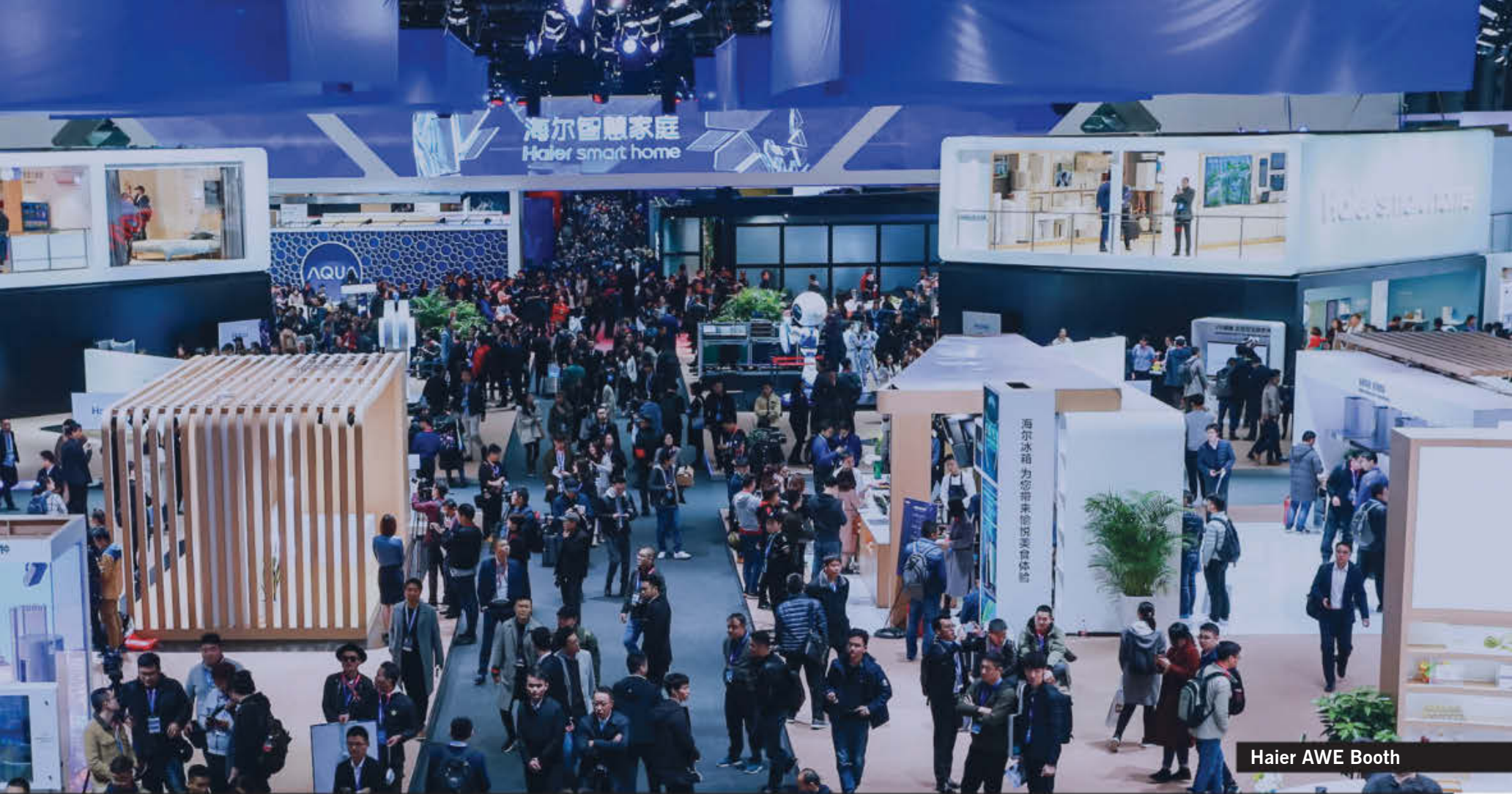
Nearby was a smart appliances suite designed for millennials by Leader, a pioneer brand for stylish young users. The suite has the contemporary appearance that younger users often like and features smart functions, such as high-speed Internet connections and voice- and remote-control options. Users can turn on their washing machines using voice commands, freeing up their hands for other tasks.

Further inside the pavilion, AWE visitors found the Haier Smart Home two-story house. The house integrates all devices and provides proactive services for every scenario, realizing a true smart lifestyle for the first time. For instance, the smart refrigerator can remind a homeowner that food inside it is about to expire. It can also provide the origin of any food inside and "talk" to other appliances



Haier Smart Home built in AWE





Haier AWE Booth

in the home: Imagine a refrigerator directing a washing machine to do a load of laundry.

This “smartness” goes beyond the kitchen too. Seven solutions that cover the whole home—including air quality, water, security, entertainment, cleaning and care, information, and whole-house health—are designed to improve the way consumers live. These solutions are capable of voice dialogue and can think proactively, taking the initiative to meet users’ needs in clothing, food, shelter, entertainment, and more.

In addition, GE Appliances (GEA), a Haier-owned company, showcased a number of smart kitchen collections designed for North American consumers. The GEA collections use Haier’s U+Connect platform to connect to different apps, devices, and software, and perform remote diagnosis, to enhance and extend the life of appliances. GEA’s full kitchen suite highlighted the Kitchen Hub, a 27-inch smart touch screen and ventilation system designed to fit easily in the space above a range. Users can manage all of the devices in the house through the Kitchen

Hub. In the mood for coffee, for example? Just give the command to brew a pot. The Hub can also adjust thermostats, check calendars, and enable video chats with family and friends while people are cooking.

And in the Social Kitchen created by Fisher & Paykel, a Haier company based in New Zealand, smart kitchen appliances including refrigerators and ovens allow users to share their culinary experiences on social-networking sites at any time.

Other vendors also impressed visitors with their novel approaches. AQUA, a Haier company in Japan, showcased an intelligent community laundry system that lets users book laundry time in advance and receive alerts after their washing is complete, avoiding long wait times. AQUA Commercial Community Wash has gained a 75% market share in Japan.

And Italian brand Candy showcased a smart oven with a 19-inch touch screen. The oven allows the cook to observe food

that is baking without having to open the door. In addition, through Bluetooth on a smartphone, the oven can display video recipes, bringing another level of convenience to the smart life experience.

The Appliance and Electronics World Expo allowed Haier to prove why it’s been the leading global appliance brand for 10 consecutive years.

The Appliance and Electronics World Expo allowed Haier to prove why it’s been the leading global appliance brand for 10 consecutive years and how it’s bringing smart homes to life around the world. It’s clear that Qingdao Haier is making good on its promise to Customize the Good Life with Haier Smart Homes. ■

Haier

PAIN-PROOF YOUR PORTFOLIO— FOR NEXT TIME

The array of recent changes to the tax code left investors dizzy this year. But these four moves could save you money over the long haul. **By Erik Sherman**

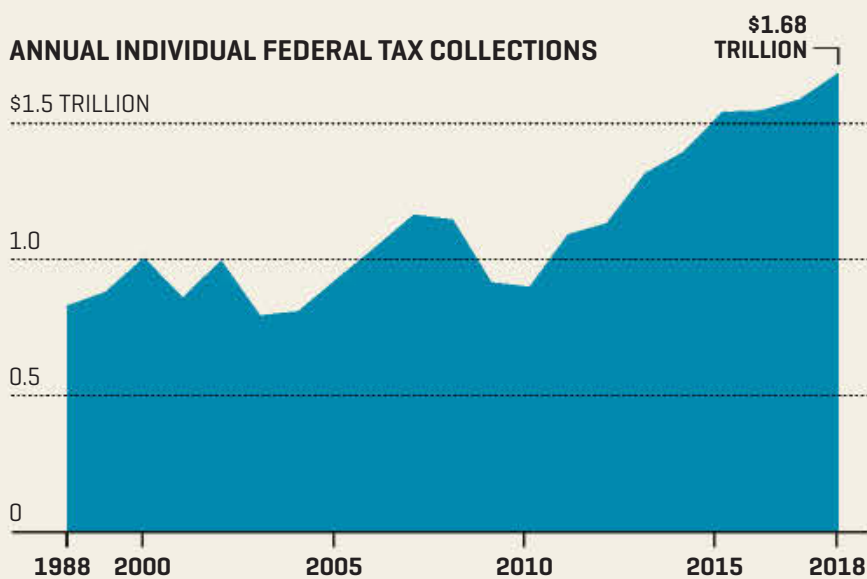
INVEST

TAX DAY HAS COME AND GONE, along with appreciable amounts of your money. Given the huge changes enacted under the Tax Cuts and Jobs Act of 2017, tax pros were still trying to figure out what worked (and what didn't) right up to the filing deadline. To decode the code, we talked to top tax experts to find strategies you can implement now—that just might pay big dividends next April.

THE TAXMAN COMETH

Individual tax receipts have been steadily rising since 2010. Recent changes to the tax code, however, may provide investors with opportunities to limit their liabilities.

ANNUAL INDIVIDUAL FEDERAL TAX COLLECTIONS



FISCAL YEAR DATA (OCTOBER THROUGH SEPTEMBER) SOURCE: TREASURY DEPARTMENT

► **Revisit REITs** Pass-through businesses like partnerships, LLPs, and sole proprietorships are the big tax-change winners. If they meet certain standards, they get to deduct 20% of their profits before calculating taxes. “It was intended for small businesses, but it also applies to REITs [real estate investment trusts] if they have the right structure,” says Cal Brown, a financial adviser with Savant Capital Management. With REITs looking at lower tax bills, that can mean more profit to divvy up among investors like you.

► **Go Local** Many have been hampered by the 2017 tax changes’ \$10,000 limitations on state and local tax (SALT) deductions. One way to save on state taxes? Move some of your portfolio to Treasuries and municipal bonds issued in your state, which would be tax exempt at the state level, says Eric Bronnenkant, head of tax at online financial adviser Betterment. The savings may outweigh the additional interest you’d earn on taxable higher-yield bonds.

► **Ask to Pay Commissions** In recent years, that advice would have sounded crazy, as clients gravitated toward fee-based advisers. However, with the deduction for adviser fees gone, paying commissions might make sense, says Paul Gevertzman, a partner at accounting firm Anchin Block & Anchin. Say that your investments earn \$10, and you get charged \$2 in fees. “If they pay you the whole amount, and you pay an advisory fee [separately], that fee is taxable,” Gevertzman says. But commissions charged as you trade, and deducted from the money you net, don’t get taxed.

► **Get Educated** One group that will benefit in a big way from the 2017 changes are parents and grandparents of school-age kids, thanks to an expansion of 529 plans. In these state plans, earnings aren’t taxable, and when you take money out to pay for such things as tuition, room, board, and textbooks, there’s no tax implication either. Though 529s were originally designed as higher-ed savings vehicles, “in the new tax law, tax-free withdrawals are now allowed for private school, from elementary through high school,” Brown says. But be aware, gift tax exclusions (now \$15,000 a year) may apply. ■

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PASSIONS

The water garden at COMO Shambhala Estate [below]; a Hindu woman presents her daily *canang sari*, a morning offering, at a temple in Ubud.

TRAVEL

BALI'S INIMITABLE ALLURE

Whether you're seeking spiritual and physical wellness, or a surfer's paradise, this Indonesian island is a destination of balance.

By Alexandra Kirkman

FALLING WATER IS the prevailing sound at Gunung Kawi Sebatu, one of the most captivating yet least visited temple complexes in Bali. Nestled within a verdant glade seven miles northeast of Ubud, it's composed of a series of ponds and pools—most full of golden carp sheltered by lotus flowers and water lilies—fed by the natural spring that flows beneath. Roaming guinea fowl and baby deer create a lively contrast to the many grinning statues that preside over the water gardens. Beyond a stone stairwell flanked by a traditional *candi bentar*, or Balinese gateway, rows of offering baskets brimming with fruit and fuchsia-hued flowers line the foundations of shrines bedecked with dragons and other





mythical creatures, blanketing the gray stone in a joyous riot of color.

Sites like this one are commonplace in Bali, a land of revelations spanning the sensory to the spiritual. The 1930s saw the Indonesian island's first influx of intrepid, high-profile travelers, including Charlie Chaplin, Noël Coward, and Cole Porter. In the ensuing decades, Bali's uniquely entrancing mix of beauty and hospitality has drawn tourists in ever-increasing numbers from around the world. And while it's the furthest thing from undiscovered, it's now drawing a new influx of visitors as the world's premier destination for holistic healing and wellness travel.

When India's first Prime Minister, Jawaharlal Nehru, visited Bali in 1954, he famously called it "the morning of the world," a description that's especially apt of Ubud, Bali's beating heart. Perched on

the Ayung River, it may be literally the greenest place on earth; dizzyingly dense jungle foliage seems to swathe every inch of town in a boundless thicket of towering palms, ferns, and other flora, while rice paddies shimmer an electric emerald in the tropical sun. This enclave of some 30,000 is Bali's cultural capital, where the island's revered artisanship, mysticism, and natural beauty converge.

The creative gifts of Balinese artisans—who excel at painting, carving, and weaving—are a defining element of the island's magnetism. Their masterful talents are such that there is no word for "artist" in the Balinese language; art is simply second nature, an inherent part of the collective identity. While the Neka Art Museum and the Museum Puri Lukisan offer dazzling overviews of the various schools of island art, it's worth visiting the studios on the outskirts of Ubud to observe the craftsmen at work. In Mas, a village known for wood carving, you'll encounter woodworkers hunched over blocks of teak or green hibiscus clenched between their feet, honing the wood into, say, an exuberantly bejeweled Ganesha, the elephant-headed Hindu god of prosperity and new beginnings, emerging from a three-dimensional canopy of impossibly intricate leaves, each whittled almost as thin as paper.

Neither tourist throngs and their attendant traffic jams nor other modern-day aggravations can shatter the palpable grace that

permeates the island. This ethereal calm is rooted in *rwa bhineda*, the Balinese philosophy of balance. Tolerance is another tenet; the Balinese view differences among people as a welcome and requisite component of an even cosmic keel—a generous perspective that especially befits an economy 80% dependent on tourism.

In the seaside hamlet of Canggu, Ubud's arresting jungle tableaux are replaced by hypnotic coastal ones: Surfboard flotillas slice through foaming breaks in the violet shadows of village temples built on massive rocks jutting into the sea. Its volcanic black sands, thundering swells, and ocean breezes scented by frangipani have long lured surfers from far and wide to create a vibrant expat community. Though hardly under the radar, this laid-back village on the island's southern shore remains charmingly devoid of the tourist sprawl found in nearby towns such as Kuta and Seminyak.

Not that Canggu is escaping Bali's luxury boom. Its beachside bars, teeming with tattooed denizens swigging beers, are gaining new, more upscale neighbors. Luxury villas are multiplying fast, as are real estate prices. Top-shelf eateries helmed by accomplished expat chefs, as well as a slew of chic new boutiques and quirky coffeehouses, are cropping up alongside Bali's traditional roadside cafés—meaning discerning travelers, lured by Bali's inimitable magic, are surely soon to follow. ■

WHERE TO STAY

In Ubud:
Four Seasons Bali at Sayan Situated among the treetops of the Ayung River valley, the resort is a singular study in jungle luxury located just minutes away from downtown Ubud. With its unique rice-bowl-shaped

architecture and stunning riverside villas, it's an especially striking standout in the Four Seasons portfolio.
fourseasons.com

COMO Shambhala Estate The jewel in the crown of the COMO Hotels and Resorts col-

lection, this sprawling resort, set on 23 jungle acres just outside Ubud, is one of the world's most acclaimed wellness destinations. Guests can visit traditional healers or bathe in the forest's natural spring pools.
comohotels.com

In Canggu:
COMO Uma Canggu Located on Echo Beach, this resort's centerpiece beach club, from Italian design superstar Paola Navone, serves up scrumptious cuisine and staggering sunsets in a colorful surf-shack setting.
comohotels.com



AN ADVENTURE WITH PURPOSE

Ecotourism is increasingly trendy, but this African safari operator has been walking the walk for 35 years. By Lindsey Tramuta

SAFARI

MOMBO. IT'S A NAME SYNONYMOUS with watching the world's most majestic wildlife. The remote camp in Botswana's Okavango Delta set the benchmark in luxury lodging when Wilderness Safaris, the industry's pioneering ecotourism outfitter, took the reins in 1999. By boldly deviating from the once-rustic standards in the delta, the company transformed the camp into an upscale destination with five-star comforts—all while maintaining an uncompromising focus on low-footprint design and operations.

Nineteen years and a fourth renovation later, all the premium trappings are still dutifully considered. Mombo's latest iteration has private, shaded verandas with individual plunge pools and plush daybeds overlooking the floodplains, indoor and outdoor showers, generously stocked bar carts, and even an on-site wellness center—all of which is 100% solar powered.

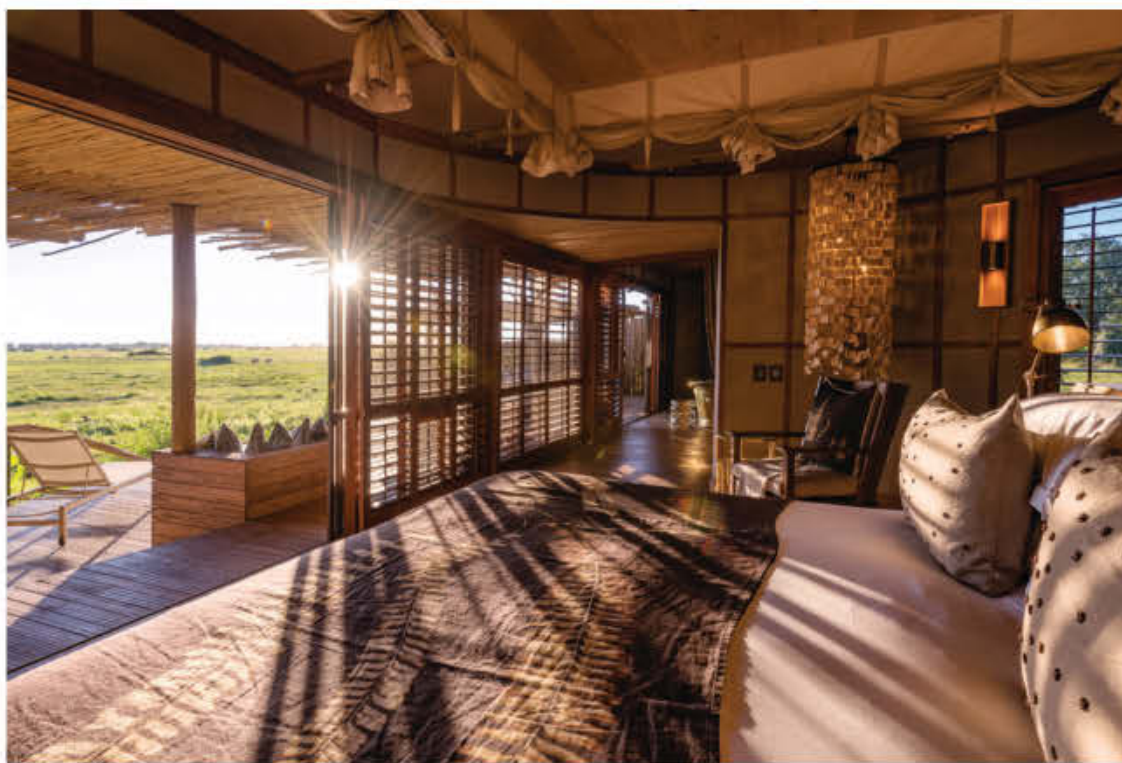
With rates starting at \$1,990 a night per person, such comforts are certainly expected. But high thread counts and copper bathtubs are only part of the Wilderness appeal. "Our competition is any tourism destination on the planet, not just Africa," says CEO Keith Vincent, who joined the company in 1993. "While the camp is spectacular,



and you don't want for anything, it could never be the only draw."

That's why the company's stated mission is to conserve and restore Africa's wilderness: no animals, no safari. This is achieved in several ways. Hosting a small number of well-paying visitors means not only unobstructed game viewing but also mitigating disruption to the animals and their habitat. The company sets up in remote, under-visited, and biodiverse locales where it can rehabilitate the land and facilitate the return of large animal species. Its nonprofit arm, the Wilderness Wildlife Trust, has funded more than 100 conservation projects in the past decade.

A notable success of the Trust is its rhino reintroduction program.



A buffalo herd (left) commuting to a water hole in Mombo camp, Botswana. One of the nine spacious tents at Mombo (above) that overlook the floodplain and are just steps from wildlife.

If travelers have the privilege of observing white and black rhinos during their game drives throughout the Mombo concession today, it's because of the partnership between Wilderness, Botswana's Department of Wildlife, and the Botswana government. Their collaborative operations in translocation and anti-poaching brought black rhinos back from localized extinction.

But conservation is about people too. Bill Given, a wildlife biologist and founder of the Wild Source, a safari agency, says Wilderness's attention to community empowerment is a major reason he recommends the outfitter to clients. Given mentions Children in the Wilderness, a program built around life skills and environmental education for children residing in neighboring villages. "It's a brilliant opportunity for children to experience the treasure of wildlife in their

region and have that be positive," he says. "This can be rare in areas where the only wildlife experiences for locals are in conflict with animals." More than creating jobs for locals—which Given points out is a prerequisite for operating—the program's goal is developing the environmental leaders of tomorrow.

In an industry in which "greenwashing" is prevalent, Wilderness has earned a reputation as more of a conservation company funded by tourism than a traditional safari operator. That's important for many travelers. Sixty percent of Americans said they were concerned with the sustainability of their leisure travels, according to a 2016 survey by travel website Skift.

Far from resting on that reputation, Wilderness has bold ambitions. "We're looking into areas that have been devastated from years of war—areas that could potentially hold another 100,000 elephants in 20 years' time," says Vincent excitedly. "Isn't that tremendous?" ■

WHERE TO BOOK

The Wild Source
thewildsource.com

Natural Migrations
naturalmigrations.com

TIME FOR TRAVEL

You don't need to be Jacques Cousteau to enjoy these voyaging watches. By Daniel Bentley

GEAR ON THE WRIST of every great adventurer of the 20th century was an equally great watch.

Take early aviator Alberto Santos-Dumont, whose friend Louis Cartier created a watch for the wrist so he could read it while flying; Sherpa Tenzing Norgay, who conquered Everest alongside Sir Edmund Hillary wearing a Rolex Oyster Perpetual; or Buzz Aldrin, who strapped an Omega Speedmaster over his space suit before leaving the Eagle lunar module. While the modern mechanical watch is, in essence, a luxury—superseded in practical use by digital technology—these timepieces were life-preserving equipment in their day.

It's the romanticism of these adventures that attracts collectors to so-called tool watches—ones built for a purpose, whether it be flying, diving, or driving.

Here are five new timepieces that capture an adventurous spirit, whether you're exploring the globe or dreaming of doing so.

