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Profits *and* Purpose: Can Big Business Have It Both Ways?



Three members of the Business Roundtable, above, photographed together for *Fortune* in New York on July 16.





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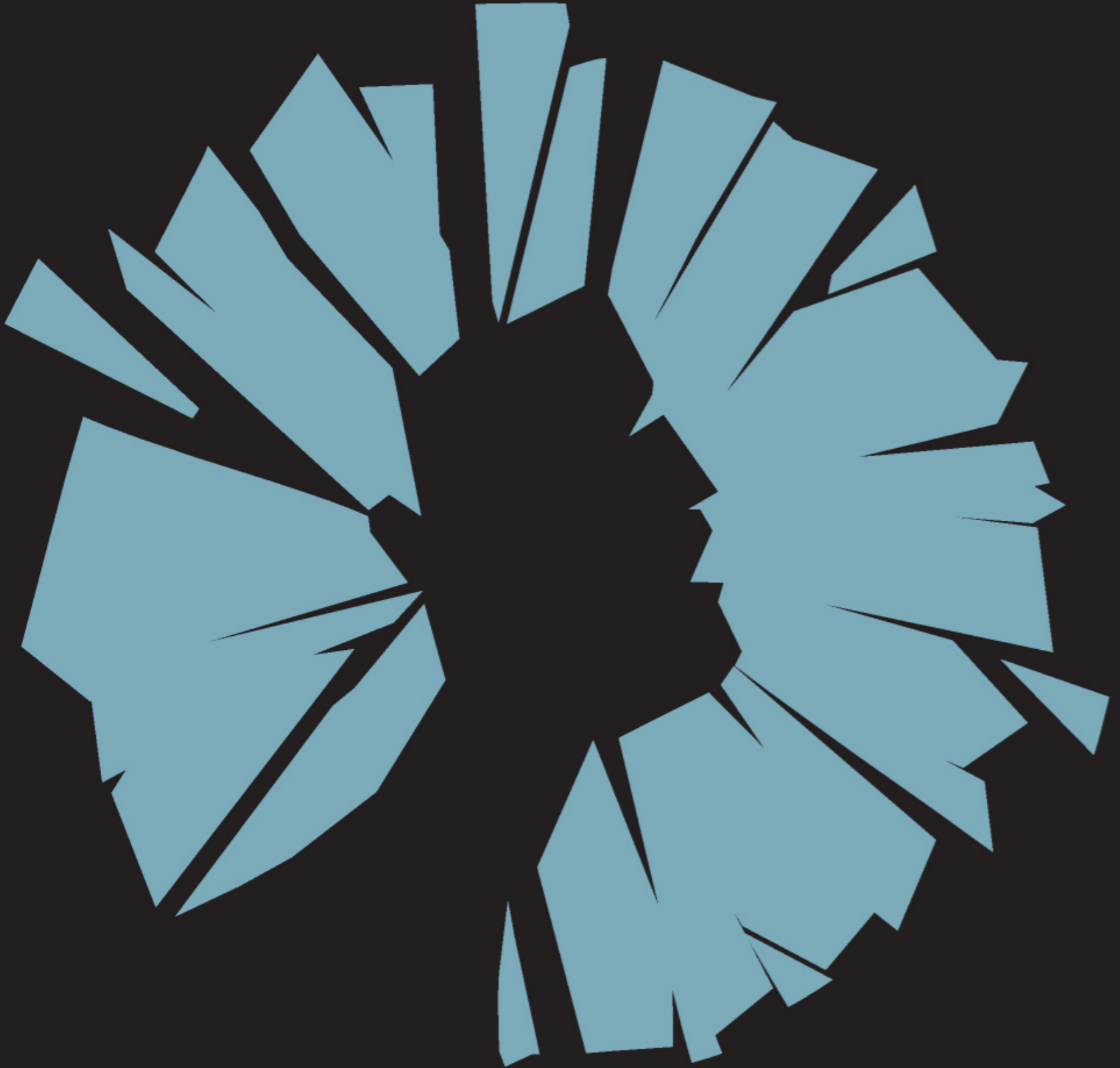


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SEPTEMBER 2019

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Change the World



Making the Planet Better ...

...And making money doing it. Our fifth annual Change the World list spotlights 52 companies whose core strategies make life better for millions.

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▲ ON THE COVER: PHOTOGRAPH BY BEN BAKER



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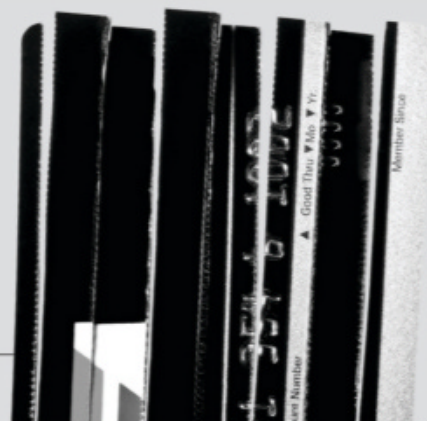
A decade after the Great Recession's borrowing binge, U.S. debt continues to soar.
Text by BRIAN O'KEEFE; graphic by NICOLAS RAPP

FORTUNE
AROUND THE WHEELWHAT OUR EDITORS
ARE UP TO THIS MONTHSUSTAIN
ON THE BRAIN

Our inaugural Global Sustainability Forum convenes in China's verdant Yunnan province from Sept. 4 to 6. Can't make it? Catch coverage on fortune.com.
fortune.com/fgsf

THE DOMINION AND
THE POWER

To Canada, O Canada: Our Most Powerful Women conference series surfaces in Toronto from Sept. 16 to 17.
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TRANSLATING SUCCESS

IN HIS 41 YEARS ON EARTH SO FAR, Luis von Ahn has changed the world three times. People still blame him for the first.

That invention, which had its public debut on Yahoo in 2000, had a mouthful of a name; the Guatemalan-born computer scientist called it a “completely automated public Turing test to tell computers and humans apart,” or “Captcha” for short. Captchas, you’ll recall, are those often-agonizing boxes of stretched and twisted letters that mortals must correctly identify and retype to gain access to certain websites. That invention, says von Ahn, has on multiple occasions provoked strangers to tell him, “Oh, my God, I hate you.”

For all the fleeting angst they may have caused, though, Captchas have long been effective in preventing antisocial types from using computers—whose optical readers, until recently, had trouble reading such misshapen type—to rapidly buy up tickets on Ticketmaster, sign up for millions of email accounts, and do a host of other spammy and scammy things.

Captchas also unfortunately have consumed countless hours of exertion (albeit in 10-second intervals) as users strain to decipher the characters. So von Ahn, now a consulting professor at Carnegie Mellon and winner of a MacArthur “genius” grant, wondered, What better thing could people do with that same 10 seconds of effort? The answer was ReCaptcha—which ingeniously tweaked the Captcha test so that web surfers actually deciphered the hard-to-read text of ancient manuscripts as they proved they weren’t bots. With ReCaptcha, which Google bought in 2009, von Ahn crowdsourced the decoding of lost literature—by 35 million words a day.

Which brings us to invention No. 3. In 2011, von Ahn and one of his former graduate students at Carnegie Mellon, Severin Hacker, created Duolingo, No. 36 on *Fortune*’s 2019 Change the World list (please see page 70). Their language-learning app, whose free, ad-supported programs (and a paid option) are actively used by 28 million people, has once again mastered the art of converting human downtime into something valuable: the ability to speak a foreign tongue. In the process, they are helping save a few from extinction too. Among the 36 languages that Duolingo teaches, three—Hawaiian, Navajo, and Irish—were once in danger of fading into history. In Ireland, for instance, fewer than 75,000 people speak Irish, or Gaeilge, daily; today, 4.4 million budding linguists are learning to *labhair* on Duolingo. When new acquaintances learn that von Ahn built it, they tell him, “Oh, my God, I love you.”

Happily, von Ahn and his team can afford to keep being loved: Duolingo’s projected revenues for this year are \$86 million—more than

double 2018’s take of \$36 million—and he expects sales to roughly double again next year. The growth, in turn, has allowed the serial inventor to invest in finding even better ways to help people learn languages—and to fund his next project: teaching people how to read.

Our fifth annual Change the World package—my favorite of *Fortune*’s many benchmark lists—offers a rich supply of companies that are finding sustainable (and often profitable) ways to address societal challenges. As always, we’re not weighing companies on a scale of “good” or “bad”—we couldn’t if we tried. Nor are we suggesting that the projects we’re highlighting absolve companies of things they may be doing that aren’t beneficial for society. (Read Adam Lashinsky’s probing interview with Anand Giridharadas, on page 98, for a more skeptical view.)

But we think doing well by doing good is a smart way to change the world. Let us know what *you* think, at letters@fortune.com.

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THE
WORLD IN
8
PAGES

BRIEFING



The True Cost of the Trade War

As the dispute rages, Trump's policies are creating what economists call "deadweight" losses that could hurt the U.S. far more than tariffs will China.

By Shawn Tully

ECONOMY

TALK TO ANYONE in Trumpland, and you'll hear that America is winning the trade war. "The economic burden is falling vastly more on them than on us," proclaimed the President's chief economic adviser Larry Kudlow in early August as the conflict escalated. But if you look past the rhetoric and crunch the numbers, a strikingly different picture emerges. The more Trump ratchets up tensions, the more he hurts the U.S. economy. By forcing U.S. companies and consumers to pay far more for everything from

sneakers to steel, Trump is inflicting a heavy price that could plunge the country into recession.

There are two issues: First, the way the President has structured his tariffs is creating what economists refer to as “deadweight” losses that threaten GDP growth (more on that later). Second, China has cannily avoided such pitfalls by being far more judicious in its tariff strategy.

Take Trump’s latest round of tariffs, slated to take effect at the start of September. Those new duties target for the first time a wide swath of

their prices.”

That’s leading to what Stephen Redding, the Princeton economist who coauthored the study, calls “deadweight” losses. Those are the extra costs that producers incur—and customers pay—for goods they used to purchase from China but now buy from third countries, where the U.S. gets no tariff revenue.

For example, GoPro is shifting most of its U.S.-bound production from China to Mexico by mid-2019, while Hasbro is moving much of its sourcing of toys sold stateside from China to

lion in 2018) to military salaries to highways. But as tariffs get bigger and bigger, the incentive rises for companies to shift from Chinese suppliers to other countries where they might be overpaying by 10%, 15%, or even 20%. “Now, they’re shifting to producers who are costlier and less efficient, hindering the efficiency of the U.S. economy,” says Chad Bown, an economist at the Peterson Institute.

How big is the deadweight burden? The N.Y. Fed study calculated that every U.S. household is paying an extra \$620 a year. That number could double if Trump raises tariffs on all Chinese imports to 25%. The cumulative hit to GDP, when you include the drop in exports to China, could be \$200 billion, says Weijian Shan, the Ph.D. economist who heads Hong Kong private equity giant PAG.

That’s a gigantic number. After expanding at 2.9% last year, GDP growth decelerated to 2.1% in the second quarter, and the Congressional Budget Office predicts an expansion of just 1.7% in 2020. At that rate, real GDP would increase less than \$400 billion next year, so a \$200 billion drag would cut growth in half, to around 1% or less. A drop that size means tepid or zero job creation, flagging investment, and slumping

profits—and raises the odds that the economy could tip into recession.

Meanwhile, China too has paid a price—albeit a smaller one. The IMF predicts GDP expansion of just 6.2% this year, the lowest number since 1990, and 6.0% in 2020. But instead of slapping one-size-fits-all tariffs across vast categories of goods, Xi Jinping is targeting only products the country can’t buy at comparable cost elsewhere.

For example, China has imposed a 28% levy on 100% of the \$13.9 billion in soybeans it used to buy from the U.S. because it can acquire them at about the same price from Brazil and Argentina. But it can’t find good substitutes for American-made aircraft, drugs, or cars, so China has kept tariffs on those products near pre-trade war levels. Duties on U.S. pharmaceuticals and planes remain below 3%.

At the same time, China has lowered tariffs on every other country. So in most categories, U.S. exporters now face higher tariffs and tougher competition from Canadian, European, and Japanese suppliers.

Crunch the numbers, and it’s hard to come to any other conclusion: In the trade war that will chart America’s economic future, China is winning.

“Deadweight” losses are the extra costs producers and consumers pay for goods they used to purchase from China but now buy from other countries.

consumer goods, some \$300 billion in toys, footwear, apparel, and some tech gear (Trump has delayed some levies till December). The new categories will be hit with tariffs just in time for holiday shopping.

According to a recent study from researchers at the New York Federal Reserve, Columbia, and Princeton, in 2018, U.S. domestic prices rose “one-to-one with tariffs levied in that year.” And contrary to what some Trump economists have claimed, “Chinese exporters did not reduce

Vietnam and India, citing Trump’s tariffs. Levi Strauss, Gap, and shoe company Steve Madden have all announced plans to buy less from China and more from nations such as Vietnam and Bangladesh.

Here’s the rub: When those companies were producing in China and paying a 25% tariff on goods, they typically added that charge to their prices. The U.S. government collected that levy and could cycle it into the economy by funding anything from aid to farmers (some \$12 bil-

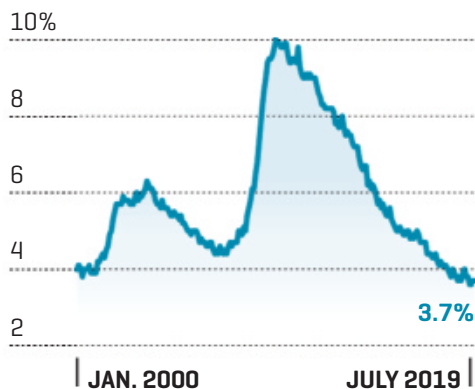
Opinions are split on whether the Federal Reserve responded to genuine concerns for the U.S. economy in cutting interest rates for the first time in 11 years in late July, or simply bowed to political pressure. But the warning signs of recession are showing themselves—and a majority of economists now believe the next cuts will come before the 2020 elections. We're keeping an eye on these nine key metrics to judge the health of the economy.

CODE YELLOW FOR THE ECONOMY

GOOD

UNEMPLOYMENT RATE

The U.S. unemployment rate is at historically low levels and is still trending downward.



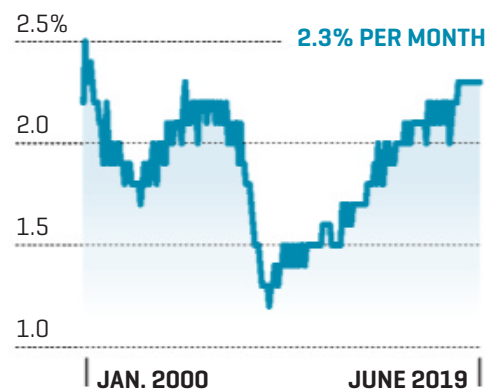
CONSUMER CONFIDENCE

Consumers are bullish, and they're getting more so.



QUITS RATE

More Americans are leaving their jobs voluntarily, a mark of economic confidence.



NOT-SO-GOOD

VEHICLES SOLD

U.S. auto sales, a core economic indicator, peaked in 2017 and are trending down.



STOCK-PRICE VALUATION

Robert Shiller's cyclically adjusted P/E ratio index indicates low future returns.



OIL PRICES

Anemic oil prices reflect weak industrial demand—a concerning sign.



WARNING SIGNS

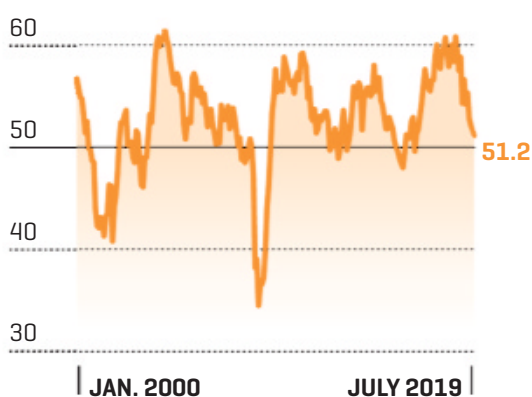
NEW BUILDING PERMITS

New housing construction is stalling—and never reached pre-crisis levels.



ISM MANUFACTURING INDEX

The index is approaching 50. Recessions tend to happen below that level.



THE YIELD CURVE

Long-term bond rates are below short-term rates, another recession indicator.



SOURCES: CENSUS BUREAU; BUREAU OF LABOR STATISTICS; THE CONFERENCE BOARD; BLOOMBERG; ROBERT SHILLER; INSTITUTE FOR SUPPLY MANAGEMENT



Customers line up for Jio services offered in Mumbai.

India's Wireless Wonder

How an Indian telecom company went from zero to 331 million subscribers in three years.

By Aaron Pressman

MOBILE

THERE'S A NEW KING of telecom in India: Reliance Jio Infocomm, the wireless carrier created by multibillionaire Mukesh Ambani, which ranked No. 1 on last year's Change the World list. The network had 331 million subscribers at the end of June, exceeding Vodafone Idea (320 million customers) for the first time. Owned by Ambani's energy and retailing giant, Reliance Industries Ltd. (RIL), the telecom company could become the foundation of an online and e-commerce platform in India that rivals Alibaba in China and Amazon in the U.S., analysts at UBS predict.

It's an amazing feat for the carrier, which started offering mobile service for free just three years ago before converting subscribers to still-cheap data plans in 2017. Currently, one Jio plan charges just three rupees per gigabyte of data used, equal to 5¢, and is ranked as the cheapest rate in the world.

To create the low-cost carrier, Ambani spent billions to build a thoroughly modern wireless network that supports only 4G standards, bypassing older 2G and 3G technology, and relies on the kind of routers and equipment used to build the Internet instead of on more specialized—and expensive—

telecommunications switching gear.

Ambani's wireless price war is eating his competitors. While Jio said net profit in the quarter ending June 30 jumped 46%, to \$130 million, Vodafone Idea lost \$690 million and third-ranked Airtel lost \$410 million. Both had been profitable a year earlier.

Reliance has been expanding its offerings into e-commerce and cloud services, leading UBS analysts to make the comparison to top Internet companies. "Can RIL evolve into India's Amazon/Alibaba/Walmart? Yes," the analysts concluded. With Ambani's deep pockets and willingness to cost-cut his way to industry domination, it's certainly plausible.



BOOKS

HIGH DINING

BEFORE Sept. 11, 2001, the restaurant Windows on the World was figuratively and literally at the pinnacle of fine dining in America. It was one of the highest-grossing restaurants in the nation and the loftiest, sitting on the 107th floor of the North Tower of the World Trade Center. Tom Roston's *The Most Spectacular Restaurant in the World* (Abrams Press) opens with the inevitable prologue set on the restaurant's final morning. But the book offers a completely new perspective on the history of the acclaimed establishment, which opened its doors in 1976. This isn't just an account of the restaurant but also a history of fine dining over the past 150 years, rooted in the emergence of New York's restaurant culture and following the ebb and flow of the city's own tumultuous history over the second half of the 20th century.

—RACHEL KING

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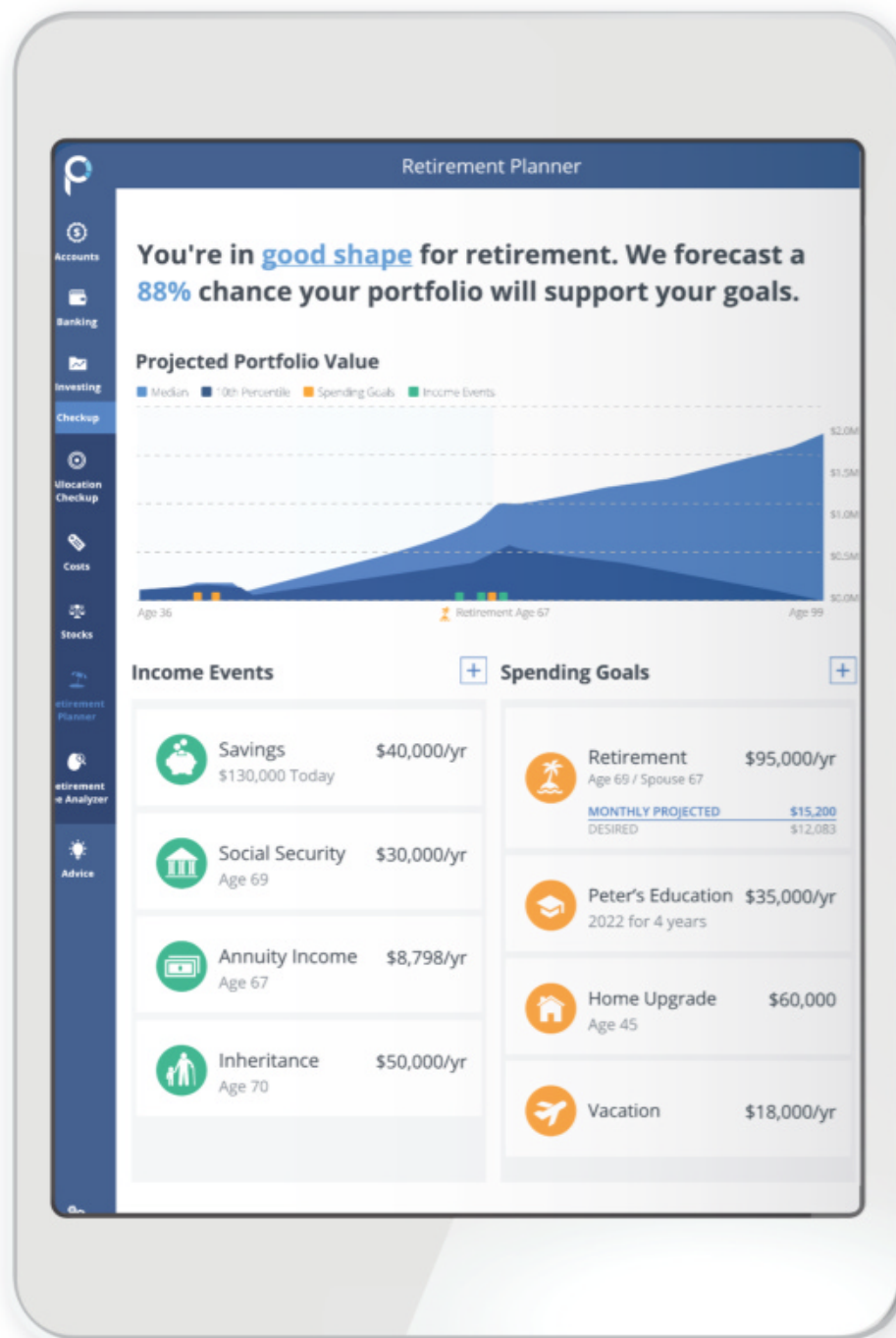
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Capital Offense

In light of the Capital One breach, should Big Business fear the public cloud? By Robert Hackett

CYBER

YOU'D BE HARD-PRESSED to find a company more committed to using the so-called public cloud than Capital One. America's seventh-biggest bank by revenue has spent years winding down its data centers—from eight in 2014 to zero planned by the end of 2020—and relying on the on-tap resources of Amazon Web Services for computing and data storage. But now, in the wake of a data breach affecting 106 million North Americans, people are questioning whether Capital One represents a cybersecurity cautionary tale.

To burrow inside Capital One's systems, a hacker supposedly exploited a "misconfigured firewall." Basically, the thief snuck in an open door. Both Capital One and Amazon stressed that "this type of vulnerability is not specific to the cloud."

Yet some experts, such as Evan Johnson, a security manager at startup Cloudflare, say AWS's technical setup made the breach "much worse." AWS is particularly susceptible to "server side request forgery," Johnson says, in which a hacker tricks a server into connecting where it shouldn't, enabling data theft. Better mitigations ought to be in place, he says.

Despite the criticism, Capital One's breach "doesn't prove the cloud is wrong," says Glenn O'Donnell, a Forrester VP. "What it does prove is you have to have the right controls in place from a security and governance perspective."

Ed Amoroso, ex-chief security officer for AT&T, agrees that for most businesses, off-loading infrastructure to the cloud remains safer than managing one's own: "You have to compare not against 'perfect' but against 'on premises.'"

HEALTH

LIVING LIVONGO

DIGITAL HEALTH firm Livongo has a secret sauce—a workforce filled with actual patients. The company, which made its debut on the Nasdaq on July 25 and had \$68.4 million in revenue in 2018, offers apps and monitoring devices to help people with chronic conditions like diabetes and hypertension. Almost 50% of Livongo employees live with a chronic condition—including its president, Jennifer Schneider, a diabetes patient, who says a Livongo device helped her survive the IPO road show. One morning while traveling, she registered a low blood sugar reading on her device and, via the connected platform, was immediately contacted by an educator who instructed her to raid the hotel minibar and snack on jelly beans. —SY MUKHERJEE



MOVIES

ALAMO PLAYS ON NOSTALGIA TO WIN MOVIEGOERS

"WISH US LUCK ON OPENING a new video store in 2019," Alamo Drafthouse Cinema CEO Tim League says, and he's only half joking. The upscale cinema chain opened its first L.A. location in July with 12 screens; a bar; and the "Video Vortex," stocked with 45,000 videocassettes that patrons can borrow at no cost. League hopes it will get moviegoers off their sofas. "I've been told that on Netflix, there are fewer than 400 movies before the year 1980, whereas we have 42,000 titles before 1980." —HUGH HART

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SPORTS

GAP INC.
GETS SERIOUS
ABOUT
ATHLETICS—
AND
WOMEN

AFTER NINE-TIME Olympic medalist Allyson Felix gave birth to her daughter via emergency C-section in November, the track-and-field star tried to negotiate with her sponsor Nike to avoid being penalized if her performance slipped while she recovered. Talks stalled—and Felix parted with Nike. Eight months later, Felix donned apparel by Athleta to compete at the USA Track & Field nationals—a first for the Gap Inc. brand.



Athleta and sister brand Intermix were responsible for about \$1.1 billion of Gap Inc.'s \$16.6 billion in revenue in 2018 and are bright spots in a portfolio of laggard brands like Gap and Banana Republic. Athleta was happy to provide “100% protection” for all future pregnancies and

Allyson Felix went public with her Nike dispute.

cover travel to competitions for Felix's daughter, Camryn; the financial terms of the deal weren't disclosed. Nike, for one, has since said it will no longer penalize pregnant athletes, and Felix hopes her deal will encourage other sponsors to up their game: “We're flipping what we think sponsorship looks like for women.”

—EMMA HINCHLIFFE

A Crimson
Phenomenon

Harvard's introduction to computer science has become more than a class. By Geoff Colvin

IVIES

TRADITIONALISTS MAY LOOK aghast at CS50, Harvard's introductory computer science course, which last year became the school's most popular course of any kind. It's taught by a young professor in jeans and a black T-shirt, David Malan, whose lectures are highly polished, fast-paced performances filled with props, demonstrations, and student involvement. Students aren't required to attend, though; lectures are recorded in a slick, multi-camera

format with production values that rival commercial TV, and most students watch them online. In addition to being Harvard's No. 1 course, it's offered simultaneously at Yale, with Malan teaching, an arrangement apparently unprecedented in the rival schools' 318-year coexistence.

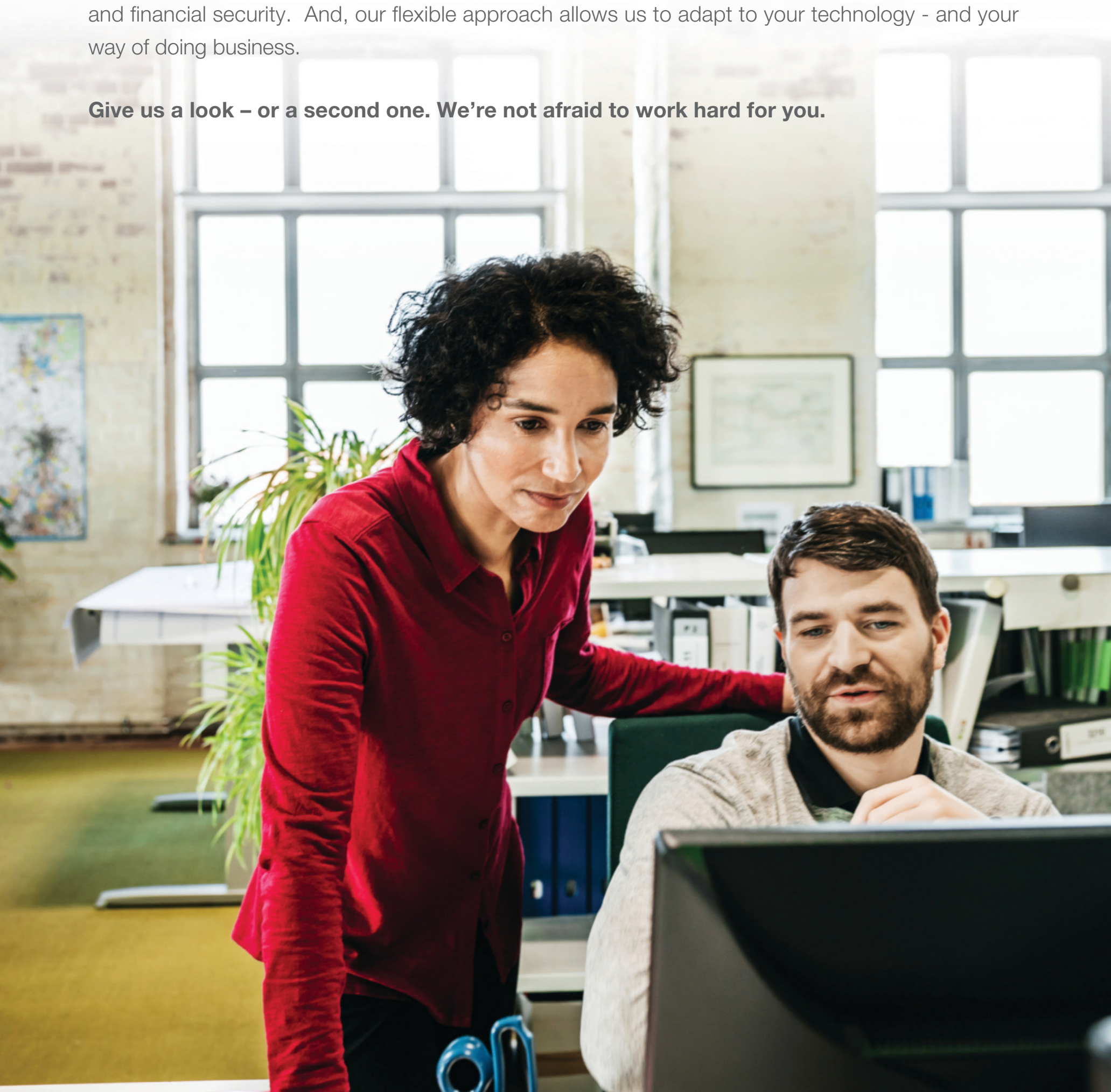
But far from being a dumbed-down sop to spoiled students, CS50 is a carefully crafted model of how to teach any subject in today's technological and social environment. It's extraordinarily demanding; by mid-semester, most students are spending over 12 hours a week on problem sets. If they need help, dozens of teaching assistants are avail-

able for in-person assistance 10 hours a week, far more than in traditional courses. “There's so much support,” says Emily Schussheim, a Yale junior who took CS50 as a freshman. “It's also really social.” Other students have called it a phenomenon, a spectacle, a cult, and a lifestyle. CS50 is available for free on the EdX education platform, where it has been taken by over a million students. Schussheim tells *Fortune* she came to college planning to major in economics, with “no real intentions” of ever taking a computer science course. Now her major is computer science and economics, and this fall she's a teaching assistant in CS50.