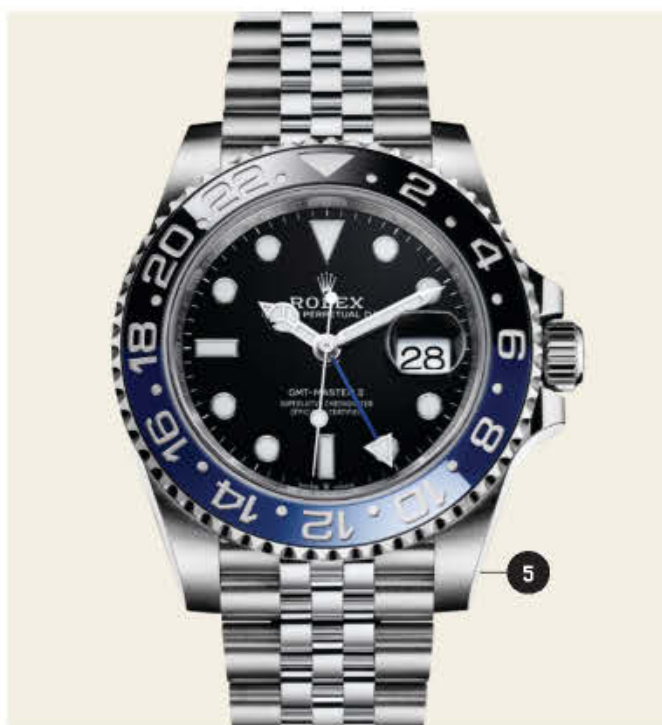


SAFARI CHIC PATEK PHILIPPE AQUANAUT

While Patek Philippe's Nautilus sports watch commands waiting lists eight years long, it was its oft-overlooked cousin

the Aquanaut **(1)** that was among the stars of the show at the recent Baselworld watch fair in Switzerland. Its jumbo-size 42mm case has serious wrist presence, and its white gold, which could pass for steel

to the untrained eye, provides a stealthy touch of luxury. With its military-esque olive green dial and matching rubber strap, this piece would look equally at home on safari or by the pool. **PRICE: \$39,690**



THE PROTOTYPE

TUDOR BLACK BAY P01

In the late 1960s, Tudor proposed a new dive watch for the U.S. Navy—a project ultimately shelved and consigned to the

archives. Fifty years later, Tudor has re-released the watch that had become a subject of horological lore. **(2)** With its unique bezel locking system and oversize lugs, it's a bold departure in design from the rest of the Black Bay line and

certainly stands out in a crowd of Submariners and Seamasters. One for the daring. **PRICE: \$4,200**

THE EASY RIDER

BREITLING NORTON CHRONOGRAPH

Breitling has long

been associated with British luxury carmaker Bentley, but a more recent partnership with legendary motorcycling brand Norton has produced this elegant chronograph. **(3)** Its visually balanced black dial,

with white sub-dials and gold numerals, pairs perfectly with the rugged leather strap. Ride on.

PRICE: \$8,500

THE AVIATOR

TAG HEUER AUTAVIA ISOGRAPH

Autavia—a portmanteau of “automotive” and “aviation”—tells you exactly what this watch is about. The Isograph **(4)** is built with TAG’s latest technologies but with a styling nod to pilots’ watches of the past. With a titanium case, ceramic bezel, a magnetic carbon hairspring, and water resistance to 100 meters’ depth, it’s a go-anywhere adventure watch.

PRICE: \$3,600

THE TIME-ZONE HOPPER

ROLEX GMT-MASTER II

In 2018, Rolex took Baselworld by storm when it debuted a stainless steel GMT-Master with a red-and-blue ceramic bezel on a jubilee bracelet. This year it gave the same treatment to its blue-and-black-dialed variant **(5)**—nick-named “Batman” by fans. With the ability to track three time zones at once, it’s the perfect piece for the frequent flier.

PRICE: \$9,250

SURVIVAL OF THE FITTEST

ATHLETICISM IS THE NAME OF THE GAME ON THE PGA TOUR.



IN THESE CONTENTIOUS TIMES, it's nice to be able to put old, thorny debates to rest. We can comfortably nix at least one: whether golf is a sport. After all, nowadays its elite players are world-class athletes. Golfers walking in the opening ceremony of the 2016 Rio Summer Olympics, after a 112-year absence from the Games, fit right in with their compatriots, just as surely as Brooks Koepka might be mistaken for a strong safety, Dustin Johnson for a shooting guard, and Rory McIlroy for an attacking midfielder.

Thirty years ago, back when the occasional potbelly roamed its fairways, the PGA TOUR debuted its first mobile fitness center. Those facilities have evolved since then, and late this winter the TOUR unveiled two fully upgraded, state-of-the-art fitness centers. At approximately 950 square feet—about 200 square feet larger than their predecessors—the new fitness centers are trailers that travel to 62 events between the PGA TOUR and the over-50 PGA TOUR Champions annually, each logging more than 24,000 miles across the mainland U.S. and Canada.

“When you think about today’s athletes and today’s PGA TOUR players, they are bigger, they are stronger, they’re faster, they’re more flexible than they’ve ever been before and are certainly bringing tremendous excitement to our tournaments week in and week out,” said TOUR commissioner Jay Monahan at the introduction of the new trailers during the 2019 Honda Classic. “This move will only enhance their ability to prepare for playing professional golf at the highest level, on the PGA TOUR.”

Each trailer has a companion wellness center dedicated to therapy and recovery; together, the duos comprise the Player Performance Centers. The annual cost for the TOUR to provide the centers for its members, including the staff of athletic trainers, physical therapists, and chiropractors, runs well into the millions of dollars, but it’s an investment as sensible as it is substantial. Offering a consistent, readily accessible, and trusted training and wellness hub keeps the talent performing at maximum capacity.

“For the last 20-plus years, fitness has become increasingly important to our players—you can see it in the physiques of the athletes,” says Andy Levinson, PGA TOUR senior vice president, tournament administration. “Tiger Woods led that charge, and now it’s a part of almost every single player’s



ABOVE: THE PGA TOUR UNVEILED ONE OF TWO NEW FITNESS CENTERS THAT WILL EACH LOG MORE THAN 24,000 MILES IN 2019, TRAVELING TO MORE THAN 30 PGA TOUR AND PGA TOUR CHAMPIONS EVENTS. EACH IS SUPPLIED WITH STATE-OF-THE-ART TECHNOGYM EQUIPMENT. OPPOSITE PAGE: PGA TOUR MEMBER ALEX NOREN USES THE INCREASED OPEN SPACE TO WORK OUT IN THE NEW FITNESS CENTER FOLLOWING A PRACTICE ROUND AT THE HONDA CLASSIC.

APPROXIMATELY 80% OF THE PLAYERS IN A GIVEN TOURNAMENT FIELD USE THE PLAYER PERFORMANCE CENTER DURING THE EVENT.



routine. As our athletes have changed, their demands have changed, and we thought it was time to revise and upgrade the facilities to give them something befitting that.”

To that end, Technogym became an Official Supplier to the PGA TOUR Player Performance Centers as part of an agreement that will also see its products at the TOUR’s Tournament Players Club facilities. The company, based in Cesena, Italy, has been the Official Equipment Supplier to the past seven Olympic Games and will provide TOUR-licensed Tournament Players Club facilities with ultra-high-end sports performance equipment, including treadmills that give real-time feedback on running efficiency and have a “sled push” feature that helps develop lower-body strength. Technogym’s SKILLTOOLS “performance tools”—medicine balls and stability balls, mobility sticks and balance pads, foam rollers and power bands—offer a wide range of training modalities for flexibility, stability, and power development and can be used for a pre-round warm-up or for post-round recovery.

Many players were already familiar with Technogym’s offerings from visits to the gyms at the elite hotels they frequent. In fact, they lobbied for the company’s involvement in the fitness centers and were involved in all aspects of planning the new facilities; the TOUR’s Player Fitness Council members and other players provided detailed input. But in addition to the best in equipment, added space was a top priority.

“The reason for more size wasn’t just because we have more people in there or because we wanted to cram more equipment in,” Levinson says. “All the players we had discussions with said, ‘We need more open space.’”

Open space is necessary for the free motion exercise and band work that are among the current workout trends on TOUR. Because it’s not just the players’ drives that are getting longer—their wingspans are too.

“In our old facility, if you put a Dustin Johnson and a Tony Finau [both 6-foot-4] together in the open space, there wouldn’t be space for anybody else,” says Levinson, laughing. “We wanted to create a space where more players could work out simultaneously doing the types of

workouts that are increasingly popular.”

“Increasingly popular” is exactly how the trailers themselves might best be described, as approximately 80% of the players in a given tournament field use the Player Performance Center during the event. It’s a number that should only rise in the coming years.

“You look at these athletes that are coming out now, they’re actually athletes,” says Brooks Koepka, the TOUR’s reigning Player of the Year and three-time major champion, including victories in the last two



U.S. Opens. “Everybody is working out. Everybody is trying to become as fit as possible to make sure they’re flexible, they’re stronger, and in good shape to play all year round.”

It’s worth noting that Koepka’s great-uncle Dick Groat was baseball’s 1960 National League Most Valuable player and a 1952 first-team All-American in basketball at Duke University. Which is to say, he was the kind of kid who, today, might well pick up a golf club instead of a bat or ball. —EVAN ROTHMAN

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The Gateses after an interview with *Fortune* in Seattle in March.





01

BILL + MELINDA GATES

COFOUNDERS, BILL & MELINDA GATES FOUNDATION

IT WAS MARCH 2018, AND ONCE MORE BILL GATES found himself behind a podium. In the previous few months, he had given one keynote address after another—in San Francisco, he'd urged drugmakers to focus on diseases that affect the poor as well as the rich; in Andhra Pradesh, India, he had preached the value of smallholder farms; in Abu Dhabi, he'd enjoined the Crown Prince and other princelings to continue their financial support for global health initiatives; in Cleveland, he'd promoted investment in better schools.

Now the world's second-richest man and foremost itinerant advocate for the poor was in Abuja, Nigeria, talking about the same theme that had underlain all of these speeches: the need to invest in "human capital." Among those gathered at the conference center, in the shadow of the Aso Rock Presidential Villa, was the Nigerian President himself, Muhammadu Buhari, and what seemed like the entire seat of government, from legislative mandarins to a full house of governors and business leaders—all primed to hear from a man who had, so far, lavished the country with \$1.6 billion in grants through his eponymous foundation.

BY CLIFTON LEAF

Two months earlier, the Bill & Melinda Gates Foundation had taken the unusual step of absorbing a \$76 million IOU Nigeria owed to Japan, for money Nigeria had borrowed to fund a polio eradication effort. The progress there had been striking. In 2012 the country had more than half of the worldwide cases of this paralyzing disease; that number had since been cut to zero.

But Gates wasn't there to deliver a keep-up-the-good-work speech. He was there to say the opposite: to tell his hosts that their nation—Africa's richest and most populous, with 190 million residents—was on a knife's edge. The country was facing an "epidemic of chronic malnutrition," with one in three Nigerian children chronically malnourished, Gates told his audience. Nigeria had the fourth-worst maternal mortality rate on the planet, making it "one of the most dangerous places in the world to give birth." More than half of rural Nigerian children could not adequately read or write. The primary health care system was "broken."

The harsh litany went on. On the basis of per capita GDP, oil-rich Nigeria was "rapidly approaching upper-middle-income status, like Brazil, China, and Mexico," Gates said. But by every meaningful measure, it still resembled an impoverished nation: Life expectancy was a meager 53 years—nine years lower, on average, than its low-income neighbors in sub-Saharan Africa. Nigeria was headed for a perilous future—unless it changed course, that is, and began to substantially invest in the health, education, and economic opportunity of its people.

"It may not be polite to speak so bluntly when you've always been so gracious to me," Gates told the gathering, veering a bit from his prepared remarks. But, he explained, he was "applying a lesson" he'd learned from Nigerian businessman and fellow billionaire Aliko Dangote, who told him: "I didn't get successful by pretending to sell bags of cement I didn't have. I took from that, that while it may be easier to be polite, it's important to face facts so that you can make progress."

It was a speech that "rattled" the government, according to the next day's headlines. And it could have been given only by Bill Gates, says Ngozi Okonjo-Iweala, chair of GAVI, the international vaccine alliance, who twice served as Nigeria's finance minister. Years earlier, when Gates was CEO of Micro-

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**Every one
of their
actions
has a
multiplier
effect.
They act
with a
unity of
purpose."**

WARREN BUFFETT
Chairman & CEO,
Berkshire
Hathaway

soft, the company he cofounded with Paul Allen in 1975, he'd had no trouble speaking bluntly to government leaders—vigorously challenging, for one notable example, the U.S. government's antitrust case against the company during the 1990s.

The post-Microsoft Gates was still unabashedly candid—"He did that in Nigeria, and he didn't mince words," says Okonjo-Iweala—but the frankness was now infused with something else: a driving sense of purpose. A more tender kind of, well, passion.

That's a word that's used quite a bit these days to describe Bill Gates, 63, who in the waning decades of the 20th century was often pilloried as a brash—and sometimes soulless—corporate predator.

Ray Chambers, an influential American philanthropist who is now the World Health Organization's Ambassador for Global Strategy and who for several years served as a UN Secretary-General's Special Envoy for Malaria, says Gates' "passion for the subject"—whatever that might be in global health—"and his compassion for the victim" are equally striking. Physician Helene Gayle, who spent five years with the Gates Foundation, overseeing its HIV, TB, and reproductive health programs and who is now CEO of The Chicago Community Trust, singles out the word "determined" before saying, "that's not quite right—that's too pedestrian. It's somewhere between determined and passionate. I mean this guy is on a mission, and he is—the word is 'undeterred.'"

And if you're wondering what drives this perpetually refueling zeal, a big part of the answer can be found on the other side of the ampersand in his foundation's name: Melinda Gates.

If Bill's superpower is speaking truth to the mighty, Melinda's may well be hearing the truth of the unmighty—and then internalizing and sharing that secret, often brutally repressed wisdom. For a generally soft-toned speaker, her voice has the command of a church bell. But those who know her say her truly uncanny talent is simply the ability to listen.

Gayle recalls one trip with Melinda, now 54, and Bill in the early 2000s to India, meeting with a group that was particularly hard-hit by HIV, women in the commercial sex industry. Melinda—as was often the case—sat on the floor with the women and listened. "Many of them were despised and stigmatized in their own communities," recalls Gayle, "and



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having her listen to these women's stories and hear the lives that they led—why they ended up having to trade sex for basically survival, and what it meant to them to have people from outside come and listen to them, listen to their stories, be willing to hug and embrace them, and treat them like human beings with equal value—was a very, very moving moment,” she says.

In Mozambique, it was the same. The Gateses would travel to a remote rural area, talking with women about their desires for their children—“and their fears that they wouldn't be able to provide for their children and care for them,” says Gayle. “And Melinda would sit on the ground, talking woman to woman about the things that mothers care about. She has this remarkable ability to connect with everybody.”

Raj Shah, the CEO of the Rockefeller Foundation, has likewise worked at the Gates Foundation and traveled frequently with its founders, but there is one trip that stands out: Bangladesh, December 2005. The govern-

In Dhaka, Bangladesh, the government went all out to welcome the Gateses, recalls a friend. The couple just wanted to spend time listening to the people.

ment had pulled out all the stops in welcoming the famous couple to Dhaka, putting their giant faces on billboards lining the highway from the airport. The Gateses, however, just wanted to visit the famous International Center on Diarrheal Disease Research—or, as everyone called it, the “Cholera Hospital.”

Established in the 1960s, the hospital had long been a pinnacle of research on ways to help children with diarrhea survive. “At the time,” recalls Shah, “there was a cholera outbreak, and we were walking through. And I don't know if you've ever seen a cholera cot, but basically it's a raised cot with a hole in the middle, and they have a blue tarp over it, for obvious reasons.” On each cot was a child. “And the kids just have constant diarrhea,” says Shah. “There are buckets under the cot to capture all that. And the mothers sit next to their kids and constantly give them a combination of oral rehydration, salts mixed with purified water and some other electrolytes.” That ORS, as it's called, keeps the child from dehydrating and dying during the diarrheal episode.

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Melinda sat down beside one mother and began helping to spoon-feed her child, as the two women—one born in Dhaka; the other, in a middle-class home in Dallas—talked through a translator about what they ate for dinner. It was a moment when Shah realized that Melinda could bond with anyone. He pauses for a moment in the conversation: “I could be wrong in all my recollections. But I just remember her saying that ‘Oh, my family ate rice and beans also!’ It’s just who she is: People connect with her in a very special way.”

FOR EVIDENCE OF WHAT HAPPENS when an unstoppable force meets a profoundly movable human being, one has simply to measure the impact of the Bill & Melinda Gates Foundation.

From January 1995 through the end of 2017, their namesake philanthropy (along with earlier Gates family foundations that were merged into the Bill & Melinda Gates Foundation in 2000) has deployed an extraordinary, barely countable \$45.5 billion. (When I asked the foundation, partly as a hypothetical, if they could send me an accounting of every single grant they’d doled out since inception, I got back a spreadsheet with 41,487 line items.)

That \$45 billion has launched, and then continually supported, what global health experts widely acknowledge to be two of the most successful international, private-public partnerships ever formed. The first is the aforementioned GAVI, which has helped developing countries immunize 700 million children against preventable diseases. The second is The Global Fund to Fight AIDS, Tuberculosis and Malaria. The fund, through its own community partnerships, has put more than 17 million people on retroviral therapy for HIV, cared for 5 million people with TB,

and treated more than 100 million cases of malaria in 2017 alone—even as it helped prevent an untold number of infections in all three diseases. (Apart from national governments, the foundation is also the largest donor to the World Health Organization.)

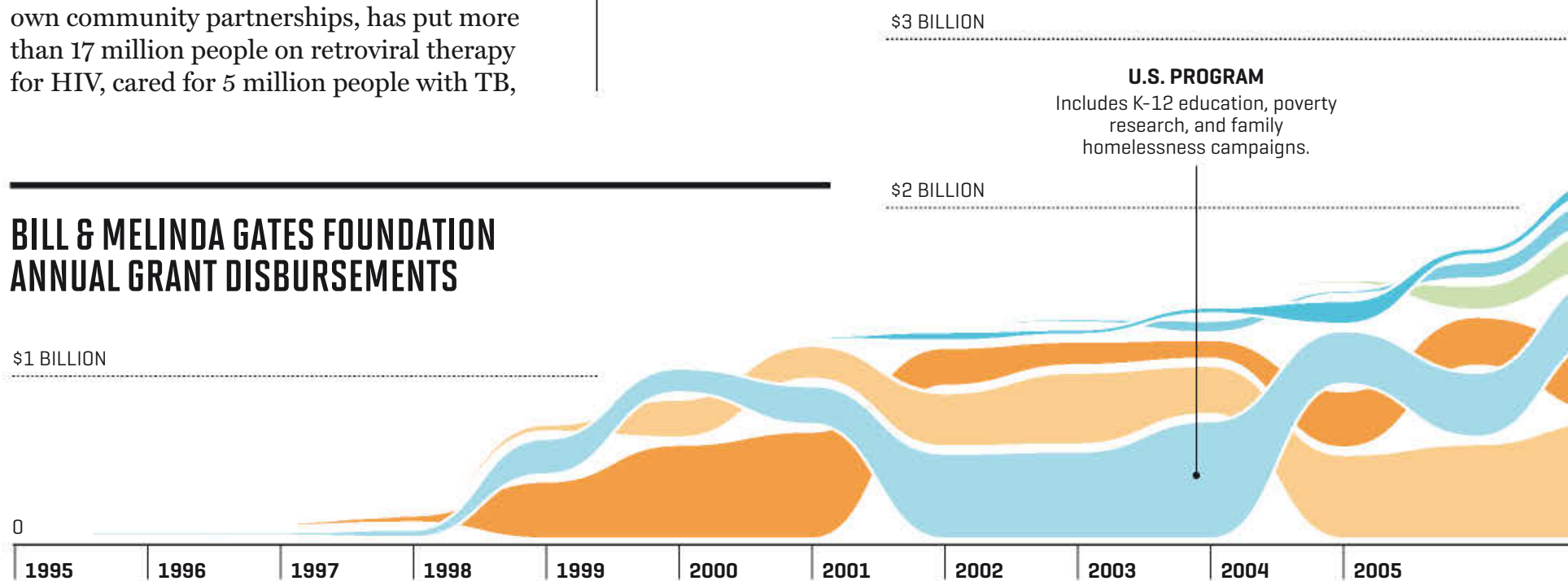
The Gates money, put to work through the Global Polio Eradication Initiative, has helped bring that horrific paralyzing disease to the brink of elimination, leaving only two places on the earth, Afghanistan and Pakistan, where the wild poliovirus remains active. In 1998, the disease could be found in 125 countries.

The eradication quest is, as nearly all foundation efforts are, sophisticated and data-driven. Gates-funded disease hunters have plumbed sewage systems in hotspot regions to check for lurking poliovirus and used digital satellite data to understand how many kids were in a given area—and, therefore, how many houses inoculation teams needed to visit.

The foundation has spent more than a billion dollars to date to reduce the burden of ancient, and long neglected, tropical diseases (NTDs) that can cause everything from blindness to anemia to an elephantine swelling of limbs—and that, despite the progress made, continue to debilitate one-seventh of the earth’s population. It has fortified health systems in developing countries and brought new innovations to agriculture. (As Bill begins one of his wonkily upbeat GatesNotes blogs, “I’ve never been shy about my passion for fertilizer.”)

The foundation jump-started a national

BILL & MELINDA GATES FOUNDATION ANNUAL GRANT DISBURSEMENTS



conversation in the U.S. on education reform: one backed by data, as well as dollars—though there have been many of those, too. (It spends \$300 million annually on K-12 learning, and on learning about learning.) The Gateses have even changed the nature and scale of family philanthropy—partnering with Warren Buffett in 2010 to convince other billionaires to give half or more of their money away during their lifetime or in their will. Today, nearly 200 families have joined the aptly named “Giving Pledge.”

“Every one of their actions has a multiplier effect,” says Warren Buffett in a phone interview about the pair, with whom he has been close friends for decades. His own fortune became part of that multiplication as well, when he donated 500,000 Berkshire Hathaway B shares to the Gates Foundation—a gift then worth about \$1.6 billion.

But the impact of Bill and Melinda Gates is due to more than money. Buffett returns to his earlier thought: “The two of them have a multiplier effect—the two of them together. They act with a unity of purpose and with a difference of style,” he says, chuckling at the truth of his own line: “That just came to me—and it’s really true.”



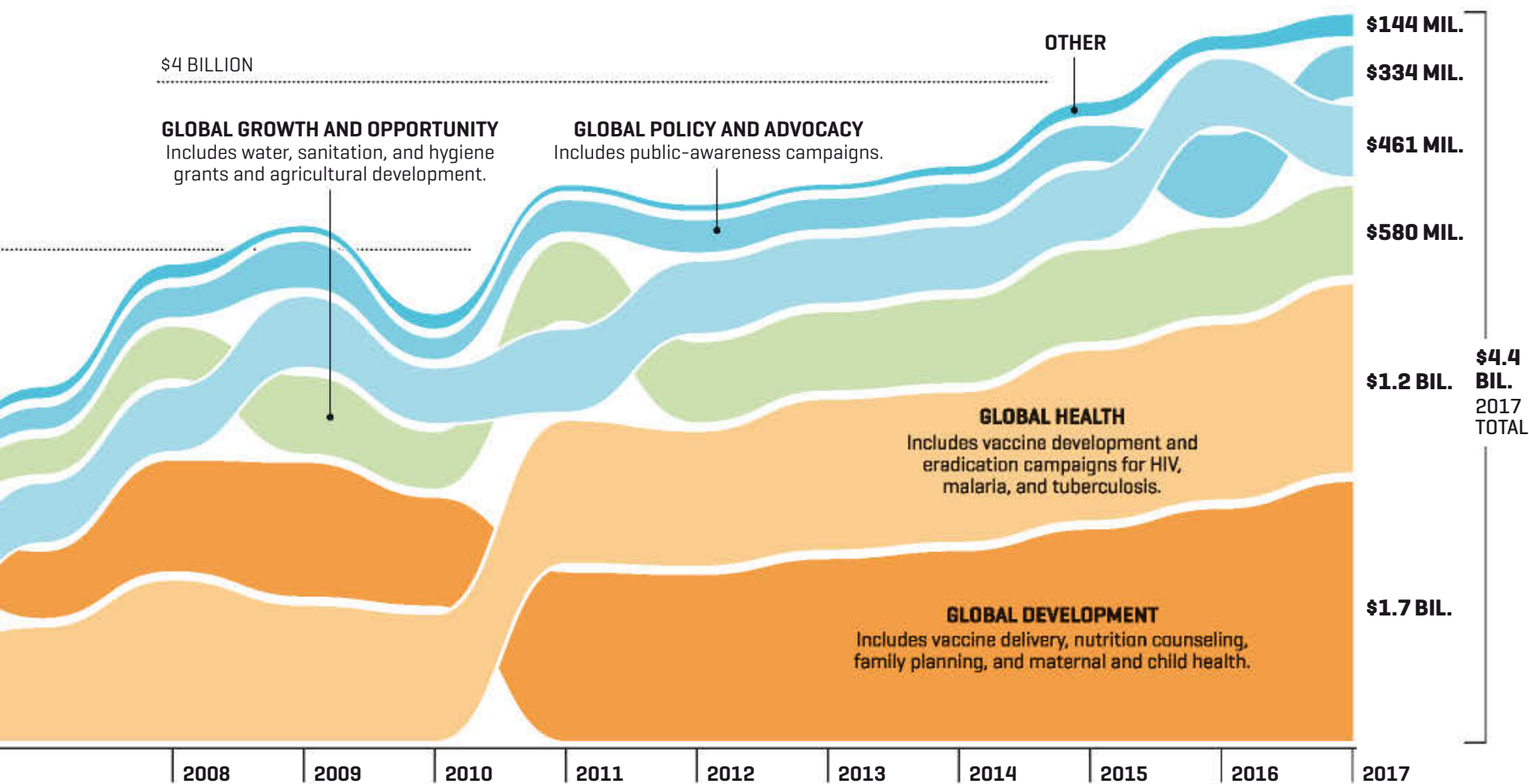
Bill and Melinda both bring a kind of infectious optimism that these are problems that can be solved.”

PETER SANDS
The Global Fund

“They are so results-orientated that most people have no idea all the things that would not be happening without them,” says Bono, who, like the Gateses, has been a tireless champion for global health, and whose own (RED) and ONE campaigns have received funding from the couple. “For as long as I’ve known them, their only interest in their income is the outcomes it can generate for others in terms of changing lives,” he adds. “They don’t ask for acknowledgment; they just get on with it. They set up the scene, hire the photographer, but are so focused on results, they sometimes forget to be in their own photograph.”

Their work over the past 20 years has helped transform the lives of hundreds of millions of people—and will surely affect billions more if the research they’re funding now helps prevent and cure AIDS, multidrug-resistant TB, malaria, neglected tropical diseases, and the flu. It will help immeasurably more if the work they’re doing now to empower women, provide sanitation, boost agriculture, and improve education (as well access to education) comes to full fruition.

For all that, *Fortune* has chosen Bill and Melinda Gates as our 2019 World’s Great-



est Leader. The pick, pointedly, is a singular one; the power of their leadership is definitely double-barreled.

TO UNDERSTAND HOW the Gateses lead, it helps to think of toilets.

This is just a guess, mind you, but it's likely that there are few people on the planet who get more excited talking about commodes than Bill Gates does. In a world where as many as 4.5 billion don't have "safely managed sanitation," according to the World Health Organization—and of whom nearly 900 million (mostly rural) people still defecate in the open—a safe, affordable, self-contained waste treatment apparatus that requires neither running water nor sewers is the sine qua non of public health interventions.

To make the point, Bill again took to the podium, flying to Beijing this past November for the Reinvented Toilet Expo. Next to him, for their shared keynote—and resting on its own, shorter podium—was a jar of human excrement. "This small amount of feces," said Gates, "could contain as many as 200 trillion rotavirus cells, 20 billion shigella bacteria, and 100,000 parasitic worm eggs."

Despite the laughter in the audience, the container was filled with deadly stuff: In much of the developing world, in fact, it is a weapon of mass destruction, as proven by history's seemingly unbroken epidemics of cholera, typhoid, dysentery, hepatitis, and diarrheal disease.

The toilet expo showcased a number of ingenious prototypes—the "most significant advances in sanitation in nearly 200 years," Bill called them—and the Gates Foundation has put some \$200 million into the effort so far.

But as Bill and Melinda explained in a joint interview in Seattle in late March, the reinvented commodes represented something potentially more liberating still. The toilets were a direct link to girls' and women's health and, ultimately, their economic empowerment. In sub-Saharan Africa, one in 10 school-age girls don't go to school during their menstrual period, according to UNICEF, and many drop out after menstruation begins. "Think about what it's like for a child to miss five or six days and how far behind they get," says Melinda. Sometimes it is the threat of violence that keeps a woman or a girl from a public latrine—and because it's usually women who take their children to the bathroom, that has a cascading effect.

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In *The Moment of Lift*, which debuted in April, Melinda Gates shares stories that capture the interplay between gender, global health, and opportunity.

"We have to draw the line" between all of these connecting data points, she says. "Because if people don't draw the lines—if we just talk about the importance of sanitation in terms of people's health," we fail to fully comprehend the missed opportunities and challenges. "What we've learned in our work is that you have to talk about the gender pieces, too, because they are specific."

Indeed, as Melinda discovered in her two-decade journey through the developing world, for virtually everything that tends to limit human capital, there is a line connecting it to gender in some way. The boldest of these lines, certainly, concern the rights of women to decide if and when they get married, and if and when they have children. Both of these choices, in much of the world, have been taken away from women, with devastating and transgenerational consequence.

Melinda, a practicing Catholic who attended an all-girls Catholic high school in Dallas (where she graduated as valedictorian), has met resistance from some quarters on some of her family planning efforts, which involve offering women access to contraception. But as Geeta Rao Gupta, a senior fellow at the UN Foundation in Washington, D.C., explains, the Gates Foundation stance on family planning has been, as with everything else it does, about "meeting unmet need."

The effort isn't about telling women in the developing world to have fewer kids, says Rao Gupta: "It's that women want to control their fertility. They're asking for contraception. They don't want this many children or too many children, and they don't have the ability, the tools that are available to the world, to be able to make that choice."

Filling that gap is not just about understanding social, cultural, or religious barriers, as important as they are. "What Melinda found was that there were supply barriers and logistical barriers in getting contraceptives into the hands of women. So then even when societies were open to that idea, there were challenges," says Rao Gupta, who also founded the 3D Program for Girls and Women, which focuses on economic empowerment.

There were other gender lines, too—like those connecting birth choices to education, and then to child mortality. When it comes to the survival of kids under 5 years old, says Gates Foundation CEO Sue Desmond-Hellmann, who is both a physician scientist



and former chancellor of the University of California, San Francisco, “one of the best determinants of a child’s health is the educational status of the mom.”

“And so when you invest in education for both boys and girls, which most of the world happily does now, you’re investing in the future of those women as mothers—and in the health of their children.”

Melinda, who earned a bachelor’s degree in computer science from Duke University and an MBA from Duke’s Fuqua School—and who spent the next nine years at Microsoft—has carefully studied the data on gender-based barriers. And the data that wasn’t already available, she has commissioned through her foundation. But mostly she has learned through in-person absorption—through a kind of human osmosis: from listening to women in self-help groups in India; from talking to girls and mothers everywhere from Bangladesh to Indonesia. The insights came when she and her then 17-year-old daughter Jenn spent the night in the “goat hut” of a

In Manhiça, Mozambique, in 2003. “Melinda would sit on the ground, talking woman to woman about the things that mothers care about,” recalls one ally who joined the trip. “She has this remarkable ability to connect.”

Maasai couple in the Tanzanian village of Mbuyuni, as they did in her homestay with son Rory in Malawi.

“It’s not at all where we started as a foundation,” Melinda says. “But I would say in the last six, seven years, we’ve really started to talk about this gender piece and have put specific investments down to make sure we address it.”

THE COMPLEX INTERPLAY between gender and global health and opportunity is also the subject of Melinda’s book, *The Moment of Lift*, which debuted in April. The stories within are often raw and moving.

But the real theme of the book—as it is with all things Gates, it seems—is optimism: what Bill and Melinda see as the endless opportunities to fix what’s dragging us down and to “summon the moment of lift for human beings,” as Melinda writes in her book.

“The enormously impressive thing is that Bill and Melinda both bring a kind of infectious optimism that these are problems that can be solved,” says Peter Sands, the former

CEO of Standard Chartered who is now executive director of The Global Fund. “Humanity has enormous capacity to innovate and think through and find ways of doing things. And when you spend any time with them, they’re constantly in the mode of saying, ‘What do we do next?’ And I think that’s a fantastically catalytic and inspiring turn to have.”

Both Gateses acknowledge how central this bright-side view is to the mission—and seem to wield it in nearly every public speech and presentation. “Optimism is fundamental to our work,” Melinda tells me in our March interview in Seattle. “We have to be able to see the reality of what’s going on in the world, and to know that and to listen to that. But we have to believe in the world getting better. And we do believe in the world getting better because it *is* getting better.”

A child born today is half as likely to die before the age of 5, compared to a child born in the year 2000, she says. The poorest parts of the world are less poor than they were. “And we have to hold that belief in progress and help others hold that belief so they’ll come along on the journey with us. Because look, the journey we’re on is not a solo journey. Many, many, many partners need to be at the table to create, for instance, a new vaccine or a new technology that’ll benefit everybody.”

Bill chimes in, “I’d say that kind of optimism is particularly important now where there’s a kind of turning inward [politically speaking], and the trust in various institutions is down a lot.

“A lot of the things we do take a long time,” he says. “I mean, we’ve been working on an HIV vaccine for over 15 years, and it’ll probably be 10 more years before we get there—so 25 years in total. Malaria eradication, if things go well, is 20 years away. The polio effort started in 1988; we didn’t get engaged until 2000. You know, it’s a long journey.” That’s challenging, he says, when it comes to getting people to commit—especially when the initial impact of the effort, as in malaria reduction, is far away from many of the donors’ front yards. “Optimism,” he says, “is a key part of it to engage people.”

“Yes, we have to believe in what’s possible,” adds Melinda. “It’s not at all a naive optimism. It’s a realistic optimism. We’re trying to envision the future—as leaders envision the future of where their company or their mission will go. And for us it’s a mission that all lives have equal value.”

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We have to be able to see the reality of what’s going on in the world...But we [also] have to believe in the world getting better.”

MELINDA GATES

THE ARGUMENT FOR OPTIMISM has some awfully good evidence in Rwanda. A quarter-century after a genocide tore the already poor East African country apart, Rwanda is a case study in what’s possible. Led by physician Agnes Binagwaho, the nation’s former health minister, and others, Rwanda has steadily invested in health infrastructure, primary care, massive childhood vaccination, and maternal health.

Groups like the Gates Foundation, GAVI, The Global Fund, and Partners in Health—co-founded by Paul Farmer, who lived in Rwanda for years—have financed the effort substantially. But much of the innovation and footwork has been homegrown. Child mortality, meanwhile, has dropped from one of the highest rates in sub-Saharan Africa to one of the lowest.

The turnaround is so extraordinary that Farmer, a Harvard professor of global health and social medicine and a celebrated pioneer in treating tuberculosis, has launched an academic center to study it: the University of Global Health Equity. (Binagwaho has been named vice chancellor.)

“We see it in lots of places: real examples of governments making investments—working with UN agencies, with NGOs, with others, but really driving their own future by investing in their young people,” says Desmond-Hellmann. “It’s happening not just in Rwanda, but also in Ethiopia, Bangladesh, and elsewhere.”

But it’s work that has to be sustained, say the Gateses—and virtually every other global health expert. The sobering truth is that Rwanda, like Nigeria, is on a knife’s edge: If efforts to combat malaria, TB, AIDS, and tropical diseases slow or even remain static, the cases of disease don’t stabilize, they go *up*. And the next generation of kids loses ground.

It’s why the Gateses are so focused now on replenishing contributions for The Global Fund, a triennial fundraising push that takes place in October—and the financial refueling of GAVI after that. These two institutions are the outstretched limbs of the Gates Foundation, and the couple have spent more of their philanthropic dollars supporting health delivery programs like these than anything else.

“They could have elected to do anything with their lives,” says Warren Buffett, “and both of them are not only spending money but huge amounts of their time and energy around the world to make life better for people. Think about that.” ■

MAKING CYBERSECURITY A PRIORITY

Senior executives and board members must be involved in due diligence—including selecting the best insurance coverage.

ANY ORGANIZATION THAT CONSIDERS cybersecurity solely an IT issue is vastly underestimating its reach. Just consider that cybercrime now costs an estimated \$600 billion a year, up from \$445 billion in 2014, according to a report by the Center for Strategic and International Studies. Given that data breaches and other cybercrime incidents can have a major impact on an organization for years, protecting systems and data must be a priority for C-suite executives and the board of directors.

Among their due diligence: ensuring that their organizations have insurance that covers crisis management and potential losses from breaches, malware, and other attacks. Until recently, the challenge for firms has been knowing whether a policy actually covers security incidents.

All policies should be abundantly clear about whether they cover cyber risk and to what degree. This enables a business to clearly and accurately analyze coverage gaps within its risk transfer programs. But the insurance industry has been grappling with the issue of “silent cyber,” which refers to potential cyber-related losses stemming from traditional property and liability policies that weren’t specifically designed to cover cyber risk.

Unlike dedicated cyber insurance plans available today, traditional liability policies weren’t created with cyber exposures in mind. As a result, they might not implicitly include or exclude

those risks. This uncertainty is what creates the silent-cyber scenario.

Insurers such as Allianz Global Corporate & Specialty (AGCS), the commercial insurance division of global financial services company Allianz, are on the forefront of clarifying this issue for customers. The firm has assembled an abundance of tools, experts, and a “think tank” to track and analyze where a client’s cyber exposures are lurking and how they might manifest.

“It’s not enough for an insurance company to put together a dedicated cyber-risk policy, although that is critically important,” says Kelly Castriotta, a product development leader at AGCS. “We think a carrier actually has to do the analysis of the traditional lines of coverage that existed before comprehensive digitization to help their clients triage cyber risk.”

AGCS has begun updating and clarifying all commercial, corporate, and specialty policies within its property and casualty portfolio, some of which were established long before many digital services existed. Castriotta says this strategy is designed to eliminate uncertainty around cyber coverage and expedite claims settlement, aligning with the new holistic approach organizations should be taking toward cybersecurity.

“The corporate world has been measuring cyber risk as if it is discrete and isolated from a risk perspective, with dedicated cyber policies only,” Castriotta says. “Cyber is now a

mainstream risk, given that technology has been integrated into the way we all do business. It now really is a board-level issue for companies to recognize cyber risk as a threat to overall corporate health.” ■

**\$600
BILLION**

**ESTIMATED ANNUAL COST
OF CYBERCRIME—
UP FROM \$445 BILLION
IN 2014**

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WHEN ANNA NIMIRIANO goes to work in the morning at the *Juba Monitor* newspaper in South Sudan, she may not have to worry about getting fired. She's the editor-in-chief. But she does have to worry about being jailed or even killed. The authoritarian government frequently dislikes what she publishes. At least seven journalists have been murdered in South Sudan since its civil war began in 2013, and President Salva Kiir has explicitly threatened to kill more. The One Free Press Coalition of major news organizations says Nimiriano "lives under constant threat." Yet she carries on.

Nimiriano is No. 8 on our new list of the World's 50 Greatest Leaders, an example of astounding courage. Not many of our other honorees risk their lives, but it's striking how courage is a theme running powerfully through this year's list. Whether in business, government, education, sports, or NGOs, these leaders take action before others do, leading from out front, where the risk is often dire and their own future least certain. Everyone has something to lose, and many on our list risk possessions that most people value highly: reputation, career, fortune, esteem.

Consider Lloyds Banking Group CEO António Horta-Osório, who has openly acknowledged his struggle with mental health. Such an admission was previously inconceivable for a high-profile CEO, so he couldn't know what would happen. Turns out it has brought him praise rather than scorn and has helped lift a stigma in an industry notorious for driving workers up to and beyond their limits.

Great leaders never know for sure if their plans will work, but they plunge ahead anyway. That's why we recognize sheer audacity, well intended, even if the results aren't known and even if the plans aren't universally applauded. CEO Tim Cook is steering Apple, a giant worth over \$900 billion, away from heavy reliance on slowing iPhone

sales and toward a business model based on subscription revenue. Many industry experts are skeptical. All we know for sure is he had to act, he's working at gigantic scale, and he isn't playing it safe.

An inescapable question: How do great leaders find such courage while most people don't? Research points to a personality style called "hardiness," identified among business executives by psychologist Suzanne C. Kobasa decades ago and validated many times among the broader population since then. Hardy individuals don't see the world as threatening or see themselves as powerless against large events; on the contrary, they think change is normal, the world is fascinating, they can influence events, and it's all an opportunity for personal growth. In studies of fourth-year West Point cadets, Col. Paul T. Bartone of National Defense University found that hardiness was by far the best predictor of which cadets, male and female, would earn the highest leadership ratings.

Decades of research show that hardy individuals just don't feel stress the way most people do. So when CEO Satya Nadella makes an epic gamble like staking Microsoft's future on cloud computing, or Los Angeles Rams coach Sean McVay bets his career on a new style of offense, they're able to do it in part because they're simply less afraid. It gets better: Research also suggests that these leaders, through their priorities, advice, and personal example, can impart their way of seeing the world to those they lead.

Reading about these 50 extremely hardy people will improve your day and perhaps do much more. In an increasingly angry world, they'll give you hope. You'll be surprised by their ingenuity in devising ways to do good. Above all, when you find yourself reluctant to dare greatly, let them inspire you with their titanium-strength courage.
—Geoff Colvin

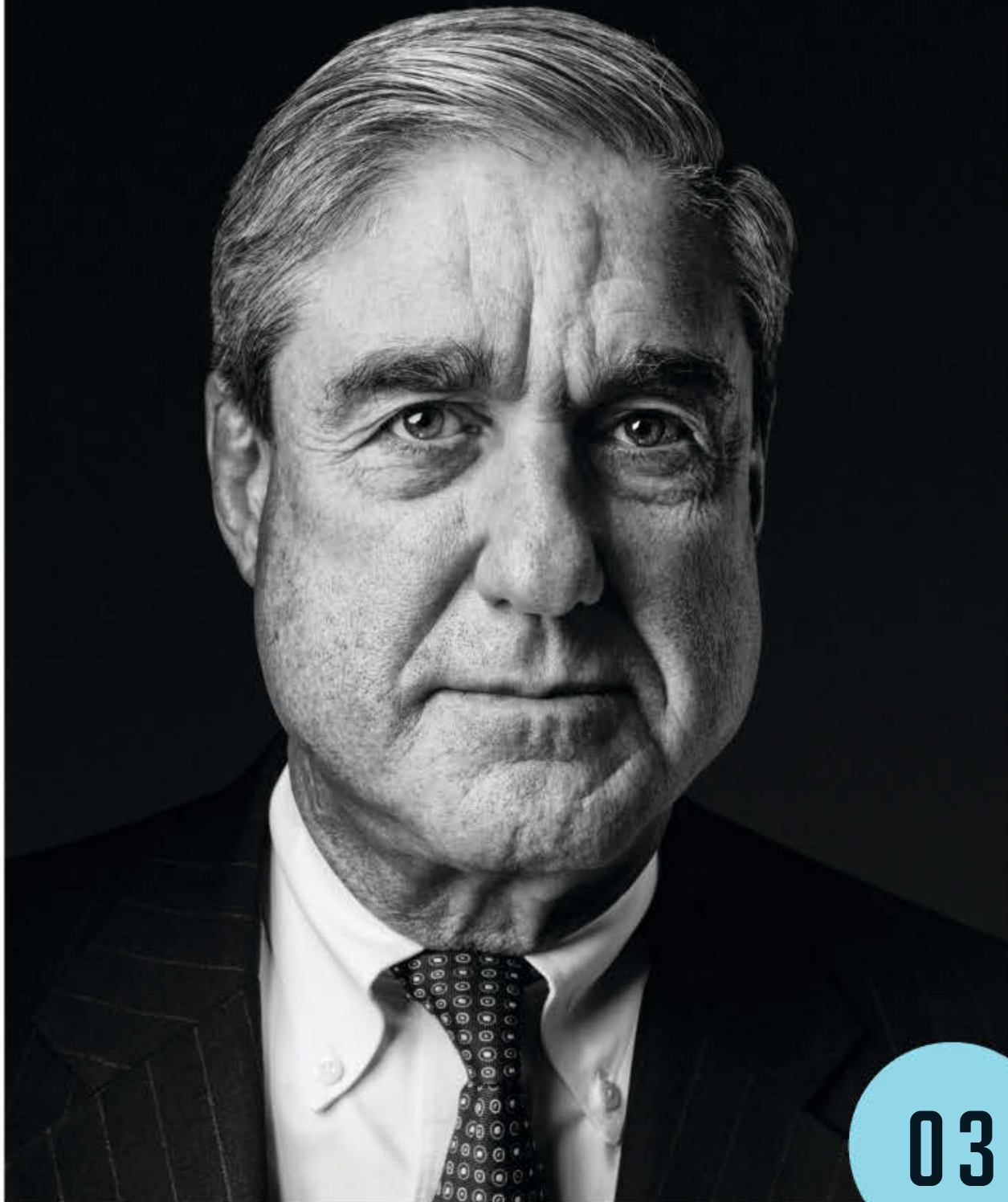
JACINDA ARDERN

PRIME MINISTER, **NEW ZEALAND**

02



JACINDA ARDERN HAD already broken new ground as a pregnant woman—and then a new mother—leading a nation. And this year, the 38-year-old Prime Minister showed the world her fullness as a leader as she deftly, empathetically, and humbly navigated New Zealand through the worst terror attack in its history, after 50 were killed at two mosques in Christchurch in March. Rallying people behind the theme “We are one,” she channeled the country’s—and Muslim community’s—grief as she opened speeches with Arabic greetings and quietly wore a head scarf. She set a standard for dignity in the face of violence by refusing to speak the attacker’s name. And she won near-unanimous support for a ban on semiautomatic weapons of the kind used in the attack. Future leaders can look to Ardern for a master class in how to guide a country through a crisis.