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E-SPORTS

E-SPORTS TEEN
WINS GRAND
SLAM PAYCHECK

THE ARTHUR ASHE stadium has been home to some legendary contests: Sampras vs. Agassi, McEnroe vs. Borg, Graf vs. Seles. But in July the New York tennis venue saw a new breed of competitor raise a trophy on its famous blue court—a *Fortnite* champion. Kyle “Bugha” Giersdorf, 16, of Pennsylvania, earned \$3 million for winning the inaugural *Fortnite* World Cup. That’s as much prize money as the U.S. Open winner took home in 2014.



FORTNITE WINNER
KYLE “BUGHA” GIERSDORF
\$3,000,000



U.S. OPEN WINNER, 2018
NAOMI OSAKA
\$3,800,000

Uber Wants Your
Loyalty—and Cash

The on-demand transportation company looks to the Amazon Prime model to stabilize revenues. By Danielle Abril

MOBILITY

UBER’S PATH to profitability remains murky after it recently posted an eye-watering \$5.2 billion quarterly loss. But it’s hoping its new \$24.99-per-month subscription service will win over skeptical investors. The subscription offers free food delivery, unlimited electric bike and scooter rentals, and discounted car rides—and provides a more stable source of revenue for the company.

“It’s a smart experiment,” says Mark Mahaney, analyst at RBC Capital Markets.

If it works, Uber could better cross-market its services to customers who may otherwise be exposed to only one—something that CEO Dara Khosrowshahi continues to emphasize. The subscription also increases the opportunity to create brand loyalty, which thus far doesn’t seem to exist within the ride-hailing industry, says Tom White, analyst with D.A. Davidson. Uber is currently testing the model in Chicago and San Francisco, with the possibility of rolling out elsewhere.

Some Uber competitors are exploring the idea

as well. Lyft has a \$14.99 monthly option that gives riders 10% off all trips. It also has a plan that offers riders fixed prices if they pay upfront. Though it has yet to roll out a package that would bundle electric bikes and scooters, it’s fair to assume that’s something the company is considering.

Uber’s idea could serve as a Band-Aid to help stop its massive quarterly bleeding. But if the offer isn’t strong enough, there’s the risk that another subscription in the mix could fatigue customers already shelling out for cable, Amazon Prime, Netflix, Hulu, Spotify, gym memberships, and public transit cards.

KIMARIE YOWELL

—
VP, Talent Development
Quicken Loans



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From Fringe to Core: 'Green' Grows Up

Convening global leaders to define what it takes to win in the new sustainability economy.

By Jeffrey Ball

FORUM

CENTRAL BANKERS aren't hired to be tree huggers. But lately the pinstriped protectors of global capitalism are sounding almost like environmental activists. In June, the Bank of England said it will ask U.K. insurers, as part of the bank's biennial insurance-industry "stress test," to assess how climate change might hurt their bottom lines. That same month, François Villeroy de Galhau, governor of the Bank of France, urged central bankers worldwide to gauge a bank's exposure to climate risk when deciding how much collateral to demand in exchange for central-bank money—calling for "thoroughly integrating climate change into the monetary policy framework." By next year, China's securities regulator plans to require publicly listed companies in the country to disclose environmental data to investors. What's behind this green awakening?

In short, something big is happening in the global economy: Green is growing up.

A decade ago, "cleantech" was the overhyped darling of venture capital firms and corporate public relations departments—boosters sure they could do well by doing good. Many lost big.

Now the adults of the global economy are launching a second, more structural sustainability push. *Fortune* 500 companies and leading financiers are pouring billions into clean alternatives to dirty technologies. In May, for example, Daimler AG announced that 50% of the new Mercedes-Benz cars it sells in 2030 will be fully electric or plug-in hybrids and that its new-car fleet will be carbon neutral by 2039.

The multinationals making this shift are keen to protect not merely the planet but also their returns. Which raises thorny questions. A crucial one: Which companies and countries will win in this shift, and which will lose?

Exploring all this—as well as sharing best practices and creating a community of leaders who will gather to shape this transformation over time—is the goal of the inaugural *Fortune* Global Sustainability Forum. Global execu-



FORTUNE GLOBAL SUSTAINABILITY FORUM 财富全球可持续论坛

\$2.1
TRILLION

Aggregate financial impact of climate-related business opportunities recently identified by 225 of the world's largest companies

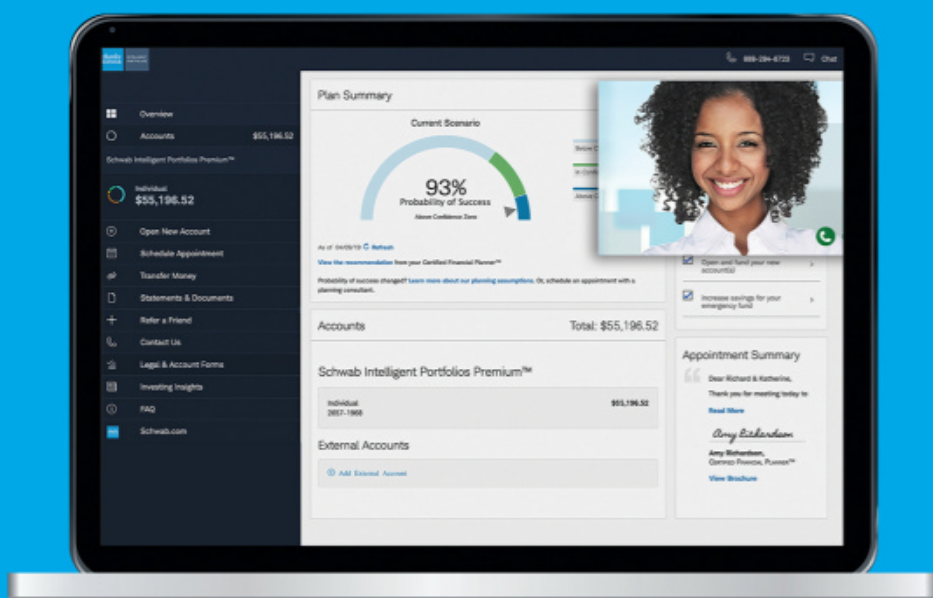
SOURCE: CDP

tives, policymakers, investors, entrepreneurs, activists, and innovative thinkers will gather Sept. 4 to 6 at the Hilton Yuxi Fuxian Lake in China's Yunnan province—in a country that is critical both to business and to the environment, at a spot of breathtaking beauty. The forum will focus on four key areas: clean energy, green finance, food and agriculture, and waste and plastics.

What started as CSR—corporate social responsibility, widely seen as a fringe pursuit—is increasingly seen by the C-suite as strategically core. Action on the environment is starting to look smarter than inaction. But whose profits that helps or hurts—not to mention whether it does much for the earth—will depend on countless future decisions. The goal in Yunnan is to start shaping them. ■

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SHOW SWAPPING IS TV'S NEW STAR

Canceled TV shows are increasingly getting a second life, thanks to a ballooning number of cable channels and streaming services. By Radhika Marya

TELEVISION SHOWS are a lot like the zombies that star in several of today's hit series: They just won't die. Instead, after being canceled, a growing number of shows are producing new episodes on a different channel or on one of the increasing number of streaming services.

In January, sitcom *Brooklyn Nine-Nine* premiered on NBC after being dumped by Fox. In May, comic book-inspired series *Lucifer* reappeared on Netflix, after being canceled by Fox last year. Meanwhile, former Syfy drama *The Expanse* is slated to come back to life on

ORIGINAL PHOTOGRAPHS: A.P. BIO: VIVIAN ZINK—NBC/NBCU PHOTO BANK VIA GETTY IMAGES; THE MINDY PROJECT: MIKE WINDLE—NBCUNIVERSAL VIA GETTY IMAGES; ONE DAY AT A TIME: COURTESY OF NETFLIX; REMOTE AND COMPUTER: GETTY IMAGES; COMMUNITY: MITCHELL HAASETH—NBC/NBCU PHOTO BANK—GETTY IMAGES; THE EXPANSE: SYFY/COURTESY EVERETT COLLECTION; DESIGNATED SURVIVOR: BEN MARK HOLZBERG—WALT DISNEY TELEVISION VIA GETTY IMAGES; THE ORVILLE: FOX/COURTESY EVERETT COLLECTION; BROOKLYN NINE-NINE: FOX VIA GETTY IMAGES



One Day at a Time



The Orville



The Mindy Project

Amazon Prime Video in December.

The practice—call it show swapping, if you'd like—isn't new. Decades ago, iconic series like *Leave It to Beaver* and *Diff'rent Strokes* switched homes during their runs.

But in recent years, the pace has noticeably accelerated because of the proliferation of cable networks and new streaming services hungry for content. Once viewed by Hollywood as “damaged goods,” canceled shows are now considered to be opportunities. After all, developing a series from scratch costs millions of dollars. Furthermore, many canceled shows have existing fans who will inevitably gush about the revivals on Facebook and Twitter.

“It's so hard to get attention to break through in this peak-TV climate that you can be a little ahead of the game by having something people already know and love,” says Brad Schwartz, president of Pop TV, the niche CBS-owned network that recently picked up sitcom *One Day at a Time* from Netflix.

In March, Netflix pulled the plug on *One Day at a Time*, a reboot of Norman Lear's hit show from the late 1970s and early '80s about a single mother and her kids. Three months later, Pop TV announced that it would give the show a second life (or third, if you count the original).

“We thought it was a perfect fit,” Schwartz says.

His channel plans to go all out in marketing its newly adopted series to get as big an audience as possible for its comeback next year. But Schwartz also points out the huge gap between what Pop TV considers success and what streaming giant Netflix does.

“If 5 million people watch *One Day at a Time*, that might not be a huge hit for them, but it would be great for us,” says Schwartz.

Netflix, which did not respond to *Fortune's* requests for comment, has never publicly

OLD SHOWS, NEW HOMES

ONE DAY AT A TIME

Original home: Netflix
2017–2019

New home: Pop TV
Expected 2020

THE EXPANSE

Original home: Syfy
2015–2018

New home: Amazon Prime Video
Expected 2019

DESIGNATED SURVIVOR

Original home: ABC
2017–2018

New home: Netflix
2019

THE ORVILLE

Original home: Fox
2017–2019

New home: Hulu
Expected 2020

THE MINDY PROJECT

Original home: Fox
2012–2015

New home: Hulu
2015–2017

COMMUNITY

Original home: NBC
2009–2014

New home: Yahoo Screen
2015

discussed viewership numbers for *One Day at a Time*, which ran for three seasons.

In general, says Dan Rayburn, an analyst at Frost & Sullivan, the multiplying number of streaming services with deep pockets is at least partially responsible for the rise in show swapping. In addition to big players like Netflix, Amazon Prime, and Hulu, newcomers include the upcoming Apple TV+ and Disney+, as well as NBCUniversal's streaming service and WarnerMedia's HBO Max.

Rayburn says a show like *The Orville*, a sci-fi dramedy that will move to Hulu from Fox in late 2020, could thrive at its new home. The series wasn't canceled. Instead, its creator, Seth MacFarlane, has explained the move by saying it was difficult to deliver the show to the network in time for its mid-season slot. Rayburn says shifting to streaming can make sense for some shows because the medium “lends itself to flexibility, creativity, and a different way of marketing.”

Of course, just because a series is rescued doesn't mean its survival is guaranteed. For example, in July, Netflix killed political thriller *Designated Survivor*, which it had adopted from ABC, after just one season.

A relatively new wrinkle in the show-swap phenomenon is the series that switches from broadcast to streaming but stays in the corporate family. That happened in July, when NBCUniversal's planned streaming service picked up NBC's recently canceled high school comedy *A.P. Bio*.

Rob Kenneally, an agent at talent firm Creative Artists Agency, expects show swapping to continue evolving as Hollywood adapts to the threat and opportunity of streaming. What is clear is that second chances, once relatively rare in TV, are now routine.

Says Kenneally, it's “a great era” for creators. ■

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ADDRESSING AMERICA'S HUNGER CRISIS

Enterprise Rent-A-Car's Fill Your Tank program is helping feed millions of vulnerable children and seniors across the nation.

FROM CALIFORNIA'S VERDANT GROVES TO THE breadbasket of the Midwest and the soil-rich fields of the Mid-Atlantic and South, America's farmland feeds the world, or at least a good portion of it.

Yet, in communities across the nation, millions of Americans go hungry every year. And food insecurity is particularly acute among some of the country's most vulnerable citizens: seniors. According to Feeding America, the nation's largest domestic hunger-relief organization, 5.5 million seniors suffered from food insecurity in 2017, the last year for which there is data. That number is expected to grow as the baby-boomer generation ages.

"When seniors experience food insecurity, they're uniquely vulnerable to the health impact of hunger,"



Enterprise's Fill Your Tank program is committing to donate \$2.5 million annually over six years to support Feeding America's efforts to fight food insecurity among seniors and children.

an annual \$2.5 million of which supports Feeding America's efforts to fight food insecurity among seniors and children.

In addition to these national efforts, Enterprise is donating \$1.5 million a year to Food Banks Canada and another \$1 million to the Global FoodBanking Network, to address hunger in Europe on behalf of Enterprise-

owned operations in the U.K., France, Ireland, Germany, and Spain. The remaining \$5 million a year goes to local food banks and pantries in communities served by Enterprise.

Enterprise's donation is the largest gift targeting senior hunger in Feeding America's 40-year history. As a result, meals served through programs designed specifically for seniors have increased by 21% since the partnership began, and seniors in need are receiving more fresh and healthy choices than ever.

"This gift has been transformational," says Jelinski. "It has allowed us to feed more seniors and allowed more of our food banks to begin programming to reach seniors, a hard age group to serve because of mobility and transportation, among other factors. Without the support of Enterprise, we wouldn't have been able to reach the growth we have in feeding seniors over the past several years." ●





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SLACK SPREADS ITS WINGS

The popular workplace chat app recently made a successful public market debut. Now what? By Michal Lev-Ram

TECH WHEN STEWART BUTTERFIELD, chief executive of workplace messaging service Slack, flew to New York City for his company's public stock market debut in June, he didn't just bring his leadership team and some key customers to help celebrate. He also brought his mother, Norma Butterfield.

"The big thing for me is, I got my mom to come," the CEO told the audience at *Fortune's* recent Brainstorm Tech conference in

Aspen. "She got to ring the bell to open our shares for trading."

The ceremonious milestone inside the New York Stock Exchange was more than a financial event for Slack. It was a bar mitzvah of sorts: a step from adolescence to adulthood for the buzzy tool that lets workers message one another, share and collaborate on documents, and manage projects, among other tasks that are key to getting work done.

Slack had ample reason to grow up. Initially popular with Silicon Valley startups, the company has more recently attracted larger corporate customers, many of which are accustomed to working with vendors that are equally big—and public. "It gives us some credibility," Butterfield said about Slack becoming a publicly traded company, during his onstage interview.

According to the CEO, some of Slack's bigger customers had been asking for the company's financial records. Now they'll have access to details like revenue and profit—and risks to the business—on a quarterly basis.

To be sure, customers weren't the only ones clamoring for Slack to go public. So were its early private investors, who have so far made a killing on the company. On June 20, Slack's impressive first day as a publicly listed company, shares opened at \$38.50, 48% above the reference price of \$26 that had been set by the NYSE the day before. That gave Slack a valuation of about \$20 billion, nearly tripling its value as a private company. The stock has since fluctuated, with Slack's market cap dipping to around \$15 billion in early August.

Despite the success of its "direct listing"—an unconventional method of going public without issuing new shares or working with an underwriter—Slack now faces even higher expectations of growth and the same powerful nemesis: Microsoft. The tech giant, based in Redmond, Wash., recently bragged that



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its rival workplace chat service, Microsoft Teams, now has 13 million daily active users, compared with Slack's 10 million. The news sent Slack's shares tumbling almost 4% in one day.

Butterfield's response to the competition is that a smaller, more focused company can have an advantage over a larger incumbent that has dozens of products. The bigger you get, says Butterfield, the harder it is to emphasize quality and user experience.

Comparing Microsoft's numbers with Slack's is difficult for several reasons. For starters, Slack contends that its service isn't just another chat tool for businesses. Rather, it's in a category by itself, the company says, because it shifts communication from one-to-one, like email, which creates silos of information, to group "channels" that make sharing information and working together easy. The average user, according to Slack, keeps the app open for nine hours daily on her computer or mobile phone, and engages with it for about 90 minutes.

There is another reason that makes apples-to-apples comparisons tricky. Teams

is bundled with Office 365, a subscription-based version of Microsoft's key workplace applications. An employer can have Teams, in other words, without even knowing it, much less using it. Slack, on the other hand, is sold as a stand-alone service and is not folded in with other products. Critics say that Microsoft's user numbers for Teams are therefore inflated.

But Jared Spataro, corporate vice president of Microsoft's 365 division, says these questions about bundling are exactly why the company decided to publish its number of daily active users—not just overall customers. "The 13 million people who are using Teams—from our perspective, it doesn't matter if they got it bundled or free," says Spataro. "They're using the product."

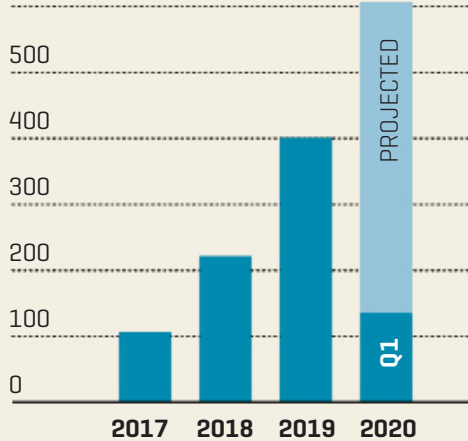
The number of hours that Microsoft's customers spend on Teams daily is unclear, however. Unlike Slack, Microsoft wouldn't say.

In any case, analysts agree that Teams is the greatest threat to Slack. William Blair analyst Bhavan Suri states the obvious in a recent report: "Microsoft is well-capitalized and has a significant presence in many large enterprises."

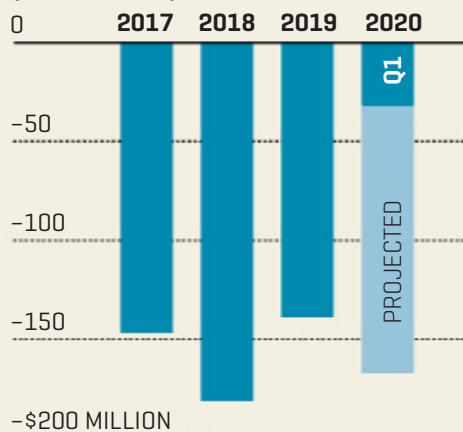
SLACK: FROM ADOLESCENCE TO ADULthood

The workplace chat app is quickly adding customers and revenue. But it's still losing huge amounts of money as it ramps up its business.

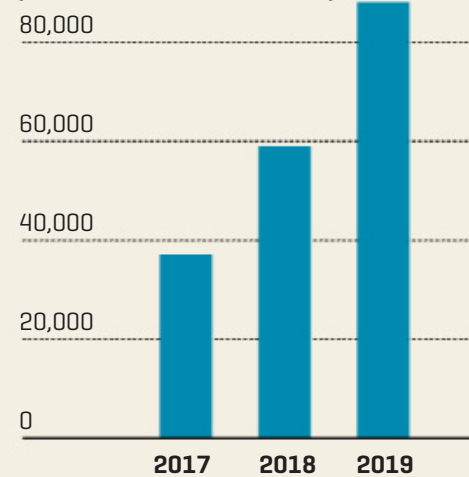
REVENUES
[FISCAL YEARS]
\$600 MILLION



ANNUAL LOSSES
[FISCAL YEARS]



PAID CUSTOMERS
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BEING NAMED TO THE FORTUNE BEST

Workplaces for Aging Services list for the first time is a tremendous honor for the associates of Brightview Senior Living. For those who work there, it just validates what they've known for years.

"We put so much time and energy into being a great place to work," says president Doug Dollenberg. "It's really rewarding to have those efforts recognized by *Fortune*."

For this Baltimore-based company, which has 4,200 associates across 38 communities in eight states along the East Coast, there is a direct correlation between associate happiness and resident satisfaction.

"I cannot say enough wonderful things about the staff," says Lauren Mullins, whose father lives at Brightview Westminster Ridge in Maryland. "The people who work here are beyond kind, they truly care and love the residents."

In an industry with a high turnover rate, Brightview recognized early on that the recipe for success starts with hiring people who have the right skills, attitude, and values to match the service-minded Brightview culture.

"A lot of competencies we can teach, but we can't teach compassion," says senior vice president Andrea Griesmar. "Our hiring process is designed to learn about those softer things first. It is difficult to pass over a candidate who has great job experience, but if they lack qualities such as a service mindset, we know that those people won't do well in our environment and won't stay long."

Once hired, an extensive onboarding process ensures associates are successful in their new jobs. Associates are partnered with a peer mentor to make sure they feel connected and comfortable from the start—while the mentor



earns extra pay.

A yearly associate survey helps Brightview identify opportunities to improve job satisfaction. To encourage career growth, the Individual Development Plan helps associates develop skills needed for promotion—with an impressive 41% of open director-level jobs filled by Brightview associates who have risen through the ranks.

"A lot of companies talk about care and concern for their team, but it all comes down to execution: Are you able to walk the walk?" says Dollenberg. "If we can continue to make our associates feel engaged, happy, and passionate, then we can continue to be a great place to work and a great place to live." ■



THE SPECIAL BOND WITH
RESIDENTS IS WHY ASSOCIATES
CHOOSE BRIGHTVIEW.



While Microsoft is a highly profitable machine that can easily plow cash into improving and promoting Teams, Slack is losing money. It hemorrhaged \$139 million in its latest fiscal year on \$400 million in revenue. But here's the good news for Slack: Its roster of paying customers was up nearly 50% during that period compared with the year before, a growth rate that many other enterprise tech players, large and small, would envy. That kind of momentum is Slack's ticket to achieving profitability, assuming it can continue at a similar pace.

Slack's trajectory hasn't always been so clear. Butterfield, 46, started Tiny Speck, a maker of online games, in San Francisco in 2009. He pivoted to Slack, the chat tool his team had created to communicate internally, in 2014, when it became clear that the original game idea wouldn't catch on. The Canadian-born chief executive officer now splits his time between the San Francisco Bay Area and New York City, along with Slack's other major hubs and visits to its customers, who are located across 150 countries.

It's not Butterfield's first time in the spotlight. Previously, he cofounded photo-sharing site Flickr, a hot startup during the post-Internet bubble era. Yahoo eventually bought the service in 2005 for a reported \$35 million (a respectable "exit" at the time). Butterfield stayed on at Yahoo as general manager of Flickr, but he left three years later, disenchanted with the web portal's bureaucracy, lack of innovation, and huge size.

It's no surprise, then, that despite Slack's rapid growth and its transition from private to public, Butterfield remains convinced that being bigger isn't always better. His customers tend to agree.

"Slack is a very nimble company," says Vijay Sankaran, chief information officer at financial services firm TD Ameritrade, where 11,000 employees have access to the chat app. "We've got a direct relationship with the CEO. We work with the product engineering team. That's a real strength of theirs."

Kaitlin Norris, "culture strategist" at e-commerce company Shopify, another customer, says she has asked for—and received—specific new features from Slack for her company's 4,000 workers. She is currently waiting for Butterfield's crew to create a feature that would let employees manually

Slack CEO Stewart Butterfield and his mother, Norma Butterfield, in June outside the New York Stock Exchange, celebrating the direct listing of Slack's shares.



**"IT GIVES US SOME CREDIBILITY."
—SLACK CEO STEWART BUTTERFIELD ON HIS COMPANY'S RECENT HIGH-PROFILE PUBLIC LISTING**

organize channels, tabs created for specific projects or topics, which otherwise appear in alphabetical order on the service.

Much of Slack's appeal to customers is that it integrates with online services from other companies. There are more than 1,500 such apps on the platform, from videoconferencing service Zoom to Google Drive, the online storage service that enables users to collaborate on documents. And Slack offers its customers tools that let them easily develop their own features that can be tied into Slack. Shopify, for example, has created an artificial intelligence-based bot called Tally that tracks what employees spend and allows them to file their expense reports, all within Slack.

"Slack acts like a pseudo operating system for the modern enterprise" that lets businesses access all their apps in one place, writes Suri, the William Blair analyst.

If becoming the one-stop shop for corporate software sounds a lot like Microsoft's pitch, it is and it isn't. Ironically, for Slack to succeed, at least in the eyes of Wall Street, it will need to become an enterprise giant much like its rival. But Butterfield is convinced he can continue to push the company into adulthood without forgetting its roots—the simplicity that helped Slack catch on in the first place. ■



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Investors are attracted to municipal bonds for three reasons; safety of principal, regular predictable income and the tax-free benefits. Together, these three elements can make a compelling case for including tax-free municipal bonds in your portfolio.

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.

Potential Tax-Free Income

Income from municipal bonds is not subject to federal income tax and, depending on where you live, may also be exempt from state and local taxes. Tax-free can be a big attraction for many investors.

About Hennion & Walsh

Since 1990 Hennion & Walsh has specialized in investment-grade tax-free municipal bonds. The company supervises over \$3 billion in assets in over 16,000 accounts, providing individual investors with institutional quality service and personal attention.

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SPONSORED CONTENT

INNOVATION ON THE PATH TO SUSTAINABILITY

A growing number of companies are creating new ways to reduce their impact on the planet.

With our global population estimated to reach 9 billion people by 2030, the phrase “circular economy” is becoming less of a buzzword and more of an urgent rallying cry. That’s because we’re using more resources than the Earth can consistently supply. Citizens—and companies—are realizing that the health of our planet depends more and more on reusing what we already have in a more sustainable way. The three Rs—reduce, reuse, and recycle—are at the core of this movement not only for individuals but also for the companies that are producing the goods that make up everyday life.

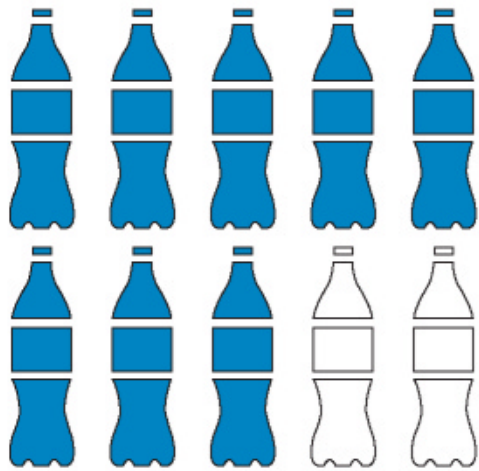
The stories in the news are all too familiar. Whales washing up on shores around the world with mounds of plastic and other garbage in their stomachs are becoming alarmingly common. The Great Pacific Garbage Patch, a section of the Pacific Ocean between Hawaii and California, now contains roughly 1.8 trillion pieces of plastic floating around in an area about twice the size of Texas. In fact, scientists note that if nothing changes in the way we use plastic, there will be more of it in our oceans by 2050 than there are fish.

The good news is that there is much that can be done to make things better. Companies of all sizes have embraced sustainability and the importance of recycling. A growing subset of these companies are startups, founded and run by millennials, who have the most at stake from the harm being done today. These companies, as well as some of the largest companies on the planet, are investing in new and innovative methods to make the products we love without so many of the environmentally harmful side effects.

If there is any doubt about the scope of the problem, it is alarmingly illustrated in a recent study from *Science Advances*. It shows that since the invention of plastic in 1907, 8.3 billion metric tons of virgin (nonrecycled) plastic have been produced, generating 6.3 billion metric tons of waste. But here’s the really alarming part: Nearly 80% of that has piled up in landfills, while just 9% has been recycled. A total of 12 billion metric tons are expected to be in landfills or our oceans by 2050 if current production and waste management trends continue without change.

What often gets overlooked in these stories is that every person in society has a role to play in reversing this trend. Experts continually say that we are either contributing to the Earth’s pollution and plastic buildup or we are looking for ways to mitigate our impact on the planet. Similarly, large corporations and other organizations also play a huge role in either furthering the damage or protecting our environment.

Earlier this year, the World Economic Forum and the Forum of Young Global Leaders



Nearly **80%** of the **6.3 billion metric tons** of waste produced since the invention of plastic has piled up in landfills.



The Great Pacific Garbage Patch now contains roughly **1.8 TRILLION** pieces of plastic floating around in an area about **twice the size of Texas**.

12 BILLION

metric tons of waste are expected to be in landfills or our oceans by 2050.



recognized companies from around the world that are exploring the most innovative ways to reduce, reuse, and recycle. Among them:

■ **CAMBRIAN INNOVATION**—This Watertown, Mass.–based company’s EcoVolt technology treats wastewater contaminated by industrial processes. It not only turns it into clean water but also produces biogas that can be used to generate clean energy. The company has nine plants across the United States that have treated an estimated 300 million liters of wastewater.

■ **LEHIGH TECHNOLOGIES**—The company, based in Atlanta, takes old tires and other rubber waste and turns it into micronized rubber powder. This powder can then be used in a variety of applications, including asphalt and construction materials.

■ **ENERKEM**—This Canadian company does amazing things with trash. Its technology extracts the carbon from trash that can’t be recycled. It then turns the carbon into a gas that can be used to make biofuels like methanol and ethanol, in addition to chemicals that can be used in thousands of everyday products.

MINIMIZING WASTE

But it’s not only these newer companies that are forging a more sustainable path. JUST Capital, a nonprofit research organization, recently surveyed a wide demographic of Americans and found that environmental impact is one of the top concerns when it comes to corporate behavior. It then looked at more than 800 companies that are part of the Russell 1000 index and identified a handful that stand above the rest for their recycling efforts and environmental stewardship.

Among them: cosmetics giant Estée Lauder. The company’s Global Environmental and Safety team has developed a strong record of minimizing waste. Since 2003, the company’s 23 owned manufacturing and distribution facilities have sent zero waste to landfills, and any waste that cannot be recycled is incinerated and converted to energy. At its industrial sites, the company achieved a recycling rate of 88.5%, and its goal is to reach 90% in the years ahead.

These companies are moving the needle by significantly reducing the amount of waste they produce and recycling whatever else they can. But perhaps just as importantly, they are showing other companies that sustainability and good business are not mutually exclusive. They can work hand in hand and lead to a smaller environmental impact and a healthier planet for all. ■



Creating a More Sustainable Future

Samsung is partnering with the United Nations Development Programme to tackle some of the world's biggest problems.

Global Goals Week kicks off in September alongside the United Nations General Assembly in New York. The umbrella initiative brings together citizens, civil society, government, the private sector, and others from around the world to discuss ways to create a more sustainable future.

Global Goals Week is an opportunity for all stakeholders to collaborate, showcase work, and set pathways toward achieving the broader Sustainable Development Goals (SDGs). Founded in 2015, the 17 SDGs aim to tackle some of the world's largest challenges, including hunger and poverty, education and equality, and sustainability and clean energy.

SAMSUNG AND UNDP

On August 7, at the "Unpacked" unveiling event for its Galaxy Note 10, Samsung announced the expansion of its partnership with the United Nations Development Programme (UNDP). The Samsung x Global Goals Campaign is an addition to Samsung's already existing corporate social responsibility (CSR) efforts, which will allow Galaxy users to directly partake in achieving the Global Goals.

The campaign includes an educational and donation-based mobile app that lets millions of Galaxy users learn more about the Global Goals and help support the issues that matter most to them. By engaging with short ads on the app, Samsung users will be able to donate 100% of the ad revenue Samsung

generates to the Global Goals. In addition, a portion of the proceeds generated from sales of the special-edition accessories will go directly to UNDP in support of the Global Goals.

"Now, more than ever, we have the potential to use the power of technology to address the world's most pressing challenges," says DJ Koh, President and CEO of IT & Mobile Communications, Samsung Electronics. "Our partnership with the United Nations Development Programme will provide Galaxy users with easy, impactful ways to learn about the Global Goals and support the causes important to them so we can collectively make a difference."

FACING BIG CHALLENGES

Samsung recognizes that the Global Goals address some of the world's most challenging issues. Since it originally announced its support of the Global Goals in 2016, the company has aligned its CSR efforts to the goals with a focus on education, sustainability, health, and local engagement—Samsung's own priority areas for its citizenship efforts.

In the area of sustainability, Samsung created the Galaxy Upcycling program, through which engineers innovate to upcycle old Galaxy smartphones for use as IoT solutions. In a world where approximately 50 million tons of electronics are discarded each year, Samsung has taken a bold and meaningful approach to recycling through innovation.

□
Samsung employees in Latin America teach children STEM using Galaxy tablets to enhance the learning experience.



Samsung also announced its plans to use 100% renewable energy in its factories, office buildings, and operational facilities in the U.S., Europe, and China by 2020.

In 2019 Samsung announced “Enabling People,” a vision focused on educating the next generation through numerous enrichment and investment programs, including its Solve for Tomorrow contest and various local training curriculums in IT. Currently running in 14 countries, the Solve for Tomorrow contests challenge students to use their knowledge of STEM to solve problems in their communities. The program not only boosts interest in STEM but also gives students their first experiences with important skill sets including leadership, entrepreneurship, critical thinking, and creativity, as well as realizing firsthand how the power of technology can be harnessed to improve lives.

TAKING ACTION NOW

Consumers are demanding that technology do more to defy barriers and create meaningful progress. In a survey conducted by Samsung, a staggering 94% of Samsung consumers polled said they believe that small actions can add up to a huge impact, and a

separate brand study by Edelman revealed 53% of the respondents believe that brands can do more to solve social ills than governments can. Leaders like Samsung have consumers’ attention and the scale needed to inspire global change.

And Samsung is just one of many partners that the UNDP has engaged with as part of its Global Goals work. As brands continue to support the goals with proactive programs, cutting-edge energy solutions, and a focus on education, the next generation will see measurable progress toward these goals.

“This partnership with UNDP and Samsung will not only harness technological innovation in achieving the Sustainable Development Goals, but will mobilize the next generation of global citizens to take action and together achieve the goals,” says Achim Steiner, UNDP Administrator.

Samsung and other technology companies must continue to leverage their key platforms to inspire change and achieve the Global Goals by 2030. Samsung’s commitment to a better society aims to inspire other corporations to use their innovation for good and to connect their products and services with the goals of society at large. The Global Goals should be a guide for everyone, bringing companies and consumers together to take bold, transformative steps, which are urgently needed to put the world on a sustainable and resilient path. ■

How Is Samsung Changing for People & for the Environment?

EXPANDING THE USE OF RENEWABLE ENERGY ACROSS SAMSUNG’S BUSINESS OPERATIONS



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Harnessing energy from solar panels



PURSUING A CIRCULAR ECONOMY THROUGH GLOBAL END-OF-LIFE TAKE-BACK AND RECYCLING PROGRAMS



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Collecting copper, aluminum, steel, and plastics

Using recycled plastic in production



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INSIDE THE BARGAIN HUNTER'S LAB

As overall stock valuations hover near historic highs, it's harder than ever to find fast-growing companies with reasonably priced shares. We found four that fit the formula for big gains. By Ryan Drousseau

INVEST **FEARS OF A DOMESTIC SLOWDOWN** and the escalation of the U.S.-China trade war created plenty of headaches for shareholders this summer. But even after dramatic market swoons in May and August, investors still seem willing to pay top dollar for stocks—especially those that promise substantial growth.

As measured by the Shiller price-to-earnings ratio, which compares companies' share prices to the 10-year, inflation-adjusted average of their profits, the S&P 500 sat at just above 29 in mid-August. That's higher than at nearly any other time on record, with the exceptions of the run-up in 1929 and the 2000 dotcom boom. (Neither one of those surges ended well, as you may recall.)

What's more, as investors anticipate the inevitable end of the current bull market, institutional players like mutual funds and hedge funds have concentrated their money in the companies that seem like the safest bets for earnings growth. That has driven valuations for such crowded-trade stocks even higher—in mid-August, Visa

and Facebook traded at more than 30 times earnings, while Adobe and PayPal traded at around 50 times earnings.

It all creates a conundrum for Warren Buffett-style value investors—the ones who seek the long-term potential that comes from a combination of robust growth and a reasonable price tag. To find such value candidates, we scoured this year's list of *Fortune's* Fastest-Growing Companies (see the full list on page 117) and found four that combine strong earnings outlooks with valuations that remain far below nosebleed territory.

SVB Financial Group (SIVB, \$201) fills an unusual niche: It's the holding company of Silicon Valley Bank (SVB), which specializes in lending



CYCLING UP
Workers at Lam Research, whose memory-storage hardware is in demand again.

to tech-focused venture capital investors. Compared with other regional banks, SVB has a particularly large portfolio of variable-rate loans, whose interest payments fall when prevailing rates decline—which makes it vulnerable to broader cuts by the Federal Reserve. The run-up to the Fed's July rate cut led SVB to lower its forecast for interest-related profits for 2019, and some investors fled; the stock is down 39% over the past year.

Piper Jaffray analyst Brett Rabatin believes the worst is likely over. At this point, he says, interest rate news “is more than priced in” to the stock. What hasn't changed? The strength of SVB's main revenue source. Venture capital investment reached \$66 billion through the second quarter of this year, on pace for its second-best year ever. The stock is currently priced in line with other regional banks, at nine times earnings, but Rabatin believes it will deserve a premium once the interest rate shocks recede.

Centene (CNC, \$49) has been among the country's fastest-growing health insurance companies in recent years. Its shares have fallen 15% year to date, however, in part because many investors believe it overpaid in its \$17 billion purchase of WellCare, a provider of Medicare- and Medicaid-affiliated health care plans. But skeptics miss one of the acquisition's big benefits: WellCare's pool of Medicare Advantage customers. Jefferies senior analyst David Windley calls these public-private hybrid plans the “Goldilocks” of the health insurance space—more profitable than Medicaid plans, and growing faster than most other health plan

categories as more baby boomers age into Medicare. The purchase of WellCare, which is pending regulatory approval, will double the size of Centene's Medicare Advantage business, Windley calculates. That's a major reason that analysts' consensus estimates show Centene's earnings per share growing 18.6% annually for the next three to five years, compared with just 5.7% for the S&P 500.

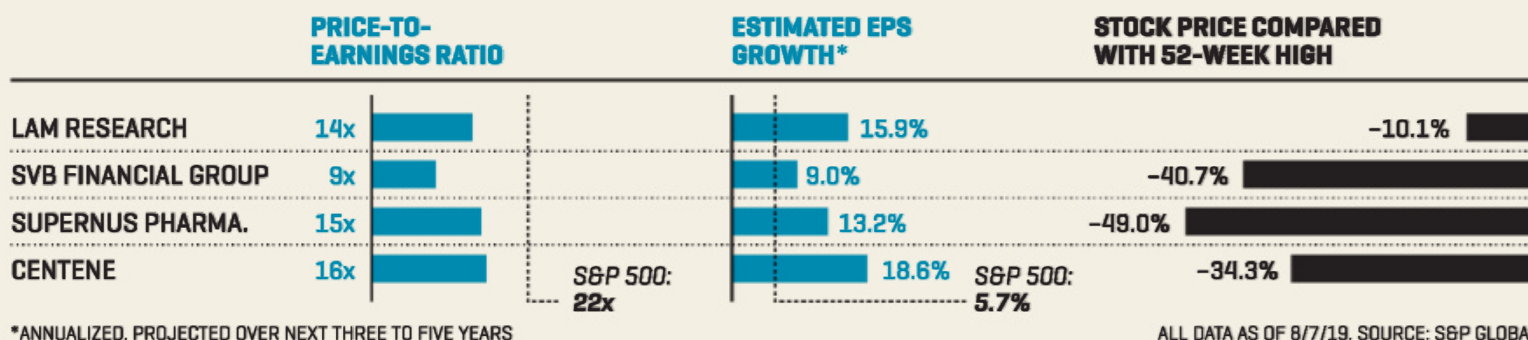
Some companies sport low valuations because of where they sit in their business cycle. **Lam Research (LRCX, \$200)** makes equipment found in many kinds of chips, including those that power iPhones and a range of artificial intelligence applications. It's an industry that rises and falls on innovation booms and supply gluts. After stratospheric growth in its previous two fiscal years, Lam's sales fell 13% in its fiscal 2019, which ended June 30. But its stock has begun to rally as investors anticipate the next rebound. Prices for NAND memory chips, which account for nearly half of Lam's revenues, have risen over the past month for the first time since 2017. “It's a good sign,” says KeyBanc Capital Markets analyst Weston Twigg, who forecasts a 12% rise in revenues for Lam in 2020.

In pharmaceutical stocks, finding a bargain can mean making a contrarian bet on a disfavored drug. Maryland-based **Supernus Pharmaceuticals (SUPN, \$29)** has staked much of its future on two drugs designed to fight ADHD. One, a non-stimulant dubbed SPN-812, has shown the ability to alleviate symptoms within a week during trials—a big differentiator, since similar non-stimulants can require a month or more to take effect. Investors were unnerved, however, by the drug's Phase III clinical trials, in which higher doses had no additional positive effect. Over the past year, Supernus's share price has sunk 47%.

Esther Hong, an analyst for Janney, argues that the market has been too pessimistic: Despite the dosage hiccup, both SPN-812 and Supernus's other ADHD drug have shown positive results. Hong believes SPN-812 could be a billion-dollar drug in the long term if, as anticipated, it wins FDA approval and launches next year. That could offer a portfolio-burnishing boost for investors in a company with a current market capitalization of just \$1.5 billion. ■

PRICED TO MOVE

These stocks are priced at a discount to the broader market, even though their growth prospects are far better than average.





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**ITS CUTTING-EDGE ECONOMY IS
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A QUALITY LIFESTYLE AT A LOWER COST.**


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...Occasionally you may hear Pennsylvania referred to as a

Rust Belt state, particularly in a year of presidential politicking, but that's so last century. "The term is obsolete," says economist Matthew Knittel, director of the state's Independent Fiscal Office.

While the steel industry experienced a decline in the late 1970s and '80s that dealt Pennsylvania a blow, 40 years later Pennsylvania's economy is thriving. Unemployment is the lowest it's been since 1976 and jobs are at an all-time high. Wage growth is strong, and with the passage of the 2019–20 budget in June, the state, which calls

itself the Commonwealth of Pennsylvania, made the largest contribution to its emergency fund in 20 years. And the economy has become far more diverse over the past few decades.

"The sense of possibility around parts of the Pennsylvania economy right now is stronger than in the last 25 years," says economist Stephen Herzenberg, executive director of the nonpartisan Keystone Research Center, which houses the Pennsylvania Budget and Policy Center.

Governor Tom Wolf, who took office in January

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“We’re a commonwealth proud of who we are and the remarkable things we’re doing today.”

TOM WOLF
GOVERNOR

2015, echoes that view. “We’re a commonwealth proud of who we are and the remarkable things we’re doing today,” he says. “While our past is glorious, our present—and the future we’re building now—are even more so.”

Wolf’s administration has made workforce development a priority, pairing it with a fierce commitment to investing in education. The new PAsmart Initiative, for example, increases workforce training and apprenticeships; teaches students coding and robotics; brings STEM learning to pre-K classrooms; and expands computer science education. K–12 education alone has garnered more than \$840 million in new dollars over the past two years, and the new budget secures an additional \$255 million for K–12 and pre-K. Pennsylvania is now the fifth-largest producer of STEM graduates, and it ranks seventh in tech employment.

These efforts are built on a legacy of innovation dating back centuries—the nation’s first

stock exchange was established in Philadelphia in 1790—and the output of Pennsylvania’s outsize share of top research universities. Autonomous vehicle technology (AVT) was first developed by Carnegie Mellon University (CMU) and its robotics engineers in Pittsburgh decades ago, and the state continues to lead in that space. In July, Volkswagen AG announced it would invest \$2.6 billion in Ford Motor Company’s Pittsburgh-based Argo AI and its AVT.

Philadelphia, too, is a tech hub, and both cities have become millennial magnets. But they hardly have a state monopoly on innovation—or even robotics, which are thriving in York and Harrisburg, while e-commerce is booming in the Lehigh Valley and cybersecurity is increasingly important to Erie.

These and other cities, such as Johnstown, are also benefiting from revitalization projects, and many are developing innovation districts and educational institutions. Invent Penn State, operated

through Penn State University, has established more than 20 innovation hubs across Pennsylvania to empower tech entrepreneurs. Another state program, Manufacturing PA, which partners students with companies to develop innovative technologies and practices, has generated 40 projects. (Manufacturing, a critical economic driver in Pennsylvania, has largely morphed into advanced manufacturing.)

Aside from its universities and history, Pennsylvania has other longstanding advantages,

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“One of our central beliefs is that community development and economic development go hand in hand.”

DENNIS DAVIN

SECRETARY, PENNSYLVANIA DEPARTMENT
OF COMMUNITY AND ECONOMIC DEVELOPMENT

including its location, which provides access to 40% of U.S. markets and 60% of Canada’s within a day’s drive; its abundant natural gas resources, which have made the state No. 2 in natural gas production; and quality-of-life benefits commensurate with surrounding areas but at less expense. Pennsylvania’s cost of living is the best ranked in the Northeast U.S., according to a 2018 CNBC business climate scorecard.

The commonwealth takes quality of life and the well-being of its citizens very seriously. “One of our central beliefs is that community development and economic development go hand in hand,” says Pennsylvania native Dennis Davin, secretary of the Department of Community and Economic Development. “One of my favorite things about the state is our diversity—of our economy, cultural makeup, topography, and recreational activities,” he says. “I think our cities stack up against any in the country as places to visit and live, and our parks, mountains, lakes, and rivers attract tourists from all over the world.”

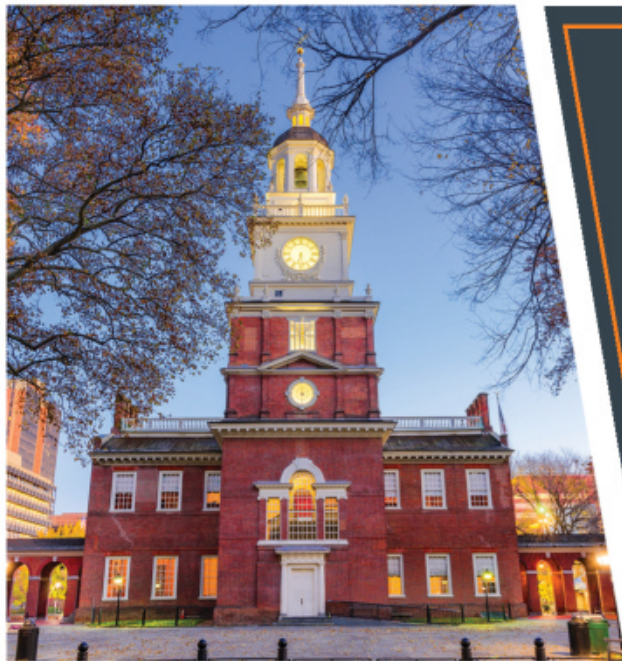
PEOPLES’ MULTI-BILLION-DOLLAR INVESTMENT IN PIPELINE MODERNIZATION IS CREATING JOBS AND REDUCING METHANE EMISSIONS.

Many businesses agree with Pennsylvania’s conviction that community and economic strength go together. “Our employees embrace a mission of bettering people’s lives,” says Morgan O’Brien, president and CEO of Peoples Natural Gas, Pennsylvania’s largest natural gas distribution company. Peoples offers payment programs to those who can’t afford its services “[with] empathy and thoughtfulness,” he says.

Natural gas is a booming industry in Pennsylvania, thanks to the abundant reserves found in its Marcellus Shale and Utica Shale, which are the largest in the country and second largest in the world. The state produces more natural gas than any other except Texas, and it feeds the state’s plastics industry, among others. “Having access to this much energy is a huge economic advantage,” says O’Brien. “But the real economic value is in what happens on the end-use side—growing the advanced manufacturing industry, technology, and supply chains around them.”

Peoples was the country’s first gas distribution company, initially intent on reducing Pittsburgh’s pollution—and 136 years later, it’s still committed to clean air. “We’ve partnered with CMU and the Environmental Defense Fund to develop a first-of-its-kind technology to address leaks in our system,” says O’Brien. “Our goal is to ensure that not only is our delivery of this natural resource safe, but that we are not impacting the environ-





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“When local business is strong, so is the local economy; more robust consumer spending leads to increased revenue to improve schools and transportation.”

PAUL TUFANO

CHAIRMAN AND CEO, AMERIHEALTH CARITAS

ment in any negative manner.”

Pittsburgh-based PNC Financial Services, which offers retail and corporate and institutional banking, as well as asset and investment management solutions, is a dominant presence across Pennsylvania and is expanding through its corporate and institutional banking and national retail digital strategies. However, Lou Cestello, PNC executive vice president and head of regional markets, seems almost as excited by PNC’s approach to supporting the community through the PNC Foundation, which is focused on advancing early childhood education, as well as initiatives that help revitalize low-income areas. “PNC is committed to supporting our customers and cities from Pittsburgh to Harrisburg and beyond. For example, in Bethlehem, through lending and tax credit investments, we helped transform the old steel factory into an arts and cultural center,” says Cestello, who adds that this Main Street bank philosophy is ingrained in PNC’s approach. “As the state grows and prospers, so do we. The Keystone State

is the cornerstone of who we are.”

Building healthy communities is part of the mission of Philadelphia-based AmeriHealth Caritas, one of the country’s 10 largest Medicaid managed care organizations. “Our support goes far beyond clinical care,” says chairman and CEO Paul Tufano. “Health inequities stem from other factors such as access to basic necessities like jobs, education, nutritious food, safe housing, and transportation.” The company’s Next Generation Model of Care seeks to bring together providers, community resources, member services, caregivers, and data analytics to manage the social determinants of health on a member-by-member basis.

AmeriHealth Caritas has also more than doubled its investments in small and diverse suppliers since 2013. “They are an important channel for improving the health of our members, who are often vulnerable. When local business is strong, so is the local economy; more robust consumer spending leads to increased revenue to improve schools and transportation,” says Tufano. “Our

goal is to help people find a pathway to a life of prosperity and maximum independence.”

Pennsylvania has always had a robust health care industry. Headquartered in Pittsburgh, national health and wellness organization Highmark Health is America’s second-largest integrated delivery and financing system, with 2018 revenue of \$18.8 billion. “Our customers are our

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Last year Business Facilities ranked the state fourth in bioscience R&D, and in 2017, it received the fourth-highest amount of bioscience funding from the National Institutes of Health.

moral and strategic compass,” says president and CEO David Holmberg. “We believe they deserve a remarkable health experience, freeing them to be their best.”

Located in Pittsburgh, UPMC is a world-renowned academic medical center. Performing more than 20,000 transplants in its 50-year history, UPMC has pioneered organ transplantation and treatments that minimize the need for antirejection medications, which can have serious side effects, including increased susceptibility to cancer and infections. “A lot of what’s happened in transplants happened here,” says Dr. Abhinav Humar, chief of transplantation at UPMC and a leading expert in immune transplantation at the UPMC Immune Transplant and Therapy Center.

Humar specializes in living-donor liver transplants. “The procedure involves a lot of technical detail,” he says. “In the U.S., there are only about 400 cases per year—we do 70 of them.” Research has long been part of UPMC’s mission. For the past year, Humar and his team have been conducting a trial using donor-derived cells in

conjunction with organ transplantation to create immunity in patients and reduce the need for antirejection meds.

Geisinger, established in central Pennsylvania in 1915 and still headquartered there, offers medical care, health insurance, education, and research. Its MyCode® Community Health Initiative analyzes enrollees’ DNA, often leading to life-saving results. The Geisinger Fresh Food Farmacy™ provides fresh food and dietary coaching to patients with chronic conditions who are also food insecure. “The program has dramatically reduced the burden of Type 2 diabetes and related medical complications, optimizing prescription use and ultimately lowering the cost of total care,” says president and CEO Jaewon Ryu, MD.

The organization also aims to address the shortage of physicians in rural communities and the burden of debt borne by many Geisinger Commonwealth School of Medicine students, with a scholarship program providing full tuition support to those who commit to working for Geisinger after graduation. “We want to make it easier for them to choose Geisinger as a place to grow their careers,” Ryu says.

Life sciences, with specialized concentrations in drugs and pharmaceuticals, as well as research, testing, and medical labs, is another major driver of Pennsylvania’s economy. Last year *Business Facilities* ranked the state fourth in bioscience research and development, and in 2017, it received the fourth-highest amount of bioscience funding from the National Institutes of Health. Pennsylvania is also notable for its many hospitals and other health facilities,

EXPERTS AT UPMC ARE EXPLORING IMMUNE TRANSPLANT IN COMBINATION WITH ORGAN TRANSPLANT.





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VINCENT DELIE JR.

CHAIRMAN, PRESIDENT, AND CEO, F.N.B. CORPORATION AND FIRST NATIONAL BANK

including many of the nation’s top institutions.

But life sciences and health care are just two of a diverse slate of industries that have significant impact in the state. Energy, for instance, is another mainstay that is certainly receiving a boost from the burgeoning natural gas industry. And the state’s energy portfolio goes far beyond natural gas to include crude oil, coal, and electricity. Overall, Pennsylvania is the second-largest producer of total energy nationally.

Philadelphia-based PECO, an Exelon subsidiary, is the state’s largest combined electric and natural gas utility, delivering energy to more than 2.1 million regional customers. “Our estimated annual economic impact is \$4.8 billion, supporting \$775 million in labor income and over 9,000 local jobs,” says Mike Innocenzo, PECO’s president and CEO.

Financial services in Pennsylvania can be traced back to the 1700s, when the state was the national epicenter of commerce. It has remained a key financial hub. “Since 1864, we’ve fueled the state’s economic and civic engines, and we

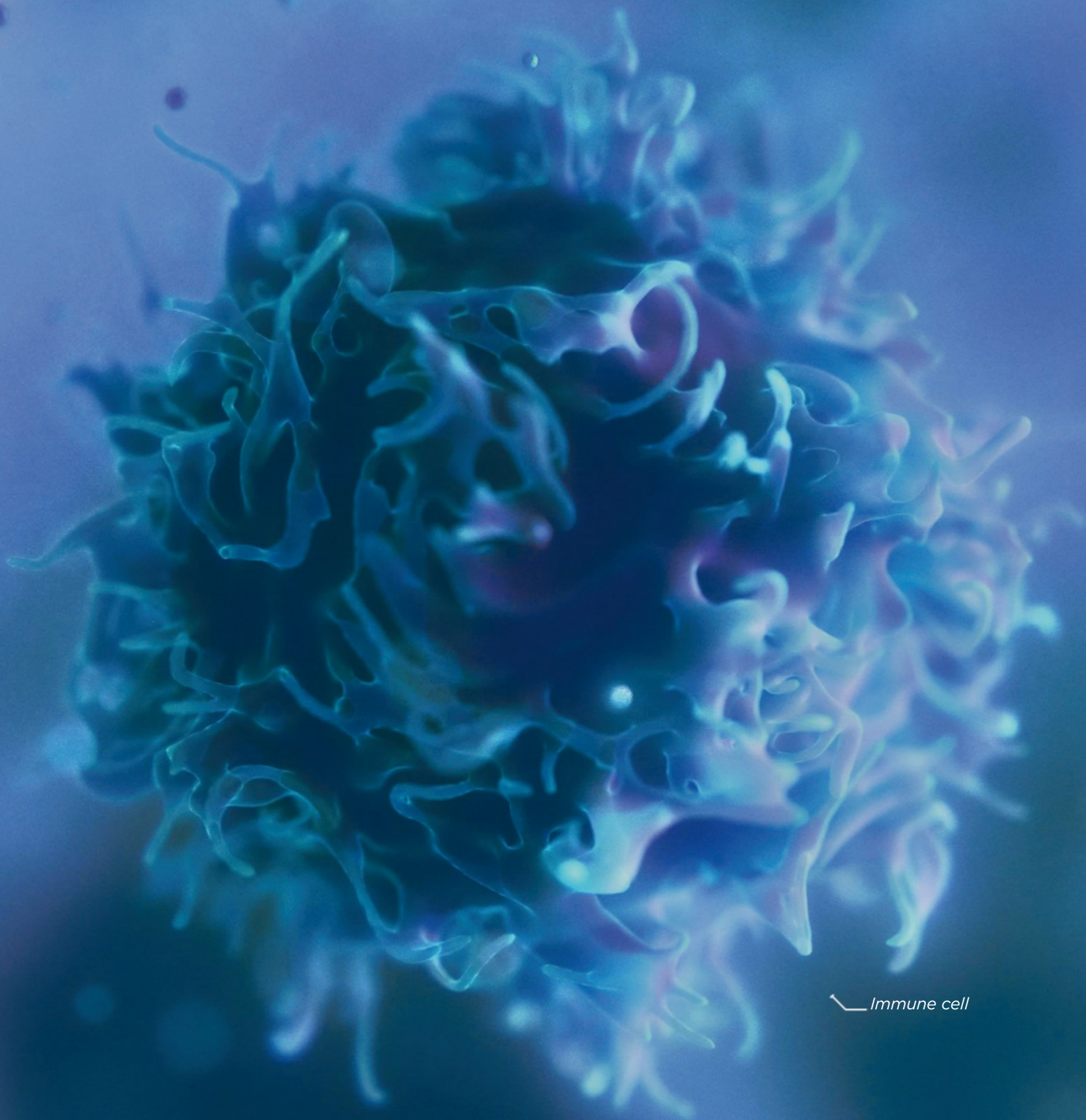
remain committed to its continued growth,” says Vincent Delie Jr., chairman, president, and CEO of F.N.B. Corporation and First National Bank, headquartered in Pittsburgh. “Pennsylvania’s remarkable location, landmarks, institutions, natural resources, and, above all, its people, create an ideal place to do business.”

The heritage of agribusiness in the state similarly goes back more than 200 years. From food to hardwoods, it has been an economic bedrock, aided by Pennsylvania’s exceptional location and infrastructure. Pennsylvania’s produce is known for its quality and abundance, and at GIANT Food Stores, “it’s the produce department we’re most loved for,” says president Nicholas Bertram. Starting out as a two-man butcher shop in the fertile Cumberland Valley, GIANT is now one of the state’s largest employers. “Much like the commonwealth has grown, we’ve grown with it,” Bertram says, adding that GIANT is poised for even greater growth. He’s also proud of the company’s commitment to social responsibility. Who gets the credit

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between UPMC and the University of Pittsburgh.*

PENNSYLVANIA

“We’re tremendously excited about shaping the future of our industry.”

BRIAN HARD

PRESIDENT AND CEO, PENSKE TRUCK LEASING

for it all? Says Bertram: “Our incredible associates.”

Even technology has a long history in Pennsylvania. You could say prolific inventor Ben Franklin was a forebear of the industry today, but even Ben Franklin Technology Partners has been around for more than 30 years as the state’s leading seed-stage provider of tech capital.

Unisys, a global information technology company based outside Philadelphia, created ENIAC, the first large-scale digital computer, in 1946. In more recent times, it has implemented a hybrid-cloud, shared-services IT model for Pennsylvania “that’s saving taxpayers there about \$100 million annually,” says Eric Hutto, senior vice president and president, Enterprise Solutions. Unisys is also working to make city streets safer with its security

technologies, much as it has done with events like the Super Bowl. “Our whole mission is securing your tomorrow,” says Hutto.

Technology is an essential ingredient in Penske Truck Leasing’s continuing success, too. Founded 50 years ago in Reading by race team owner and auto executive Roger Penske, it has since become an \$8.4 billion global transportation and logistics company with a fleet of over 320,000 vehicles. It employs more than 36,000 people worldwide, 3,700 of them in Pennsylvania. “We’re proud of our heritage and past performance, but we’re tre-

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to market. Says Hard: “We’re committed to providing the most effective vehicle technologies to our customers and driving innovation and sustainability when it comes to mobility.”

Primary metal manufacturing, too, is alive and well in Pennsylvania, but it has been transformed for a new century with technological advancements. The industry currently accounts for almost 36,000 jobs in the state, 4,000 of those at U.S. Steel in Pittsburgh. The company has called western Pennsylvania home ever since

mendously excited about shaping the future of our industry,” says Penske Truck Leasing president and CEO Brian Hard.

Penske is a leader in its industry’s cutting-edge evolution, from developing mobile apps and remote vehicle diagnostics platforms to applying artificial intelligence, blockchain, and robotics technologies. It’s also a major player in bringing new electric trucks and electric-truck charging infrastructure

Andrew Carnegie revolutionized steelmaking there when he opened the Edgar Thomson Plant. Today, the company is investing more than \$1 billion in advanced steelmaking technology in the Mon Valley to continue that legacy.