03

ROBERT MUELLER

SPECIAL COUNSEL, DEPARTMENT OF JUSTICE

FEW PEOPLE ON EITHER SIDE OF THE PARTISAN DIVIDE seem satisfied with the outcome of Mueller's investigation into Russian interference in the 2016 elections. But that very dissatisfaction speaks to the nobly impartial example the former FBI director set as he led an arduous, sensitive investigation. He and his team didn't uncover the smoking guns that President Trump's critics craved, nor did they grant the President the exoneration he demanded. Instead, sticking to the evidence and tuning out the hype, they exposed serious wrongdoing and shed light on systemic flaws that the nation is now more likely to address.

Mueller took on a thankless task with dignity, integrity, a willingness to sacrifice his own reputation for a cause, and an unflinching commitment to the rule of law. He proved the country's institutions still work, even in the face of unprecedented political turmoil. That's unquestionably good for the country, whatever the next act of the drama may be.

04

PONY MA

Founder and CEO, Tencent

Compared with others in China's boisterous tech scene, Ma keeps a low profile. But his influence has gone global thanks to WeChat, Tencent's billion-member instant messaging service. WeChat is the epitome of the super-app model, a single interface through which users can pay bills, order food, book tickets, play games, and more. And rivals, including Facebook, are now adapting to emulate its success.



05

SATYA NADELLA

CEO, Microsoft

Under Nadella, Microsoft has generated incredible growth from new businesses like its Azure cloud platform. And Nadella recently showed that he could put principles first while navigating employee unrest, as he stood by a contract to supply the U.S. Army with augmented reality headsets. He argued that Microsoft shouldn't withhold technology from institutions that protect our democracy.



03: TRUNK ARCHIVE; 04: VCG VIA GETTY IMAGES; 05: COURTESY OF MICROSOFT

07

MARGRETHE VESTAGER

Commissioner for
Competition,
European Union

At a time when U.S. lawmakers are divided over reining in Big Tech, Vestager has shown how it can be done. She fined Google a total of \$9 billion for alleged anticompetitive behavior, sought \$15 billion in back taxes from Apple (both moves are being appealed), and is investigating Facebook. Dismissive of industry excuses, Vestager says: "If it's your algorithm, it's your responsibility."



08

ANNA NIMIRIANO

Editor-in-Chief,
Juba Monitor

South Sudan has lost five years and an estimated 383,000 souls to civil war, and the challenges of speaking truth to power at Nimiriano's newspaper range from gas shortages to death threats. When security forces hauled a colleague to jail and told her to shut down the paper, she persuaded them to release him and let her publish. The battles will surely continue.

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06



I don't want you to be hopeful. I want you to panic. I want you to feel the fear I feel every day. And then I want you to act."

GRETA THUNBERG
Addressing the
World Economic
Forum, Jan. 25

GRETA THUNBERG

STUDENT AND CLIMATE ACTIVIST, SWEDEN

GRETA THUNBERG ISN'T HERE TO INSPIRE YOU; she's here to give you anxiety. "I don't want your hope," the 16-year-old climate activist said in a speech at the World Economic Forum this year. "I don't want you to be hopeful. I want you to panic. I want you to feel the fear I feel every day. And then I want you to act." In September, she started skipping school on Fridays so she could protest government inaction on climate change at Sweden's Parliament in Stockholm. Her one-woman sit-in ballooned into some 1,700 "climate strikes," largely by youth, on March 15, under her "Fridays for Future" banner. The mass protest garnered the support of leaders from New Zealand's Jacinda Ardern to Paris Mayor Anne Hidalgo—and earned her a Nobel Peace Prize nod. Climate change, left unchecked, will cause wars, conflict, and refugee crises, said Freddy André Ovstegard, a Norwegian lawmaker who nominated her, so Thunberg's movement is "a major contribution to peace."

JOSÉ ANDRÉS

CHEF/FOUNDER, WORLD CENTRAL KITCHEN

09

IN MARCH, CHEF JOSÉ ANDRÉS DESCENDED ON MANHATTAN to prepare for the launch of a fresh addition to his restaurant empire—a 35,000-square-foot Spanish food hall in the sparkling new Hudson Yards complex. Here, alongside other A-list chefs such as the French Laundry's Thomas Keller and Momofuku's David Chang, Andrés's New York City culinary concept would ply patrons with cured meats and cheese, tapas and paella, and a selection of a dozen sherries.

Just over a week after the opening, Andrés was on the ground in Fremont, Neb.—population 26,000—handing out meals to families displaced by the unprecedented flooding wreaking havoc throughout the Midwest. That a two-star Michelin chef and pioneer of Spanish cuisine would deliver sandwiches out of a Catholic church here in Dodge County seemed obvious to Andrés.

“When you need medical service, you bring doctors and nurses,” he says. “When you need the rebuilding of infrastructure, you bring in engineers and architects. And if you have to feed people, you need professional chefs.”

Andrés has formalized that credo through his nonprofit, World Central Kitchen (WCK), which he founded after volunteering in Haiti in the wake of its 2010 earthquake. Since then, Andrés and his team show up with a simple mission wherever disaster strikes: to feed people, especially those who are hardest to reach. “The big problems have very simple solutions,” he says. In this case, it's to just start cooking—a quest that is remaking ideas about what relief work and humanitarian aid can look like.

Since Haiti, Andrés and WCK have fed Texas, Florida, and North Carolina after hurricanes; Guatemala and Hawaii after volcanic eruptions; Indonesia post-earthquake and tsunami; federal workers during the U.S. government shutdown; firefighters amid the California wildfires; and Central American

refugees in Tijuana. Most recently, Andrés was in Mozambique, which was hit in mid-March by a cyclone, attempting to double the number of daily meals produced by WCK to 20,000 by the time he left. He and his team do not wait for permission to show up. When people are hungry, he says, you must start feeding them today, not tomorrow or a week from now, after you've had a dozen meetings and made a plan. “We don't sit waiting for someone to tell us what to do,” he explains.

Andrés's most visible work took place in Puerto Rico, where he jumped on one of the first commercial flights to the island in the aftermath of Hurricane Maria. WCK would become the territory's largest provider of fresh meals—to date it has served nearly 4 million—a feat that reportedly helped earn Andrés a Nobel Peace Prize nomination. WCK continues to operate in Puerto Rico through programs that help the island grow more of its own crops so it's better prepared next time disaster strikes.

The chef's experience in Puerto Rico further opened his eyes to problems with the current aid model; he saw NGOs moving without urgency and flexibility. Big nonprofits must become leaner, with more expertise, he says. “We come with a fresh view of how to solve the same problems,” he says. “We are not here to push anybody out, but I do think we are here to tell people we need to reinvent ourselves.” —*Beth Kowitt*

9: REDUX; 10: MCMILLON; PARAS GRIFFIN—GETTY IMAGES FOR 2017 ESSENCE FESTIVAL; WOODS: COURTESY OF WALMART

DOUG MCMILLON AND LISA WOODS

CEO; Senior Director,
Strategy & Design for
U.S. Benefits, Walmart

Health care costs in the U.S. have reached astronomical levels—spending hit \$3.7 trillion in 2018—and they continue to climb, weighing on patients and the employers who help foot the bill. As America's largest employer, Walmart is all too familiar with these trend lines—which have led McMillon and Woods to innovate to do health care better.

For the company's 1.1 million U.S. employees and their families, Woods launched the Centers of Excellence (COE) program in 2013, enabling workers to travel to top hospitals Walmart contracts with for select procedures. The company foots the bill and has found it's worth it. More than half the employees referred by their local doctor to get spine surgery, for example, have learned from a COE that they don't need it. For those who do, an operation at a COE decreases the chance of readmission by 95%. Walmart has found that employees treated at a COE recover faster, too, returning to work three weeks earlier.

Walmart has now expanded the COE model to almost a dozen types of care. It's a blueprint that others have started to emulate and one that might shake up the nation's dysfunctional health care system.



ALIKO DANGOTE

CEO, DANGOTE INDUSTRIES



DANGOTE IS AFRICA'S RICHEST PERSON—worth \$16.4 billion, according to Bloomberg—and the four publicly traded companies under the umbrella of his Dangote Industries now account for about a third of the value of the Nigerian stock exchange. That wealth is based on a big bet on Nigeria's economic independence: Dangote's peers give him credit for helping the country become self-sufficient in the sectors in which his companies compete (cement, agriculture, mining, and petroleum). He's now converting his wealth into impactful philanthropy: Dangote's foundation, the largest in Africa, has helped establish a top-tier business school at Nigeria's Bayero University; it's also teaming up with the Bill & Melinda Gates Foundation to fight chronic malnutrition in Nigeria.

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MASAYOSHI SON

CEO, SoftBank

Son has become a tech kingmaker. He upended venture capitalism in 2016 by launching the \$100 billion Vision Fund, and his backing often proves pivotal in battles between rival startups. Son personally vets CEOs of potential portfolio companies and spurs them to scale up dramatically, even if profit is elusive. Ride sharing as we know it might not exist without his avid backing of Uber, Grab, and Didi Chuxing.



13

MARILYN BARTLETT

Special Products Coordinator, State of Montana

Health care costs are inflated in part by ignorance: The employers who pay the bills often can't get medical providers to explain and justify what they charge. Bartlett helped save Montana's state health plan from bankruptcy by demanding transparency from hospitals and doctors, then negotiating better deals. Other employers are now clamoring to follow her lead.



14

TIM COOK

CEO, Apple

Last year Apple became the first U.S. company to be worth \$1 trillion, thanks to the dominance of the iPhone; it lost that status because iPhone sales growth is slowing, and Apple needs a new act. Cook knows it, too, and Apple's "pivot" to services and subscription revenue, unveiled in March, is his bid to reignite growth. Succeed or fail, the reimagining will determine Cook's legacy—and Apple's future.



16

CHIP BERGH

CEO, Levi Strauss

When Bergh took over in 2011, the denim maker was a shadow of its iconic former self. Bergh brought the cool back, marketing Levi's as hip Americana with a celebrity pedigree. Internally, he revamped company tech and cleaned house; by the time the company went public in March, annual revenue had risen 26% on his watch. Bergh has also launched the Safer Tomorrow Fund, a pioneering effort to prevent gun violence.



15

CLAUDIA DOBLES

First Lady, Costa Rica

Dobles helped her husband, Carlos Alvarado, win election in 2018 with a pledge to "decarbonize" Costa Rica by 2050. An architect and urban planner, she's now in charge of turning that promise into reality—setting deadlines, brokering alliances, and raising money. Job one: replacing the antiquated buses and trains that anchor the nation's transit system with clean electric models.



17

SEAN MCVAY

Head Coach, L.A. Rams

The youngest head coach in modern NFL history took his team to the Super Bowl, and although he didn't win, much of the rest of the league wants a carbon copy of the 33-year-old. McVay's up-tempo offensive style turned the Rams into a nearly unstoppable force and has triggered a youth movement: Of the eight head coach openings in 2019, four were filled by people under age 40.



18

THE 'PINK WAVE'

42 NEWLY ELECTED WOMEN IN CONGRESS

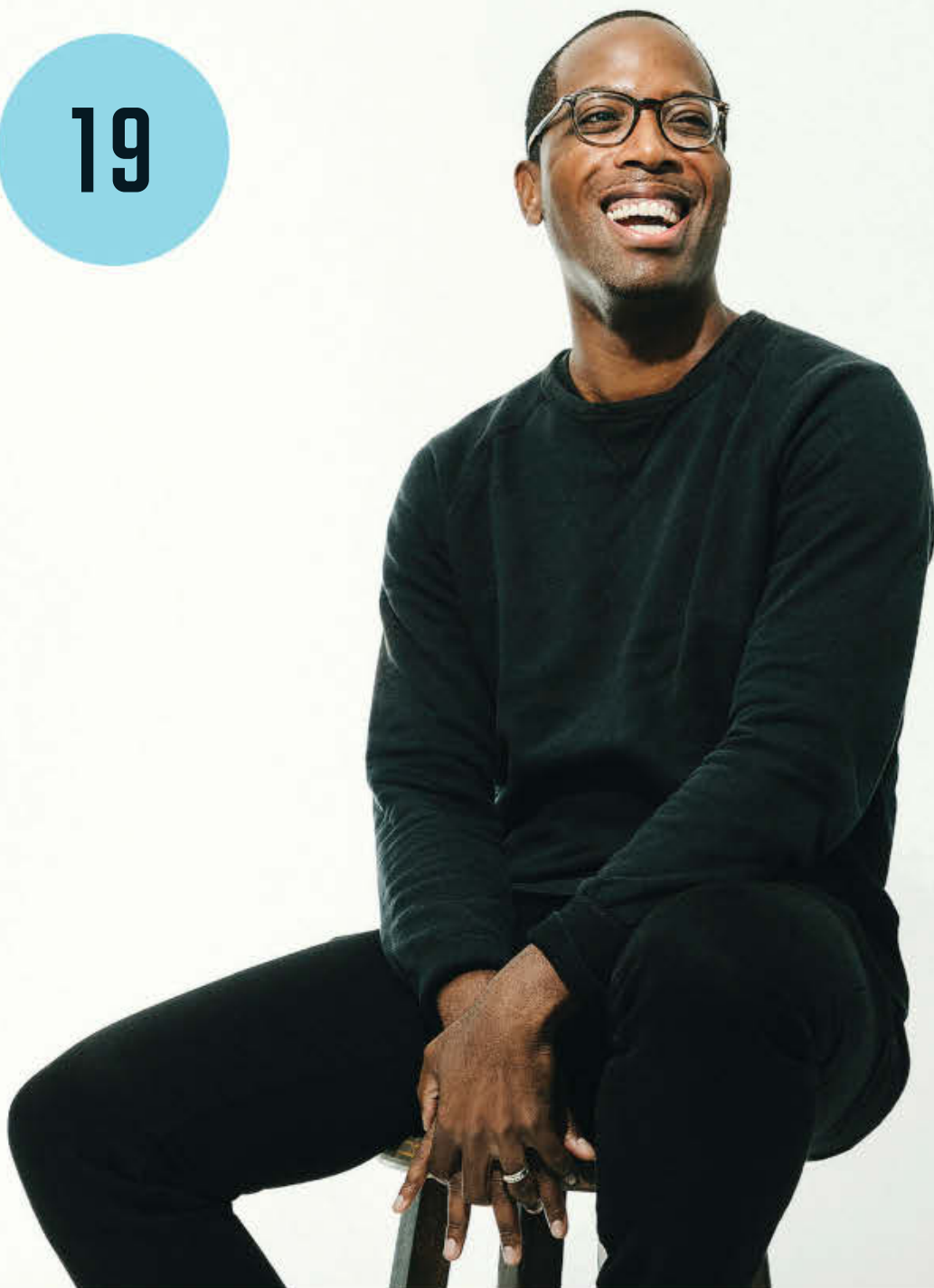
IN THE RUN-UP TO LAST YEAR'S MIDTERM elections, pundits chewed through hours of cable news programming, speculating about a potential blue wave. But while they were right about the oceanic force, they got the shade wrong—it was pink. Forty-two women won their congressional seat for the first time in 2018, the largest total since the 27 elected in 1992, the first "Year of the Woman."

The record-setting congresswomen also sent a surprising message: The American electorate may not be as balkanized as we think. Five of the 13 incoming women of color were elected by majority white districts, according to a *New York Times* analysis, while more than a third of the Democratic women represent districts won by President Trump. What's more, the newcomers made it clear that they prioritize legislative action over partisan scrapping; 46 freshman Democrats—more than half of them women—sent a letter to party leadership, urging it to put policy progress ahead of investigations of the administration.

The Kelly Slater of the pink wave is, of course, Alexandria Ocasio-Cortez, whose progressive Green New Deal and social media mastery have inspired fans and enraged critics in equal measure. While not every newcomer has AOC's star power, the new members share her refusal to follow the old rule book—the one whose cover is emblazoned: *Wait Your Turn*.

Congresswomen in "suffragette white" at the 2019 State of the Union address.

19



TRISTAN WALKER

COFOUNDER, **CODE2040**; CEO, **WALKER & CO. BRANDS**

A COMMON THEME LINKS CODE2040, a nonprofit that nurtures black and Latinx tech talent, and the eponymous beauty company that Walker launched in 2013. Both are based on the premise that people of color will be the majority in the U.S. in about 20 years [the “2040” in Code2040] and that businesses will miss huge opportunities if they fail to connect with that majority. Walker, a Stanford B-school grad whose career includes stints on Wall Street and at Twitter, has made that case resonate in very disparate industries. Code2040 now places more than 100 “fellows” each year at Silicon Valley giants like LinkedIn and Airbnb. And in retail, Walker & Co. broke through by persuading Target and Sephora to carry its shaving products and shampoos and display them prominently, rather than in an “ethnic beauty” niche. In December, Procter & Gamble bought the company in another affirmation of Walker’s vision.

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CHARLIE BAKER

Governor, Massachusetts

Baker’s approval ratings routinely land near 70%, a remarkable feat for a Republican leading a famously liberal state. He’s earned that favor with a quiet bipartisanism that feels almost foreign these days. A data-driven fixer—he previously led the turnaround of a health insurer—Baker has been effective in addressing the state’s opioid woes and issues with social services; he also signed a green energy bill last year.



21

JO ANN JENKINS

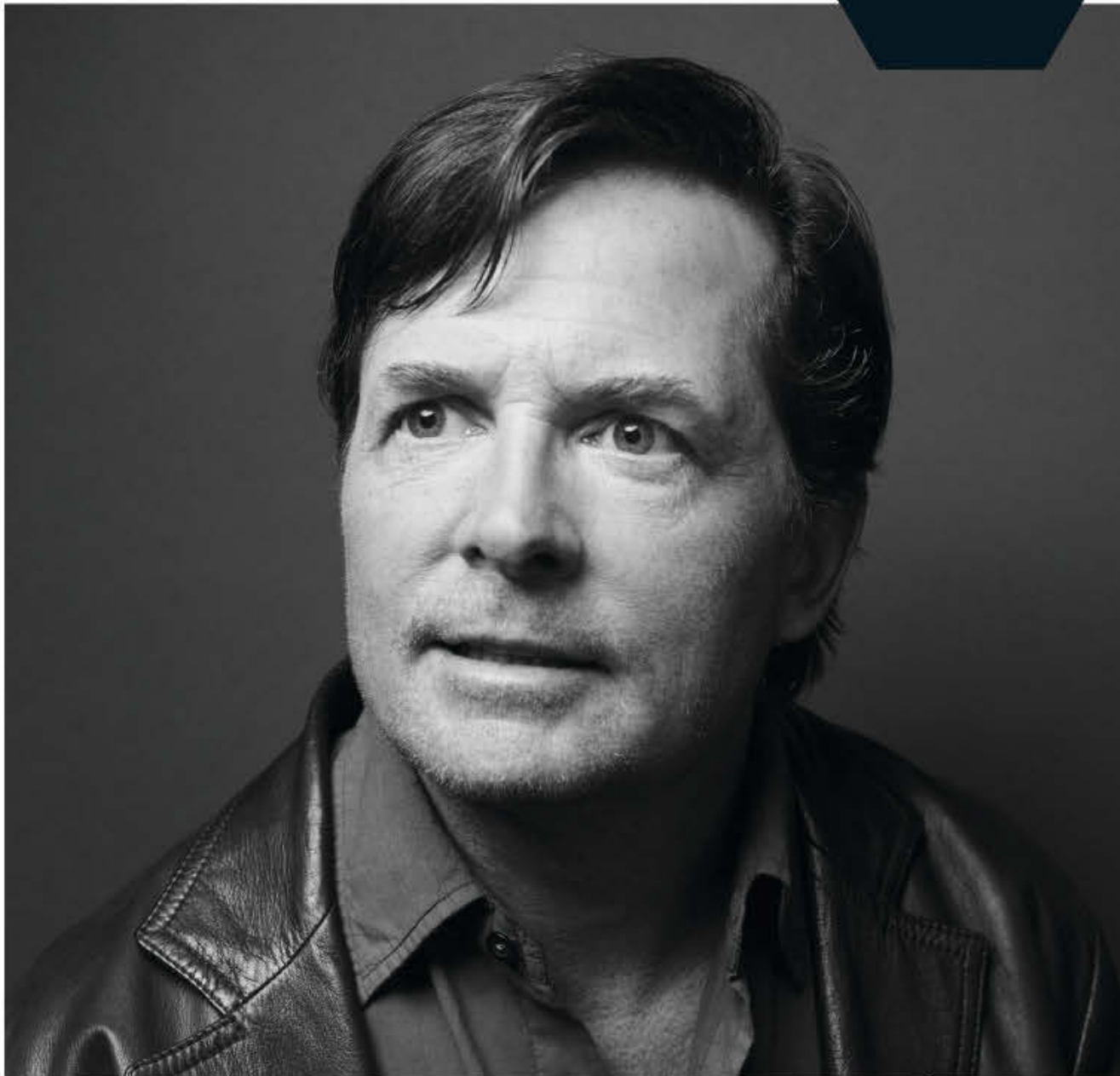
CEO, AARP

About 24% of the U.S. workforce is 55 or above—and older workers face a disproportionate risk of being laid off. This spring, Jenkins rallied bipartisan support behind a long-dormant bill that would strengthen federal age discrimination laws. She’s also a dogged critic of prescription drug costs—a burden to which older workers and retirees alike are keenly vulnerable.



MICHAEL J. FOX

ACTOR



PARKINSON'S DISEASE TYPICALLY AFFECTS people when they're around 60 years old. For star actor Michael J. Fox, it hit at 29. Fox was diagnosed in 1991 but didn't publicly reveal his disease until seven years later. That decision was fueled in part by a desire to raise awareness about Parkinson's and fund research to fight the degenerative disorder of the nervous system. Two decades later, Fox has become one of the most respected advocates in medicine. His Michael J. Fox Foundation for Parkinson's Research, founded in 2000, has raised and invested some \$900 million in the quest for a cure. Fox carries a deep belief that Parkinson's patients themselves must play a central role in curing the malady. "We're the experts on what we have," he said in a recent *Fortune* interview. "We have a responsibility as patients—if we expect [medical researchers] to do what we need them to do, they need to be fully informed on our experience, what works with us, what we respond to, what we can contribute."



Hopefully, this is a window into the future."

KATIE BETHELL, PAID LEAVE U.S.
On Katrina Lake's taking parental leave while serving as CEO

23

KATRINA LAKE

CEO, *Stitch Fix*

As CEO of personal styling service *Stitch Fix*, Lake has quietly changed the game for women in corporate America. In 2017, at 34, she became the youngest female founder ever to take a company public. *Stitch Fix's* board and workforce are majority female. And Lake last year set a trailblazing example by taking a substantial parental leave—16 weeks—while serving as a public-company CEO.



24

WILLIAM MCDONOUGH

Founder, *William McDonough + Partners*

"Green" architecture arguably went mainstream thanks to McDonough, whose firms designed eco-friendly campuses for such giants as Nike and Ford. Today he's a leading proponent of a "circular economy" in which sustainability drives all product design; he's steering an effort to redesign plastics using materials that won't pile up in our oceans and bloodstreams.



22: AUGUST; 23: PATRICK T. FALLON—BLOOMBERG VIA GETTY IMAGES; 24: GARY GERSHOFF—WIREIMAGE

25

LEO VARADKAR

Prime Minister, Ireland

Ireland's youngest ever Taoiseach—and first openly gay and first ethnic-minority leader—stands out on all fronts. But it's how he has positioned Ireland to win big in Brexit that's most noteworthy. Varadkar's commitment to low taxes and low-drama politics has wooed the likes of Bank of America Merrill Lynch and Barclays to move their European bases to Dublin while securing Ireland's title as Europe's fastest-growing economy.



26

MARK HARRISON

President and CEO, Intermountain Healthcare

Health workers often struggle for access to essential generic drugs, thwarted by price hikes, shortages, and drug-industry whims. Enter Harrison, CEO of a top Utah health system, with a bold fix: With six partners, he formed an independent nonprofit drugmaker, Civica Rx. The venture has signed up some 800 health systems as customers; it should be producing generics by year's end.



27



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FATMA SAMOURA

SECRETARY GENERAL, FIFA

IN 2016, A GLASS CEILING WAS BROKEN in the world's most popular sport when Senegal's Fatma Samoura was named the first female secretary general of FIFA, soccer's world-governing body. Samoura, a veteran of the United Nations, was brought on board to help haul FIFA out of a corruption scandal that resulted in dozens of indictments and guilty pleas for wire fraud, racketeering, and money laundering. On her watch, FIFA has taken financial oversight responsibility back from its hitherto unreliable member organizations. The proportion of women within FIFA's administration has risen to 48% from 32% in 2016. She's helping women gain on the field too: Three years ago, FIFA established its first-ever women's soccer division; it more recently launched its first global strategy for realizing the commercial potential of the women's game.

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25: SIMON DAWSON — BLOOMBERG VIA GETTY IMAGES; 26: COURTESY OF INTERMOUNTAIN HEALTHCARE; 27: FIFA/GETTY IMAGES

28

KYAW HLA AUNG**Activist/Lawyer, Myanmar**

For decades, Kyaw Hla Aung has tirelessly resisted violent discrimination against his Rohingya people in Myanmar. His efforts to open schools for Muslims and to protest seizures of farmland have earned the lawyer global respect, along with prison time. Awarded the 2018 Aurora Prize for humanitarianism, he donated his \$1 million prize money to fund health care for the 700,000 Rohingya displaced by recent ethnic cleansing.



30

KAPIL MOHABIR**Managing Partner, Plympton Farms**

Growing up in Guyana, Mohabir saw firsthand how the lack of access to large markets can trap small farmers in poverty. After stints at Deloitte and Harvard Business School, he returned to Guyana to organize farmers into a collective that could sell in bulk, then helped them find customers among industrialized-world food companies. Next up: teaching that business model in other small, farming-dependent countries.



29

WILLIAM J. BARBER II**Pastor and Activist**

Barber sees such issues as poverty, racism, and voter suppression as moral matters, with unethical treatment of people as their common theme. His “Moral Monday” protests at North Carolina’s State House have drawn thousands of marchers in recent years. Last year he revived the Poor People’s Campaign, originally launched by Martin Luther King Jr., to take his message nationwide.



31

TADASHI YANAI**CEO/Founder, Fast Retailing**

It’s easy to mistake Fast Retailing’s Uniqlo unit for “fast fashion”: Its clothes, after all, are cheap and ubiquitous. But the trendy, disposable nature of fast fashion is the opposite of what Yanai aims for. Uniqlo’s warehouse-style shops are stocked with durable, practical clothes that work in any season, an approach that has positioned it as a leader in sustainable fashion.



32

MICK EBELING + DANIEL EPSTEIN

CEO, NOT IMPOSSIBLE LABS (LEFT); CEO, UNREASONABLE GROUP

JUST BECAUSE SOMETHING IS UNREASONABLE doesn’t make it impossible. That’s the message Mick Ebeling and Daniel Epstein, two unconventional entrepreneurs, delivered to a captivated crowd at *Fortune’s* Brainstorm Health conference in April. Ebeling’s Not Impossible Labs has developed technology that extends abilities to the impaired, including wearables that let deaf and hearing people alike feel music in a “surround body” experience, and a 3D-printing lab for prosthetics in Sudan. Unreasonable, meanwhile, devotes itself to funding growth-stage entrepreneurs (rather than seed- and early-stage) to help speed those kinds of revolutionary ideas to market. Epstein cites George Bernard Shaw, who wrote that “all progress depends on the unreasonable man,” as an inspiration for his business philosophy. He’s funded some 180 unreasonable entrepreneurs to date.

VENTURE CAPITAL FOR THE 99%

Aileen Lee, All Raise; Steve Case and J.D. Vance, Rise of the Rest

It may be tech's biggest gender gap: Fewer than 10% of leadership roles in venture capital are held by women, and only 2.2% of VC funding went to female-founded companies in 2018. All Raise, a coalition of women in the VC field, launched last year [sparked by a group email from Cowboy Ventures partner **Aileen Lee**] with the aim of boosting both those numbers. All Raise gives female founders intensive one-on-one mentoring, while its VC Champions program pairs promising investors with senior partners at established venture firms.

Geographical diversity is another hurdle in tech: **Steve Case** [below, center], the AOL founder turned investor, says 75% of venture funding goes to firms in California, New York, or Massachusetts. With his partner, author **J.D. Vance**, Case runs Rise of the Rest, a \$150 million fund devoted to companies in less heavily saturated markets. Through a process that includes buzzy bus tours and pitch competitions, Rise of the Rest has invested in about 100 companies in more than 30 states so far—reminding the startup world that a San Francisco Bay view is not a prerequisite for success.



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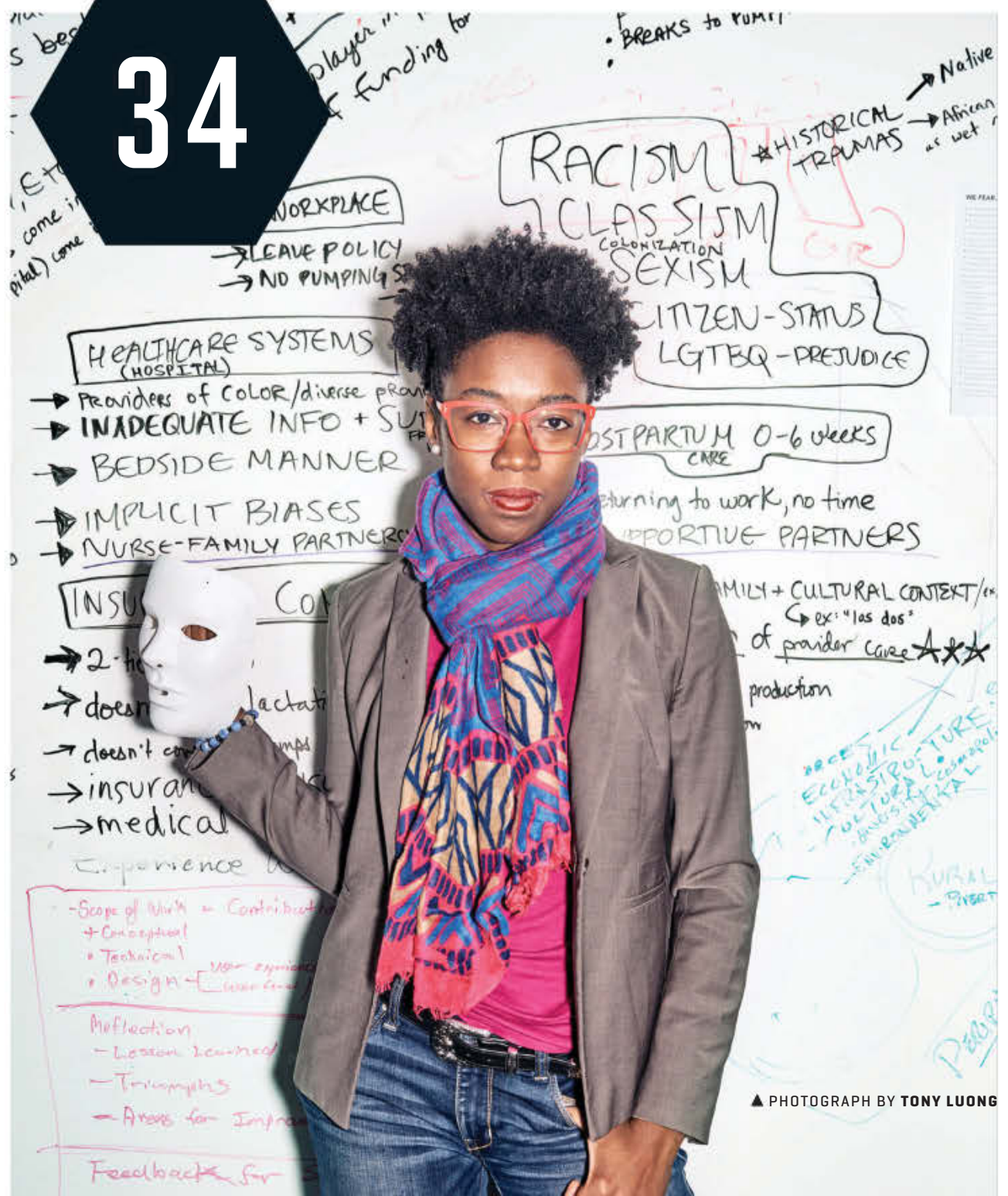
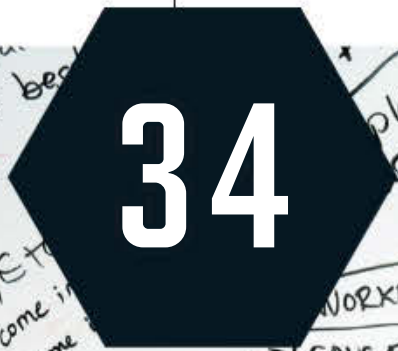
The World's 50 Greatest Leaders The List

JOY BUOLAMWINI

FOUNDER, **ALGORITHMIC JUSTICE LEAGUE**, GRADUATE RESEARCHER, **MIT MEDIA LAB**

THE ECONOMIC POTENTIAL of artificial intelligence captivates business leaders. But the so-called deep-learning systems behind A.I. are only as good as the data they are trained on. Imagine a scenario in which self-driving cars fail to recognize people of color as people—and are thus more likely to hit them—because their computers were trained on data sets of photos where such people were absent or underrepresented.

No one has done more than computer scientist Joy Buolamwini to draw attention to A.I. bias. In one widely read study, Buolamwini showed how facial-recognition technology from Microsoft, IBM, and China's Megvii performed better when analyzing photos of lighter-skinned men than of darker-skinned women. Both Microsoft and IBM subsequently updated their tech. Her study of Amazon's facial-scanning has been more controversial [Amazon has disputed her approach], but the friction underscores her influence as the conscience of the A.I. revolution.



▲ PHOTOGRAPH BY TONY LUONG

35

KERSTIN FORSBERGFounder/Chair,
Planeta Oceano

Planeta Oceano aims to educate entire communities, from preschoolers up to business owners, about marine ecology, in hopes that they'll take the initiative to protect endangered species. "It's not top-down; it's about acting together," Forsberg says. The approach has helped protect sea turtles, rays, and sharks in Ecuador and Forsberg's native Peru; she's now bringing a digital curriculum to U.S. schools.



36

SUNITA DANUWARExecutive Director,
Shakti Samuha

In Nepal, some 15,000 girls a year are kidnapped and trafficked into sex work, often in neighboring India. In 1992, when she was 14, Danuwar became one of them. Rescued after four years in a brothel, she banded with other survivors to found Shakti Samuha ["Group of Power," in Hindi]. The organization provides shelter and counseling to trafficking victims and has helped more than 20,000 women.



37

CHRYSTIA FREELAND

MINISTER OF FOREIGN AFFAIRS, CANADA

AS MANY GOVERNMENTS SLIDE TOWARD AUTOCRACY and nationalism, Canada has been loud and clear in its call for liberal democracy and the rule-based international order. The main source of its full-throated defense is Freeland, Canada's fierce, hardworking minister of foreign affairs. A journalist turned politician, Freeland has been outspoken in promoting human rights; she was key to Canada's passing legislation in 2017 that allows for sanctions against bad actors. [The government has since leveled them against individuals in Russia, Saudi Arabia, Venezuela, Myanmar, and Sudan.] Her tough negotiating skills were instrumental in securing Canada's first-ever trade agreement with the EU, and last year, in hammering out the "new NAFTA" with the U.S. and Mexico. She won over U.S. Trade Representative Robert Lighthizer, her negotiating rival, who told the *Washington Post* he considers Freeland "a good friend," and added, "She did an amazing job for Canada."

ELLEN AGLER

CEO, The End Fund

Agler is leading an international effort to eliminate a problem that shouldn't exist: neglected tropical disease (NTD). Her organization has taken aim at five debilitating and sometimes fatal afflictions—including river blindness and intestinal worms—that are fully preventable and treatable but still affect more than 1.5 billion people worldwide. NTD is a bit of a misnomer, Agler notes. It's not the diseases that are neglected, but the people who suffer from them.

The End Fund works with NGOs, governments, and private philanthropists to direct resources and coordinate their efforts. This approach has worked wonders: Between 2012 and 2018, it resulted in more than 724 million treatments and the training of 1.8 million health workers.

In April, the End Fund received more than \$50 million from donors as part of the Audacious Project, a philanthropic initiative that backs organizations tackling the world's most pressing problems. The money will help accelerate the eradication of intestinal worms in eight African countries. That will give vulnerable populations, who miss out on school, work, and other life events when they suffer from worms, a chance to thrive.

**JORDAN PEELE**

Director/Producer

Peele continued his emergence as a director of heady horror with *Us*, which shattered the domestic box office record for original horror movies with a \$70 million opening weekend in March. Peele is also helping filmmakers from all backgrounds get past Hollywood gatekeepers. Peele's production company, Monkeypaw, accepted open script submissions this year, a rare move for an enterprise as hot as his.

**SISTER NORMA PIMENTEL**

Executive Director, Catholic Charities of the Rio Grande Valley

Three blocks from the McAllen bus station sits Sister Norma Pimentel's Humanitarian Respite Center. Here, the "Mother Teresa of South Texas" gives migrant families a chance to catch their breath, along with a shower, meal, change of clothes, and travel assistance. Motivated by faith, not politics, the center has helped more than 100,000 people since 2014.



MENTAL HEALTH AT WORK

NOT LONG AGO, IT WOULD HAVE BEEN considered a terrible move for anyone on the business fast track to talk openly about their struggles with mental health. Now CEOs are urging employees to do it. After Cisco CEO Chuck Robbins sent a companywide email with the subject "Making Mental Health a Priority," encouraging employees to "talk openly and extend compassion," his inbox was flooded with responses from over 100 employees, many of whom shared deeply personal experiences with mental health.

One in five Americans suffers from some sort of mental health condition, and 56% of them receive no treatment. The ripple effects in the workplace are significant: According to a 2015 study, depression alone costs the U.S. economy an estimated \$210 billion a year through work absenteeism, low productivity, and concurrent conditions that often accompany poor mental health. That means that legitimizing and prioritizing emotional health in the workplace is financially prudent as well as humane.

Corporate America is catching on. In March, more than 40 top executives, including Johnson & Johnson CEO Alex Gorsky and Bank of America Merrill Lynch chief Brian Moynihan, attended the American Heart Association CEO

Roundtable to discuss an action plan designed to help build a mental health-friendly workplace. The strategies they discussed included reducing stigma around mental health issues through open discussion and employee feedback; offering digital behavioral technology (for example, apps that can connect employees to counselors) as a part of insurance plans; and integrating evidence-based mental health policies in existing practices.

The upshot of this activity: People who once remained tight-lipped to avoid being shunned or even fired over mental health issues are beginning to feel they can turn to their employers for support. An equally important message, for anyone struggling: We aren't as alone as we once thought. —Carson Kessler

ANTÓNIO HORTA-OSÓRIO

CEO, Lloyds Banking Group

In 2011, eight months after becoming CEO, Horta-Osório stepped away to seek help for stress. Today he's giving his colleagues tools to help themselves while openly talking about his own crisis (and deftly navigating Brexit). Lloyds provides senior staff with mindfulness tools and psychological analysis so they can better process anxiety; it will soon roll out similar help for all employees.





42

PRINCE HARRY + MEGHAN MARKLE

DUKE AND DUCHESS OF SUSSEX

THERE ARE PLATFORMS—AND THEN THERE IS the audience available to the Duke and Duchess of Sussex. Their May 2018 wedding, for example, garnered nearly 50 million television viewers in the U.K. and U.S. alone. The couple may project picture-perfect personas, but they use the global stage to promote causes that might be considered taboo even in non-royal households. Harry has spoken out about struggles with mental illness, prompting overdue discourse about how the condition plagues men, who are less likely to seek help for it. Meghan, having brought new diversity of ethnicity and economic class to the House of Windsor, has taken up women’s empowerment as a signature issue, even declaring herself a “proud” feminist in her official royal biography.

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BETH FORD

CEO and President,
Land O’Lakes

Ford’s visibility soared last summer when her promotion to CEO made her the first openly gay woman to run a *Fortune* 500 company. Since then, she’s been an exemplar for bringing your whole self to work, serving as an LGBTQ role model without making that identity the focus of her leadership. And she has deftly steered the dairy cooperative during a year roiled by trade wars and changing consumer tastes.



MICHAEL CROW**President, Arizona State University**

Crow has spent 17 years reinventing “party school” ASU as a higher-ed innovator, adding satellite campuses, online degrees, and partnerships to educate Starbucks employees and Uber drivers. Enrollment, at 98,000, is nearly twice that of 2002, and the student body is far more economically and racially diverse. Expansion hasn’t hurt learning: 52% of students graduate in four years, up from 28% in 2002.

**ARUNACHALAM MURUGANANTHAM****Social Entrepreneur, Jayaashree Industries**

The hero of the Oscar-winning documentary short *Period. End of Sentence* invented a machine that turns cellulose into low-cost sanitary napkins—a boon in India, where brand-name pads are prohibitively pricey. Each machine converts roughly 3,000 women to pad usage—and the freedom of movement that comes with it—and provides jobs for 10 more women.

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Leaders
The List

TRICIA GRIFFITH**CEO, PROGRESSIVE INSURANCE**

FORTUNE’S REIGNING BUSINESSPERSON OF THE YEAR, Griffith leads by example, drawing from the experience of having risen from entry-level claims adjuster to CEO over 30 years at Progressive. In her first C-suite gig, as head of human resources, she launched Progressive’s first diversity and inclusion programs. As CEO, she grabs lunch with rank-and-file employees in the company cafeteria every Friday to help break down communication barriers and spread cohesion across the ranks. She excels at fostering creativity, sponsoring innovative hackathons and problem-solving workshops that spur heads-up thinking. Her moves have made Progressive a rare fast grower in a competitive, commoditized industry: Revenue has increased 36% since Griffith took the helm in 2016, thanks in part to a bet on A.I. and a bold leap into home insurance.

MAHATHIR MOHAMAD

PRIME MINISTER, MALAYSIA

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AT 93, MAHATHIR IS writing an unexpected chapter in his legacy. During his first, 22-year tenure as Prime Minister, from 1981 to 2003, he turned Malaysia into one of South-east Asia's economic tigers, but his ornery disregard for the judiciary and the press hinted at autocratic leanings. Last year, he returned from seclusion to run for office on an anti-corruption platform, leading a new political party to a shocking victory over incumbent Najib Razak. Mahathir is now tackling the endemic corruption plaguing the country's institutions, and has brought Najib to court on charges connected to the 1MDB scandal, a sprawling malfeasance case that has ensnared Wall Street bankers and government officials [Najib denies the charges]. Mahathir and his party are now moving to protect judicial independence and press freedom, recognizing that they help keep a democracy honest.





Bennett counsels his team before a February home game.

TONY BENNETT

HEAD MEN'S BASKETBALL COACH, UNIVERSITY OF VIRGINIA CAVALIERS

LAST SPRING, THE VIRGINIA MEN'S basketball team suffered one of the most shocking upsets in sports—becoming the first top-seeded team in the history of NCAA's "March Madness" tournament to lose to a lowest-ranked 16 seed. This April, in the same tournament, Virginia won its first title.

That the Cavaliers ascended from humiliation to celebration is a testament to Bennett's coaching skills. Inheriting a program that attracts relatively few stars, Bennett built a contender by stressing passing and disciplined, stifling defense. And after last year's defeat, Bennett gave his players leeway to talk openly about the frustration of losing, the better to motivate themselves and one another. Discussing last year's loss after this year's triumph, he told reporters: "It bought us a ticket here."

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50WGL

The
World's 50
Greatest
Leaders
The List

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BRIAN MANLEY

Chief of Police, Austin

Austin boasts the third-lowest rate of violent crime among the 30 biggest U.S. metro areas, and many credit Manley for keeping the peace. He has made community collaboration a central focus, urging officers to forge ties with homeless people and with Austin's Latin American immigrant communities. And he earned widening acclaim last year by keeping the city calm during a terrifying string of bombings.



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SCOTT GOTTLIEB

Former Commissioner, FDA

In his final week at the FDA, Gottlieb issued at least eight official statements, running the gamut from addressing the youth e-cigarette epidemic to developing rules for using A.I. in medical devices. That flurry of activity is a microcosm of his tenure—one defined by a willingness to thrust the FDA into any important fray—and helped explain the unique impact of his short-lived term at the agency.



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To merchants who have accepted Visa and Mastercard at any time from January 1, 2004 to January 25, 2019: Notice of a class action settlement of approximately \$5.54-6.24 Billion.

Si desea leer este aviso en español, llámenos o visite nuestro sitio web, www.PaymentCardSettlement.com.

Notice of a class action settlement authorized by the U.S. District Court, Eastern District of New York.