Gov. Wolf and Secretary Davin will be the first to tell you that Pennsylvania, like any state, still faces challenges. An aging workforce is one, says Davin,



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“Our philosophy is that we want to make Pennsylvania a place where people can work smart and live happy.”

DENNIS DAVIN

SECRETARY, PENNSYLVANIA DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT

and it reinforces the urgency of establishing a robust pipeline of young workers. “We need to make sure we’re making impactful investments in our communities that will encourage young talent to stay here,” he adds. That means promoting affordable housing, developing more recreational areas, and beautifying downtown districts. “Our philosophy is that we want to make Pennsylvania a place where people can work smart and live happy.”

The state has always been known for a strong work ethic, and leaders and other stakeholders have adopted a can-do spirit in forging partnerships and collaborating to reach shared goals: building a skilled and future-focused workforce;

promoting technology among established industries; supporting creative entrepreneurs; and enhancing Pennsylvania’s business climate and quality of life.

“Pennsylvania’s economy has a ton of forward momentum,” says Gov. Wolf. “The combination of our prime location, world-class educational institutions, affordable cost of living, abundant and diverse energy portfolio, and the investments we’re making in our communities makes Pennsylvania a place where families and businesses want to be. Those strengths help us grow our economy.



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THE PROGRAM AT THE FORTRESS ACADEMY OF YORK IS JUST ONE EXAMPLE OF HOW THE STATE IS USING STEM EDUCATION TO TRAIN ITS FUTURE WORKFORCE.

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tion about starting a new business.

Early in his administration, Wolf also eliminated the Capital Stock and Foreign Franchise tax. “Pennsylvania continues to offer some of the lowest individual tax rates on the East Coast,” he says. And while the new budget secured health care savings for 400,000 residents and created a first-in-the-nation GI Bill providing college education to veterans at low or no cost, it did not raise

But we still have work to do in a few key areas.”

As a former owner of a successful business, Wolf knows all too well how navigating complex rules and regulations can create a drag on forward movement. “My administration has worked hard to cut red tape and streamline all aspects of government, including eliminating burdensome or redundant requirements and licenses,” he says. The PA Business One-Stop Shop was created to meet those objectives, providing entrepreneurs with a single location for resources and informa-

the minimum wage, which Wolf is passionate about. “It’s well overdue for our working families,” he says.

The governor is intent on pushing more changes that benefit Pennsylvania. “In addition to all the advantages we offer, we’re committed to providing technical assistance that moves at the speed of business,” he says. “And we will continue to fight to strengthen our workforce and improve our corporate tax structure to ensure a business-friendly environment.” ■

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PASSIONS

TRAVEL



A Provençal home designed by the in-demand architecture and garden team of Alexandre and Dominique Lafourcade.

BUYING PROVENCE

Like the food, wine, and scenery of southeastern France, its stunning properties are never out of style for long.

By Lindsey Tramuta

“IT’S THE LIGHT and the landscape,” says artist and garden designer Dominique Lafourcade of the enduring appeal of Provence. “Peter Mayle probably had something to do with it too.” Her own verdant home lies in St.-Rémy-de-Provence, a picturesque town about 10 miles south of Avignon.

The region’s crisp, painterly light, neat rows of plane and cypress trees, and a pastel palette pulled straight from a Postimpressionist canvas were among the motivations for the late English author Mayle’s move to a farmhouse in Ménerbes in 1987. Much like Cézanne and Van Gogh, whose beloved works

were directly inspired by the Provençal setting, Mayle owed his literary stardom to his adopted home.

Provence, in turn, can thank Mayle’s endearing tales—notably his bestselling memoir *A Year in Provence* and the novel *A Good Year*—for inspiring a steady stream of vacationers and foreign homebuyers, even decades later.

But beyond being able to deliver on the promise of a languid pace and varied scenic beauty, the region offers privacy, chief among the reasons affluent travelers keep visiting and investing.

“If you look at second-home buyers across budgets, most are French



and increasingly Parisian. The TGV train to Avignon is only two hours and 30 minutes now. It's a practical getaway," explains Philippe Boulet, director of the Emile Garcin real estate agency. "But for high-end residences, our clients are largely foreign—English, Northern European, and Belgian. American investment fluctuates but is strong at the moment." According to Boulet, the hot-ticket properties—running anywhere from \$500,000 to \$10 million before renovation—are often dated or run-down farmhouses, small castles, and villas around the Alpilles mountain range and in such regions as the Luberon, the Camargue, and the Var, at the edge of the Riviera.

American Shauna Varvel laid down roots on a secluded, 65-acre property on Île de la Barthelasse, near the Alpilles, after a decade of renting homes in Provence each year with her family. Before the purchase in 2015, the Varvels rented the estate's 13,000-square-foot 18th-century farmhouse and fell in love. "The house needed extensive renovation, but we loved the flat green land and its uniquely large size to accommodate our five children," says Varvel.

She hired Lafourcade Architecture, a 40-year-old firm based



Two Lafourcade revivals: the Abbaye de Pierredon estate (left); a dining room at Le Mas des Poiriers.

in St.-Rémy that has become well-known in the region for its restorations of homes, hotels, and wine estates. In the footsteps of his father, Bruno, architect Alexandre Lafourcade led the overhaul of Varvel's property, imbuing the rustic with unmistakable sophistication all while respecting prickly local regulations, such as building from only existing structures and hewing to the area's signature style.

The net result of a Lafourcade renovation is a robust residence with a timeless aesthetic plus modern comforts and technology. At every stage of his projects, he works exclusively with local artisans and artists, including his mother, Dominique, who designs the elaborate gardens that embellish each property, filling wild and unused land with exquisite landscape compositions that regularly earn attention

in the world's leading home and garden magazines.

In the case of the Varvel estate, Le Mas des Poiriers (Pear Trees Farmhouse), the interior and exterior design needed to serve several purposes. "We inherited a tax code that requires us to farm and to rent. We produce over 60 tons of pears each year as well as an extensive sunflower crop," she explains. With seven bedrooms, a tennis court, a swimming pool, and a cottage with two additional bedrooms, it's an ideal home for a large family, both Varvel's and those who rent the property for weddings or getaways.

Today, Alexandre Lafourcade wagers that foreign buyers make up 90% of his clients: "It's only been in the last two to three years that Americans have really come back to invest. When they do, it's for the dream, the magic of the South. What's different now is that with greater means of accessing the region, the dream is even easier to achieve." ■

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CHANGE
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WORLD

Introduction

Where Business Creates Virtuous Circles

These 52 companies are using the creative tools of business to meet society's unmet needs.



You might not expect modern corporations to tackle an urgent problem of the 21st century by looking back to the 1950s. But that's what one group of companies is doing with a new service called Loop, whose backers refer to its approach as "the milkman model."

As that *Leave It to Beaver*-era nickname implies, Loop delivers supermarket and drug-store staples—including toothpaste, detergent, mayonnaise, and ice cream—to consumers' homes in durable, reusable containers. It's a "zero waste" initiative, an effort to alleviate the planet's plastic-pollution crisis. Several consumer-goods giants are Loop partners, including Unilever and Nestlé (which are packaging their brands in Loop's bottles and tubes) and retailers Kroger and Walgreens. The company that conceived Loop, however, and will distribute, clean, and refill all those containers, is tiny TerraCycle, a 302-employee startup in Trenton, N.J., whose CEO, Tom Szaky, founded the business 18 years ago in his Princeton dorm room.

TerraCycle holds the No. 10 spot on *Fortune's* fifth annual Change the World list. The list honors companies that recognize public health, environmental, economic, and social problems as major challenges—but also as opportunities to initiate a so-called virtuous circle. They understand that doing good for society and the planet can help them bring in more revenue, which can help them do more good, in a self-reinforcing loop.

The TerraCycle project embodies another kind of virtuous circle: As the threats posed by

pollution become increasingly urgent, more companies are embracing the idea of a "circular economy," one in which products last longer and are close to 100% recyclable. That idea animates Daisy, Apple's iPhone-repurposing robot (No. 16); the reusable "smart grid" circuitry manufactured by French giant Schneider Electric (No. 9); and many other innovations featured here. Expanding opportunities for your own employees can create another positive loop. That ideal guides \$514 billion retailer Walmart (No. 5), which is paying for higher education for thousands of its employees, and \$398 million restaurant chain MOD Pizza (No. 28), which has built its workforce around formerly incarcerated people and others who struggle to get hired elsewhere.

We selected the 2019 list in collaboration with our expert partners at Shared Value Initiative, a consultancy that helps companies apply business skills to social problems. As MOD shows, small companies are just as capable as multinationals of fitting that bill. This year's smaller candidates were particularly potent. Our 52 honorees include at least nine companies with less than \$1 billion in annual revenue.

"Small" doesn't mean "money-losing," however. These companies here have built their do-gooder ideas into real business models, and are either turning a profit with their help or have credible plans for doing so. (Please see more about our methodology on page 76.) The Change the World list doesn't score companies on their charitable generosity, nor does it rate them on some cosmic scale of good and bad. It celebrates the nexus where daring ideas overlap with the desire to make the world better.

Loop, which has signed up 80,000 customers in the U.S. and Europe since its launch in May, sits in that sweet spot. It's not going to make the Great Pacific Garbage Patch disappear. But be patient: Many world-changing ideas start small. —*Matt Heimer*

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CHANGE
THE
WORLD

NO. **1**

Qualcomm

Turning Faster Connections Into Green Gains

A top designer of mobile-phone chips creates building blocks for the 5G revolution.

SAN DIEGO

The mobile-chip designer has been a leader in wireless tech since the earliest smartphones. Now it's building chips for 5G connectivity, which promises speeds 10 to 100 times as fast as those of today's phones. Already, phonemakers are using Qualcomm modem chips to power 5G-compatible devices. But the company will soon introduce inexpensive, low-power versions for smart devices and sensors that could have a profound impact on the planet. As such sensors become pervasive, cities will be able to monitor air and water quality in real time, farmers can avoid overwatering or overfertilizing crops, and self-driving cars will communicate with each other to avoid traffic jams and reduce emissions.

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PURCHASE, N.Y.

NO.

2

Mastercard is spreading the wealth. With revenue up 20% to \$15 billion in 2018, the payments company has put more resources behind its efforts to reach consumers who lack access to the digital economy. Through a subsidiary, the Center for Inclusive Growth, Mastercard established the first chamber of commerce in India devoted to rural women entrepreneurs in the cities of Pune, Satara, and Chiplun. Six months in, the initiative has reached 5,660 women at 3,275 businesses in agriculture, food production, and artisan manufacturing, providing them with access to credit, training in financial literacy and marketing, and more. The work is part of Mastercard's goal to reach 500 million people previously excluded from financial services by 2020—it has only 100 million more to go.





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NO. 3

BYD

Expanding the universe of electric cars.

SHENZHEN, CHINA

BYD began life as a manufacturer of cell phone batteries and didn't make its first car until 2003. But for three years, it was the world's largest maker of vehicles that run partly or wholly on electricity (Tesla only recently overtook it). The Chinese company's development of a flexible "E-platform" for EV design and construction has been key to its success. A basic BYD model sells for a mere \$8,500 or so, after subsidies—a key factor in evangelizing EVs more widely. And a recently announced joint venture with Japan's Toyota should expand BYD's global footprint. (For more on BYD and China's EV market, see the feature in this issue.)

NO. 4

TE Connectivity

Lifesaving technology for stroke sufferers.

SCHAFFHAUSEN, SWITZERLAND

TE specializes in connectivity and sensor technology used in industries such as aerospace, automotive, and energy. But it made its way into a hospital setting three-and-a-half years ago with elegant solutions that can help emergency cardiac and stroke patients. Using TE guide wires and microcatheters, doctors can make one simple incision in the femoral artery and thread a medical device to the precise area of the brain where it's needed (either to bust up a clot or stop bleeding caused by a stroke). To date, the technology has been used to help some 1.3 million stroke patients worldwide, according to TE.



One of the more than 5,600 Indian business owners trained this year through Mastercard's Center for Inclusive Growth.

Walmart

“You’ve Got to Be Able to Manage Change”

Under CEO Doug McMillon, the world’s largest company has invested billions to make its workforce more resilient.

BENTONVILLE, ARK.



NO.

5

Walmart CEO Doug McMillon was on his way to lunch with his wife when he got the call. It was Saturday, Aug. 3, and it had already been a sad and tumultuous week at the company. A few days earlier, at a Walmart in Southaven, Miss., an associate—as Walmart calls its employees—had shot and killed the store manager and a department manager. Now, McMillon was told, a new crisis was unfolding: There was an active shooter in a Walmart store in El Paso.

McMillon immediately diverted his route to Walmart’s Bentonville, Ark., headquarters, and his wife dropped him off. He went straight to Walmart’s emergency operations center (EOC), where security, operations, and human resources teams were tracking the situation. The Southaven tragedy was still fresh in his mind. “But it didn’t take very long once I got into the EOC,” says

McMillon, “to figure out this was a different kind of circumstance.”

This time the shooter was not an employee but a 21-year-old man who had reportedly driven some 10 hours to El Paso from his home near Dallas, intending to gun down people of Mexican descent. Using an AK-47 style assault weapon, the gunman killed 22 people and wounded another 24. Along with a second mass shooting that night in Dayton, the massacre kicked off a new national debate about gun violence—with Walmart in the middle of the conversation.

In the days following the shooting, Andrew

Ross Sorkin of the *New York Times* wrote an open letter to McMillon calling on him to use the company's influence and leverage, as it has in sustainability efforts over the years, to put pressure on the gun industry. And a 23-year-old associate in California launched a petition at Change.org to stop the sale of firearms at Walmart. At press time, the petition had garnered more than 73,000 signatures.

McMillon so far has resisted being drawn into the larger political and policy conversation. On the Tuesday after the shootings, he traveled to Texas to meet with the store's managers and associates, "just to hug the people and listen to them," he says. That same day, McMillon published his own open letter to Walmart's associates, reflecting on the tragic nature of the shootings but saying that the company would focus for the time being on helping associates and customers in El Paso and working with law enforcement.

McMillon wrote that the company would be "thoughtful and deliberate in our responses." Asked a few days later if he's made any decisions about how to engage in the policy debate, McMillon says it's still not the right time. "No doubt, there's a spotlight on the company," he says. "But I'm not ready to talk about that today."

The questions aren't likely to go away, as McMillon well knows. Grappling with complex sociopolitical issues is part of the burden and the responsibility of running the world's largest company—one with a footprint the size of a not-so-small country. Walmart easily ranked No. 1 on this year's *Fortune* Global 500 thanks to its \$514 billion in revenue. And with 2.2 million associates globally—1.5 million in the U.S. alone—the company is the world's biggest nongovernment employer.

McMillon, 52, has spent his entire career at the massive retailer. But when he stepped into the top job five and a half years ago—becoming just the fourth executive to lead Walmart after iconic founder Sam Walton—he found the company in a bit of a rut. Not only was Walmart trailing Amazon badly online, but also its core U.S. stores were struggling. McMillon concluded that he needed to invest in his workforce—to attract better-quality associates, boost retention, and by doing so ultimately improve the store experience.



CHANGE
THE
WORLD

THE BIG IMPACT OF A HUGE COMPANY

6,000
Number of
Walmart
staffers now
enrolled
in degree
programs
through Live
Better U

\$19.31
Average
hourly com-
pensation
(wages and
benefits) for
a Walmart
hourly
associate

\$119 B
Increase in
Walmart's
market
value since
November
2015

It wasn't a universally popular idea. After McMillon told Wall Street that he planned to increase wages for his legions of associates—McMillon says the company has invested \$4.5 billion in the effort—Walmart's stock tumbled. When I profiled McMillon for *Fortune* in 2015, his strategy hadn't yet yielded results. The company had just reported its sixth straight quarter of negative or flat U.S. same-store sales. Just over four years later, Walmart has reported 19 straight quarters of positive U.S. same-store sales growth. From its low point in November 2015, Walmart's stock has soared 86%, vs. 43% for the S&P 500—a gain of \$119 billion in market value.

Walmart is the only company to have been named to *Fortune's* Change the World list in each of its five years. In the past, Walmart has earned its way onto the roster primarily for its leadership in driving sustainable business practices, in its own operations and throughout its supplier network. But this year Walmart makes it on the strength of the long-term investment in its people. That investment goes well beyond simple pay increases: The company has offered training courses to hundreds of thousands of associates through its Academies program.

Now Walmart is building on that foundation with its Live Better U initiative. Last year the company partnered with Guild Education to launch the program—the name comes from Walmart's "Save Money, Live Better" slogan—allowing workers to pursue college degrees and skills certificates, debt-free, for \$1 per day. Some 6,000 Walmart employees are already active and enrolled in school through the program, and another 4,000 are signed up to start this fall. Part of the idea is that they'll have the skills and resilience to adapt as the economy evolves. "You've got to be able to manage change. You've got to be able to learn new tasks," McMillon says. "Some people will go outside the company after receiving that training, and that's okay with us."

From McMillon's perspective, Live Better U is part of a continuum—a long-term effort to make sure that Walmart continues to be a "learning" organization. That kind of learning builds resilience, both economic and emotional, that can prepare his workforce for whatever comes next. —*Brian O'Keefe*

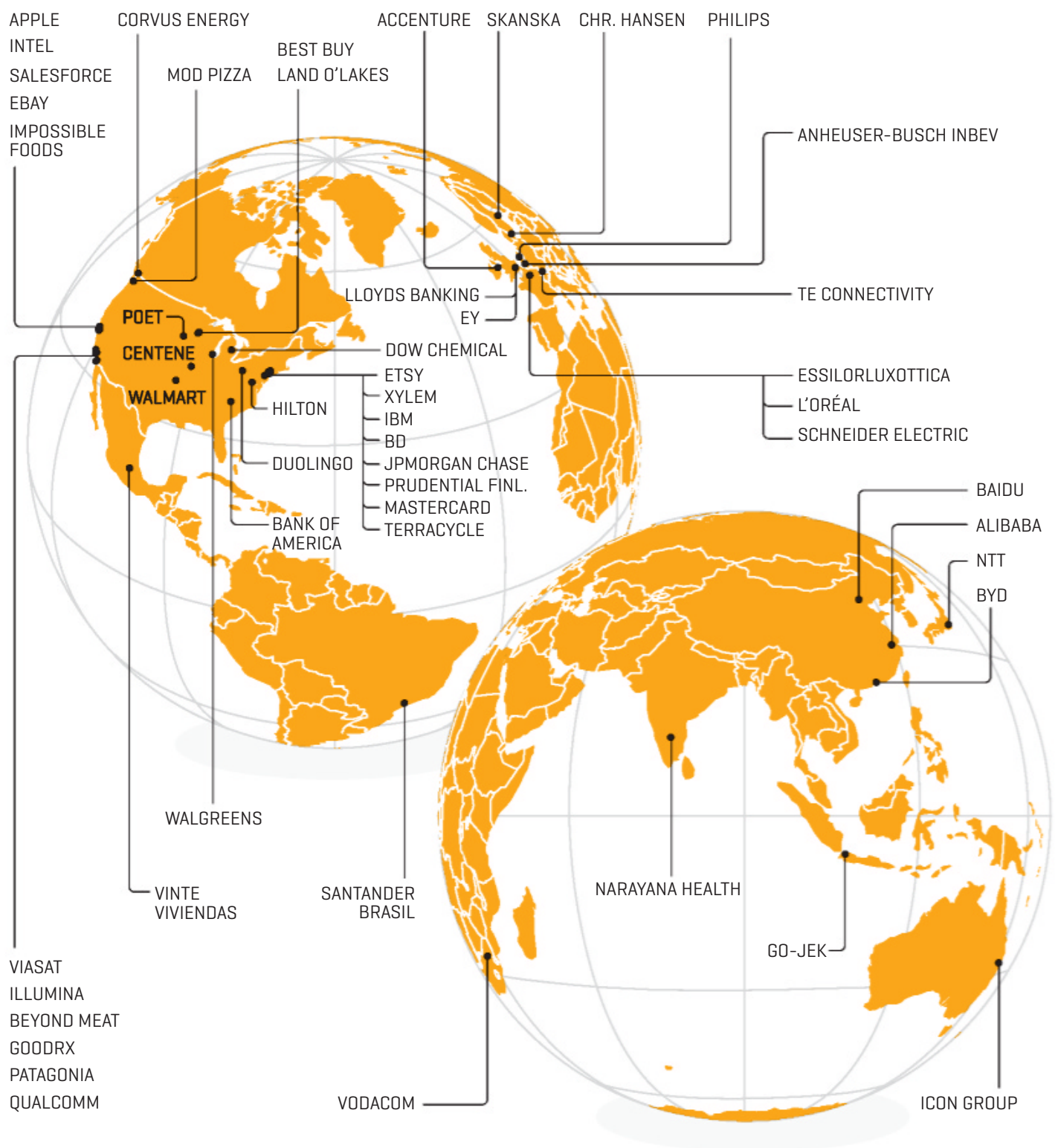
NO. 6

Santander Brasil

Small loans, big impact.

SÃO PAULO

The bank has operated its Prospera micro-loan program in Brazil since 2002. But last year it harnessed digital technology to dramatically speed up approvals, reducing the process from 10 days to 10 seconds. That enabled Prospera, which provides small low-interest loans to entrepreneurs (a quarter of whom live below the poverty line), to increase the number of business owners it supports by more than 50% in 2018; it's on track to grow that number another 90% this year. So far, the nearly \$2 billion it has extended in loans (ranging in size from as little as \$25 to thousands of dollars) has gone to more than 700,000 entrepreneurs. There is evidence it's making a difference, particularly in the most poverty-stricken areas: A study by Rever Consulting found that every Brazilian real granted via Prospera generated 4.5 times that amount in economic value.



How We Choose the Companies

MEASURABLE SOCIAL IMPACT

- We consider the reach, nature, and durability of a company's impact on one or more specific societal problems.

BUSINESS RESULTS

- We consider the benefit the socially impactful work brings to the company. Profitability and contribution to shareholder value outweigh benefits to the company's reputation.

DEGREE OF INNOVATION

- We consider how innovative the company's effort is relative to that of others in its industry and whether other companies have followed its example.



CHANGE
THE
WORLD



NO. 7

Centene

Dignity for a neglected group.

ST. LOUIS

Many Americans struggle to access health care. But for the disabled, the impediments are often physical and fundamental: heavy doors, non-adjustable examination tables, and offices that aren't equipped to adapt to their needs. Centene, an insurer that manages the care of 15 million people, saw that this reality meant many ability-challenged patients weren't getting all the care necessary to stay healthy and prevent costly hospital stays. So, in 2017, it launched its Provider Accessibility Initiative, distributing grants to remove barriers to care. The effort has helped over 123,000 people it covers (and many more it doesn't) access care with dignity. "The disabled community has just lived with these barriers to health care," says Kelly Buckland, executive director of the National Council on Independent Living, who advised Centene on the effort. "Centene is fundamentally changing the landscape."

NO. 8

Bank of America

Solving a housing puzzle.

CHARLOTTE

In many U.S. cities, soaring land and construction costs incentivize developers to charge higher rents than low- and middle-income workers can afford. To close that gap, Bank of America lends money at below cost, works the tax-credit system, and teams up with nonprofits. The payoff: Since 2005, BofA has financed 194,500 units of affordable housing.

NO. 9

Schneider Electric

A circle game.

RUEIL-MALMAISON, FRANCE

Schneider makes energy-management and automation equipment that is crucial to sustainability. It's increasingly designing its equipment to last longer and be easily recyclable, to fit in a low-waste "circular economy." One example: The MasterPact circuit breaker is easily fixable and can be returned to Schneider at the end of its life to be remade.

NO. 10

TerraCycle

Packaging you'll never throw away.

TRENTON

Even recyclable packaging often ends up in landfills. That's why recycling startup TerraCycle in May launched the Loop platform, aiming for zero-waste packaging through a "milkman model"—delivering goods in durable, reusable containers. Loop works with 41 big brands, from Crest to Häagen-Dazs, in the U.S. and Europe, with more likely in 2020.

NO. 11

Go-Jek

Getting business done in Indonesia.

JAKARTA

This super-app began as a ride-hailing service. But its mobile wallet, Go-Pay, has expanded financial access for millions—particularly in Indonesia, where 64% of the population is "unbanked." In 2018, users purchased over \$6 billion in goods and services through Go-Pay, which also offers back-end support and loans to some 130,000 smaller businesses.

Viasat

It Came From Outer Space

Connecting Latin America to the Internet, dirt cheap.

CARLSBAD, CALIF.

NO.

12

Satellite Internet service provider Viasat has been able to offer cheap online service

from space to poorly wired parts of the world as the capabilities of its spacecraft have improved. Since lofting the school-bus-size ViaSat-2 satellite in 2017, the company's reach has extended across Latin America. In Mexico, for example, a simple \$1,500 receiver setup in a local shop can provide Wi-Fi across a wide area for as little as 50¢ an hour to users with cheap phones or tablets. So far, over 600,000 devices have logged on for Internet connections in Mexico. In July the state of São Paulo began working with Viasat to set up community Wi-Fi stations to provide connectivity in 20 underserved areas. Coming next: three ViaSat-3 satellites, with more capacity, reaching Europe, the Middle East, and Africa in 2021 and the Asia-Pacific region in 2022.



Customers go online at a ViaSat Community Wi-Fi hub in Mexico.

NO. 13

Walgreens

A drugstore keeps customers healthy.

DEERFIELD, ILL.

Walgreens' "Balance Rewards for healthy choices" is a health care innovation disguised as a retail loyalty program. Customers earn rewards and discounts by executing tasks such as monitoring their glucose or blood pressure. BRhc claims over 850,000 active users, and peer-reviewed studies show associations between membership and healthier habits.

NO. 14

EY

Building on the strengths of the neurodiverse.

LONDON

People with neurological differences from what's seen as the norm—including placement on the autism spectrum, Tourette's syndrome, and dyslexia—fall under the umbrella of neurodiversity. They're often excluded from the workforce—but not at accounting and consulting giant EY, a leader in hiring and matching them with meaningful roles. EY now has five Neurodiversity Centers of Excellence to facilitate these staffers' integration into the firm: Together they serve 80 employees. EY is also partnering with universities and nonprofits to recruit neurodiverse candidates who can fill skills gaps on its teams.

NO. 15

BD

A frontline fighter in the war against microbes.

FRANKLIN LAKES, N.J.

The bugs that make us sick are increasingly resistant to the drugs we've used (and misused) to fight them. By one estimate, antimicrobial resistance (AMR) will cause the deaths of 10 million people annually by 2050. BD's products, including its test to rapidly detect drug-resistant tuberculosis and its infection-prevention equipment, are tools to combat AMR. BD also trains health workers to quickly and precisely diagnose and treat infection. In Uganda, with BD's help, turnaround time for a TB test has fallen from three weeks to three days, reducing chances that a patient will go untreated or be given the wrong drug.



Apple

Someday, Your New Phone Could Be Made From Your Old Phone

A global electronics giant tackles the growing problem of e-waste.

CUPERTINO, CALIF.

NO.

16

In an unmarked building tucked away in an industrial park in Austin, a location so secret it doesn't appear on Apple Maps, one of Apple's latest technologies is hard at work. Inside glass casing, automatic robotic arms move left, right, up, down, and around a conveyor belt with speed and precision. A couple of technicians in blue lab coats, safety goggles, and gloves watch as fog—created by the glassed-in chamber's extreme cold, which can drop to -112 degrees—billows around one of the arms. Loud mechanical pounding breaks the low hum of running machinery with a uniform *thump, thump, thump*.

This complicated system, called Daisy, combines automation and a human touch to give Apple its coveted result: scraps of pure plastic, metal, and glass from otherwise-unusable iPhones. "We spend a lot of time in the engineering, making sure our devices stay together,"

© COURTESY OF APPLE INC.



says Lisa Jackson, Apple's vice president of environment, policy, and social initiatives. "Daisy was about making sure we had an efficient and effective way to *disassemble* products."

Daisy represents not only a breakthrough in electronic recycling efforts—robotically pulling apart an electronic device piece by piece—but also a road map to minimizing environmental impact. Apple prides itself on its green credentials; a high proportion of its supply chain, for example, is powered by renewable energy. Now it's turning its attention to an equally thorny problem: the fast-growing, often toxic detritus of discarded electronic gear.

Apple in 2017 announced a goal of eventually making all of its products from recycled or renewable material—and eventually, only such material. Apple can't say when that will happen. (It won't be soon.) But this building, the Materials Recovery Lab, which opened in April, is where the company is doing the research that it hopes will get it there.

Managing e-waste, a category that spans thrown-away equipment from fax machines to smartwatches, is becoming an increasingly complex problem. In 2016 the world generated 44 million metric tons of e-waste, according to the Global E-Waste Monitor. For perspective, that's the equivalent of about 4,500 Eiffel Towers.

Household e-waste, including consumer electronics, is a smaller share of the pile; last year it accounted for 1.6 million metric tons, or 3.5 billion pounds, according to the Golisano Institute for Sustainability at Rochester Institute of Technology. Total e-waste mass is actually decreasing as companies release sleeker, smaller products, says Callie Babbitt, associate professor at the Golisano Institute. But there's a new problem on the rise, she explains: "The products we're using now are relying on an increasingly complex mix of rare-earth materials and precious metals." And as companies put out new products at an increasingly rapid pace, even automated systems may struggle to keep up.

Apple declines to estimate the size of its own e-waste footprint. The company sold 217.7 million iPhones last year: At an average of about five ounces a phone, that means Apple put about 68 million pounds of materials



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**IF WE DON'T
SPEND TIME
INVESTING
IN MAKING
SURE
MATERIALS
ARE REUSED,
IT WILL
BE A
PROBLEM
WE CANNOT
SURMOUNT."**

into households worldwide through phones alone, some of which will eventually become waste if consumers lack a better option.

Daisy represents a "crucial step" toward Apple's goals, says Jackson, who spent five years leading the U.S. Environmental Protection Agency before joining Apple. The robot, which debuted last year, can disassemble 15 different iPhone models (from the iPhone 5 up) at a rate of 200 devices per hour. The machine at the Austin lab and another in the Netherlands together are processing about 1 million of the 9 million iPhones collected since April through Apple's trade-in program. (Most of the others are refurbished and resold.)

Apple lists 14 materials used in its products that it hopes to eventually fully recycle. One is plastic, which takes hundreds of years to decompose, poses a threat to wildlife, and can release harmful toxins as it corrodes. Another is lithium, found in rechargeable batteries, the mining of which takes a heavy toll on the environment. With help from Daisy, the company has been able to recover all 14 elements for recycling; it's already reusing tin and aluminum for new Apple products like the MacBook Air.