This notice is authorized by the Court to inform you about an agreement to settle a class action lawsuit that may affect you. The lawsuit claims that Visa and Mastercard, separately, and together with certain banks, violated antitrust laws and caused merchants to pay excessive fees for accepting Visa and Mastercard credit and debit cards, including by:

- Agreeing to set, apply, and enforce rules about merchant fees (called *default interchange fees*);
- Limiting what merchants could do to encourage their customers to use other forms of payment; and
- Continuing that conduct after Visa and Mastercard changed their corporate structures.

The defendants say they have done nothing wrong. They say that their business practices are legal and the result of competition, and have benefitted merchants and consumers. The Court has not decided who is right because the parties agreed to a settlement. The Court has given preliminary approval to this settlement.

THE SETTLEMENT

Under the settlement, Visa, Mastercard, and the bank defendants have agreed to provide approximately \$6.24 billion in class settlement funds. Those funds are subject to a deduction to account for certain merchants that exclude themselves from the Rule 23(b)(3) Settlement Class, but in no event will the deduction be greater than \$700 million. The net class settlement fund will be used to pay valid claims of merchants that accepted Visa or Mastercard credit or debit cards at any time between January 1, 2004 and January 25, 2019.

This settlement creates the following Rule 23(b)(3) Settlement Class: All persons, businesses, and other entities that have accepted any Visa-Branded Cards and/or Mastercard-Branded Cards in the United States at any time from January 1, 2004 to January 25, 2019, except that the Rule 23(b)(3) Settlement Class shall not include (a) the Dismissed Plaintiffs, (b) the United States government, (c) the named Defendants in this Action or their directors, officers, or members of their families, or (d) financial institutions that have issued Visa-Branded Cards or Mastercard-Branded Cards or acquired Visa-Branded Card transactions or Mastercard-Branded Card transactions at any time from January 1, 2004 to January 25, 2019. The Dismissed Plaintiffs are plaintiffs that previously settled and dismissed their own lawsuit against a Defendant, and entities related to those plaintiffs. If you are uncertain about whether you may be a Dismissed Plaintiff, you should call 1-800-625-6440 or visit www.PaymentCardSettlement.com for more information.

WHAT MERCHANTS WILL GET FROM THE SETTLEMENT

Every merchant in the Rule 23(b)(3) Settlement Class that does not exclude itself from the class by the deadline described below and files a valid claim will get money from the class settlement fund. The value of each claim will be based on the actual or estimated interchange fees attributable to the merchant's Mastercard and Visa payment card transactions from January 1, 2004 to January 25, 2019.

Pro rata payments to merchants who file valid claims for a portion of the class settlement fund will be based on:

- The amount in the class settlement fund after the deductions described below,
- The deduction to account for certain merchants who exclude themselves from the class,
- Deductions for the cost of settlement administration and notice, applicable taxes on the settlement fund and any other related tax expenses, money awarded to the Rule 23(b)(3) Class Plaintiffs for their service on behalf of the Class, and attorneys' fees and expenses, all as approved by the Court, and
- The total dollar value of all valid claims filed.

Attorneys' fees and expenses and service awards for the Rule 23(b)(3) Class Plaintiffs: For work done through final approval of the settlement by the district court, Rule 23(b)(3) Class Counsel will ask the Court for attorneys' fees in an amount that is a reasonable proportion of the class settlement fund, not to exceed 10% of the class settlement fund, to compensate all of the lawyers and their law firms that have worked on the class case. For additional work to administer the settlement, distribute the funds, and litigate any appeals, Rule 23(b)(3) Class Counsel may seek reimbursement at their normal hourly rates. Rule 23(b)(3) Class Counsel will also request (i) an award of their litigation expenses (not including the administrative costs of settlement or notice), not to exceed \$40 million and (ii) up to \$250,000 per each of the eight Rule 23(b)(3) Class Plaintiffs in service awards for their efforts on behalf of the Rule 23(b)(3) Settlement Class.

HOW TO ASK FOR PAYMENT

To receive payment, merchants must fill out a claim form. If the Court finally approves the settlement, and you do not exclude yourself from the Rule 23(b)(3) Settlement Class, you will receive a claim form in the mail or by email. Or you may ask for one at: www.PaymentCardSettlement.com, or call: 1-800-625-6440.

LEGAL RIGHTS AND OPTIONS

Merchants who are included in this lawsuit have the legal rights and options explained below. You may:

- **File a claim to ask for payment.** Once you receive a claim form, you can submit it via mail or email, or may file it online at www.PaymentCardSettlement.com.
- **Exclude yourself** from the Rule 23(b)(3) Settlement Class. If you exclude yourself, you can individually sue the Defendants on your own at your own expense, if you want to. If you exclude yourself, you will not get any money from this settlement. If you are a merchant and wish to exclude yourself, you must make a written request, place it in an envelope, and mail it with postage prepaid and postmarked no later than **July 23, 2019**, or send it by overnight delivery shown as sent by **July 23, 2019**, to Class Administrator, Payment Card Interchange Fee Settlement, P.O. Box 2530, Portland, OR 97208-2530. Your written request must be signed by a person authorized to do so and provide all of the following information: (1) the words "In re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation," (2) your full name, address, telephone number, and taxpayer identification number, (3) the merchant

that wishes to be excluded from the Rule 23(b)(3) Settlement Class, and what position or authority you have to exclude the merchant, and (4) the business names, brand names, “doing business as” names, taxpayer identification number(s), and addresses of any stores or sales locations whose sales the merchant desires to be excluded. You also are requested to provide for each such business or brand name, if reasonably available: the legal name of any parent (if applicable), dates Visa or Mastercard card acceptance began (if after January 1, 2004) and ended (if prior to January 25, 2019), names of all banks that acquired the Visa or Mastercard card transactions, and acquiring merchant ID(s).

- **Object to the settlement.** The deadline to object is **July 23, 2019**. To learn how to object, visit www.PaymentCardSettlement.com or call 1-800-625-6440. Note: If you exclude yourself from the Rule 23(b)(3) Settlement Class you cannot object to the settlement.

For more information about these rights and options, visit: www.PaymentCardSettlement.com.

IF THE COURT APPROVES THE FINAL SETTLEMENT

Members of the Rule 23(b)(3) Settlement Class who do not exclude themselves by the deadline will be bound by the terms of this settlement, including the release of claims against the released parties provided in the settlement agreement, whether or not the members file a claim for payment.

The settlement will resolve and release claims by class members for monetary compensation or injunctive relief against Visa, Mastercard, or other defendants. The release bars the following claims:

- Claims based on conduct and rules that were alleged or raised in the litigation, or that could have been alleged or raised in the litigation relating to its subject matter. This includes any claims based on interchange fees, network fees, merchant discount fees, no-surcharge rules, no-discounting rules, honor-all-cards rules, and certain other conduct and rules. These claims are released if they already have accrued or accrue in the future up to five years following the court’s approval of the settlement and the resolution of all appeals.
- Claims based on rules in the future that are substantially similar to – i.e., do not change substantively the nature of – the above-mentioned rules as they existed as of preliminary approval of the settlement. These claims based on future substantially similar rules are released if they accrue up to five years following the court’s approval of the settlement and the resolution of all appeals.

The settlement’s resolution and release of these claims is intended to be consistent with and no broader than federal law on the identical factual predicate doctrine.

The release does *not* extinguish the following claims:

- Claims based on conduct or rules that could not have been alleged or raised in the litigation.
- Claims based on future rules that are not substantially similar to rules that were or could have been alleged or raised in the litigation.
- Any claims that accrue more than five years after the court’s approval of the settlement and the resolution of any appeals.

The release also will have the effect of extinguishing all similar or overlapping claims in any other actions, including but not limited to the claims asserted in a California state court class action brought on behalf of California citizen merchants and captioned *Nuts for Candy v. Visa, Inc., et al.*, No. 17-01482 (San Mateo County Superior Court). Pursuant to an agreement between the parties in *Nuts for*

Candy, subject to and upon final approval of the settlement of the Rule 23(b)(3) Settlement Class, the plaintiff in *Nuts for Candy* will request that the California state court dismiss the *Nuts for Candy* action. Plaintiff’s counsel in *Nuts for Candy* may seek an award in *Nuts for Candy* of attorneys’ fees not to exceed \$6,226,640.00 and expenses not to exceed \$493,697.56. Any fees or expenses awarded in *Nuts for Candy* will be separately funded and will not reduce the settlement funds available to members of the Rule 23(b)(3) Settlement Class.

The release **does not** bar the injunctive relief claims or the declaratory relief claims that are a predicate for the injunctive relief claims asserted in the pending proposed Rule 23(b)(2) class action captioned *Barry’s Cut Rate Stores, Inc., et al. v. Visa, Inc., et al.*, MDL No. 1720, Docket No. 05-md-01720-MKB-JO (“*Barry’s*”). Injunctive relief claims are claims to prohibit or require certain conduct. They do not include claims for payment of money, such as damages, restitution, or disgorgement. As to all such claims for declaratory or injunctive relief in *Barry’s*, merchants will retain all rights pursuant to Rule 23 of the Federal Rules of Civil Procedure which they have as a named representative plaintiff or absent class member in *Barry’s*, except that merchants remaining in the Rule 23(b)(3) Settlement Class **will release** their right to initiate a new and separate action for the period up to five (5) years following the court’s approval of the settlement and the exhaustion of appeals.

The release also does not bar certain claims asserted in the class action captioned *B&R Supermarket, Inc., et al. v. Visa, Inc., et al.*, No. 17-CV-02738 (E.D.N.Y.), or claims based on certain standard commercial disputes arising in the ordinary course of business.

For more information on the release, see the full mailed Notice to Rule 23(b)(3) Settlement Class Members and the settlement agreement at: www.PaymentCardSettlement.com.

THE COURT HEARING ABOUT THIS SETTLEMENT

On **November 7, 2019**, there will be a Court hearing to decide whether to approve the proposed settlement. The hearing also will address the Rule 23(b)(3) Class Counsel’s requests for attorneys’ fees and expenses, and awards for the Rule 23(b)(3) Class Plaintiffs for their representation of merchants in MDL 1720, which culminated in the settlement agreement. The hearing will take place at:

United States District Court for the
Eastern District of New York
225 Cadman Plaza
Brooklyn, NY 11201

You do not have to go to the Court hearing or hire an attorney. But you can if you want to, at your own cost. The Court has appointed the law firms of Robins Kaplan LLP, Berger Montague PC, and Robbins Geller Rudman & Dowd LLP as Rule 23(b)(3) Class Counsel to represent the Rule 23(b)(3) Settlement Class.

QUESTIONS?

For more information about this case (*In re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation*, MDL 1720), you may:

Call toll-free: 1-800-625-6440

Visit: www.PaymentCardSettlement.com

Write to the Class Administrator:

Payment Card Interchange Fee Settlement
P.O. Box 2530
Portland, OR 97208-2530

Email: info@PaymentCardSettlement.com

Please check www.PaymentCardSettlement.com for any updates relating to the settlement or the settlement approval process.

1-800-625-6440 • info@PaymentCardSettlement.com





Decoding the Market's Messages

A RECESSION IS WRITTEN IN THE STARS; BIG LOSSES DON'T HAVE TO BE. HERE ARE FIVE NUMBERS TO WATCH TO SPOT A BEAR MARKET BEFORE IT EATS YOUR SAVINGS.

IN JUNE, ECONOMISTS will mark the 10th anniversary of the end of the Great Recession. But even as traumatic memories of that crisis recede, investors collectively have grown more jittery in anticipation of the next one. Market volatility has soared as relatively minor economic setbacks trigger frequent, dramatic selloffs. Over the past 12 months, mutual-fund shareholders have pulled out about \$100 billion more from stock mutual funds and ETFs than they put in—a sign of mounting unease among Main Street savers.

Ask the pros and they'll tell you that the caution underlying those jitters is justified. Indeed, 77% of economists expect a recession by the end of 2021, according to the National Bureau of Economic Research, with slowing corporate earnings in the U.S. and sluggish growth abroad stacking the deck against the economy. Investors tend to forget, however, that not all recessions trigger market crashes. David Kelly, chief global strategist at J.P. Morgan Asset Management, argues that the severe impact of the past two recessions has conditioned us to expect the worst. "We often assume when we have a bear market, it's going to be a grizzly bear," says Kelly. "But it might just turn out to be a koala bear."

That said, even koalas have teeth, and nobody wants to get bitten. Here, *Fortune's* writers take a look at five lesser-known economic indicators that offer reliable clues about a future slowdown, along with advice about how to react—without overreacting—to bears of any size.

The Yield Curve

WHEN LOW RATES AUGUR BAD NEWS

● **FOR FIVE DAYS** in late March, the three-month Treasury bill paid higher interest than the 10-year note—and cast a gloomy cloud over many investors' outlooks. The event was an example of the one omen economists rely on more than any other to predict recessions: an obscure-sounding metric called the inverted yield curve. "Not only is it the most reliable, it's really the only one," says Rick Rieder, BlackRock's chief investment officer of global fixed income.

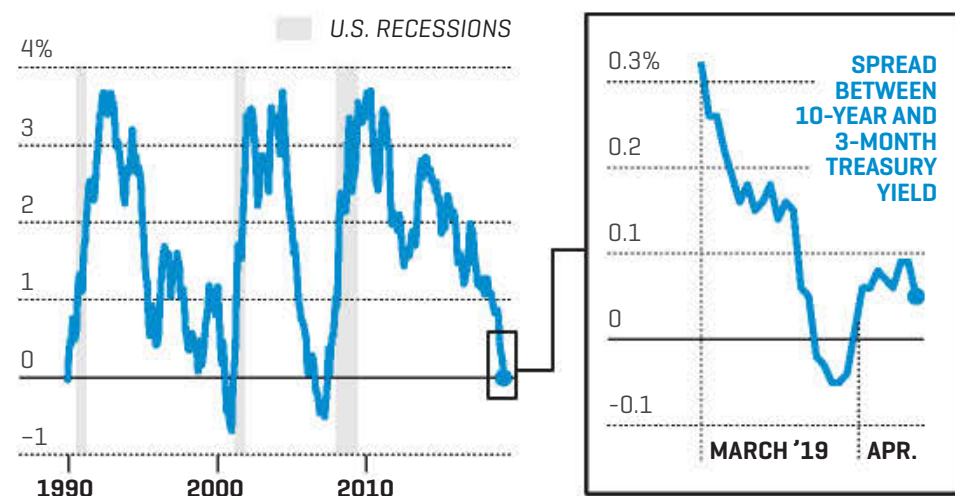
The yield curve is the gap between interest payouts ("yields") on long-term government bonds—say, 10-year Treasuries—and yields on their short-term counterparts, such as the two-year note or three-month T-bill. Normally long-term bonds pay more, because investors are willing to hold on to a bond for a decade only if they're compensated more for their patience and risk—so the curve is positive. But occasionally, investors become convinced that interest rates and stock returns will be so low in the future that they're better off buying long-term bonds now, to lock in today's yields (even if they're relatively low) and own an asset that will be less risky than the alternatives. They buy more, driving yields below short-term rates; the yield curve goes negative, or "inverts"; and economists and investors fear bearish times ahead.

It's a phenomenon that has preceded the past nine recessions since 1957, according to economic data from the Federal Reserve. There's just one big caveat: Flat or inverted curves have also generated at least three false alarms—most recently during the dotcom boom times of 1998, when, after an inversion, the stock market proceeded to rise 55% before it peaked. As Sam Stovall, chief investment strategist for CFRA, put it in a research note: "While all trout are fish, not all fish are trout."

There's reason to think this latest fish is one to throw back. Kelly

A DANGEROUS DIP

Yield-curve "inversions," in which the yields on short-term Treasuries exceed those on long-term Treasuries, often precede recessions. In March, one closely watched curve inverted for the first time in nearly 13 years.



SOURCE: FEDERAL RESERVE BANK OF ST. LOUIS

of J.P. Morgan notes that historically, the Fed has to raise interest rates much higher than they are today before the curve inverts. "You need a bubble, you need excess, you need above-average growth before we have a problem," adds Andrew Slimmon, managing director at Morgan Stanley Investment Management. Other experts argue that the indicator is no longer meaningful in the post-financial crisis era, as unprecedented bond buying by central banks has distorted bond spreads.

Still, when people tell Slimmon the predictor doesn't apply anymore, he says, "My response is, 'Explain to me why, every time in the past, this is consistent?'" One other trend that anxious investors often miss: Even should the yield curve invert again and stay inverted, investors will still likely have at least a year to adjust their portfolios before a recession hits. Adjusting might mean rotating into less highly valued stocks, keeping more in cash, and scooping up shorter-term bonds while their higher yields last. —*Jen Wieczner*

Auto Loans

AMERICA'S OTHER SUBPRIME PROBLEM

● **U.S. AUTO SALES** bounced back long ago from their Great Recession lows, but car buyers aren't doing so well. At the end of 2018, more than 7 million Americans were in "serious delinquency," or 90 days past due, on their auto loan payments, according to the Federal Reserve Bank of New York. That total represents an all-time high—and a further spike could send troubling ripples through the broader economy.

As the New York Fed noted, the numbers indicate "not all Americans have benefited" from a strong labor market. Borrowers between the ages of 18 and 29 had the highest delinquency rate of any age group, in another sign of how younger adults—often saddled with student debt obligations that sap their disposable income—are struggling to establish themselves.

But cash-strapped borrowers aren't the only destabilizing factor. As big banks like JPMorgan Chase and Wells Fargo have stepped back from the sector, nonbank lenders that

specialize in auto finance have filled the void. Many of them are “not regulated as prudently as banks are,” according to Mayra Rodríguez Valladares, managing principal at financial consultancy MRV Associates, and “have been loosening their underwriting standards.”

As a result, there is more borrowing than ever—with \$1.27 trillion in loans outstanding at the end of 2018—and an unusually high percentage of borrowers are risky. Some 22% of auto loans, and 50% of those underwritten by auto-finance companies, qualify as subprime, according to the New York Fed. “We’re seeing loans where people are paying 29% interest for a loan on a 10-year-old [used] car,” says Eric Poe, COO of CURE Auto Insurance, based in Princeton, N.J. Wall Street has fueled this dynamic via its appetite for auto loan asset-backed securities, whose total outstanding value reached a record \$222.8 billion in 2018, according to the Securities Industry and Financial Markets Association (SIFMA).

Overstretched young borrowers, loose regulations, iffy loans “securitized” for investors. If that pattern gives you a queasy sense of déjà vu, you aren’t alone: Analysts agree that the dynamics are similar to the subprime mortgage lending boom that preceded the last recession. The good news is that the auto loan market is far smaller than the mortgage market. (Subprime mortgages alone represented around \$1.3 trillion of the mortgage market in 2007—larger than the entire auto loan market today.) And the effects of any crisis would

Is the yield curve a reliable recession predictor? “Not only is it the most reliable, it’s really the only one,” says one investor.

be smaller too. Still, a spike in delinquencies would likely be bad news for investors in banks with auto loan exposure, for some insurance companies, and, of course, for the automakers themselves. Buckle up, and watch the road. —*Rey Mashayekhi*

China’s Consumers

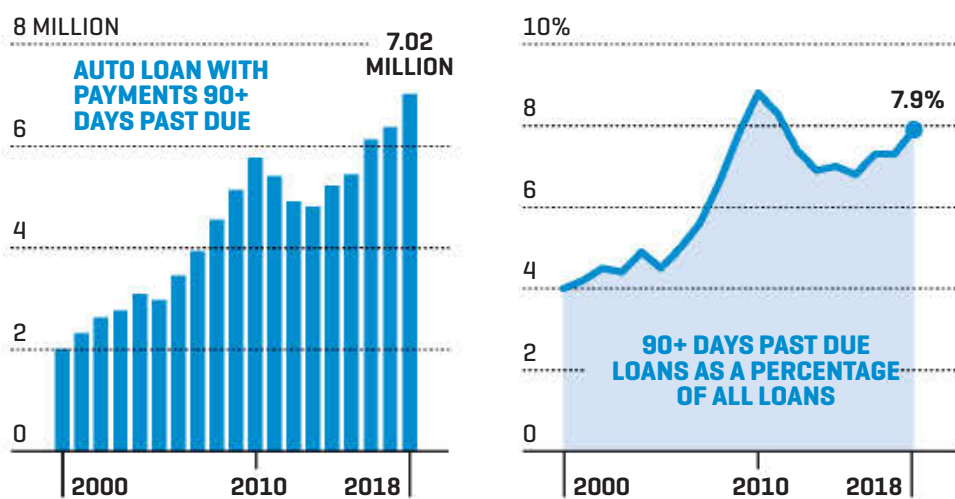
FORGET GDP—KEEP AN EYE ON RETAILERS AND TOURISTS

● **OVER THE COURSE** of a single day this January, Apple lost \$74 billion in market capitalization, after warning investors that spending in the country it most relied on for growth—China—was slowing. Investors in Ford Motor Co. and Japanese electronics giant Panasonic endured similarly ugly days soon after, for the same reason, a reminder of how broad and bitter the impact of a Chinese slowdown could be.

The question is how to forecast that slowdown. The usual barometer of a nation’s economic health, GDP, is widely seen as unreli-

UNSAFE AT ANY SPEED

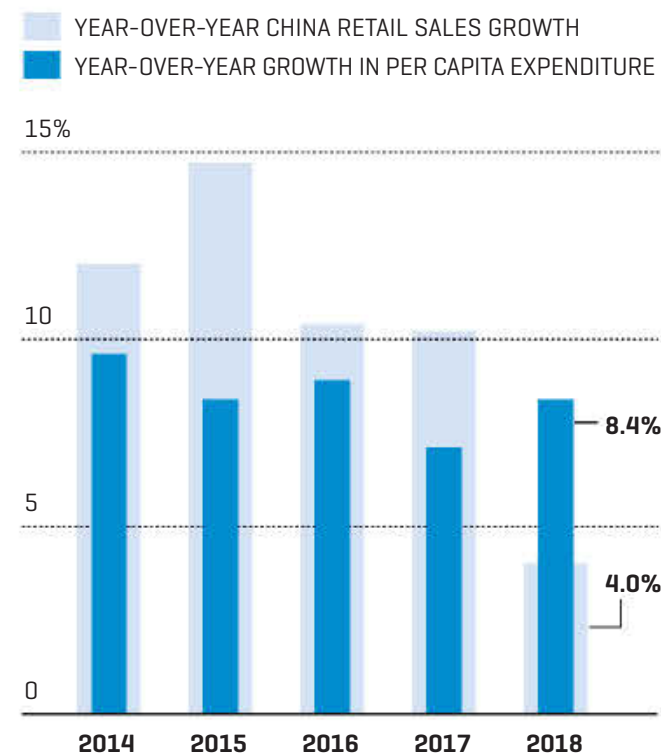
Americans are far more likely to owe money on their cars today than they were a generation ago. They’re also more likely to be in arrears on their payments—a fact that could soon become a drag on the economy.



SOURCES: NEW YORK FEDERAL RESERVE BANK; EQUIFAX

TRACKING CHINA’S SHOPPING HABITS

Consumer spending, still a new phenomenon in China, is beginning to slow by some measures.