Traditional e-waste recycling facilities are less dainty than Daisy. Most rely on bulky machines to shred products, dumping the output into bins of mixed particles. These mixed streams are much harder to recycle, and some elements get lost, stuck, or tossed out in the process. Jackson says Apple wants to improve not only its own processes but also the broader industry's mulch-it-all approach. Part of its Austin facility is dedicated to broad e-waste recycling R&D, with the hope of developing innovations that will allow all recycling facilities to recover more materials, improving the consumer-tech supply chain.

It's a long road that will require numerous parts of the industry to get on board if Apple's goals are to be realized. Even Jackson says she wasn't initially convinced it was doable. But after talking to engineers and team members, she came to see total recycling as not only possible but also vitally necessary. "If we don't spend time investing in making sure the hardware is used for a long time and materials are reused," she says, "it will be a problem we cannot surmount." —Danielle Abril



EssilorLuxottica

Keeping Poverty From Obscuring People's Vision

A global eyewear company sells glasses for as little as 75¢ a pair.

CHARENTON-LE-PONT,
FRANCE

NO.

17

In 2013, EssilorLuxottica, the world's leading producer of eyewear, launched 2.5 New Vision Generation (2.5NVG), a line of more affordable (but still stylish) prescription glasses targeted at the 2.5 billion people around the world—almost entirely in low-income countries—who suffer from uncorrected poor vision. After much engineering work, the company now makes glasses that cost as little as 50¢ a pair to manufacture, and that retail for no more than three to four days' pay in a given country. France-based Essilor has also created new business models to sell them, partnering with governments and NGOs to train entrepreneurs in dozens of countries, who now offer vision-testing and lens-fitting services. In the six years since the program's launch, Essilor estimates it has enabled access to vision services for 200 million people, more than 25 million of whom now use a pair of 2.5NVG glasses. The company expects the initiative to become profitable in many places in a few years.

In 2013, EssilorLuxottica, the world's leading producer of eyewear, launched 2.5 New Vision Generation (2.5NVG), a line of more affordable (but still stylish) prescription glasses targeted at the 2.5 billion people around the



CHANGE
THE
WORLD

NO. 18

Chr. Hansen
Saving food,
naturally.

HORSHOLM,
DENMARK

Food spoilage is a global problem, but synthetic chemicals that protect food create problems too. This Danish bio-science firm produces more than 30,000 strains of "good bacteria," which it harnesses to various ends—from lactic acid cultures to extend yogurt shelf life to microbial products that reduce antibiotic and pesticide use in farming.

NO. 19

Anheuser-Busch InBev
Giving farmers
a history.

LEUVEN, BELGIUM

Farmers in developing countries often sell their crops in cash deals that lack formal records. AB InBev has partnered with startup BanQu to provide blockchain-powered supply-chain software to thousands of farmers in Zambia and Uganda—creating immutable transaction records that can help them build credit histories and financial independence.

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NO. 20

Skanska

Going beyond green in construction.

STOCKHOLM

The Swedish construction giant holds itself to the strict standards for environmental sustainability spelled out in the Paris Agreement climate accord—no small feat in a resource-intensive business. That means its huge infrastructure projects, like the new Terminal B at New York’s LaGuardia Airport, are built to the highest possible sustainability certifications.

NO. 21

Accenture

Health care where doctors are few.

DUBLIN

Health care professionals can be hard to find in rural Africa. One solution? Train local “community health workers” to provide basic diagnostic testing and to educate their neighbors on where to find more complex care. Accenture teamed up with Amref Health Africa to train more than 35,000 such workers in Kenya, who now in turn reach 3.5 million households.

NO. 22

IBM

A high-tech fix for food contamination.

ARMONK, N.Y.

Some 600 million people a year are sickened by food-borne illnesses. To reduce that toll, IBM has built blockchain-based software to trace the flow of food so contamination outbreaks can be more quickly contained. Its produce-tracking Food Trust includes more than 100 growers, producers, and sellers (including grocery giants Walmart and Albertsons).

NO. 23

Xylem

Keeping water in its rightful place.

RYE BROOK, N.Y.

Think of it as a Fitbit for water systems: Xylem’s Decision Intelligence uses pressure sensors to track flow and quickly pinpoint leaks in pipes. Xylem’s data analysis also helps cities redesign their infrastructure: In South Bend, Ind., Xylem helped reduce sewer overflow by 70% and keep about 1 billion gallons of polluted H₂O out of local waterways.

MOD Pizza

Pizza to Go, With Extra Opportunity

A restaurant chain hires thousands of the hard-to-employ.

BELLEVUE, WASH.

NO.

28

The fast-pizza trend has paid off for MOD: Since opening its doors during the 2008 recession, it has expanded to nearly 450 stores

in the U.S. and the U.K., with revenue of \$398 million last year.

The people serving the food at MOD make as big a statement as the food they’re serving. More than 38% of its roughly 8,000 workers are “opportunity employment” hires, people who are often shut out of the job market. MOD partners with local organizations to hire low-income youth; people with intellectual, physical, or developmental disabilities; and people who were formerly incarcerated. It remains a rarity in that last category—and a vital difference-maker, since the single most important predictor of recidivism is joblessness.

NO. 24

Intel

Raising the bar on diversity.

SANTA CLARA, CALIF.

In 2018, Intel hit one of tech’s boldest diversity goals: 14.6% of its skilled workforce is now made up of underrepresented minorities (African-Americans, Hispanics, and Native Americans). It’s now diversifying its supply chain: Starting in 2020, it will spend at least \$1 billion a year via suppliers owned by women, minorities, veterans, LGBTQ, and disabled people.

NO. 25

Vodacom

Keeping drugs on shelves.

MIDRAND, SOUTH AFRICA

In South Africa’s huge public health system, local shortages of key drugs are sadly frequent. Vodacom, the nation’s top mobile carrier, worked with the system to build an app that makes the supply chain more transparent, enabling pharmacists to warn about low stocks and shift inventory as needed. Vodacom sells the tech to the private sector too.

NO. 26

Dow Chemical

Turning plastic waste into open road.

MIDLAND, MICH.

Dow, a major plastics producer, is mixing recycled plastic into asphalt, creating road surfaces that are cheaper, more eco-friendly, and more durable than conventional highways. Dow has built only about 60 miles of hybrid road so far, but that alone diverted 200 tons of plastic from landfill. New projects await in Vietnam, Mexico, Brazil, and the Philippines.

NO. 27

GoodRx

Navigating the medication maze.

SANTA MONICA

Millions of Americans don’t take the medications they’re prescribed, often because they can’t find them at affordable prices. GoodRx’s free, ad-supported website helps consumers comparison-shop and find discounts at some 70,000 pharmacies. GoodRx says that since its founding in 2011, it has helped 100 million people save more than \$10 billion.



About 38% of MOD Pizza’s workers belong to groups whose job opportunities are limited.

WORLD-CHANGING DNA

What **Change the World Companies** Have in Common

SERVING MULTIPLE STAKEHOLDERS

→ World-changing companies recognize that a narrow focus on shareholder value can hurt a business in the long run. (For more on that philosophical shift, see “A New Purpose for the Corporation” in this issue.) They strengthen their businesses by investing in their employees and bolstering the communities where they operate.

PLEASING SHAREHOLDERS

→ On average, the global, publicly traded companies on each of *Fortune's* four previous Change the World lists have outperformed the MSCI World Index since those lists were published. Eight of the companies on our inaugural list (2015) have delivered total returns of 100% or more since then; the MSCI benchmark returned 42% over that span.

LISTENING TO EMPLOYEES

→ Many companies elicit transformative ideas from their rank and file. Lloyds Banking Group (No. 31) devoted resources to helping customers with mental-health issues after its staff chose that issue in a companywide vote. Hilton (No. 41) relies on individual hotel managers to devise plans for reducing environmental impact at its more than 5,600 hotels.

CHANGING THE CONVERSATION

→ Salesforce (No. 49) was a pioneer in discussing environmental and social issues in public filings. Now that's almost de rigueur among progressive-minded companies. —M.H.

L'Oréal

Its Farmers' Gains Aren't Just Cosmetic

A beauty conglomerate helps women farm sustainably—and earn more for it.

PARIS

NO.

29

The world's largest cosmetic brand takes aim at two goals with its Sharing Beauty With All initiative: It trains workers to harvest essential ingredients in sustainable ways, and its plan is to help those workers—most of whom are women in developing nations—keep a greater share of the rewards. In Burkina Faso, a top source of ingredients for the moisturizer shea butter, L'Oréal has trained some 37,000 women to harvest and process shea nuts while limiting deforestation. It also reduced the roles of some middlemen, increasing the farmers' incomes. Women in Madagascar (home of skin-care staple *Centella asiatica*) and India (hair-care ingredient guar gum) are benefiting from similar L'Oréal efforts.



A farmer harvests shea nuts, a key ingredient in many lotions and moisturizers, in Burkina Faso.

NO. 30

Prudential Financial

Making homes affordable.

NEWARK

Prudential has become a big backer of affordable housing in “low-opportunity communities,” committing \$5.6 billion so far in more than 30 cities. Its efforts are especially apparent in its home city, where the ripple effects of New York's housing crunch have inflated prices. Prudential “stands out for their leadership in keeping Newark affordable,” Mayor Ras Baraka tells *Fortune*. Buildings funded by Prudential have reserved as much as 40% of their units for low-income tenants.

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NO. 31**Lloyds Banking Group**

Working for peace of mind.

LONDON

Money stress and mental-health challenges can all too easily amplify one another. Lloyds has introduced a service that offers counseling to customers, helping them save money by avoiding inaction and mistakes. The bank has also trained some 500 staffers to be internal mental-health advocates, helping colleagues cope with their own hurdles.

NO. 32**Best Buy**

Shrinking the electronic footprint.

RICHFIELD, MINN.

The huge retailer is helping customers use electronics more sustainably. Best Buy trains employees to promote energy-efficient models across all its product lines. It's also fighting e-waste: Since 2009, it has recycled 2 billion pounds of consumer electronics at its more than 1,000 stores and kept tons more out of landfills by offering repairs and trade-ins.

NO. 33**Narayana Health**

Rethinking surgical care and bringing down its price tag.

BENGALURU

Open-heart surgery: \$3,500. **Endoscopy:** \$14. Narayana offers medical care at prices that boggle the American mind. The health care group, which has grown to 24 hospitals [all but one in India], makes treatment affordable in part by being judicious with skilled workers' time: Senior surgeons swoop in for just the most challenging part of a procedure and so perform roughly four times as many surgeries as a U.S. doctor would. [They also hit quality metrics comparable to those in the U.S.] Narayana sees 2.5 million patients a year; it brought in \$409 million in revenue and \$9 million in profit in its past fiscal year.

NO. 34**Poet**

Putting every husk and cob to use.

SIOUX FALLS, S.D.

Poet makes the most of an ear of corn. The world's top producer of biofuels turns the crop into ethanol, but it has also engineered uses for that process's by-products, reducing waste on multiple fronts. Those include a dense, nutrient-rich animal feed and Jive, an asphalt "rejuvenator" that makes roads less temperature-sensitive and more durable.

NO. 35**Illumina**

Lifesaving shortcuts in gene testing.

SAN DIEGO

Illumina's technology has made genomic sequencing faster and cheaper—which can literally save lives. An example: Stephen Kingsmore, CEO of Rady Children's Institute for Genomic Medicine, notes that babies with rare genetic disorders can now have their genomes sequenced in just 20 hours—so treatment can be delivered within days rather than weeks.

NO. 36**Duolingo**

Teaching languages to the masses with a free app.

PITTSBURGH

Education may be the great equalizer, but access to it is hardly equal. That was what Luis von Ahn discovered growing up in Guatemala, where endemic poverty kept many from learning how to read or write. So von Ahn, a serial inventor and MacArthur "genius" grant recipient, teamed up with a fellow computer scientist at Carnegie Mellon to create Duolingo—a free, ad-supported app that makes it surprisingly easy to learn any of 36 languages on one's own in a short time. Lessons are intuitive, brisk, and game-like—which explains why 28 million people actively take its courses each month.

**Alibaba**

A Digital Bridge Across China's Rural-Urban Divide

An e-commerce initiative drives billions in sales to merchants in impoverished areas.

HANGZHOU, CHINA

NO.

37

The e-commerce giant's Rural Taobao platform has set up service centers in over 30,000 villages across China to help rural merchants sell online. In 2018, sellers in China's most impoverished regions sold \$8.9 billion worth of goods through Alibaba channels, and in the first half of 2019, the total value of goods sold from those regions surged 80% higher than in the same period last year. Alibaba's Taobao Live—a booming video-streaming platform on which hosts make sales—has pledged to teach 1,000 rural sellers how to market themselves through video and aims to push an additional \$440 million worth of rural produce through the platform this year.



A Rural Taobao video host live-streams from a farmer's home in China's Jiangxi province.

NO. 38

JPMorgan Chase

A job-training program plays a role in a historic rescue mission.

NEW YORK CITY

Paris's struggling banlieues, or suburbs, are fertile soil for AdvancingCities, a JPMorgan Chase initiative that funds job training and business loans in economically disadvantaged communities. The training it finances typically focuses on jobs of the future—think digital skills or hospitality-industry work. But this year the Paris program found a poignant link to the past. Among its partners is Les Compagnons du Devoir, a venerable trade union that trains people in stonecutting and carpentry. Some of its trainees' skills are now being deployed in the repair of Notre Dame, which was gutted by fire in April.

NO. 40

Corvus Energy

Building batteries that put cleaner engines on the high seas.

RICHMOND, B.C., CANADA

We all know the battery revolution has come for our cars and buses, but what about boats and ships, which use even dirtier fuels? Canada's Corvus Energy—founded by a naval architect and a battery expert—developed a lithium-ion battery that could withstand rough marine conditions. By 2011, Corvus had made its first sales to blue-chip companies like Siemens. Its batteries now power 55% of the world's roughly 300 electric or hybrid vessels, including huge craft like freighters and cruise ships. It's a fast-growing business: In each of the past four years, Corvus's growth rate has exceeded 100%.

NO. 39

Baidu

Building A.I. to help rural physicians.

BEIJING

Baidu is using A.I. to support health care in China's remote regions. One example: computer vision software that can detect eye disease with 94% accuracy from a simple eye scan. (It takes just 10 seconds.) Baidu is developing similar tech for diseases such as breast cancer and pulmonary obstructions and has built an A.I. diagnostic tool to aid rural GPs.

NO. 41

Hilton

Enlisting travelers in a green cause.

MCLEAN, VA.

Anyone who has tried in vain to disable a hotel suite's arctic AC will appreciate Connected Room. Due to deploy in about 200 hotels in 2020, it lets guests track and control, via app, the emissions impact of their HVAC, lights, and other systems. It's part of a broader energy-saving effort that has helped Hilton slash carbon emissions and operating costs.

**Etsy****Taking On the E-Commerce Pollution Problem**

An online retailer makes a carbon-offset promise, and others follow suit.

BROOKLYN

NO.

42

Etsy is finally profitable, and new CEO Josh Silverman is thinking more deeply about the company's social role. Earlier this year, Etsy became the first e-commerce platform to offset 100% of shippers' carbon emissions by funding carbon-reduction projects. Because it's difficult to control emissions from shipments Etsy doesn't handle itself (its sellers do the shipping), "offsets are really a viable and credible way" to address them, says Adam Klauber of the Rocky Mountain Institute. Etsy may also be inspiring others: 3Degrees, a firm that helps companies (including Etsy) reach sustainability goals, says it has seen an uptick in inquiries since Etsy's announcement.



Etsy CEO Josh Silverman at the company's Brooklyn headquarters.

▲ PHOTOGRAPH BY DAVID WILLIAMS



CHANGE
THE
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NO. 43

Philips

Nearing a carbon-neutral milestone.

AMSTERDAM

This multinational, which has lately focused on health care products, has made huge strides in reducing its energy use—it aims to reach carbon neutrality in 2020, relying on wind to power facilities in the U.S. and the Netherlands. It's also building more products for minimal energy use, at large scale (MRI systems in hospitals) and small (rechargeable toothbrushes).

NO. 44

Vinte Viviendas

Building whole communities.

TECÁMAC, MEXICO

Vinte aims to build homes that are both affordable for Mexico's middle class and environmentally friendly. The 40,000 homes it has sold since 2002 include features such as solar panels and thermal insulation that reduce electricity costs by as much as 77%. New developments also include schools and hospitals, boosting the long-term value of these properties.

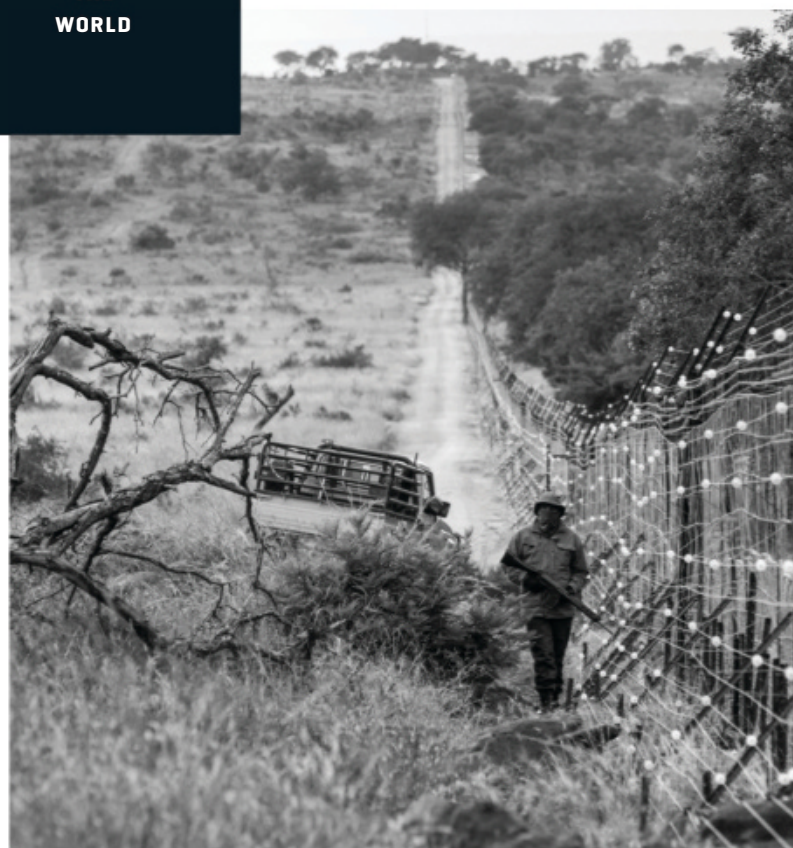
NO. 45

Land O'Lakes

An A.I.-driven app gives farms an edge.

ARDEN HILLS, MINN.

The third-largest agricultural cooperative in the U.S. is better known for dairy farmers and tractors than for supercomputers. But it took incredible computing power (from Amazon) to crunch the impact of 30 years of weather data on 100,000 different soil types and varied crops, all to create an A.I. app that can make farming both more profitable and better for the environment. Rolled out in September 2018, the Truterra Insights Engine is in use at about 3,000 farms. Utilizing detailed satellite maps; data from other farming apps; and the results of weather, soil, and crop simulations, Truterra analyzes precisely how each part of a field should be treated. A farmer can add more or less fertilizer where soil conditions vary, use cover crops to minimize erosion, or even leave ground unplanted if Truterra says it's a money-losing patch. That leads to less waste, less runoff, and less soil erosion—plus higher profits.



NTT

High-Tech Protection for a Threatened Species

A telecommunications firm deploys sensor-driven surveillance to stop rhino poaching.

TOKYO

NO.

46

Rangers in South Africa noticed a horrible thing around 2011: They were losing a lot of rhinoceroses. The species, long considered a relative conservation success story, was rather suddenly under aggressive attack—not from the

typical local poacher looking to get by, but from organized crime groups harvesting their horns for sale. By 2015, South Africa—home to nearly 80% of the world's roughly 30,000 remaining rhinos—estimated it was losing a rhino to poachers every eight hours. Enter NTT, the Japanese telecommunications firm, which that year set up its technology at one of the country's private game reserves. Rather than use drones and guards to track animals, NTT, working with Cisco, a two-time Change the World list honoree, set up sensor-powered surveillance equipment to help rangers communicate and monitor the humans coming and going from the reserve. The results were dramatic—reducing poaching incidents on the reserve by 96% in the first two years, dropping fence crossing and cutting to almost zero, and lowering security response time on the 6,200-hectare reserve to seven minutes. NTT has since spread these efforts to other reserves across Africa.

NO. 47

Icon Group

Cancer care, if docs are rare.

BRISBANE, AUSTRALIA

The scourge of cancer doesn't limit itself to cities, but too often, high-quality treatment does. The Icon Group, Australia's largest private cancer care provider, aims to reach patients close to home—whether they're in Southeast Asia or rural Australia—through telemedicine, remote radiation therapy, and partnerships in underserved markets.

NO. 48

Patagonia

Recycling to make a green brand greener.

VENTURA, CALIF.

The outdoor gear and apparel company is an unflinching advocate for the environment. Since 2002, it has donated 1% of revenue to green causes. But it's also tackling its own plastic problem head on. Patagonia has committed to making 69% of its clothes from recycled materials, and it's researching how to reduce shedding of polluting microfibers.



A guard on patrol for poachers at a game preserve near South Africa's Kruger National Park.

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NO. 49

Salesforce

An app strikes a blow for environmental transparency.

SAN FRANCISCO

Salesforce built a \$13 billion business by helping companies track sales metrics; now it's helping them track green metrics too. An app rolled out this year lets customers measure and analyze the carbon emissions of all sorts of elements of their businesses, including the energy consumed by their data systems and their employees' business travel. Now in a 10-customer pilot program, the app is part of a broader campaign to persuade corporate peers to transparently report their environmental impact to shareholders—something Salesforce has won plaudits for doing in its own filings.

NO. 50

eBay

Teaching small retailers to take a profitable e-commerce leap.

SAN JOSE

Can an e-commerce giant help mom-and-pop retailers compete against, well, e-commerce giants? eBay is trying just that with its Retail Revival program, which launched in 2018 to help local businesses use digital platforms to reach new markets. eBay provides one-on-one sales training over an eight-week period, followed by 10 months of dedicated support. The program has reached 10 cities in seven countries, with 75% of its 450 sellers new to eBay. Already, 92% of buyers for these new sellers are located outside the sellers' home states, a sign of expanded horizons and diversified revenue.

**Impossible Foods/Beyond Meat****Reimagining the Hamburger in Defense of the Planet**

Two food pioneers are persuading fast-food fans to eat plant-based meat substitutes.

REDWOOD CITY, CALIF./EL SEGUNDO, CALIF.

NOS.

51
52

An Impossible Foods burger uses 87% less water than a traditional beef burger. A burger from Beyond Meat—made of pea, mung bean, and brown rice proteins—requires 93% less land. If even a tenth of the world's meat-eating population replaced its burger consumption with these plant-based options, the impact on the environment could be monumental. These two companies' meatless products aren't catchall sustainability solutions; nearly any ingredient produced at scale will have some negative effect on the environment, notes Clodhugh Conlon, a sustainability consultant with firm BSR. But with plant-based products from Beyond Meat—which reported \$87.9 million in net revenue in 2018 and expects to exceed \$240 million in 2019—already in Tim Hortons, Dunkin', and TGI Fridays; Impossible Foods' product in Applebee's and White Castle; and competitors like Tyson introducing their own copycats, it's a promising start.



Plant-based patties are made to taste more burger-like at this Beyond Meat lab.

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SIMPLY PERFECT.

A New Purpose for the Corporation

For more than two decades, the association that represents many of America's most influential CEOs has explicitly put shareholders first. In an atmosphere of widening economic inequality and deepening distrust of business, that model no longer suffices. Here's how the powerful Business Roundtable is redefining its mission. **By Alan Murray**



For Milton Friedman, it was simple. “There is one and only one social responsibility of business,” the Nobel economist wrote in 1970: to “engage in activities designed to increase its profits.” Companies must obey the law. But beyond that, their job is to make money for shareholders.

And Friedman's view prevailed, at least in the United States. Over the following decades, “shareholder primacy” became conventional business wisdom. In 1997, the influential Business Roundtable (BRT), an association of the chief executive officers of nearly 200 of America's most prominent companies, enshrined the philosophy in a formal statement of corporate purpose. “The paramount duty of management and of boards of directors is to the corporation's stockholders,” the group declared. “The interests of other stakeholders are relevant as a derivative of the duty to stockholders.”

Times change.

On Aug. 19, the BRT announced a new purpose for the corporation and tossed the old one into the dustbin. The new statement (which readers can see in its entirety on page 94) is 300 words long, and shareholders aren't mentioned until word 250. Before that, the group refers to creating “value for customers,” “investing in employees,” fostering “diversity and inclusion,” “dealing fairly and

ethically with suppliers,” “supporting the communities in which we work,” and “protect[ing] the environment.”

Friedman must be turning in his grave.

The new statement is the result of a year-long reexamination that began with a testy dinner attended by a group of journalistic critics and involving a comprehensive survey of CEOs, academics, NGOs, and political leaders. “It has been a journey,” says Johnson & Johnson CEO Alex Gorsky, who chaired the effort. But it was a necessary journey because “people are asking fundamental questions about how well capitalism is serving society.”

JPMorgan Chase CEO Jamie Dimon, who chairs the Roundtable, said the statement “is an acknowledgment that business can do more to help the average American.”

I've covered business as a journalist for four decades and, over that time, have conducted hundreds of interviews with CEOs of the largest corporations in the U.S. and across the globe. In the past few years, it has become clear to me that something fundamental and profound has changed in the way they approach their jobs.

If you were to trace the history of that change, you might start with the speech Bill Gates gave in Davos in 2008, in his last year of full-time service at Microsoft, calling for a new “creative capitalism.” As Gates told the World Economic Forum, “the genius of capitalism” lies in its ability to “[harness] self-interest in helpful and sustainable ways.” But its benefits inevitably skew to those who can pay. “To provide rapid improvement for the poor,” he said, “we need a system that draws in innovators and businesses in a far better way... Such



SOCIETY GIVES EACH OF US A LICENSE TO OPERATE. IT'S A QUESTION OF WHETHER SOCIETY TRUSTS YOU OR NOT.”
—GINNI ROMETTY, CEO, IBM



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▲ PHOTOGRAPHS BY BEN BAKER

a system would have a twin mission: making profits and also improving lives for those who don't fully benefit from market forces."

Over the next few years, Harvard Business School professor Michael Porter began pushing what he called "shared value" capitalism, and Whole Foods cofounder John Mackey propounded "conscious capitalism." Salesforce CEO Marc Benioff wrote a book on "compassionate capitalism"; Lynn Forester de Rothschild, CEO of family investment company E.L. Rothschild, started organizing for "inclusive capitalism"; and the free-enterprise-championing Conference Board research group sounded a call for "sustaining capitalism."

Capitalism, it seemed, was desperately in need of a modifier.

Setting all this grammatical soul-searching in motion was a global financial convulsion. The financial crisis of the late 2000s shook the foundations of the sprawling market economy and bared some of its uglier consequences: an enormous and widening gulf between the über-rich and the working poor, between the ample rewards of capital and the stagnating wages of labor, between the protected few and the vulnerable many. Compounding these inequities, moreover, was a sweep of disruptive business technologies that began to come of age in the wake of the crisis—from digitization to robotics to A.I.—and that made vulnerable workers feel ever more so.

The reaction against "the system" was both broad and shocking in scale—particularly among younger people. A 2016 Harvard study found that 51% of U.S. respondents between the ages of 18 and 29 did not support capitalism; one-third, meanwhile, favored a turn to socialism. A 2018 Gallup poll of the same cohort found a similar rejection—only 45% viewed capitalism positively, a 23 percentage point drop from 2010, when Americans were still in the murky shadow of the Great Recession. Even a sizable chunk of Republicans were suddenly wary of the free market, other polls suggested.

The rejection of the system was manifest in the 2016 Brexit vote, when the British masses flouted the collective wisdom of corporate and political leaders. It was there in plain view during the bruising U.S. presidential election, when the leading Republican, Donald Trump,



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PURPOSE AT A TURNING POINT

64%

Share of
Americans
who say a
company's
"primary
purpose"
should be
"making
the world
better."

[SOURCE: JULY
SURVEY BY
NEW PARADIGM
STRATEGY GROUP,
FOR FORTUNE]

41%

Share of
Fortune 500
CEOs who
say solving
social
problems
should be
"part of
[their] core
business
strategy."

[SOURCE: MARCH
POLL FOR FORTUNE,
THROUGH
SURVEYMONKEY]

attacked the globalization and free trade that had driven U.S. business growth for three-quarters of a century—and as Democrats nearly drove socialist Bernie Sanders to the top of their ticket.

Capitalism, at least the kind practiced by large global corporations, was under assault from all sides, and CEOs were getting the message loud and clear.

That December, after the election, *Fortune* assembled roughly 100 big-company CEOs in Rome, at the encouragement of Pope Francis, and spent a day in working-group deliberations on how the private sector could address global social problems. The group—which included CEOs of Allstate, Barclays, Dow Chemical, IBM, Johnson & Johnson, Siemens, and many others—proposed ways that business could help reach the billions of people in the world who lacked basic financial services; support the effort to fight climate change; expand training programs for those whose jobs were threatened by technological change; and provide basic community health services to the half-billion people who had no access to care.

The aim of the gathering—in a very un-Milton Friedman way—was to maximize not shareholder value but rather social impact. And many of the CEOs seemed genuinely eager to use their business platforms to make a difference. But the backdrop for the conversation, as I heard again and again in private discussions, was never far from mind—and remains so today: More and more CEOs worry that public support for the system in which they've operated is in danger of disappearing.

"Society gives each of us a license to operate," IBM CEO Ginni Rometty told me this August. "It's a question of whether society trusts you or not. We need society to accept what it is that we do."

What's driving this change, more important, isn't just an ominous "what if" but also an outspoken "who." Public interest in corporate responsibility is unusually high: A July survey of 1,026 adults for *Fortune* by polling firm New Paradigm Strategy Group found that nearly three-quarters (72%) agree that public companies should be "mission driven" as well as focused on shareholders and customers. Today, as many Americans (64%) say that a company's "primary purpose" should include



“making the world better” as say it should include “making money for shareholders.”

But CEOs invariably say the constituency that’s truly driving their newfound social activism is their employees. Younger workers expect even more from employers on this front. Though, according to the poll, fewer than half of Americans overall (46%) say that CEOs should take a stance on public issues, support for such action is overwhelming among those ages 25 to 44. Millennials, in particular, may be driving the change more than anyone—and, more important, they’re choosing to work at companies that are driving change too. Among those ages 25 to 34 in the *Fortune*/NP Strategy poll, 80% say they



PEOPLE ARE ASKING FUNDAMENTAL QUESTIONS ABOUT HOW WELL CAPITALISM IS SERVING SOCIETY.”

—ALEX GORSKY, CEO, JOHNSON & JOHNSON

Required Reading for a Realignment

Capitalism’s crisis of purpose has prompted as much soul-searching among authors and academics as it has in boardrooms. Here are three titles to guide idealistic CEOs.



The Future of Capitalism

BY PAUL COLLIER

→ Collier, an Oxford economist, delves into three divides that capitalism has exacerbated: the urban-rural split; the gap between the more and less educated; and the gap between wealthy and emerging nations. To close these rifts, he calls on business to support a stronger social safety net. “Capitalism needs to be managed, not defeated,” he says.

The Trillion-Dollar Shift

BY MARGA HOEK

→ This tome is a veritable textbook for green-minded business leaders. Hoek, a former construction industry CEO and the founder of the Dutch Sustainable Business Association, delves into 50 case studies of companies that have unlocked new opportunities, especially in the developing world, while still minimizing their environmental impact.

The Enlightened Capitalists

BY JAMES O'TOOLE

→ O'Toole, professor emeritus at USC's business school, portrays more than 20 do-gooder visionaries, spanning the decades between 19th-century textile magnate Robert Owen and Patagonia founder Yvon Chouinard. Many of the lively profiles are also miniature tragedies: Too often, these leaders' works were undone by their successors.

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want to work for “engaged companies.”

In that light, it’s perhaps no wonder that Salesforce’s Benioff publicly took on a “religious liberties” law in Indiana that he viewed as discriminating against gay people. Or that Bank of America CEO Brian Moynihan publicly objected when the legislature in North Carolina, the bank’s home base, passed a bill limiting transgender access to public bathrooms. Or that Delta CEO Ed Bastian battled with his home-state Georgia legislature when he discontinued a discount program for the National Rifle Association. Or that Merck CEO Kenneth Frazier withdrew from President Trump’s advisory council after the President’s equivocal comments about the Charlottesville riots. The CEOs in each case took courageous moral stands, in my view, but it’s also likely their workforces—and a good chunk of their customer bases—were deep in support.

That said, as a chronicler of CEO behavior, I can confidently state that none of these actions would have happened a decade earlier. The standard chief executive response, when faced with a controversial social issue that didn’t directly affect the bottom line, was to shut the heck up.

Not everyone, of course, sees this new social consciousness on the part of business as an authentic change—or even necessarily a good one. Anand Giridharadas, author of the book *Winners Take All: The Elite Charade of Changing the World*, has emerged as one of the most articulate critics (see “An Insider Takes Aim at ‘The Elite Charade’” in this issue).

“I absolutely see the change,” Giridharadas told me recently. “It has become socially unacceptable as a company or a rich person not to be doing good. CEOs are asking the question: ‘What can I do to make the world better?’”

“But what many are failing to do is ask: ‘What have I done that may be drowning out any of the do-gooding I’m doing?’” He cites the 2017 tax bill, supported by the Business Roundtable, as an example. The lion’s share of the benefits, he argues, ended up in the hands of the top 1%, increasing the income inequality underlying many social problems.

“What I see are well-meaning activities that are virtuous side hustles,” he argues, “while key activities of their business are relatively undisturbed ... Many of the compa-





JAMIE DIMON, CEO OF JPMORGAN CHASE AND CHAIR OF THE BUSINESS ROUNDTABLE, SPEARHEADED THE EFFORT TO REEVALUATE THE BRT'S STATEMENT OF PURPOSE. THE RESULTING REVISION, HE SAYS, "IS AN ACKNOWLEDGMENT THAT BUSINESS CAN DO MORE TO HELP THE AVERAGE AMERICAN."

nies are focused on doing more good but less attentive to doing less harm."

Some of that may indeed be true. But given the immense power large companies exercise in society, the new social consciousness of business surely should be seen as a step in the right direction. At a time when the nation's political leadership is tied in knots, more interested in fighting partisan battles than in uniting to solve public problems, business leadership is filling the leadership vacuum.

The Business Roundtable's apostasy got its start back in June of last year, when journalist Steven Pearlstein wrote a column in the *Washington Post* criticizing the group's 1997 statement. That "decision to declare maximizing value for shareholder[s] as the sole purpose of a corporation" is "the source of much of what has gone wrong with American capitalism," he wrote.

Soon afterward, the Drucker Institute's Rick Wartzman echoed the theme in a column for *Fast Company*. He praised the BRT under Dimon for advocating the abandonment of quarterly earnings guidance, criticizing Trump's immigration policies, and pushing for expanded workforce training efforts. But he said that "for all of these developments, the Roundtable is failing in an area that lies at the very core of the connection between business and society: It continues to elevate shareholders' interests above everybody else's."

Never one to take criticism lightly, Dimon invited Pearlstein, Wartzman, and a small group of others to a testy, off-the-record dinner in October at JPMorgan headquarters. His argument to the group was that most BRT companies already take into account the concerns of a broad range of stakeholders in their decision-making.

But he left the dinner agreeing to take a second look at the 1997 statement.

The resulting reevaluation led to a lively internal debate. "There were members who spoke up and were spirited," says Joshua Bolten, the BRT's CEO. But, at the end of the day, "most of them were persuaded this was the right articulation" of corporate purpose. The board agreed "that it is really important for us collectively to highlight and proactively communicate the positive role of business in society."

"We had some real good discussion and debate," Gorsky tells me. But, in the end, "I was impressed with the unanimity of the BRT members in support of this."

Bolten insists the change is more than just words. Under Dimon, the BRT has taken more high-profile positions on social issues—its recent endorsement of raising the minimum wage is an example. "The traditional role of the BRT was policies that promote or hinder economic growth. We haven't lost that. That's still bread and butter." But the group has added an "opportunity agenda": recognizing the need to adopt policies that will help better spread the benefits of economic growth.

The new purpose statement should "raise the bar for everyone," says Rometty. "And I know for a fact it will have an effect on the agenda the BRT pursues. We will take a broader view of the policy agenda and not be as narrow as we have been in the past."

Rometty herself has been a reflection of that change in the work she has done as chair of the group's workforce and education committee. She has pushed companies to support a broad training and workforce program that goes far beyond their individual interests and is more focused on the needs of a society in the grips of huge technological change that

threatens to leave many workers behind. “In this era, we do stand a chance there are going to be people who have won and not won, haves and have-nots. We need to make sure everyone feels they can participate. We have to make this an inclusive era so everyone can see they have a role and can get a good job.”

General Motors CEO Mary Barra, a member of the BRT board, is another example of the trend. She assumed her CEO post just before the company came under attack for faulty ignition switches that led to more than 100 deaths. “We were very values-driven,” she says. “It is always easy to say you have values and put them on the walls. But living when things are hard is more difficult.” Today, she says, “we regularly talk to employees about our values.”

In 2017, GM condensed its social mission into a simple, bold commitment to “zero crashes, zero emissions, zero congestion.” “There was a huge outpouring of support,” Barra says. “That was a big aha moment for me.” Levi Strauss’s Chip Bergh, who took a strong stance on gun control, tells of a similar epiphany.

Barra and Bergh are in good company, it appears. Four in 10 *Fortune* 500 CEOs (41%), according to a poll we conducted in March through SurveyMonkey, agree that solving social problems should be “part of [their] core business strategy.” (Seven percent, it’s worth noting, still stick to the Friedman view that they should “mainly focus on making profits and not be distracted by social goals.”)

Wartzman of the Drucker Institute notes that the current focus has a “back to the future” quality to it. Many American corporate leaders came out of World War II with a profound sense of the need to put social goals and workers’ needs high on their corporate agenda. But that commitment broke down in the last quarter of the 20th century, in part because globalization broke the bond between many companies and their local communities.

Just as this was happening, another radical financial notion came into vogue. It was called the theory of shareholder primacy, and it turned out to be more powerful than anyone could have predicted. Who knows? Maybe the new corporate philosophy will too. **F**



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Statement on the Purpose of a Corporation

PUBLISHED BY THE BUSINESS ROUNDTABLE, AUG. 19, 2019

→ **Americans deserve** an economy that allows each person to succeed through hard work and creativity and to lead a life of meaning and dignity. We believe the free-market system is the best means of generating good jobs, a strong and sustainable economy, innovation, a healthy environment, and economic opportunity for all.

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dignity and respect.

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- We respect the people in our communities and protect the environment by embracing sustainable practices across our businesses.

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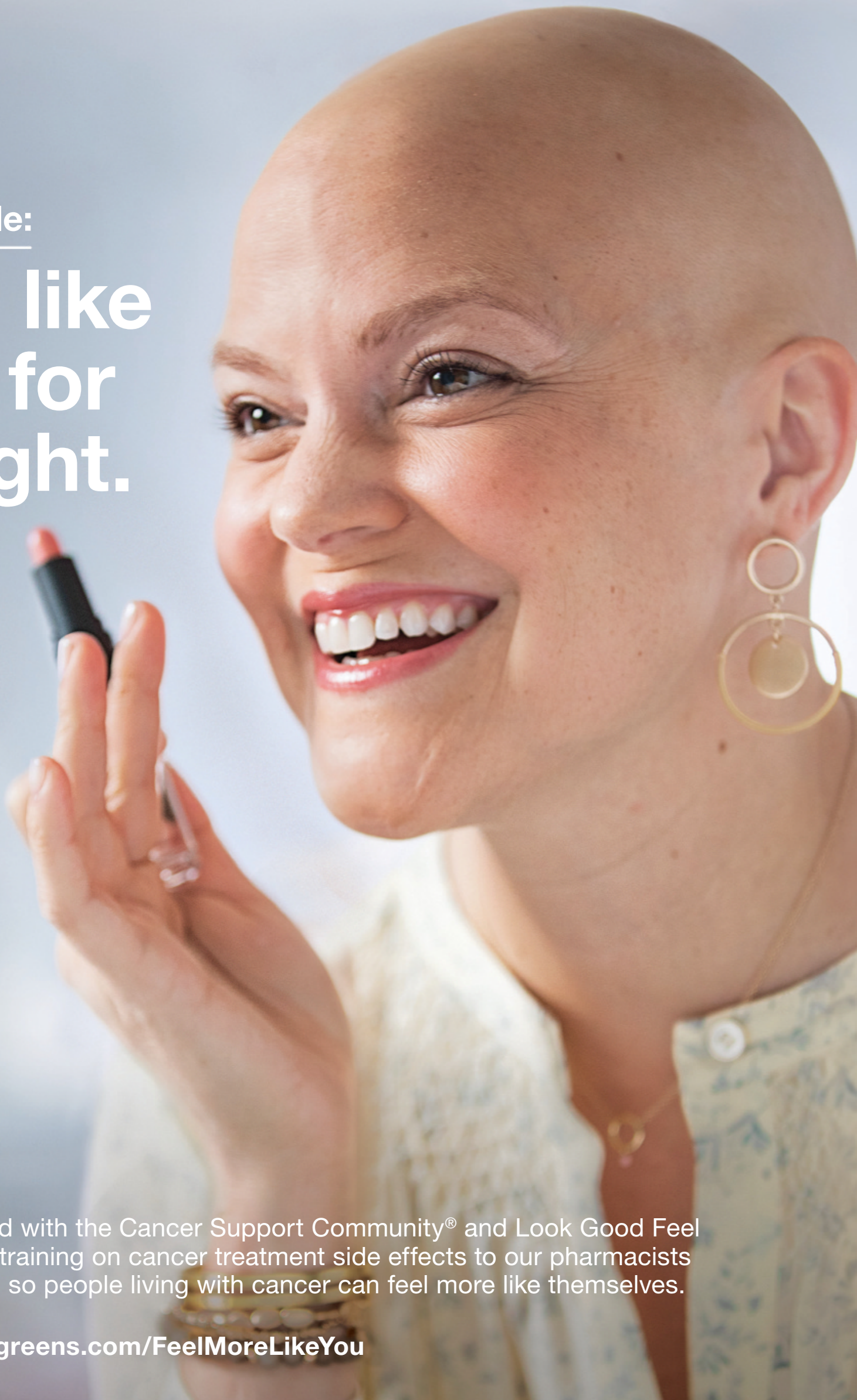
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Innovation accelerates to win new 5G revenue streams.

CAPTURING THE 5G PROMISE

Developers line up to be first to any great challenge. For fifth-generation mobile networks (5G), more than 200 network operators in 85 countries are actively testing, performing trials on, or deploying the technology, according to the Global Mobile Suppliers Association. Unlike its predecessors, 5G will make an impact far beyond faster speeds. It will enable a variety of exciting new technologies, like autonomous driving, augmented/virtual reality, and a much broader reach for the Internet of things (IoT). These technologies and the markets they create will transform our society in ways we never imagined.

As you might expect, 5G technology will deliver much faster data rates and unprecedented reliability. High data throughput, courtesy of enhanced mobile broadband, will enable lightning-fast downloads and even real-time high-definition video streaming. Massive machine-type

communications will connect billions of “things” to the internet, giving rise to a new frontier of applications such as smart farming and optimal traffic management. Ultra-reliable, low-latency communications will fully deliver previously limited use cases like autonomous vehicles and remote surgery.

What you might not expect is that 5G’s high-bandwidth and real-time capabilities hold enormous potential for society. If you can imagine a world where first responders could treat traumas miles away from the nearest hospital, so can developers. And while these capabilities may feel far off, they are closer than most think. In

fact, the barriers have already been broken: The first telesurgery using 5G took place at the Hospital Clinic of Barcelona, from an auditorium at Mobile World Congress in February 2019. And remote surgery using 5G was performed on a human brain in China in March 2019.

Delivering this kind of wireless speed, responsivity, and reliability requires a series of technical advancements. The first is frequency spectrum. Prior to 5G, cellular communications mostly resided in crowded frequency segments below 3 GHz, where physics are good but data rates are restrained by limited spectrum availability. What 4G proved

The 5G promise is exciting. The technology is highly complex. And the disruption potential to the mobile communications industry is enormous.

is that the appetite for mobile data traffic is large and continues to grow. Communications technology company Ericsson predicts mobile data traffic growth to reach 131 exabytes per month in 2024, close to five times the amount in 2018. But there are not enough new bands available at low frequencies to meet the need. High-throughput applications need wider bandwidths only available at higher frequencies, in the millimeter-wave (mmWave) spectrum.

While higher frequencies deliver much faster data rates, the move to mmWave brings new technical challenges for developers across the mobile ecosystem. Higher frequencies can carry more data, just at shorter ranges and with higher sensitivity to interference. Device makers and network equipment manufacturers need to combat these potential losses with advanced multi-antenna reception techniques. Multi-antenna approaches, though, require over-the-air testing methods, which can make device characterization less predictable. Mobile network operators also have to prepare for a massive increase in 5G subscribers.



The 5G promise is exciting. The technology is highly complex. And the disruption potential to the mobile communications industry is enormous. Device makers are eagerly delivering on 5G smartphone shipments, which analysis firm IDC forecasts to grow to hundreds of millions in just five years. The prospect of new revenue models equally motivates mobile operators around the world. And it is real. Fixed 5G emerged in 2018, delivering 5G home internet service to customers in select cities. These services are only the tip of the 5G iceberg for mobile network operators. The 5G mobile network buildout that started in 2019 is expected to be a catalyst, spurring even more new application services to enterprises and consumers alike.

The technical gauntlets have been

set, and developers are responding across the mobile network ecosystem. New development workflows, testing paradigms, and methods of testing field deployments have emerged to make the promise of 5G real. Streamlining the workflow across stages—design, validation, manufacturing, deployment—and industry collaborations are critical to continue feeding the appetite of 5G.

While many of the technical complexities of 5G have been solved, there are many more to come. Increased production demands will lead to faster manufacturing test innovations. Higher densities of latency-sensitive applications will lead to demands for faster mobile operator and data center networking tests. Disaggregated network applications will lead to changes in how we monitor and secure users. But developers develop, even in the face of complexity, and they line up to face these challenges when their lab environments have the design and test tools equal to the task.

No one understands, appreciates, and applauds the 5G development community more than Keysight. ●

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An Insider Takes Aim at 'The Elite Charade'

As a conference-circuit regular and former McKinsey consultant, writer **Anand Giridharadas** has seen firsthand corporate America's efforts to solve social problems. Here's why he's come to see those efforts as more self-serving than world-changing. **By Adam Lashinsky**



The setting is ironic for a late-afternoon cocktail with Anand Giridharadas, the self-appointed scourge of well-meaning plutocrats everywhere. The author of the biting 2018 book *Winners Take All: The Elite Charade of Changing the World* has suggested the bar at the Big 4 Restaurant in San Francisco's Huntington Hotel, where he is staying. And so we sip drinks amid the dark wood paneling and white tablecloths of a redoubt that quietly screams plutocracy. Oil-painted portraits of two of the bar's namesake 19th-century railroad magnates, Leland Stanford and Mark Hopkins, gaze down sternly at us as we discuss what Giridharadas believes to be the pernicious impact of the 21st century's own robber barons.

The villains in Giridharadas's tale live in a land *Fortune* readers will recognize. He calls it MarketWorld, a place where any problem can be solved by market forces—including issues involving public health or primary education, which common sense suggests only governments or massive publicly funded institutions can possibly tackle. Giridharadas thinks the MarketWorld ethos enables those in charge to convey a sense of sacrifice while comfortably calling the shots, thereby preserving their place at the top. When a big company donates thousands of computers to public schools while

lobbying to squelch tax hikes that would keep those schools funded, that's MarketWorld in action. "I felt there was a phenomenon of the people who benefited most from the last four decades entrenching their monopoly on the future," he says, "by claiming to be leading the charge to fix our biggest shared problems."

His list of privileged culprits and their enablers is long. These include for-hire "thought leaders," as distinguished from nobler critics; philanthropists and "impact" investors who prescribe fixes for their benighted beneficiaries without asking how they'd like to be helped; and the merry band of attendees of what he calls the "TED, Davos, and Aspen conference circuit" who reinforce one another's rarefied conceptions of goodness. Where others see noblesse oblige, in other words, Giridharadas spies disingenuous self-dealing.

Giridharadas knows his subject because he's a full-fledged member of the club. Indeed, the 37-year-old journalist is that most dangerous form of critic, the insider who bites the hand that feeds him. An Ohio native with a vertical shock of salt-and-pepper hair, Giridharadas checks all the boxes of the global elite. Educated at Harvard and launched into the working world as a consultant at McKinsey, he has given two TED Talks, was a Henry Crown Fellow at the Aspen Institute, and is now an editor-at-large for *Time* magazine. He gives paid speeches and attends swell parties, rubbing shoulders with the one percent. He is prolific on Twitter, naturally, and is quick with substantive rants as well as pithy put-downs like "Plutes be pluting." His arguments resonate with other idealistic insiders (some of whose crises of conscience he recounts in *Winners Take All*), even



OUR SOCIETY IS WAY MORE DEFENSELESS AGAINST THE IDEALISTS THAN THE REALISTS. WE DON'T REGULATE THE IDEALISTS WELL, BECAUSE WE ARE SUCKED IN BY THEIR STORY."

if those arguments aren't changing the practices of those insiders' employers.

He's got no issue per se with well-heeled do-gooders trying to change the world. His beef is with how rich and influential people and corporations bestow their gifts and the implications for governmental organizations that could otherwise have far greater impact. Elites, he says, are happy to help so long as the results are a "win-win"—provided that the benefactors themselves don't suffer, whether from higher taxes or from policies that would restrain rapacious behavior. But Giridharadas argues that the only way to solve society's biggest problems is for "some people to do worse"—a solution for which the privileged have little or no appetite.

Few escape Giridharadas's ire. Former President Bill Clinton gets most of a chapter in *Winners Take All* for his now defunct Clinton Global Initiative conference, which offered a platform for the powerful to promote pet philanthropic projects, regardless of their past misdeeds or the merits of their proposals. Pious tech leaders particularly bother Giridharadas—precisely because they wield power under the flag of idealism. Each has a self-serving narrative, he argues: "Uber just wants to create micro-entrepreneurship in America. Google just wants to organize all the world's information. Facebook just wants to build a universal community of mankind. And I really think they believe it... Our society is way more defenseless against the idealists than the realists. We don't regulate the idealists well, because to some degree we are sucked in by their story."

Research for his book predated the rise of left-wing Democrats like Alexandria Ocasio-Cortez, with whom he clearly sympathizes. And Giridharadas doesn't much dwell on Donald Trump, with whom he clearly doesn't. If anything, he's fed up with both U.S. political parties. He blames Republicans for having denigrated government for decades, though he gives them points for transparency. "It has been one of the most successful intellectual campaigns in the history of the world," he says. "It spread globally as a kind of theory in which government is bad and entrepreneurs are the only good thing." But he reserves special scorn for Democrats who have bought into anti-government orthodoxy: "You have Obama



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A GAP
CHARITY
CAN'T
FILL

187%
Increase in
U.S. philan-
thropic
giving,
1979–2017

Includes
corporate giving
and individual
philanthropy.

[SOURCE: GIVING
USA]

22%
Increase in
the average
earnings of
the bottom
90% of U.S.
earners over
that span

343%
Increase in
the earnings
of the top
1%

In 2017 dollars.

[SOURCE: ECONOMIC
POLICY INSTITUTE]

creating the Office of Social Innovation and Civic Participation. The founding charter says that top-down programs from Washington don't work anymore. Really? Barack Obama only could vote because of a top-down program from Washington—the Voting Rights Act of 1965—"that worked pretty well."

Why pick on rich people and companies that sincerely are trying to help? When "the modest act of do-gooding abets harm-doing on a much bigger scale, the net effect of the do-gooding may be negative," he retorts. An example he cites is the attention paid to Mark Zuckerberg's philanthropy even as journalists were slow to catch on to Facebook's data-privacy misdeeds. "If you took away all of the coverage that resulted from that moral do-gooding," he says, "I think the guy would have been busted by journalists and regulators, like, eight years ago." Goldman Sachs, guilty according to Giridharadas of helping cause the Great Recession, runs an initiative called 10,000 Women to help women entrepreneurs. "If they really loved women that much, they would have not done what they did in the financial crisis, which hurt way more than 10,000 women," he says. Philanthropy can "douse public anger," he argues, which in turn "prevents public action that would really make lives better."

Some plutocrats get off easier than others. Giridharadas has kind words, for instance, for Bill Gates, notably the work his foundation has done in Africa, where some governments don't have the capacity to solve intractable problems. But all the same, Giridharadas questions the power that wealth confers on Gates and his ilk, particularly in the U.S.: "I really don't think the Founders envisioned you setting public policy agendas at the level that someone like Gates does. That was one of the objections that a hundred years ago used to be much more common, which is, 'Who are these people to make decisions about public life?'"

The century-old objections he is referring to gave rise to the Progressive movement, a direct reaction to the political power amassed by the Dead White Men on the walls of the Big 4's bar. The critic clearly yearns for a similar development, a time of muscular governing to help the needy and to rein in the powerful. For now, the portraits of those plutocrats—and the position of their successors—remain firmly in place. ■



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TACKLING PLASTIC WASTE FOR A MORE SUSTAINABLE WORLD

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HP USES RECYCLED OCEAN-BOUND PLASTIC BOTTLES TO MAKE ORIGINAL HP INK CARTRIDGES AND HARDWARE, DIVERTING MORE THAN 700,000 POUNDS—25 MILLION PLASTIC BOTTLES—SINCE 2016.



Eight million. That's how many metric tons of plastic end up in the world's oceans every year. It destroys ocean life and even turns up in the fish and seafood we eat. While much of this material is recyclable, an alarming amount of plastic that doesn't reach the ocean ends up in landfills.

Manufacturers can play an outsized role in solving the plastic waste problem. One of the recognized leaders in sustainability is HP, which produces printers, printer ink and toner cartridges, personal computers, and 3D-printing solutions. The company manufactures 100% of its toner cartridges and 80% of its ink cartridges using recycled content. Today, HP uses 1 million recycled plastic bottles per day and has diverted more than 25 million post-consumer plastic bottles from reaching waterways and oceans.

"HP knows that what is good for the environment is good for business and society," says Nate Hurst, HP's chief sustainability and social impact officer. "Our purpose is to create technology that makes life better for everyone everywhere and to create experiences that positively impact people, the planet, and our communities. This starts with transforming our entire business to a more efficient, circular, and low-carbon model."

That commitment is evident in HP's legacy of leadership in promoting a closed-loop plastics supply chain. By recycling existing print cartridges to create new ones, HP is helping reduce the use of virgin plastic and avoid plastic waste ending up in landfills. More recently, HP has expanded its closed-loop manufacturing process to include hardware—the HP Tango printer, for example, is made with more than 30% recycled plastic by weight.

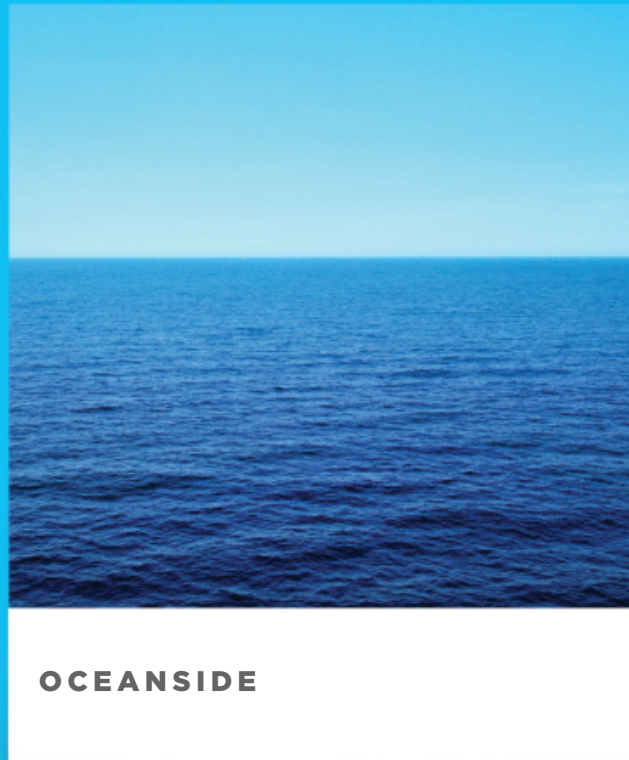
One of HP's most effective sustainability projects has been its impact sourcing initiative in Haiti. Following the country's devastating 2010 earthquake, its already weak trash collection system buckled, and tons of plastic and other waste piled up on beaches, in waterways, and in communities. HP has worked with nongovernmental organizations (NGOs) and supplier partners to create a sophisticated supply chain in Haiti to collect and incorporate the plastic waste into its closed-loop plastics supply chain—creating nearly 1,000 jobs for Haitians and providing health care and education for their families.

"Our investments and partnerships in Haiti are a great example of the positive change that can happen when businesses and NGOs come together to support shared objectives to benefit the planet, our people, and global communities," says Ellen Jackowski, HP's global head of sustainability strategy and innovation.

"Recycling is the answer to plastics waste and to enhanced sustainability," says Steve Alexander, president of the Association of Plastic Recyclers (APR), an international trade association representing the plastic-recycling industry. "One of the most important aspects of recycling is sorting the materials, because otherwise they're going to get thrown out."

HP knows that in addition to being good for the environment, sustainability is good business. In 2018, HP tracked more than \$972 million in new revenue as a direct result of its sustainability programs, a 35% year-over-year increase.

Meanwhile, companies are encouraging their suppliers to provide recyclable packaging, and it's in their interest to do so. These days, says Alexander, "it's what customers expect." ■



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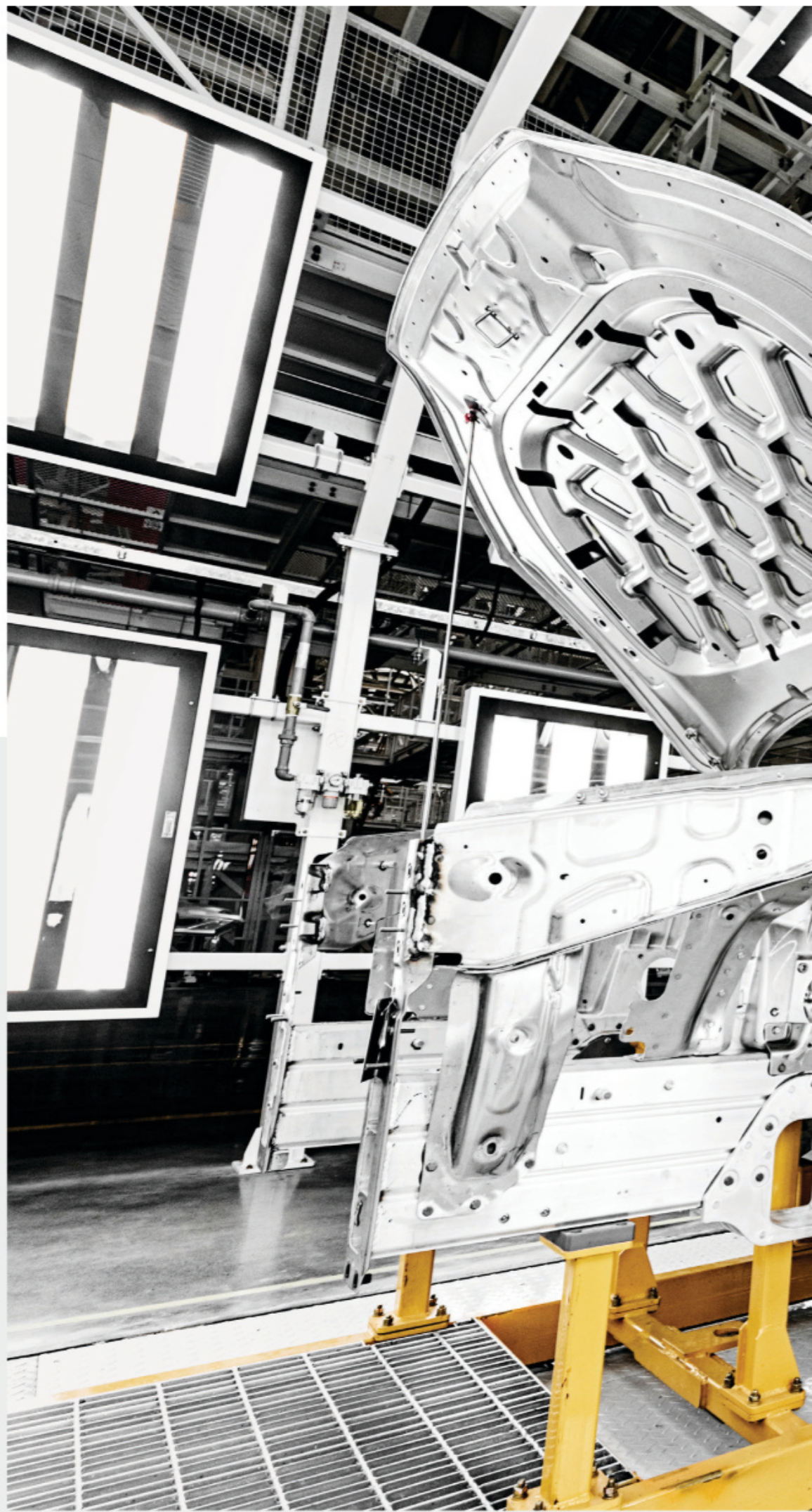
keep reinventing

Electric Gold Rush: The Auto Industry Charges Into China

Global carmakers like Volkswagen are betting that electric vehicles are the future. But to win in the world's largest EV market, they will have to battle a host of fierce new Chinese competitors. Oh, and Tesla. **By Jeffrey Ball**



In a drab industrial zone of western Shanghai, amid factories that each year crank out hundreds of thousands of gasoline-powered cars, transmissions, and engines, the world's largest automaker is racing to finish a new sort of plant, one that will produce a car unlike any it has made before. The 74-acre facility will have a newfangled assembly-line conveyor belt made of plastic instead of the typical steel or wood—a system that should be cheaper to reconfigure on the fly in order to manufacture cars whose shapes and layouts are likely to change more frequently and radically than any model the company has previously built. And the plant will be decked out with infrared cameras to monitor the safety of stockpiles of a component the company hasn't before had to deal with in large volume: enormous batter-





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ies—each nearly as big as two coffins side by side—that have a nagging propensity to ignite.