SOURCE: CHINESE NATIONAL BUREAU OF STATISTICS

able in China. Local governments are rewarded for hitting growth targets set by the central government and so self-report impressive numbers; many commentators believe the central government also smooths out the data. Chang-Tai Hsieh, an economics professor at the University of Chicago, coauthored a paper earlier this year making the case that China had overstated GDP by about 15% in 2016.

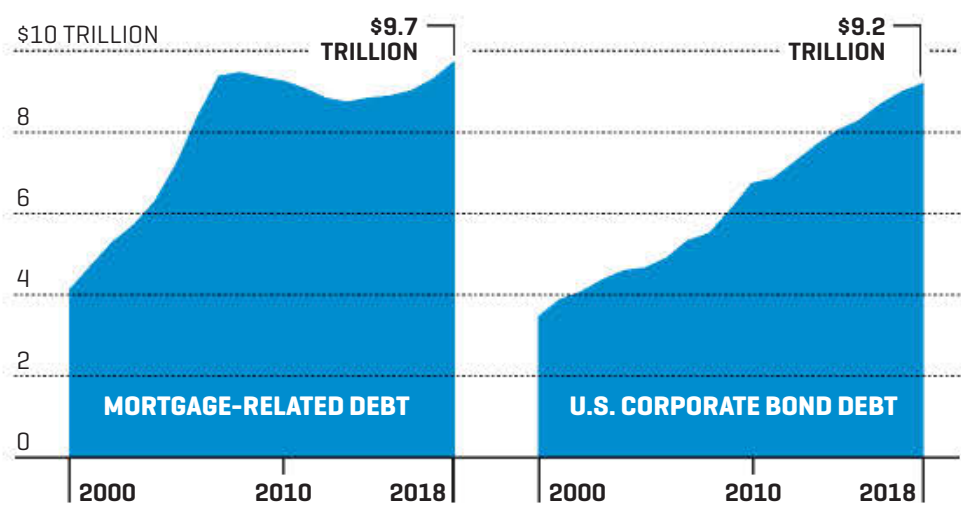
Even if the figures were reliable, GDP arguably can't fully capture a rapidly changing ecosystem in which consumer spending is overtaking heavy industry as an economic driver. "GDP doesn't tell you if a project is good or bad, or if services are useful," says Yukon Huang, a senior fellow at the Carnegie Endowment and former China director at the World Bank. "It just tells you what is being produced—and it doesn't matter if it's ghost cities or roads that don't go anywhere."

For a more trustworthy indicator, many investors look at household expenditures and personal income data, published by China's National Bureau of Statistics (available on its website in English, as well as in news reports). Hsieh argues that those reports' survey-driven methodology makes them harder to manipulate. Professional investors, meanwhile, reinforce that information with harder-to-find consumer data that's completely outside the state's control. Andy Rothman, an investment strategist at mutual fund firm Matthews Asia, cites import-export statistics and data on Chinese tourism spending in Japan as examples.

What story are Chinese consumers telling the world right now? It's a cautiously upbeat one, and one that suggests they *won't* be the trigger for the next recession. Income growth slowed in the fourth quarter of 2018, to 6.5% year over year, its slowest pace since 2016. Retail activity remains robust: In fact, consultancy eMarketer expects Chinese retail spending to hit \$5.6 trillion this year—exceeding American retail spending for the first time ever. The warning sign to watch for: Nicholas Lardy, senior fellow at the Peterson Institute for International Economics, says investors should

BORROWED TIME

A surge in mortgage-related borrowing helped precipitate a crisis in 2007; some fear that a recent uptick in U.S. corporate debt could soon do the same.



worry if income growth lags China's reported GDP growth rate over multiple quarters. That would be a signal to reduce exposure to emerging markets, where business fortunes rise and fall with China.—*Lucinda Shen*

Corporate Debt

HOW MUCH BORROWING IS TOO MUCH?

● **EVEN IN GOOD TIMES**, servicing the interest on a hefty debt load can hurt a company's profitability. In the face of a slowing economy or rising interest rates, you get a double or triple whammy. All of which makes it sobering to realize that global business debt now exceeds \$66 trillion, up from \$29 trillion before the financial crisis, according to consultancy McKinsey.

Total U.S. corporate debt remains near its all-time high of 73.5% of GDP, at about \$15 trillion. Corporate bond debt hit \$9.2 trillion at 2018's close, according to securities industry estimates. And although interest rates have been low, much corporate debt represents higher-risk, more-expensive borrowing. At the end of February, more than 20% of U.S. corporate debt was rated in riskier junk categories, according to Fitch Ratings, and 46.7% was classified BBB, one step above junk.

Some industries are swimming in more debt than others. Patrick Finnegan, a senior director at Fitch Ratings, identifies health care, pharma, food and beverage, and energy among the sectors that have built up heavy leverage, with much of it going to fund mergers and acquisitions. Leverage isn't inherently bad, of course, if a company's earnings are strong enough. To figure out whether a given company's debt load is manageable, McKinsey partner Susan Lund recommends checking whether its interest coverage ratio—revenue divided by interest payments—is at least 1.5. Lund estimates that 5% to 6% of U.S. companies fail to clear that bar, while as many as 25% of companies in emerging markets fall short.

That latter figure is troubling because businesses in emerging markets, including China, are particularly dependent on bank debt—that is, loans. This debt is largely opaque—it's not

easy for investors to tell how much companies have borrowed. And bank debt is more likely to be “variable rate,” meaning that interest payments on the loans go up if rates rise more broadly in the market.

To reduce exposure to corporate debt if rates spike, Tom Graff, head of fixed income and a portfolio manager at Brown Advisory, suggests steering clear of bond ETFs, whose prices could get very volatile if investors stampede out when interest rates rise. (Try open-end mutual funds or direct bond buying instead.) And in both the bond and stock markets, look for clean balance sheets: If a company has a heavy debt load, now’s a good time to walk on by. —*Erik Sherman*

Corporate Profits

AS WORKERS GET MORE, SHAREHOLDERS COULD GET LESS

● **FOR DECADES**, it’s been one of Warren Buffett’s guiding principles: When corporate profits swell to a disproportionately large share of GDP, the Omaha sage has cautioned, the competitive nature of capitalism exercises a gravitational force that pulls them back to historical norms. Profitability shrinks, and stock returns become sluggish, or worse.

If that principle holds true, investors could be facing a rough ride. By some measures, Buffett’s gravitational shift is already underway. U.S. earnings peaked at 11% of GDP in 2012, but in the fourth quarter of 2018, they still accounted for 9.3%, or 2.6 percentage points higher than the 60-year average (see chart), suggesting they have further to fall. Analysts polled by FactSet forecast a year-over-year decline in earnings per share for the S&P 500 of 4.2% in the first quarter, and zero growth in the second.

The change reflects a tipping of the balance back toward labor. Since 2000, the share of GDP going to salaries, wages, and bonuses has dropped from 46% to 43%; lately, that trend is reversing. “America now has 7 million job openings, more than one for every unemployed worker,” says Ryan Sweet of Moody’s Analytics. That tightening labor market and the increased

“GDP doesn’t tell you if a project is good or bad, or if services are useful,” says one China expert.

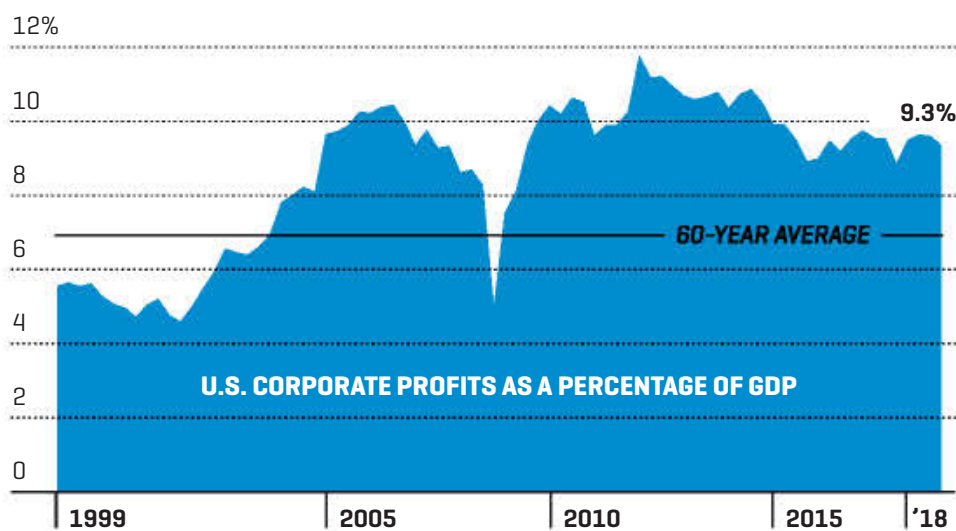
rates at which workers are leaving jobs for new ones are why wages are growing at 3.1%, twice the pace of 2010. Ordinarily, these trends would continue pressuring profits, and suppressing share prices, across the economy.

But there’s one investor who thinks we may have entered a new normal that could sustain higher profitability for a long time—and that investor, surprisingly enough, is Warren Buffett. At the 2018 annual investor meeting for Berkshire Hathaway, Buffett acknowledged that the Internet, social media, and data revolutions have spawned an “asset-light economy,” driven by tech giants that generate floods of profits from mere trickles of capital. Amazon, Apple, Google parent Alphabet, Facebook, and Microsoft dominate their industries, and their powerful brands and enormous scale swell their revenues per customer and lower their costs of attracting new ones. It’s not coincidental that those five companies now account for 12% of the S&P 500’s profits. While they, too, face rising labor costs, they don’t need nearly as much labor (or plants, or inventories) to generate hefty sales.

The takeaway: The profitability of the tech titans will decline more gradually than margins in other industries, which should help their stocks outperform too. Overall U.S. stock returns will likely be lower than what investors have grown used to. But if workers pocketing higher wages are a reason for that slowdown, that will be a silver lining. —*Shawn Tully*

DECLINING SHARE, DECLINING SHARES?

Corporate profits have been sinking as a share of GDP. Some analysts fear that stocks will follow suit.

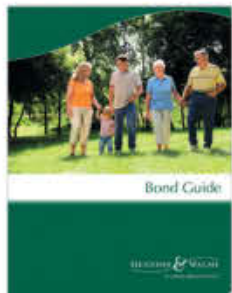


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Potential Safety of Principal

When investing in municipal bonds, investors are paid back the full face value of their investment at maturity or earlier if called, unless the bond defaults. This is important because many investors, particularly those nearing retirement or in retirement, are concerned about protecting their principal. In June of 2017, Moody's published research that showed that rated investment grade municipal bonds had an average cumulative 10-year default rate of just 0.09% between 1970 and 2016.* That means while there is some risk of principal loss, investing in rated investment-grade municipal bonds can be an important part of your portfolio.

Potential Regular Predictable Income

Municipal bonds typically pay interest every six months unless they get called or default. That means that you can count on a regular, predictable income stream. Because most bonds have call options, which means you get your principal back before the maturity date, subsequent municipal bonds you purchase can earn more or less interest than the called bond. According to Moody's 2017 research,* default rates are historically low for the rated investment-grade bonds favored by Hennion & Walsh.

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About Hennion & Walsh

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RAISING SUPERWOMEN

Despite her own powerful brood,
Silicon Valley godmother Esther Wojcicki
believes leaders are made, not born.

INTERVIEW BY MICHAL LEV-RAM



© COURTESY OF ESTHER WOJCICKI

ESTHER WOJCICKI DIDN'T set out to raise CEOs. But she knew she wanted her children—and students—to have an upbringing vastly different from the one she had endured. “If I didn’t behave, I was beaten,” says the longtime educator and matriarch of one of the most well-known families in Silicon Valley. “My father’s philosophy was ‘Spare the rod, spoil the child.’”

Wojcicki, or “Woj,” as she’s known to the 700 teenagers enrolled in her popular Media Arts Program at Palo Alto High School, came up with her own philosophy after many years of teaching and parenting. She lays out the secrets to cultivating effective and ethical leaders in a new book, *How to Raise Successful People: Simple Lessons for Radical Results*. Her tried-and-tested formula? It all boils down to TRICK, a catchy acronym that stands for trust, respect, independence, collaboration, and kindness.

If Wojcicki’s offspring are any indication, her method works. Her firstborn, Susan Wojcicki, is the CEO of YouTube. Janet Wojcicki is a professor of pediatrics at the University of California at San Francisco. And Anne Wojcicki, the baby of the family, is the founder and CEO of genetic testing company 23andMe. “Our parents taught us to believe in ourselves and our ability to make decisions,” the three write in the book’s foreword. “We don’t remember ever having our ideas or thoughts dismissed because we were children.”

Wojcicki’s guide to raising successful people weaves together stories of her own harsh childhood (in addition to being beaten by her father, she says, her formative years were defined by the loss of her baby brother, who died after accidentally swallowing a handful of pills) with actionable takeaways based on TRICK. One of her keys to instilling trust, for example, is to give teenagers a budget and let them shop for needed items on their own. Financial literacy skills can be taught early on, says Wojcicki. She showed her daughters a compound interest chart when they were still in grade school, and growing up, the three sisters sold so many lemons from their neighbor’s yard that they became known as the “lemon girls.”

The TRICK philosophy can be of value to employers too, says Wojcicki. In her book, she notes that CEOs like John Mackey of Whole Foods and other leaders known for “employee empowerment” are interested in her methods. “The ultimate goal of TRICK is creating self-responsible people in a self-responsible world,” she writes. “This is what we’re doing as parents, teachers, and employers—not just raising children or managing classrooms and boardrooms, but building the foundation of the future of humankind.”

While Wojcicki’s book may be the latest in a long list of literature focused on fostering success, rarely does this genre get written from the perspective of a mother. *Fortune* caught up with the 78-year-old matriarch in her Palo Alto home, where she sat surrounded by family photos, to talk about raising leaders, the recent college admissions scandal, and the thorny issue of technology’s dark side. That last point is a hot topic in the Wojcicki family, she says—no surprise given that two of her three daughters run sometimes-controversial tech companies. An edited transcript of the interview follows.

FORTUNE: Why did you write the book and why now?

ESTHER WOJCICKI: So many people were asking me what I did with my daughters and what I did with my students. I thought, Well, if everyone really wants to know how I did it, perhaps it would be easier if I just wrote a book. I’ve spent a lifetime collecting this information, and I thought I would share it with the world. This is my legacy—I’m trying to make sure that people understand the power of giving children control of their learning.

What can employers learn from TRICK?

If you treat employees the same way, if you believe in them and give them an opportunity to perform, then they believe in themselves. It is really crazy, but when someone believes in you, you’re willing to take more risks and willing to be more creative.

Just imagine if you have an employer who thinks poorly of you; the only way you’re going to be able to perform is by following their directions exactly. And where is the creativity in that? All these employers want people who are creative and willing to take a risk, and all the people coming out of college are trained not to take a risk. They’re trained to follow instructions. If you don’t follow instructions, you don’t get a good grade. We’re producing a nation of rule followers—a nation of sheep.

If you just look at Google [parent company of YouTube], the main thing they do is give their employees a sense of freedom by saying, if you want to work on a 20% project [a policy allowing employees to devote themselves to whatever they want for 20% of the time], you have the right to do that. Google turned out to be one of the most creative companies on the planet.

What does the college admissions scandal say about the state of education and parenting?

Students are not engaged enough, and their parents—who are a nation of “snowplow parents”—are clearing the way and giving students tutors who basically cheat for them. The parents were all going crazy trying to get kids to pass tests that are completely irrelevant to the real world. The work world is not a series of tests. The work world is a series of projects and people collaborating together. We are not training students the right way. The business world is complaining that they aren’t getting students who are properly



prepared. But they need to realize that they should not use the SAT as a gauge for what makes a good employee.

Of the five TRICK principles, which is the hardest for employers to implement?

Trust. Employers don't trust their employees, so they have a lot of mechanisms to make sure employees are actually doing the work that they're supposed to do. I can understand why it's hard because there are people out there who don't do what they're supposed to do. But I would suggest explaining the culture of the company and talking about how you're giving people more trust and respect, and how you're expecting people to honor that. If there are violations, then you do have to change the rules. But I would say that most people work really hard. The second hardest is kindness.

Why is kindness so hard?

Because we don't have a word in the English language that expresses happiness when other people succeed—that we don't have the word shows that we don't even have the concept. When you have a profit motive in mind and somebody doesn't meet your expectations,

Family ties (from left): Wojcicki sisters Anne, Susan, and Janet at the California Academy of Sciences in San Francisco.



that profit motive becomes the most important thing, and kindness disappears.

How do you define success?

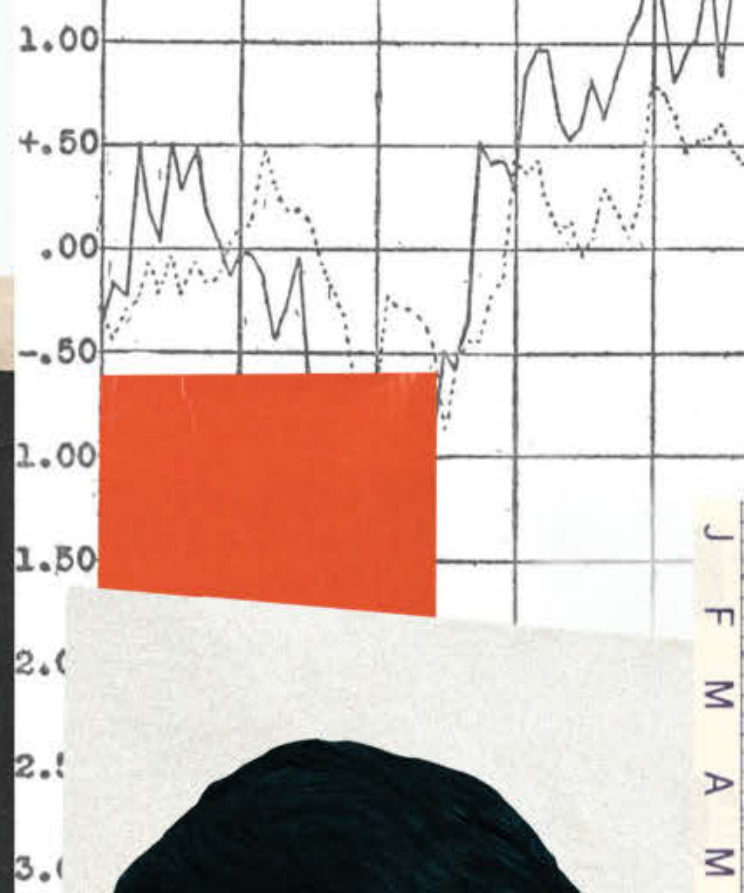
I would define success as people who have a place to live, a job, a passion of some kind, food to eat, and relationships. No. 1 is positive relationships. That is success as far as I'm concerned. The community is so important. In America we need that today more than ever.

Does technology help or hinder the implementation of TRICK values?

Technology is good because it empowers kids; it gives them the opportunity to find information themselves. The downside is we spread misbehavior. The question is how do we regulate that. Do we want to hide [information]? Suicides in high schools—if you cover the suicide and talk about it, statistics [show] there's an upsurge of suicides that happen after. One thing we should do is promote media literacy and media education: how to use your phone ethically, how to use technology for information. The only thing we do now is confiscate kids' phones, which is ridiculous. They don't learn anything; they just learn that the phone is forbidden fruit. ■

ANNUAL REPORT

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INVESTMENT

KLEINER PERKINS

A FALLEN EMPIRE

Once the very embodiment of Silicon Valley venture capital, the storied firm has suffered a two-decade losing streak. It missed the era's hottest companies, took a disastrous detour into renewable energy, and failed to groom its next-generation leadership. Can it ever regain the old Kleiner magic? **By Polina Marinova**

MEEKER: MICHAEL KOVAC GETTY IMAGES;
DERR: STUART ISETT FOR FORTUNE; HAMID:
KEVIN MOLONEY FOR FORTUNE

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OME FIVE YEARS AGO Vladimir Tenev and Baiju Bhatt, founders of a potentially disruptive no-fee stock brokerage startup called Robinhood, set out to raise capital for their fledgling Silicon Valley outfit. They sought a relatively small amount, \$13 million, that would value their idea at \$61 million. The former Stanford classmates, both

within spitting distance of their 30th birthdays at the time, did what entrepreneurs have been doing for decades: They asked the venerable venture capital firm Kleiner Perkins Caufield & Byers to back them.

Kleiner—its singular name is as sufficient on Sand Hill Road as Oprah is in Hollywood—was interested. The firm sees lots of opportunities, however, and it chose not to bite. Then, in mid-2015, when Robinhood was looking for another \$50 million at a valuation of \$250 million, Kleiner passed again. By 2017, when Robinhood became a “unicorn” valued at \$1.3 billion as it raised an additional \$110 million, it was the startup doing the snubbing: It excluded Kleiner from the list of venture firms that participated in its funding.

It wasn't until early last year that Robinhood and Kleiner finally connected, according to accounts from dealmakers on both sides. By then Robinhood had made such a splash in the brokerage world that Fidelity, TD Ameritrade, and Charles Schwab had cut fees in response to the upstart's zero-commission offering. Under

the sponsorship of famed Wall Street analyst Mary Meeker, a Kleiner partner since 2011, the firm that had failed repeatedly to invest at increasing levels now participated in the \$363 million funding round, valuing Robinhood at \$5.6 billion.

The inability to get in on a hot startup's ground floor, only to subsequently pay a far richer price, was all too common for the once-storied firm. Kleiner had sat out on another generation of technology investments, the crop of so-called Web 2.0 companies, including Facebook in the 2000s. Now, in the 2010s, it was failing again to make early-stage investments—the traditional meat of venture capital investing—in the most sought-after startups of the day. But this time its whiffs came with a perverse twist: Kleiner was succeeding wildly with a new strategy centered around Meeker, who ran a separate fund within the firm focused on more mature private companies that required capital to grow as opposed to merely establish themselves.

“Growth” investing, with its more developed companies, should be somewhat safer than “venture” investing and would also earn commensurately lower returns. Yet Meeker's

GENENTECH: JUSTIN SULLIVAN—GETTY IMAGES; DOERR: ANN E. YOW—DYSON GETTY IMAGES; NETSCAPE: ALAIN BUU/GAMMA-RAPHO—GETTY IMAGES; AMAZON BOXES: JERAMEY LENDE—ALAMY; GOOGLE SIGN: CLAY MCLACHLAN—REUTERS

SILICON VALLEY HISTORY



1972

Kleiner Perkins Caufield & Byers is founded by Eugene Kleiner, Tom Perkins, Frank J. Caufield, and Brook Byers.

1976

Kleiner invests \$100,000 and incubates biotech business **Genentech**, which sold for \$47 billion three decades later.

1980

John Doerr, who worked in sales at semiconductor maker Intel, joins Kleiner as an investor.

1994

Kleiner invests \$5 million for a 25% stake in **Netscape**, the first commercial web browser, producing returns of \$400 million when the company goes public the following year.