What's happening here in Shanghai is no incremental industrial tweak. It's Volkswagen AG's bet-the-corporation bid for supremacy in the electric-car age. "Volkswagen" translates as "the people's car," and for much of the eight decades of VW's existence, the people were understood to be European or American and the cars to run on petroleum. But now VW's biggest market is China, and the company, squeezed by new environmental mandates, has resolved to remake itself largely as a producer of electric vehicles, or EVs. Which makes this new Shanghai plant the forward base in the fight of VW's

▀

Taxi drivers wait for their electric cars to power up at a charging station in Shenzhen. All but 100 of the city's 21,000 taxis are electric vehicles from Shenzhen-based EV maker BYD.

life. When it starts producing electric vehicles next year, it will be VW's "most modern factory worldwide," says Fred Schulze, who heads production in Shanghai for VW's joint venture in China with SAIC Motor, the Shanghai-based firm that is China's biggest state-owned automaker. Schulze, a VW veteran, previously oversaw production of sport-utility and crossover vehicles from VW's Audi unit—mostly gas-guzzlers such as the Q7 and Q8 but also the electric E-tron. From now on, Schulze says of VW, "our growth should be from EV cars."

All across the global economy, titans of the fossil-fuel era are scrambling to adapt to an existential shift: the soaring economic

◉ PREVIOUS SPREAD: VCG—GETTY IMAGES

viability of clean alternatives to dirty energy. Electricity and oil producers are struggling to ride—rather than be crushed by—a renewable-energy wave. Banks are trying to shore up their portfolios against losses induced by climate change. Automakers, though, are at a particularly scary fork in the road. The rise of electric vehicles—machines with multiple small motors instead of one big engine; with batteries instead of a fuel tank; with unprecedentedly extensive software systems instead of a transmission—is poised to redefine car making. If established automakers don't adapt, and fast, the corporate infrastructure they have long seen as a signature asset may prove instead an insupportable stranded cost.

It's far too soon to declare the end of the internal-combustion era. In the six months ended June 30, according to Wood Mackenzie, an energy-data firm, 97% of all new passenger cars sold globally had only an oil-burning engine under the hood. But it's not too early to see that electric cars are coming on fast. Indeed, sales are shooting up beyond many supposed experts' wildest projections. Globally, according to Wood Mackenzie, combined sales of passenger EVs—including full-electric vehicles, which have no combustion engine, and "plug-in hybrid-electric" vehicles, which augment their battery system with a combustion engine—jumped 47% from the first half of 2018 to the first half of 2019, to 1.1 million. The surge is being driven by a combination of factors: declining cost and improving technology, notably for batteries; increasingly convenient electric-charging infrastructure, particularly in large cities; and hefty government support.

Who wins and loses globally in the auto industry's pivot to an electric-car future will depend largely on who triumphs in China. The country, home to notoriously polluted urban skies and a population gaga for SUVs, has become, in just the past few years, by far the biggest electric-car market in the world. Owing to a potent mix of government subsidies and mandates—policies driven both by local environmental concerns and by an intent to dominate a burgeoning global technology—China accounted for 54% of the world's sales of plug-in-hybrid and full-electric cars in the year ended June 30, Wood Mackenzie says. The U.S. share: 16%.



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WE FEEL CONFIDENT," SAYS A TOP EXEC AT CHINESE EV GIANT BYD ABOUT INCREASED COMPETITION. "WE MASTERED ALL THE SKILLS BY OURSELVES."

But that's just the start. China's Society of Automotive Engineers has said 40% of passenger-vehicle sales in the country should be full electrics or plug-in hybrids by 2030. That's not far off in an industry that plans in decade-long increments. To support the push, electric-car charging stations, some big enough to charge several hundred cars at a time, are popping up across major Chinese cities like so many Starbucks. Hundreds of firms in China are today manufacturing electric cars. A shake-out is probably in the offing, as China's overall auto market softens and Beijing dials back the subsidies that have spurred the proliferation of EV startups. But the trend is clear: The country that trailed the world during the 20th century at developing cars that burn oil seems all but certain to lead it in the 21st in developing cars that hum on wired juice.

The result is an electric-car race in China that's fast-paced, financially risky, and anyone's to win. "It's a little bit like the Gold Rush in California," says Stephan Wöllenstein, the head of VW's China business, who, as he offers this analysis, is sitting in an air-conditioned conference room, a box of VW-branded facial tissue on the table, on the top floor of the automaker's tastefully appointed China headquarters tower in Beijing.

This summer, I spent some time in China with a few of the leading contenders in the electric-car race. They range from long-established Chinese auto brands to brash upstarts to well-capitalized Western companies like VW. There's BYD, which according to Bloomberg New Energy Finance was the world's largest maker of EVs for several years until Tesla recently overtook it—and in which Warren Buffett's Berkshire Hathaway owns about an 8% stake. There's Nio, a money-losing but technologically showy company that is producing gadget-laden electric SUVs. And then, of course, there's Tesla, the California-based icon founded by the mercurial Elon Musk, whose pretty and pricey cars essentially created the global electric-vehicle market. Tesla, which declined to comment for this story, broke ground earlier this year on a colossal electric-car factory on the other side of Shanghai from the spot where VW is building its new plant.

To those in the U.S. and Europe inclined to fret about Chinese industrial hegemony, EVs

represent the latest tech-centric industry that China has targeted to dominate. But this time China's influence is likely to play out more subtly. Because cars are big and thus expensive to ship—unlike, say, mobile phones or solar panels—manufacturing them is likely to remain a largely local activity, with factories in major markets around the globe. But while China is unlikely to centralize the world's electric-car manufacturing, it is defining how the global EV market develops—that is, setting the rules of the road. In many industries, Beijing has trailed Washington and Brussels. In the electric-car sector, Beijing, aided by some of the biggest Western multinationals, is leaving Washington and Brussels in the dust.

Industrial strategy in China is never the result of a single person. But, as much as anyone else, Ouyang Minggao is the technological father of China's electric-car push. From his carpeted office on the top floor of an automotive institute at Tsinghua University, essentially China's Harvard, Ouyang has spent more than a quarter century helping steer the largely government-funded research-and-development campaign that has resulted in today's EV boom.

I meet Ouyang there on a sweltering Saturday morning. He's running late, rushing from a session at which he helped strategize about further boosting the number of electric cars on the road in Beijing. His institute's stairwells are lined with black-and-white photos of auto industry pioneers: Karl Benz, Rudolf Diesel, Henry Ford, Nikolaus Otto, and Meng Shaonong, who—a plaque below his photo notes—was “the founder of the Chinese automobile industry.”

When Ouyang came to Tsinghua in 1993, China had just launched an electric-vehicle R&D program. Over the years, spending rose. Then, in 2008, things got a lot more serious. That year, China showed off 500 domestically made electric cars and buses at the Beijing Olympics. More significantly: The global financial crisis hit. One direct result of the meltdown was the Obama administration's 2009 economic-stimulus plan, which included billions of dollars in support for U.S. clean-energy industries.

That spending plan caught the attention of Beijing. And it led, in 2009, to what



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47%
Leap in
global sales
of electric
vehicles
from the
first half of
2018 to the
first half
of 2019

[SOURCE: WOOD
MACKENZIE]

**10.9
MILLION**
Vehicles sold
in 2018 by
Volkswagen,
only 79,000
of which
were
electric.
By 2050,
VW says
the vast
majority of
the vehicles
it sells will
be EVs.

Ouyang describes as a “strategic discussion at high levels” in the Chinese government about how the country should proceed with its own clean-technology push. China's State Council, the country's top policymaking body, ultimately announced nine “strategic” industries, one of which was electric cars. Government subsidies began to flow in earnest and included hefty subsidies for battery makers, automakers, and electric-car buyers—with bigger awards to the companies that advanced technology most rapidly.

But China's electric-car effort hasn't just been about pushing tech boundaries. It also has involved manipulating consumer behavior. In big Chinese cities such as Beijing, Shanghai, and Shenzhen, municipal policies have severely constrained people's ability to obtain license plates for combustion cars—but have made it easy for them to get plates for electric vehicles. China has also capitalized on several characteristics that Ouyang contends make it more suitable than the U.S. for large-scale electric-car use. China has relatively cheap electricity. It has a history of widespread electric-vehicle use, in the form of scooters. And, thanks largely to extensive state-sponsored high-speed rail for distant journeys, it has a consumer driving pattern that skews heavily toward short city trips, which are easier than long rides to build an infrastructure of car-charging stations around. For all these reasons, Ouyang says, “I think the United States is not the best application” for electric cars. “China is.”

If one city on the globe epitomizes an electric-car future, it's Shenzhen. The reality jars me as soon as I exit the airport terminal on a steamy evening and, along with a few hundred other sweaty people, get in line for a taxi. Every cab in the queue, which stretches as far as I can see, is electric. What's more, each is the same model: a hatchback made by Shenzhen-based BYD.

The growth of BYD—in Chinese, “bee-YA-dee”—epitomizes the dizzying speed with which China's electric-car enterprise has matured from a geeky science project into a dead-serious industry. Founded in 1995, it early on was a contract maker of cell phone batteries for Western brands such as Nokia and Motorola. BYD went public on the Hong



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Kong Stock Exchange in 2002. It began selling combustion cars in 2003 and electric vehicles—taxis as well as buses—in 2010. Its early EVs were just modified versions of gas-powered cars. But around 2014, BYD's R&D department began designing an all-new vehicle architecture—known in the auto business as a “platform”—in an effort to optimize the particular attributes of the electric vehicle by designing one from the ground up. Cars based on what BYD calls this “E-platform” began hitting the market last year.

BYD has benefited mightily from hometown government support. The agency that regulates Shenzhen's taxis required that local taxi companies switch to EVs to maintain their permits to operate—and it doled out subsidies over the past few years totaling about \$510 million to bring the price of each EV taxi down to that of a comparable combustion model, says Zeng Hao, deputy director at the agency. Today, all but about 100 of Shenzhen's 21,000 taxis are electric cars—all built, naturally, by Shenzhen's own BYD.

Anyone who assumes a Chinese electric car is a rattling econobox might want to take one of BYD's new models for a spin. It lacks the it's-good-to-be-king ride and feel of that crown jewel of the EV realm, the Tesla Model S. But it also lags the Model S's China sticker price, which is upwards of \$100,000. Loaded, the E-platform's top model, the Tang, has a sticker price of about \$51,000, after subsidies. A basic BYD model at the E-platform's lower end can be had, after subsidies, for about \$8,500.

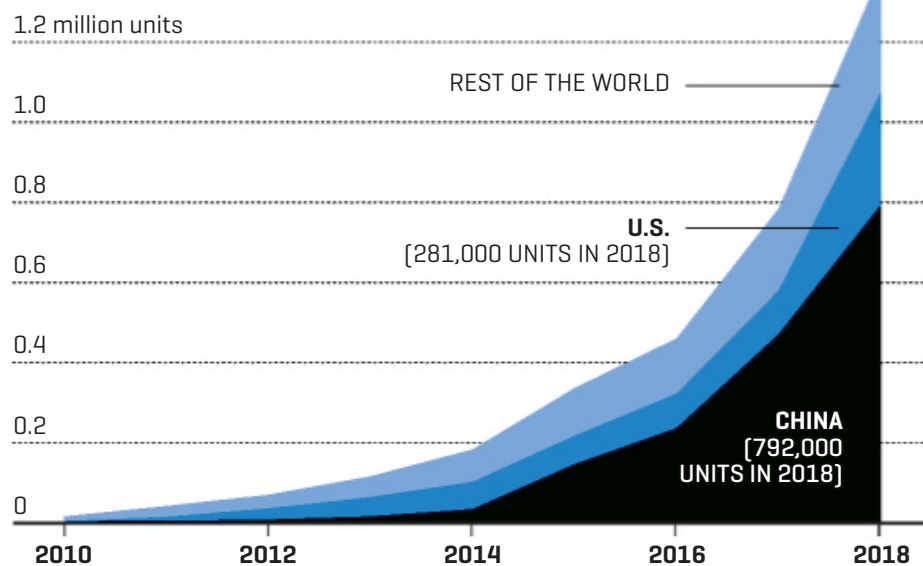
The company's leadership doesn't appear overly worried about the new competition at home and from abroad. “We feel confident,” says Lian Yubo, BYD's senior vice president for passenger-car R&D, noting that BYD has been at the EV game longer than essentially anyone. “We mastered all the skills by ourselves.”

One of those skills is the manufacturing of an obscure electronic switch, crucial to electric cars' controls, called an insulated-gate bipolar transistor, or IGBT. Most automakers buy their IGBTs from parts suppliers. But surging demand for electric cars has created a market shortage of IGBTs. BYD isn't constrained by that shortage; in the city of Ningbo, some 700 miles northeast of Shenzhen, it has its own IGBT factory, part of a unit known within the

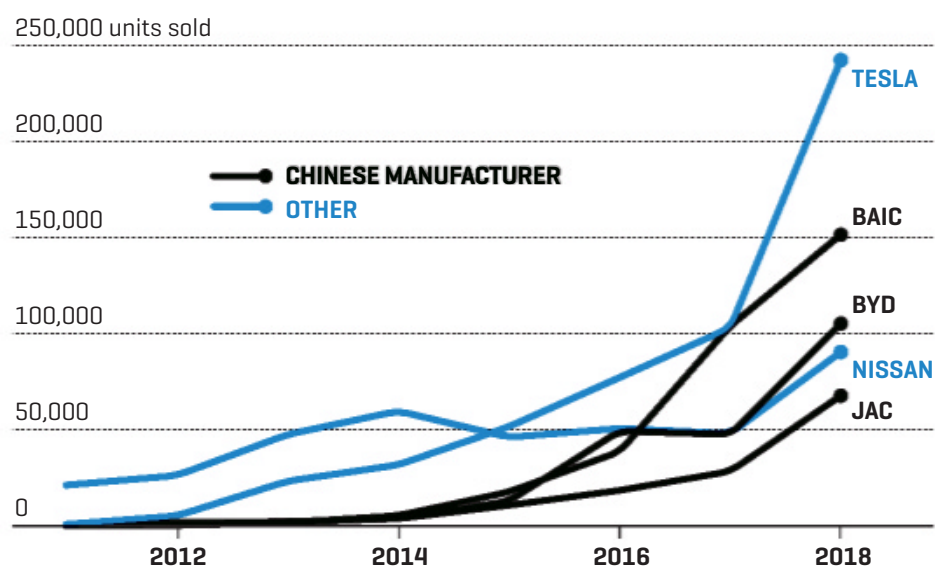
Racing Ahead in EVs

China is easily the world's biggest market for electric-vehicle sales. And Chinese companies are among the biggest sellers not named Tesla.

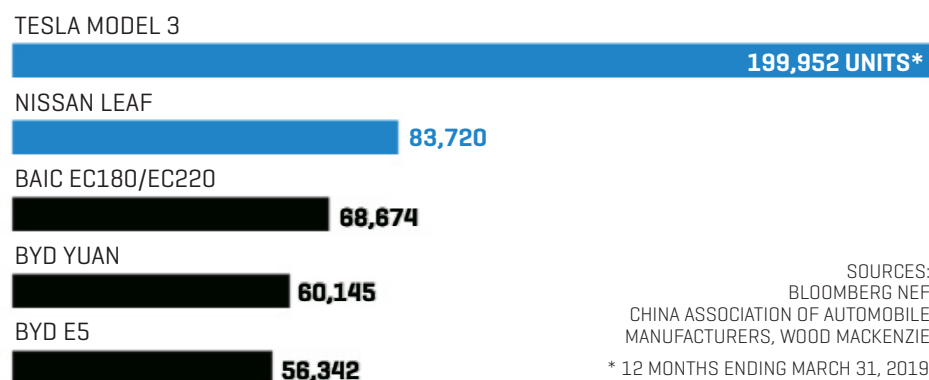
FULL-ELECTRIC VEHICLES SOLD ANNUALLY, BY GEOGRAPHY



TOP MANUFACTURERS OF FULL-ELECTRIC VEHICLES GLOBALLY



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company as BYD Division 6.

As we speak, Lian teases me with word that, later that afternoon, BYD will announce something big. The news breaks a few hours later: BYD and Toyota will team up to build Toyota-branded electric cars that will hit the Chinese market by 2025. This is just the latest electric-vehicle deal BYD has struck with a foreign automaker; for the past five years, in a joint venture with Daimler AG, the German owner of Mercedes-Benz, BYD has been building electric cars sold in China under a brand called Denza.

BYD, though, isn't content to be just the back-office builder of foreign brands' Chinese EVs. It wants to become an aspirational global electric-car brand itself. That's why, in 2016, Lian hired, from a VW-owned design studio in Italy, Wolfgang Egger, who previously had been design chief at Audi.

I meet Egger in his shiny new domain, the lobby showroom of a design studio that BYD built for him. Unlike Lian, who dresses plainly, Egger is all Euro style: He sports brown suede shoes, fashionably skinny blue chinos, a white dress shirt, and a well-cut windowpane sport coat whose blue hues accentuate his eyes. When I ask where he had it fitted, he flashes a grin and offers an of-course response: "Italy."

Bolting VW for BYD was, Egger says, a no-brainer. "To create a future EV brand was, for me, very fascinating," he says, adding: "A cherry was missing on my cake." Since Egger arrived, BYD has moved to open a satellite design studio in Los Angeles, not far from Lancaster, Calif., where the company makes electric buses for the U.S., and it has expanded its global design staff from 120 to 200, with plans to enlarge it to 300. Among Egger's top hires are the former head of exterior design for Ferrari and the former head of Mercedes-Benz's Advanced Design Studio in Como, Italy. They came, he says, for the same reason he did: "You can have your playground like this as a designer to realize things and to influence the future."

When Egger got to BYD, its cars had, he says, "a volume-brand design" devoid of "emotional feeling." He hopes to create a global brand that "has a little bit, let's say, German technology feeling, Italian sports car emotional feeling, and Chinese culture." His key Chinese culture element is the dragon, a symbol of



Ouyang Minggao, a professor at Beijing's elite Tsinghua University, has spent more than a quarter century helping create and guide China's electric-car boom.

strength and good fortune. He has designed BYD's new electric cars with myriad aesthetic nods to the dragon, particularly in their front. He hopes the headlights evoke a "dragon's eyes," the grille a "dragon's mouth," and the chrome or lighting accents between them a "dragon's mustache."

It all sounds a little dreamy—until Egger explains that this design wouldn't be possible in a combustion car. The dragon's eyes—the headlights—are visually accentuated in the BYD design because the hood slopes down to them steeply and tightly. That wouldn't work in a car with an engine because the engine would require both a higher front profile and air-intake vents. At BYD, he says, "the combustion is the follower. The EV is the leader now."

If BYD represents the Chinese electric-car industry's establishment, Nio epitomizes the upstarts. The five-year-old company, which went public on the New York Stock Exchange last year, fashions itself as China's homegrown Tesla. In at least one important sense, the price tags, that comparison is apt. Nio says it sells the most-expensive mass-production cars—electric or otherwise—built in China without the involvement of an automaker from outside the country. With all the options, its original and still most-expensive model, an SUV called the ES8, has a sticker price of about \$76,400.

William Li, the Internet entrepreneur who founded Nio, has aimed essentially to out-Tesla Tesla at China cost. The premise: "We can sell the same performance but at half the

price,” Charles Huang, the vice president in charge of developing Nio’s electric-drive systems, tells me one afternoon. We’re sitting in his office at Nio’s headquarters, an assortment of rented buildings in Anting, the same automaking agglomeration of Shanghai in which VW is building its new electric-car plant. Nio’s conference rooms are named for Western cultural landmarks (“Eiffel Tower,” “Teatro Colón,” “The Guggenheim”). The headquarters’ café is decorated to resemble a chain of swank urban lounges that Nio has built for its car buyers in big cities across China. It serves up espresso from a \$16,000 La Marzocco machine.

Nio even hired some former Tesla engineers, not surprising in an industry in which talent often moves to the highest bidder. But this year, Tesla launched Chinese sales of its Model 3, a car with a Chinese sticker price starting about \$46,500. Suddenly Nio’s job got a lot harder. “Now our strategy has changed. We need to be more cost efficient,” says Huang, a University of Michigan Ph.D. who previously worked in Michigan developing a spacecraft that later went to Pluto and at SAIC, where he headed the electric-vehicle division.

Even amid the belt-tightening, Nio is charging ahead. A key to its strategy is a “battery-swap” system; for about \$26, Nio buyers can roll their cars into small Nio sheds that now dot cities such as Beijing and Shanghai, watch their cars be hoisted on a lift, and, with the help of a proprietary machine that Nio engineers designed, have the battery unbolted from beneath the car and replaced with a fully charged one—if all goes well, in less than six minutes, or not much longer than it takes to fill a conventional car with gasoline. Nio is building not just a car but, it hopes, a network.

This business-model innovation is, I’m told, the brainchild of Li, Nio’s founder. I glimpse him behind a closed door in his glassed-in office in the Shanghai headquarters. But he won’t talk with me, the company says. One reason may be that Nio is bleeding money. The company reported a net loss of \$391 million for the quarter ended March 31, a loss 71% greater than in the year-earlier quarter, and warned of a “challenging sales environment” because of declining subsidies, increasing competition, and a slowing Chinese auto market. Then, in June, Nio announced it was recalling 4,800



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BUT AT
HALF THE
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BOASTS
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AT THE
CHINESE
EV START-
UP NIO.

ES8 SUVs after fires broke out in the batteries of two that were parked. As the company proceeded with the recall, having decided “the battery has some problems,” fires erupted in two more ES8s, Huang says. No one was hurt, he says, and Nio replaced the batteries with a newer model. As of mid-August, Nio’s stock was trading at less than one-quarter the peak it reached around the company’s initial public offering last fall.

One response: fewer people. Huang tells me Nio’s total headcount, which in late 2018 reached a high of about 10,000, is now down to about 8,400 and will fall by this year’s third quarter to about 7,000.

But for all its financial shakiness—or perhaps because of all that spending—Nio makes an over-the-top electric car. One day I take a high-speed train about two-and-a-half hours west from Shanghai to Hefei, the city in which JAC Motors, a state-owned auto manufacturer, has built a new factory for Nio. In what amounts to a capital-light strategy for the startup, Nio designs the cars and pays JAC for every vehicle that JAC’s maroon-shirted workers roll off the line. The factory is architecturally striking, and it’s chock-full of European-designed robots. Outside, on the factory’s test track, I climb into an ES6, Nio’s just-released answer to Tesla’s Model 3, and floor it. The torque slams me into my seat back and squeezes out of me a whoop. Nio’s cars may be a drag for investors, but they’re a hoot to drive.

At least on the straightaway. On the road, with real-life twists and turns, a Nio’s handling can feel a bit squishy. “I think our drivability is quite good,” Huang says, “but we have room to improve.”

Raw numbers drive home the differences among China’s EV contenders. In 2018, tiny Nio sold 11,348 electric cars and posted a net loss of \$1.4 billion. Bigger BYD sold 533,000 vehicles, nearly half of them partly or fully electric, and inked a profit of \$413.2 million. Automotive granddaddy VW sold 10.8 million vehicles globally—only 79,000, or 0.7%, of them, partly or fully electric, according to Bloomberg New Energy Finance—and it racked up a net profit of \$14.3 billion. Stocks in all three companies have swooned from

SHOULDN'T THE WORKPLACE BE A BETTER PLACE?

ELECTRIC GOLD RUSH



Workers assembling Golf series vehicles at Volkswagen's massive plant in Zwickau, Germany. VW will spend \$1.3 billion retooling the plant to manufacture electric vehicles almost exclusively.

earlier this year.

VW was founded by the Nazis in the 1930s as a project to produce automobiles for the masses. But for all VW's marketing of itself as a German automaker—"Das Auto," thundered a company slogan—its center of gravity long ago began shifting to China. Working through joint ventures with state-owned Chinese manufacturers, the VW group now sells about 40% of its vehicles in China—more than in Germany, North America, and South America combined. It is China's biggest automaker, wielding a market share there last year of 19%. Now—globally, but above all in China—VW is attempting to shift from builder merely of the people's car to builder of the people's electric car.

It essentially has no choice.

In Europe, its home market, the company faces two stark realities. The first is its own fault: In 2015, VW's reputation was shattered by the revelation that its brass had, for years, knowingly built diesel cars that spewed excessive pollution, and then repeatedly lied about it to regulators. The second, which some at VW see as following from the first, comes in the form of a regulatory headlock from Brussels: a 2018 European Union requirement that automakers slash the carbon emissions of their car fleets 37.5% by 2030. VW, in the carbon wars, has an outsize target on its back: It coughs out fully 1% of global carbon emissions owing to the sheer number of cars it puts on the road.

In China, the company now

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CHANGE
THE
WORLD



SMART ROBOTS ARE NOT GOING TO STEAL OUR JOBS. YET.



A drone's-eye view of the 74-acre VW electric-car facility under construction in western Shanghai. It will be Volkswagen's most advanced plant worldwide when it opens next year.

faces another regulatory prod backing it into the electric-car corner. China's central government, which for the past several years doled out billions in electric-car subsidies, is pulling back that support and implementing a mandate instead. In what amounts to a polluter's tax, one modeled on a policy in California, China is requiring that automakers peddle a certain number of electric cars each year to offset their internal-combustion sales—or buy credits from greener rivals.

In short, the Chinese government is switching from a carrot to a stick. Wöllenstein, VW's China head, predicts that, by decreeing more electric-car sales, Beijing will force economies of scale that, within a few years, will make electric cars less expensive

than combustion cars to produce. "The lines will probably cross in 2022 or 2023," he says.

If that happens, the Chinese government will have birthed a new global automotive era.

VW has been preparing for this shift since early 2016. That was when, in the immediate aftermath of the diesel scandal, the company realized it needed an alternative low-carbon technology that it could deploy at scale. VW had for a few years been manufacturing small numbers of electric versions of a couple of its combustion models, notably the E-Golf, a variant of its basic hatchback. But in 2016, VW started work on a new platform designed specifically for electric vehicles—the modular E-drive kit, or in German, *Modularer E-Antriebs-Baukasten* (MEB).

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ELECTRIC GOLD RUSH

In 2018, the company announced an audacious new target: It will be carbon-neutral by 2050—not just in manufacturing its cars but also, far more significantly, in the operation of its cars over their lifetime on the road. VW executives are still trying to figure out how to meet this promise—how, for instance, to ensure that those who buy its electric cars charge them with clean, rather than dirty, electricity, particularly in China, where the power system is especially coal-dependent. At a minimum, though, the company will need to do something pretty radical: It will have to make the vast majority of its new-vehicle lineup electric.

It's hard to overstate the epic nature of this shift. Which is why I went to Wolfsburg to meet the man directing it.

Thomas Ulbrich started at VW three decades ago as an auto mechanic. Today, with his shaved head and powerful build, he retains much of that factory-floor persona. But now he wears a blue suit and commands an office alongside other board members high up in Volkswagen's executive tower. Ulbrich appears to operate at one speed. In a conventionally powered VW GTI, it would be sixth gear. Now, of course, Ulbrich drives an E-Golf, one he had the Wolfsburg paint shop coat in a particularly badass matte white. He lets me drive it; the interior smells of his favorite cigarillo brand, Clubmaster, and, when I press the power button, the speakers start pumping out “Cryin,” by Aerosmith.

As we talk in his conference room, Ulbrich sheds his jacket, paces like a caged lion, and downs an espresso from a demitasse. Not long into our conversa-

tion, he lets loose a fact that takes me a good couple of seconds to process. Given the lead time required to design a new car, VW will begin developing, in the next few years, what will be its last-ever vehicle powered by an internal-combustion engine—in the lingo, an ICE. Ulbrich tells me he expects to have the following heart-to-heart with engineers who will lead that effort: “Gentlemen, do it good, do it right—do it really good and right—because it is the last time you are starting to develop an ICE platform.”

VW has recently let fly a flurry of statistics about its electric-car intentions, each brasher than the last. By next year, it will begin producing two cars on the MEB platform: a hatchback evocative of the Golf, called the ID.3, and a small SUV, the ID.Crozz. By 2022, it will be building MEB cars at eight factories: two in China, including the one in Shanghai; one in the U.S., in Chattanooga; and five in Europe. By 2023, it will have spent \$33 billion on its electric-vehicle transition. By 2028, it will have sold a cumulative 22 million electric vehicles across 70 different models.

The first MEB production cars will start rolling off the assembly line in November. They will be built in a plant in eastern Germany's Saxony region, an auto-manufacturing stronghold, in a picturesque town called Zwickau. I went for a look.

The Zwickau plant historically produced, every year, 300,000 Golfs, Golf Sportwagons, and Passats, along with about 10,000 auto bodies for Bentley and Lamborghini, luxury brands that VW owns. But, over the next two years, it will ramp down production of combustion cars—except for the Bentley and Lamborghini

bodies—and ramp up production of electric vehicles.

VW is spending \$1.3 billion to renovate the Zwickau factory for electric-car production. Some 40% of that money will go to the body shop. To protect the battery in a crash, the electric car's body will be about 210 pounds heavier, in order to be stiffer, than a combustion car's. The ID.3 will have about 6,000 welds instead of the Golf's approximately 5,200.

Added welds aren't the only headache. In a combustion car, the various electronic brains, known as electronic control units, or ECUs, work somewhat independently of one another. But in an electric car, in which the electronics are more fundamental to powering the vehicle, the ECUs are more closely linked. That means factory workers have to learn a new way of assembling them. And that's why VW workers from factories around the world that soon will start producing MEB cars are parachuting into Zwickau to get up to speed.