June 1996

The firm takes an \$8 million stake in **Amazon**, which goes public the following year.

June 1999

Alongside rival Sequoia Capital, Kleiner invests \$11.8 million for a stake in **Google**, one of the greatest venture investments of all time.

Feb. 2004

General partner Vinod Khosla leaves to launch his own firm, Khosla Ventures, after 18 years at Kleiner.

investment team outperformed the venture group overseen by longtime Kleiner leader John Doerr and a rotating ensemble of lesser-known investors who joined and left him over the years. Meeker, not the venture capital investing unit, was landing stakes in the era's most promising companies, including Slack, DocuSign, Spotify, and Uber, breeding resentment over tension points as old as the investing business: Who gets the credit and, more important, who gets paid.

Worse, a class system developed inside Kleiner, evident to the outside world as well, notably among entrepreneurs mulling accepting Kleiner's money: Team Meeker was a top-tier operation while the venture unit was B-list at best. Says Ilya Strebulaev, a Stanford finance professor who studies venture capital: "Twenty years ago, Kleiner Perkins was at the pinnacle of venture capital. These days it's just one of many firms trying to compete."

What happened next is another age-old tale in the business world, of how a once-proud stalwart found itself on the edge of irrelevance. It's about just how much succession planning matters and the ramifications of not adequately grooming the right successors.

"Twenty years ago, Kleiner was at the pinnacle of venture capital. These days it's just one of many firms trying to compete."

And it's a reminder that something as elusive as identifying early-stage winners from the pack of wannabes doesn't get easier, even after more than four decades of practice. The story of what happened in the past handful of years at Kleiner is also one neither the firm's partners nor the notoriously tight-lipped VC industry around it are interested in discussing, at least on the record. Doerr, Meeker, and other Kleiner principals all declined to be interviewed for this article or to comment. But more than 20 current and former employees, investors in Kleiner's funds, entrepreneurs, and other industry observers did talk about what went wrong and how, if possible, the firm can ever regain that old Kleiner magic.

HAVING TO SWEAT TO GET INTO a promising startup would have been unthinkable during Kleiner's golden years, from its founding in 1972 through its \$11.8 million investment in Google in 1999. The firm made legendary investments in startup icons including Tandem Computers, Genentech, Sun Microsystems, Electronic Arts, Netscape, and Amazon.com. Like any venture firm, which invests so early



Feb. 2006

Kleiner forms \$200 million "pandemic and biodefense fund" focused on preventing infectious-disease pandemics.

▲ **May 2008**

Kleiner launches a \$500 million fund that focuses on later-stage "clean tech" investments. One, electric-car maker **Fisker Automotive**, goes bankrupt.

▲ **Nov. 2010**

Mary Meeker announces she'll leave Morgan Stanley and Wall Street to join Kleiner to lead the \$1 billion digital growth fund.

▲ **May 2012**

Ellen Pao sues Kleiner for gender discrimination. She will lose her case, but the firm's reputation suffers badly in a public trial.

▲ **March 2016**

Doerr becomes chairman of Kleiner Perkins.

▲ **June 2016**

Kleiner Perkins raises \$1 billion for its third growth fund.

▲ **Aug. 2017**

Mamoon Hamid joins from Social Capital.

▲ **Sept. 2018**

Early-stage and growth-stage funds announce split.

▲ **Jan. 2019**

Having left Kleiner, Meeker targets \$1.25 billion for debut fund out of her new firm, called Bond.

in a company's existence that it often has no revenue yet, Kleiner had its share of stinkers. But Kleiner's overall investment results were staggering: A mid-90s fund, for example, returned \$32 for every dollar invested. Its power on Sand Hill Road was unquestioned. "You could not do better than a Kleiner deal," says Silicon Valley historian Leslie Berlin. "It was a sign of approval from the very highest level. And it meant everything to entrepreneurs."

The firm's ablest investor for two decades, though his name wasn't on the letterhead, was John Doerr. A former Intel salesman, Doerr joined Kleiner in 1980 and over time became its de facto leader. Doerr scored a string of hits—Netscape, Amazon, and Google—becoming an active and forceful board member at the tech industry's most exciting companies. He also was a prominent cheerleader for Silicon Valley in the age of the Internet.

Doerr was so powerful, in fact, that he was able to pivot Kleiner's entire thrust away from the Internet and toward his latest passion project: renewable energy companies he believed would be the next important wave of tech investing. Doerr was a prominent Democratic fundraiser and pal of former Vice President Al Gore, whom Doerr made a Kleiner partner. Between 2004 and 2009, the firm had invested \$630 million across 54 "clean tech" companies, and 12 of its 22 partners spent some or all of their time on so-called green investments.

The firm's heart may have been in the right place, but its investments flopped. Some, like electric-car maker Fisker Automotive, went bankrupt. Others, like fuel-cell manufacturer Bloom Energy, took 16 years from Kleiner's investment in 2002 to go public. The result was a tarnished brand at a time Kleiner's competitors were killing it with investments in the digital economy. Accel Partners, for example, was the early backer of Facebook. Union Square Ventures was among the first to put money into Twitter. And Benchmark Capital, which scored in the web's first era by investing in eBay, staked Uber in its early days.

Doerr had pushed Kleiner into an unfortunate investment category, and he also failed to assemble a team of investors that could lead the firm past its troubles. On the one hand, Kleiner had a penchant for collecting famous

names who nevertheless had no investing experience—or didn't stick around through troubled times. Former Secretary of State Colin Powell was a "strategic adviser." Gore was a full-on investor. Bill Joy, a cofounder of Sun Microsystems and by acclaim a brilliant technologist, was a Kleiner partner for nine years. Vinod Khosla, another Sun cofounder and the closest Doerr had to an investing peer, jumped ship in 2004 to set up his own shop, a formidable power on Sand Hill Road today.

Kleiner also became known as a firm full of highly pedigreed young investors who stayed for a number of years but left without being given a shot at ascending to the top ranks. Many constitute the next generation of leadership in the venture capital world—but not at Kleiner. Steve Anderson, for example, did a four-year stint in the early 2000s. He went out on his own and later became the first investor in Instagram, which sold itself to Facebook for \$1 billion. Aileen Lee, famous for coining the expression "unicorn" for the once-rare billion-dollar startup, now runs

KHOSLA: STEVE JENNINGS—GETTY IMAGES; ANDERSON: TIMOTHY ARCHIBALD

THEY CAME, THEY INVESTED, THEY LEFT: HERE ARE SEVEN PROMINENT VCS WHO DID TIME AT KLEINER



Vinod Khosla

1986–2004

▲ Khosla cofounded Sun Microsystems, a computer hardware firm, before joining Kleiner Perkins as a general partner. He was the driving force behind blockbuster telecommunications investments Cerent, bought by Cisco, and Juniper Networks, an independent company today.



Steve Anderson

1999–2003

▲ Anderson joined Kleiner Perkins after graduating from Stanford Business School and helped out on Kleiner's Google investment. He left the venture firm for Microsoft and later started Baseline Ventures, an early-stage firm that was the first to invest in Instagram, bought by Facebook.

Cowboy Ventures. Trae Vassallo, key to one of Kleiner's biggest successes of the era, thermostat maker Nest, started her own early-stage-focused firm, called Defy.

The endless outflow created two problems. Entrepreneurs couldn't be sure who would be around at Kleiner to help guide them, and Doerr didn't know who would lead the firm when he retired. It wasn't a problem unique to Kleiner, but it was an acute one. "Succession has always been a challenge with venture capital firms because they tend to be so tied to specific, large personalities," says Spencer Ante, author of *Creative Capital*, a history of the industry. "Some people are better at giving up control than others." In Doerr's case, he couldn't seem to alight on the right mix of promise and stature. "I think the answer lies in John and his superhero fixation," says one ex-Kleiner investor. "If you weren't already a superhero coming in, you weren't going to become a superhero at Kleiner."

In need of a new strategy and a high-wattage personality to match his own, Doerr

"Succession has always been a challenge with venture capital firms because they tend to be so tied to large personalities."

found both. He raised Kleiner's first "growth" fund in 2010 on the assumption that if Kleiner couldn't catch early-stage stars, at least it could get them before their ascent was complete. To run the new billion-dollar fund, in 2011 he persuaded a longtime friend of the firm, Morgan Stanley's Mary Meeker, to move west and become an investor for the first time in her career. It was a development that would partly resuscitate Kleiner—and eventually lead to its being cleaved in half.

MEEKER WAS ALREADY A LEGEND in Silicon Valley, despite having spent all of her career as a New York City-based research analyst. She came of age in an era when analysts worked hand in glove with investment bankers, and her enthusiastic support for companies like Netscape, Amazon, and Google—all in Kleiner's portfolio—helped Morgan Stanley win the mandate to underwrite their IPOs. New rules prohibited investment banks from rewarding analysts on deals, so Doerr's offer



Aileen Lee
1999–2012

▲ Lee invested in e-commerce and retail companies such as Rent the Runway, One Kings Lane, Plum District, and Dollar Shave Club. She also coined the term "unicorn," which refers to a technology startup valued at \$1 billion or more. She later launched the "seed"-stage firm Cowboy Ventures.



Ellen Pao
2005–2012

▲ A protégé of John Doerr, Pao filed a gender discrimination lawsuit alleging that she had been passed over for promotion. A jury cleared Kleiner in 2015 after a public trial that aired the firm's dirty laundry. Pao now runs a diversity and inclusion nonprofit called Project Include.



Matt Murphy
1999–2015

▲ Murphy made investments in companies like AppDynamics and SimpliVity. He led Kleiner's iFund initiative, a pool of capital that backed concepts related to Apple's iPhone. After leaving Kleiner, he joined Menlo Ventures and now invests in A.I., software, and robotics companies.



Trae Vassallo
2002–2014

▲ A design expert, Vassallo was tasked with Kleiner's renewable-energy efforts, which ultimately led to a major success: the early-stage investment in thermostat maker Nest Labs, which sold to Google for \$3.2 billion. Vassallo cofounded Defy, an early-stage venture capital firm.



Megan Quinn
2012–2015

▲ Quinn joined Kleiner Perkins from mobile payment company Square, where she was the director of products. At Kleiner she focused on working with both the early-stage and growth units. In 2015 she joined Spark Capital, where she has invested in companies including Rover, Niantic, and Glossier.

to have Meeker run the new fund afforded her the opportunity to repot herself. “I always wanted to invest,” she told *Wired* in 2012.

“The Kleiner team had been talking to me for a decade about joining, and I thought that if I didn’t do it now, I never would.”

Her deep network and ability to spot tech trends paid off almost immediately. Kleiner’s new growth fund invested in the likes of Facebook, LendingClub, DocuSign, Snapchat, and Slack—all companies seeded by other venture capitalists that nevertheless had plenty of upside left when Meeker invested. The returns were stellar for its category. Kleiner’s growth fund grew investments by 2.4 times as of late last year, according to data the firm supplied to its investors. That performance bested a Kleiner venture fund raised at a similar time, even though later-stage investments are designed to be considerably less risky.

And as Meeker was racking up victories, Kleiner’s early-stage practice continued to stumble—especially compared with the competition and its own illustrious past. There were successes. Longtime partner Ted Schlein, for example, invested in a series of security-software companies that were purchased for healthy gains. Randy Komisar and Trae Vassallo invested early in Nest, acquired in 2014 by Google for \$3.2 billion. But the wins weren’t enough, and Kleiner continued to miss bigger opportunities. The fund it raised in 2010 doubled its money. But that paled in comparison to a Benchmark fund of a similar vintage that multiplied investors’ capital by 25 times, thanks to investments in Uber and Snapchat.

It didn’t help that Kleiner faced a myriad of distractions. Even as its alternative-energy investments were blowing up or otherwise foundering, Doerr set out in 2014 to solve the early-stage leadership problem by trying to buy another firm. He approached Chamath Palihapitiya, an outspoken former Facebook executive who was the driving force behind Social Capital, which at the time was planning to raise its third fund. Doerr had personally invested in Social Capital, a not-uncommon practice for the bigwigs of Sand Hill Road, and he thought Palihapitiya’s brashness and connections could be the answer to Kleiner’s problems.

Talks eventually broke down, however, over how much control Palihapitiya, who declined

to comment for this article, would have over all of Kleiner. Around the same time, Kleiner was fighting a bruising court battle, a gender discrimination suit filed by Ellen Pao, a Doerr protégé. Kleiner emerged victorious but bloodied from the litigation, and Doerr continued his hunt for new talent. He and Schlein, who helped manage the firm, found it at the same place Doerr tried before, Social Capital, by recruiting another cofounder, Mamoon Hamid, to head up early-stage investing. Hamid, who had led Social Capital’s investment in Slack, joined Kleiner in 2017, a year after Doerr became chairman, a role that connotes something like emeritus status at a venture firm. Doerr presented Hamid as the new leader of Kleiner—a move that would put the newcomer in conflict with Meeker, who already was providing plenty of leadership of her own.

NOT LONG AFTER HAMID, who is 41, joined Kleiner, he circulated a poll to the firm’s staff with questions about the free food provided in the office. “We’d like to have a high-quality selection of snacks that makes everyone happy,” he wrote in an email. The focus on noshing was culturally if not financially significant. He’d been brought in to shake things up, after all. A few months later, when Kleiner moved its annual holiday party from the fusty Menlo Circus Club in the suburbs to a hipster venue in San Francisco’s gritty Tenderloin neighborhood, Hamid insisted on skipping the uncool practice of providing name tags.

Cue the grumbling. Hamid’s assertion of authority extended beyond generational etiquette and a long overdue redesign of the firm’s website. He also turned his attention to the operations of the entire firm, including the growth fund. Hamid began attending growth team meetings, for example, and giving input on investment ideas, offering to help source deals. He wanted to blur the lines of what types of investments were appropriate for which funds, meaning he envisioned the early-stage fund taking bigger stakes, the province of the growth fund. Hamid, say Kleiner insiders, saw himself as helping; Meeker’s team viewed Hamid’s offers as meddling.

The relationship between the two funds

“[Hamid] comes in and thinks he’s the new sheriff in a place where Mary thinks she’s the sheriff. Why wouldn’t she leave?”

was made more difficult because Kleiner partners shared in the spoils of one another's investments. The success of Meeker's fund had proved to be a boon to other partners. But deciding how much of a boon quickly became contentious. The firm incentivized investors to work together on deals but wasn't clear on what the rewards formula was. "All of a sudden, [Meeker's] monster growth fund starts working, and there was a lot of credit-seeking and lobbying for their share, claiming, 'I did this,' and 'I helped with that,'" says a former Kleiner investor. According to someone close to the growth team, its members began to ask: "Why do we want to give such a big portion of the money we earn to people who aren't contributing anything?"


The two sides disagreed about more than compensation. Hamid had recruited a contemporary from another firm, Ilya Fushman of Index Ventures, with the suggestion the two could build a firm together. Never mind that Kleiner had been around for decades. One of their goals was to be able to assure entrepreneurs that Kleiner's growth outfit would be able to fund later investment rounds in their companies. Meeker wasn't willing to make those assurances though. The two sides disagreed on a number of administrative issues too, like fund governance, hiring practices, and the way investment committees would be structured.

By last year the mood inside Kleiner devolved into one of bruised egos and general resentment. Rankings of top VCs routinely pushed Kleiner partners far down the list; of the world's top 20 venture capitalists published recently by CB Insights, Meeker's was the only name associated with Kleiner, at No. 8. "Let's be perfectly honest. Everyone at Kleiner cares about that stuff," says a former insider. Says another: "Mamoon comes in and thinks he's the new sheriff in a place where Mary thinks she's the sheriff. Why wouldn't she leave?"


In September, Meeker did just that. She announced she would exit Kleiner to set up a firm called Bond, still focused on late-stage private companies, and would take her Kleiner team along for the ride. These included her longtime partner Mood Rowghani, Warburg Pincus veteran Noah Knauf, and Juliet de Baubigny, an executive recruiter

MISSES AND HITS

Once king of early-stage investing, Kleiner repeatedly missed hot young companies. Here are four that its growth team nabbed at much higher prices.

 **Uber**
The ride-hailing leader is set to go public soon at a valuation of \$100 billion. Kleiner got in at \$17 billion. Benchmark Capital fared far better.

 **Pinterest**
A buzzy company from the beginning, Kleiner did not invest until Pinterest's 11th round of financing.

 **Slack**
Kleiner first invested at a valuation of \$1 billion. That's a huge win, considering the messaging service is worth \$7 billion. But the venture investors will do far better.

 **Airbnb**
Sequoia Capital, Kleiner's longtime archrival, invested when the hotel disrupter was worth about \$2.4 million. Kleiner got in at a \$25.5 billion valuation.

who had been with Kleiner since 2001. They would leave behind Hamid, Fushman, and a small group of other Kleiner investors to try to rebuild the firm's reputation.

THE SPLITTING UP of a venture capital firm isn't so different from the dissolution of a marriage. Meeker, who is 59, hasn't completed raising money for Bond, and she has continued to look after Kleiner's "children," the companies she invested in during her time there. Like divorcing spouses who haven't yet sorted out the paperwork, the two sides are still cohabitating. They continue to share office space in San Francisco's South Park neighborhood as well as in Kleiner's longtime complex on Sand Hill Road in Menlo Park.

John Doerr, now 67 years old, remains Kleiner's chairman. He's no longer actively investing the firm's funds, but he lends a hand where he can. He recently published a book, *Measure What Matters*, in which he shares his experiences from Google and other companies with managing by "objectives and key results," or OKRs. And in February, Doerr received a lifetime achievement award from the National Venture Capital Association. Demonstrating that there are no hard feelings, Meeker introduced him at the gala event, attended by many Kleiner alumni. Doerr, calling himself "a hopeless optimist," reminded his audience that "ideas are easy. It's execution that's everything. And it takes a team to win."

Doerr's successors at what remains of Kleiner continue the work of trying to find Silicon Valley's next big thing. They have invested in companies like Rippling, an employee-management software concern; Applied Intuition, which makes software for self-driving-car simulations; and Propel, an app for managing food stamps. And they are very much taking their chairman's cue in how they communicate their shared values.

The venture capital partners recently held a retreat and came up with the slogan, "One team, one dream," a nod to the firm's formerly fractured approach. The new leadership also has begun quarterly "all-hands" meetings in an effort to be more transparent about the firm's performance. As Doerr implores in his book, they're trying to measure what matters now—not what happened in the past. ■



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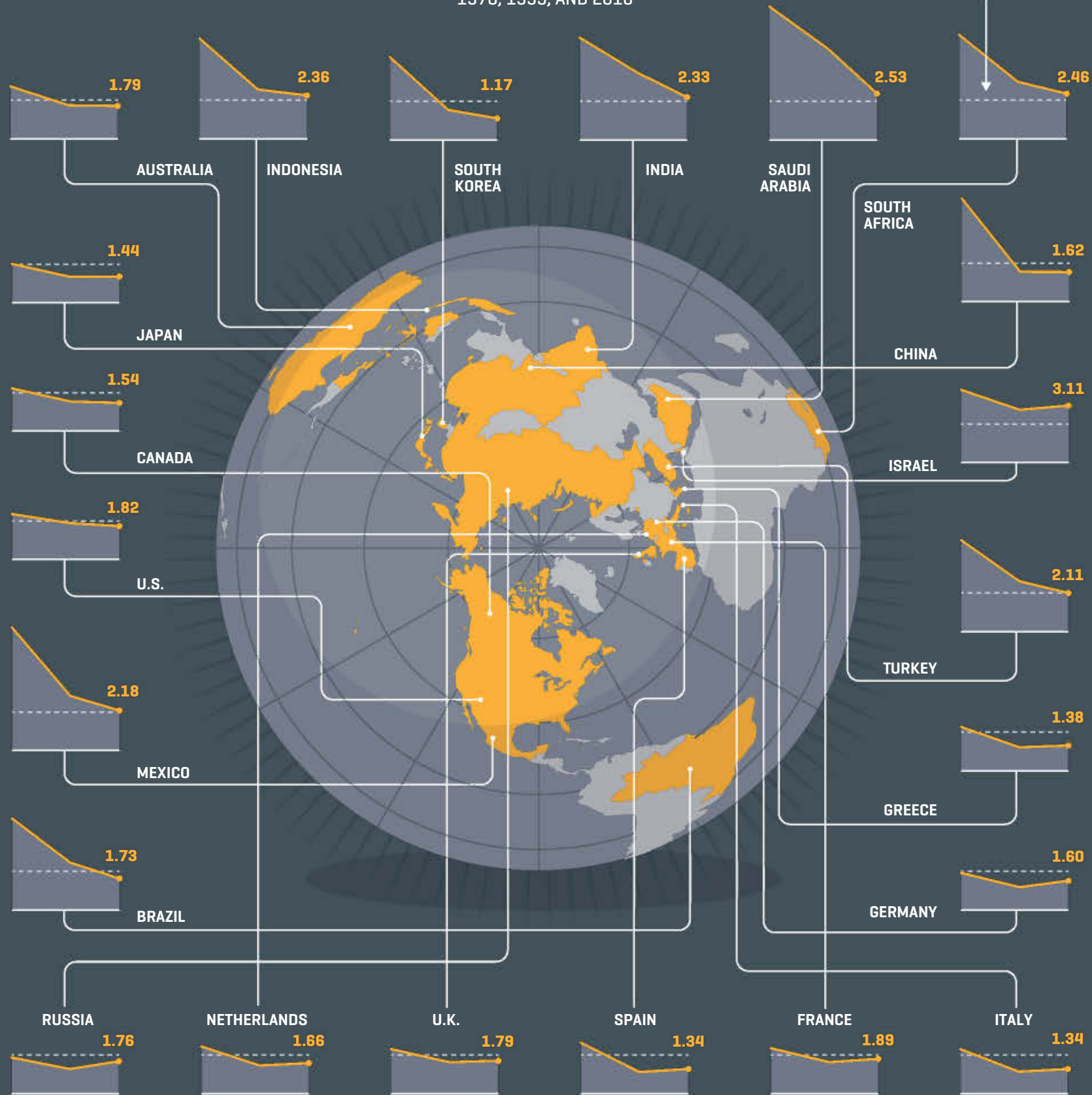
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CHANGE IN FERTILITY RATE FOR SELECTED COUNTRIES

AVERAGE NUMBER OF CHILDREN BORN PER WOMAN
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DOTTED LINE SHOWS
REPLACEMENT-
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BIRTH OF A QUANDARY

IN MOST INDUSTRIAL NATIONS, the average number of childbirths per woman has fallen below 2.1—the “replacement rate” at which population growth levels off. That may be good for a resource-strained planet. But for businesses and governments, it’s a looming challenge. One impact of declining fertility—a sinking ratio of working-age people to retirees—is already eroding social safety nets in the U.S., Europe, and Japan. Falling birth rates also threaten consumer-facing industries whose growth depends on ever-expanding pools of customers. To address the problem, we’ll need big gains in productivity and better immigration policy. Those solutions are anything but child’s play. —MATT HEIMER

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