One of the biggest contingents is coming from China. I meet one Shanghai worker, He Long, as I'm touring the Zwickau assembly line. He has worked for 24 years in the Shanghai factory complex run by the VW-SAIC joint venture. Soon he will go back to help implement MEB production there. I ask him how making an electric car will differ from making a conventional one. "Too many ECUs," he says.

It will be crucial to VW's global fortunes that He and his colleagues do a bang-up job cranking out the new electric models in China if Volkswagen wants to keep up with its Chinese rivals.

VW executives profess admiration for a handful of large Chinese electric-car makers, among them

BYD. They say time will tell whether startups like Nio can make reliable cars. Wöllenstein, the VW China chief, suggests anyone attempting to drive a Nio a long distance be prepared to call the Chinese equivalent of an Uber: "Let's say, keep your mobile phone and a DiDi app" ready. But VW clearly is eyeing Nio. When the head of the Zwickau plant shows me a presentation on VW's electric-car push, it has Nio's logo pasted alongside Tesla's on a slide underscoring market competition. And Wöllenstein notes the gadget-laden cars from startups like Nio are an "indirect threat," changing "customers' perceptions of what is a must-have." That competition is getting increasingly close. VW has inked a joint venture with JAC, the Chinese company that's building Nio's cars, under which VW and JAC will launch an entry-level electric-car brand aimed at young Chinese consumers. Its factory is to be built in Hefei, the same city that's home to the Nio production plant.

Ulbrich, the electric-car chief, spent seven years working in China for VW—and in the process, developed a deep respect for the speed and sophistication of Chinese innovation. To this day, his office is decorated with Chinese art. He notes that many of his colleagues used to chuckle at the thought of Chinese electric-car makers outpacing the mighty German behemoth. But "the smile," he says, "was for the first generation of these cars." Ulbrich typically spends at least a few days each month in China, and he and his colleagues on the VW brand's management board fly there twice yearly to drive the latest local competition. These days, when they assess their Chinese rivals, few in Wolfsburg are laughing. ■

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FASTEST-GROWING COMPANIES

THERE IS NO “ONE SIZE FITS ALL” WHEN IT COMES to warp-speed growth. For instance, Chinese social media and dating app Momo, No. 1 this year on *Fortune’s* 100 Fastest-Growing Companies list—our annual ranking of the world’s top performers in revenues, profits, and stock returns over the past three years—had \$2.1 billion in sales last year. By contrast, Amazon.com, No. 11, had \$242 billion. Not every fast grower is a product of the Internet era, either: The average age of the companies on this year’s list is 38 years old. But they have all been market winners, with an average annual return of 29% over the past three years vs. 14% for the S&P 500. To read our analysis of which stocks on the list are most attractive now, see “Inside the Bargain Hunter’s Lab” on page 43. But first, explore the full list on the pages that follow. —*Brian O’Keefe*

LIST BY
SCOTT DECARLO,
DOUGLAS G. ELAM,
AND KATHLEEN SMYTH

RANK		For an explanation of Fortune's methodology, go to the end of the list.	EARNINGS PER SHARE		NET INCOME	REVENUE		REVENUE	TOTAL RETURN		P/E, CURRENT FISCAL YEAR PROFITS (EST.)
2019	2018		THREE-YEAR ANNUAL GROWTH RATE (%)	RANK	PAST FOUR QUARTERS* (\$ MILLIONS)	THREE-YEAR ANNUAL GROWTH RATE (%)	RANK	PAST FOUR QUARTERS* (\$ MILLIONS)	THREE-YEAR ANNUAL RATE* (%)	RANK	
1		MOMO¹ Beijing	193	2	340	141	1	2,142	53	14	18
2		TEXAS PACIFIC LAND TRUST Dallas	95	16	306	85	2	432	68	4	19 [^]
3		MICRON TECHNOLOGY Boise	173	3	13,060	38	23	29,985	41	22	8
4		CORCEPT THERAPEUTICS Menlo Park, Calif.	295	1	76	74	4	258	27	49	15
5	19	NETFLIX Los Gatos, Calif.	129	9	1,265	33	43	16,614	59	12	102
6	5	PAYCOM SOFTWARE Oklahoma City	80	22	143	34	41	612	74	3	90
7	7	NVIDIA Santa Clara, Calif.	82	21	3,291	35	32	10,729	52	15	42
8	36	NEXSTAR MEDIA GROUP Irving, Texas	73	26	396	52	8	2,778	31	40	16
9		TRITON INTERNATIONAL Hamilton, Bermuda	98	15	361	30	50	1,464	44	19	7
10	38	SS&C TECHNOLOGIES HOLDINGS Windsor, Conn.	71	27	133	44	12	4,136	28	46	17
11	9	AMAZON.COM Seattle	112	12	12,005	30	49	241,545	38	26	73
12	20	BROADCOM San Jose	141	8	3,473	36	29	21,813	26	52	17
13		WEIBO¹ Beijing	148	6	623	58	6	1,768	15	80	16
14	18	VEEVA SYSTEMS Pleasanton, Calif.	63	32	259	27	58	911	68	5	107
15		INNOVIVA Brisbane, Calif.	161	5	399	59	5	264	11	87	7
16		ETSY Brooklyn	49	43	96	28	55	652	86	2	90
17	8	ARISTA NETWORKS Santa Clara, Calif.	34	65	385	38	25	2,274	59	11	32
18		ENANTA PHARMACEUTICALS Watertown, Mass.	28	79	78	45	11	234	56	13	41
19		ABIOMED Danvers, Mass.	64	31	259	33	42	769	34	32	61
20	23	NV5 GLOBAL Hollywood, Fla.	34	66	28	40	18	441	42	21	21
21	17	MKS INSTRUMENTS Andover, Mass.	68	29	300	40	19	1,984	23	58	17
22	6	FACEBOOK Menlo Park, Calif.	65	30	19,553	45	10	58,949	19	67	25
23	13	GRUBHUB Chicago	34	67	55	41	15	1,098	36	30	92
24		YANDEX Schiphol, Netherlands	85	18	750	34	36	2,130	20	64	31
25	40	ALIGN TECHNOLOGY San Jose	35	64	376	34	40	2,079	50	16	38

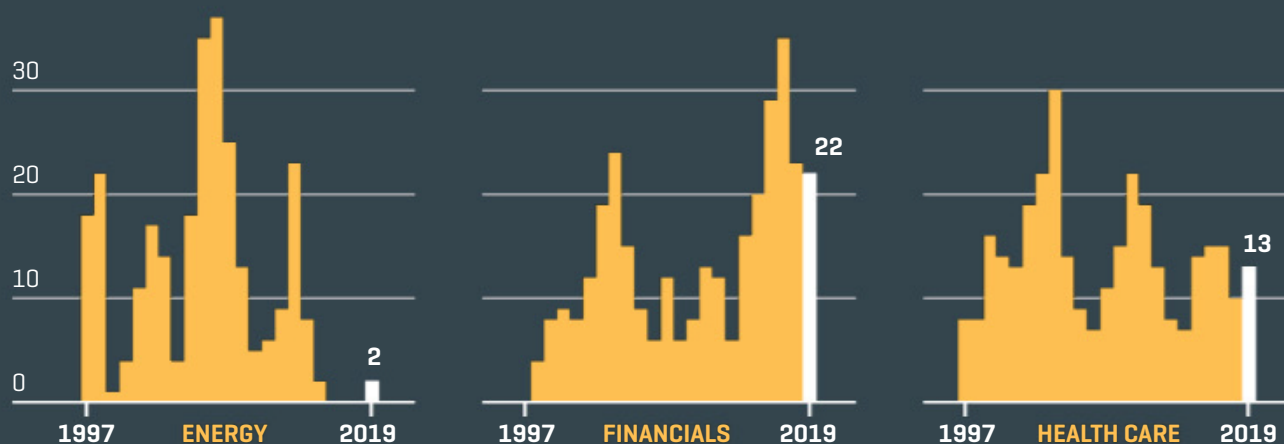
* Through the quarter ended April 30, 2019. ¹ Incorporated in the Cayman Islands.

[^] P/E estimates for the current fiscal year are not available. The figure shown is the trailing 12-months P/E ratio.

TECH STILL REIGNS SUPREME

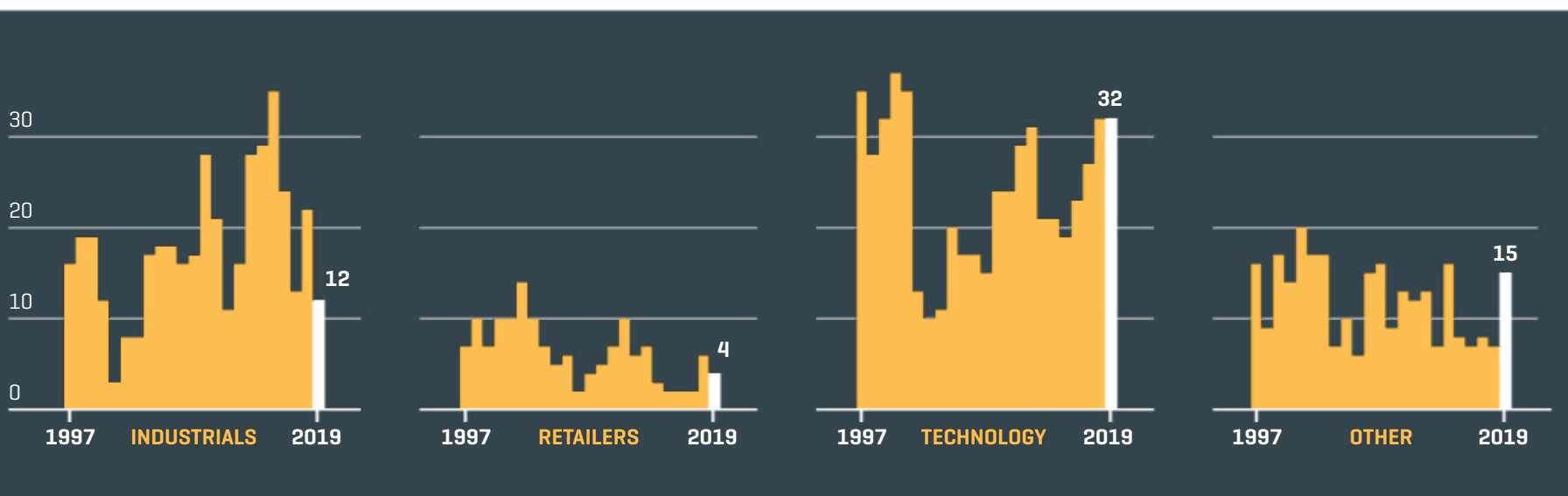
For the second year in a row, the technology sector placed the most companies on the list, matching last year's total of 32. The once-dominant energy industry, meanwhile, continues to lag.

NUMBER OF COMPANIES IN EACH SECTOR >



RANK		For an explanation of Fortune's methodology, go to the end of the list.	EARNINGS PER SHARE		NET INCOME	REVENUE		REVENUE	TOTAL RETURN		P/E, CURRENT FISCAL YEAR PROFITS (EST.)
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26		WASTE CONNECTIONS Vaughan, Ontario, Canada	54	38	548	35	34	5,027	27	50	35
27	16	EAGLE PHARMACEUTICALS Woodcliff Lake, N.J.	79	24	38	43	13	216	13	85	32
28	77	MALIBU BOATS Loudon, Tenn.	27	81	59	37	27	628	48	17	7
29	3	SUPERNUS PHARMACEUTICALS Rockville, Md.	60	34	103	39	20	404	18	73	14
30		HEALTHQUITY Draper, Utah	63	33	93	30	52	304	29	43	81
31		BIOTELEMETRY Malvern, Pa.	33	71	49	34	39	409	43	20	23
32	44	LAM RESEARCH Fremont, Calif.	53	40	2,671	27	57	10,418	33	34	12
33	21	ADOBE San Jose	55	37	2,682	24	76	9,552	45	18	49
34		MEDIFAST Baltimore	49	44	64	23	77	568	60	10	17
35	10	LGI HOMES The Woodlands, Texas	35	63	146	36	30	1,513	31	41	11
36		LIVE OAK BANCSHARES Wilmington, N.C.	74	25	41	40	17	264	7	92	58
37		WILLIS LEASE FINANCE Coconut Creek, Fla.	122	10	57	20	99	374	38	27	7 [^]
38		MATCH GROUP Dallas	59	35	501	20	98	1,787	67	6	43
39		SALESFORCE San Francisco	102	14	1,158	26	70	14,013	24	57	128
40	63	ON SEMICONDUCTOR Phoenix	83	20	602	22	84	5,887	32	38	13
41		FORMFACTOR Livermore, Calif.	85	19	107	27	60	544	20	63	26
42		BAOZUN¹ Shanghai	33	69	43	25	73	858	97	1	35
43	14	COHERENT Santa Clara, Calif.	51	41	196	38	21	1,700	14	82	24
44		FIRSTCASH Fort Worth	29	78	154	41	16	1,799	26	51	26
45		METHANEX Vancouver	88	17	438	27	63	3,703	19	68	16
46	2	STAMPS.COM El Segundo, Calif.	104	13	137	35	35	589	-20	100	21
47		WINGSTOP Dallas	29	77	22	27	65	164	64	7	130
48	66	YY¹ Guangzhou, China	27	82	644	38	24	2,578	27	47	10
49		FIRST BANCORP Southern Pines, N.C.	36	62	91	30	48	299	29	44	12
50	45	AUTOHOME¹ Beijing	42	52	452	21	94	1,126	63	9	20

* Through June 28, 2019. The S&P 500 returned 14.2% annually over the same period. [Company returns lower than that of the S&P are bolded.]



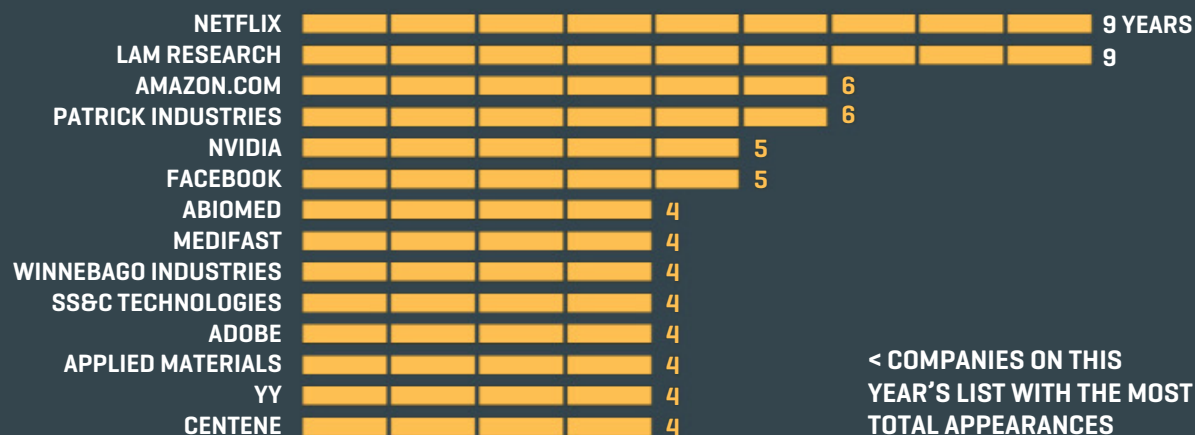
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51		PENUMBRA <i>Alameda, Calif.</i>	25	87	12	32	44	471	39	25	207
52	56	ESSENT GROUP <i>Hamilton, Bermuda</i>	45	49	484	27	66	752	29	42	9
53		MASTERCRAFT BOAT HOLDINGS <i>Vonore, Tenn.</i>	80	23	45	24	74	439	21	61	5
54	43	NOVA MEASURING INSTRUMENTS <i>Ness-Ziona, Israel</i>	69	28	48	21	93	245	33	37	25
55		SMARTFINANCIAL <i>Knoxville</i>	37	58	19	42	14	107	11	88	13
56	28	MOLSON COORS BREWING <i>Denver</i>	39	55	990	56	7	10,741	-16	99	12
57	67	FIVE BELOW <i>Philadelphia</i>	38	57	154	24	75	1,628	37	29	40
58		PLANET FITNESS <i>Hampton, N.H.</i>	42	53	96	20	100	600	63	8	51
59		WINNEBAGO INDUSTRIES <i>Forest City, Iowa</i>	33	68	106	35	33	2,025	21	62	11
60		PBF ENERGY <i>Parsippany, N.J.</i>	59	36	327	30	47	26,599	14	81	22
61		SVB FINANCIAL GROUP <i>Santa Clara, Calif.</i>	42	51	1,068	23	79	2,958	33	35	11
62		E*TRADE FINANCIAL <i>New York City</i>	54	39	1,095	26	71	3,123	24	56	12
63		MODINE MANUFACTURING <i>Racine, Wis.</i>	146	7	85	22	88	2,213	18	72	9
64		WESTLAKE CHEMICAL <i>Houston</i>	40	54	781	31	45	8,510	19	69	18
65		CBOE GLOBAL MARKETS <i>Chicago</i>	25	90	403	75	3	2,594	17	76	25
66		NANOMETRICS <i>Milpitas, Calif.</i>	120	11	44	21	90	309	19	70	25
67	33	APPLIED MATERIALS <i>Santa Clara, Calif.</i>	49	42	3,485	23	82	15,761	25	54	17
68		BMC STOCK HOLDINGS <i>Raleigh, N.C.</i>	170	4	125	23	80	3,674	6	94	14
69	30	PATRICK INDUSTRIES <i>Elkhart, Ind.</i>	39	56	111	36	31	2,319	7	93	11
70	12	INOGEN <i>Goleta, Calif.</i>	46	46	46	31	46	369	10	89	38
71		EPAM SYSTEMS <i>Newtown, Pa.</i>	25	89	237	26	69	1,940	39	24	47
72		WEX <i>Portland, Maine</i>	37	59	132	22	89	1,520	33	36	25
73		FEDERAL AGRICULTURAL MORTGAGE <i>Washington, D.C.</i>	26	85	107	27	61	595	31	39	9
74		STERLING BANCORP <i>Montebello, N.Y.</i>	24	91	450	48	9	1,329	12	86	10
75		RMR GROUP <i>Newton, Mass.</i>	46	47	77	26	68	538	17	75	10

† Through the quarter ended April 30, 2019.

* Through June 28, 2019. The S&P 500 returned 14.2% annually over the same period. [Company returns lower than that of the S&P are bolded.]

AN ELITE CLUB OF REPEAT GROWERS

A total of 56 companies on this year's list have made it before (and 38 are returnees from last year). A smaller group—14 companies—are on for at least a fourth time. The exclusive club includes RV powerhouses Winnebago and Patrick Industries as well as tech giants Netflix and Facebook.



< COMPANIES ON THIS YEAR'S LIST WITH THE MOST TOTAL APPEARANCES

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76		NICOLET BANKSHARES Green Bay	23	93	42	37	28	168	18	71	12
77		CABOT MICROELECTRONICS Aurora, Ill.	30	73	124	20	97	794	39	23	18
78	49	CENTENE St. Louis	30	74	1,082	34	38	65,366	14	83	12
79		TRIUMPH BANCORP Dallas	21	99	54	34	37	307	22	60	14
80		IROBOT Bedford, Mass.	25	88	90	23	81	1,113	38	28	25
81		ANALOG DEVICES Norwood, Mass.	23	94	1,570	27	59	6,138	29	45	23
82	84	MONOLITHIC POWER SYSTEMS Kirkland, Wash.	36	61	110	21	92	595	27	48	58
83	26	SEACOAST BANKING CORP. OF FLORIDA Stuart, Fla.	36	60	72	27	64	309	16	77	14
84	99	TRISTATE CAPITAL HOLDINGS Pittsburgh	33	70	59	29	53	271	16	78	11
85		SINA¹ Beijing	26	86	130	38	22	2,143	-1	98	19
86	83	PREFERRED BANK Los Angeles	28	80	73	27	62	217	20	65	10
87		PRA HEALTH SCIENCES Raleigh, N.C.	22	96	159	23	83	2,892	33	33	22
88		COMTECH TELECOMMUNICATIONS Melville, N.Y.	22	95	26	22	86	663	34	31	24
89		INDEPENDENT BANK GROUP McKinney, Texas	21	97	136	38	26	524	10	90	11
90		WYNN RESORTS Las Vegas	45	48	882	22	87	6,654	13	84	23
91		IHS MARKIT² London	21	100	411	26	67	4,124	25	53	31
92		PGT INNOVATIONS North Venice, Fla.	43	50	55	21	96	732	18	74	17
93		GREEN BRICK PARTNERS Plano, Texas	30	72	53	28	54	663	5	95	10
94	32	HOOKE FURNITURE Martinsville, Va.	29	76	35	30	51	676	0	97	8
95		CBRE GROUP Los Angeles	24	92	1,077	23	78	21,802	25	55	15
96		TD AMERITRADE HOLDING Omaha	26	83	2,008	22	85	5,747	23	59	13
97		OLD LINE BANCSHARES Bowie, Md.	21	98	30	28	56	134	15	79	13
98		KEARNY FINANCIAL Fairfield, N.J.	47	45	41	21	95	249	4	96	26
99		TEXAS CAPITAL BANCSHARES Dallas	29	75	312	26	72	1,324	9	91	10
100		ONEOK Tulsa	26	84	1,224	21	91	12,271	19	66	22

[†] Through the quarter ended April 30, 2019. ¹ Incorporated in the Cayman Islands. ² Incorporated in Bermuda.

* Through June 28, 2019. The S&P 500 returned 14.2% annually over the same period. **[Company returns lower than that of the S&P are bolded.]**

2019 FASTEST-GROWING METHODOLOGY

To qualify, a company—domestic or foreign—must be trading on a major U.S. stock exchange; report data in U.S. dollars; file quarterly reports with the SEC; have a minimum market capitalization of \$250 million and a stock price of at least \$5 on June 28, 2019; and have been trading continuously since June 30, 2016. Companies must have revenue and net income for the four quarters ended on or before April 30, 2019,


of at least \$50 million and \$10 million, respectively, and have posted an annualized growth in revenue and earnings per share of at least 20% annually over the three years ended on or before April 30, 2019.

Companies that meet these criteria are ranked by revenue growth rate, EPS growth rate, and three-year annualized total return for the period ended June 28, 2019. [To compute the revenue and EPS growth rates, Fortune uses a trailing-four-quarters log linear least

square regression fit.]

The overall rank is based on the sum of the three ranks. Once the 100 companies are identified, they are then reranked within the 100, using the three equally weighted variables. If there is a tie, the company with the larger four-quarter revenue receives the higher rank.

Excluded are real estate investment trusts, limited-liability companies, limited partnerships, business development companies, closed-end investment firms, and companies that lost money

in the quarter ended on or before April 30, 2019. In addition, Fortune excludes companies that have announced intentions to restate previously reported financial data, if these errors appear to have a significant impact. Also, Fortune excludes companies that lost money in the quarter ended May 31 or June 30, if the loss represents a deterioration in business conditions. The data are provided by Zacks Investment Research. The data-checking process was aided by information provided by S&P Global Market Intelligence. 

Dennis Abboud
Readerlink

Molly Ashby
Solera

Patrick Bass
thyssenKrupp
North America

Ed Bastian
Delta Air Lines

Gregory Becker
Silicon Valley Bank

**Marc Benioff and
Keith Block**
Salesforce

Chip Bergh
Levi Strauss & Co.

Stanley Bergman
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Rob Bernshteyn
Coupa Software

Aneel Bhusri
Workday

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Ruder Finn

Carlos Brito
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Tom Buiochi
ServiceChannel

Patrick Bultema
FoodMaven

Tory Burch
Tory Burch

Tim Cadogan
OpenX Technologies

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Griffith Foods

Tim Collins
Ripplewood Advisors

Brian Cornell
Target

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Linda Crawford
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Surya Kant
TCS North America,
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Rohit Kapoor
EXL Service Holdings

Margaret Keane
Synchrony

Alfred Kelly
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APCO Worldwide

Robert Moritz
PwC

Matt Moynahan
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Bank of America

Deanna Mulligan
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Peter Oswald
Mondi Group

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HARMON International

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BIG-BOX REBOUND: HOW TARGET PACKAGED A TURNAROUND

In 2017, the struggling megachain spooked Wall Street and earned mockery in the retail world by committing billions to revamping its stores. That Hail Mary pass connected for a touchdown: Today, more-inviting shopping floors and smoother e-commerce have turned Target into a winner again. **By Phil Wahba**

T

HE ROOM WAS NO BIGGER than a walk-in closet, a tight fit for Target CEO Brian Cornell and the team of executives and support staff who were sharing it. Sketchy air circulation made the room feel even more claustrophobic. And its cable-TV feed didn't work—which meant the gang couldn't tune in to see just how badly Wall Street talking heads were freaking out about Target's stock.

The chamber, a "greenroom" at a former church turned event space on Manhattan's Park Avenue, was an uncomfortable place to share an uncomfortable moment. It was Feb. 28, 2017; the executives were waiting to address Target's annual investor meeting. About an hour earlier, Target had pressed the "Send" button on a news release announcing a make-or-break revival plan for the massive but

PACK AND PLAY Prepping orders for delivery at a Target in Burnsville, Minn. Involving stores in online orders helps the company earn more profit from e-commerce.





struggling big-box retailer.

In the release, Target told the world it would sacrifice short-term profitability to make its prices more competitive with those of Walmart and Amazon. It would junk and replace some of its best-known brands. It would overhaul its e-commerce and raise wages for a large cohort of its 320,000 employees. And—most unnerving of all to cautious investors—it would undertake hundreds of extensive store renovations. Total price tag: \$7 billion over three years.

Cornell and his leadership team were convinced that they had the right plan to reverse Target's severe sales skid. But when their PR crew finally rigged up an iPad to stream CNBC, it became clear that few others agreed. A bemused anchor surmised that there must be a typo in the press release: What brick-and-mortar retailer would spend billions on stores in the Amazon era? Shares were down in premarket: They would go on to fall 14% that day, as investors concluded that Target's profits would take a hit for years.

And when the Target crew finally escaped the stuffy greenroom and faced their investors in person, the reception didn't get any more sympathetic. "I finish out that morning," Cornell recalls, "and the final question is, 'Brian, how long do you think you'll be in this job?'"

Investors had plenty of reason to be skeptical. Target was already reeling, suffering four straight quarters of comparable-sales declines. E-commerce, which Cornell had vowed to jump-start when he became CEO in 2014, was growing at barely half the pace he had promised. Some of the hip-on-a-budget store brands that had earned the chain the mock-highbrow "Tarzhay" moniker had grown too stale to lure new shoppers. Analysts had begun to fear that the chain was slipping into irrelevance, as traditional department stores had done. And a dismal 2016 holiday season, in which Target's sales declined while Walmart's soared, put an exclamation point on Target's woes.

The way Cornell's team saw it, these problems shared a common root: Target stores themselves had been better suited to retail in 1962, when the chain was founded, than they were in the 21st century. Many looked shabby after years of insufficient upkeep; few had the



THE HOT SEAT CEO Brian Cornell, photographed in the home decor section of a Target in Minneapolis. He faced intense skepticism from shareholders when he unveiled his store-renovation plan in 2017.

infrastructure to support e-commerce well. (It wasn't unheard-of for customers picking up online orders to find themselves killing time at cash registers while employees ran around the store collecting their items off shelves.) The holiday debacle was the final straw, convincing the C-suite that it was time to bring out the heavy artillery and fix its stores. No matter how badly Target needed to grow again, Cornell says, "we couldn't go down that path until we built some of those capabilities."

The idea that store improvements would be crucial to a retailer's revival may sound like simple common sense. But the alarmed reaction from Target shareholders on that February day indicated just how strongly the prevailing winds had been blowing the opposite way. Department stores like Macy's and J.C. Penney and specialty chains like Gap and Bed Bath & Beyond have collectively closed hundreds of stores, seeking growth online to make up for declining brick-and-mortar traffic—moves their shareholders have backed because e-commerce expenses are typically less of a drain on profit.

Target, in contrast, saw the potential in doubling down on what makes a retailer a retailer: stores and merchandise. By the end of 2020, Target will have remodeled 1,000 of its 1,800 stores; it's also

rolling out smaller, brand-new locations in dozens of higher-end city neighborhoods. Changes visible to shoppers include fancier presentation of apparel (think mannequins sporting “looks,” instead of stacks of shirts on shelves) and better-lit, sleeker checkout areas. Just as important, behind the scenes, is the retooling of backroom space to facilitate e-commerce—which helps Target earn more on its digital sales.

The outcome? Two and a half years after its big bet spooked shareholders, Target is posting ticker-tape-parade-worthy results. The company has notched eight straight quarters of comparable sales increases. Target’s total first-quarter sales hit \$17.4 billion, 8.7% higher than the same quarter in 2017. That’s phenomenal growth by retail standards, and the “comp” growth rate has outpaced that of most of Target’s rivals, including Macy’s, Kohl’s, and Walmart. And while operating profit margins initially shrank slightly under the \$7 billion plan, total earnings remained steady and recently began to tick up again.

Just as important to Target’s future: Its products are buzzworthy once more. Two of the brands Target has launched since 2016 already reap \$1 billion or more in annual sales, and it has won substantial market share in areas like swimwear, toys, and men’s clothing. All the momentum suggests that Target has recovered its long-absent swagger, says Charlie O’Shea, an analyst at Moody’s: “What Cornell and this team have done is to bring it back to Tarzhay.”

O F COURSE, TARGET EXECUTIVES know what it’s like to celebrate prematurely. In September 2015, a little over a year after he became CEO, Cornell had basked in a standing ovation during a companywide staff meeting at the Target Center arena in Minneapolis. He was grinning with satisfaction as he stood below a Jumbotron that displayed a graphic showing Target’s shares rising—and Walmart’s stock falling—over the preceding year.

Cornell, a PepsiCo veteran who was Target’s first CEO from outside the company, had taken the job during a particularly bad spell, one that included a massive data breach and a catastrophic expansion into Canada. His early days were a hit, however, thanks to several splashy moves. Cornell sold Target’s \$4-billion-a-year pharmacy business to CVS Health. The company launched “innovation labs” meant to quicken Target’s tech metabolism. And the new Cat & Jack children’s apparel brand was a runaway hit with young mothers, quickly becoming a \$2 billion business.

But those successes masked some deeper structural problems. Target was being outflanked by Walmart and others in retail’s price wars—particularly in apparel, where most of its older brands no longer had enough appeal to draw customers away from cheaper rivals. Target also stumbled in the culture wars: After the company spoke out about allowing transgender shoppers and employees to use the restrooms of their choice, boycotts in relatively conservative markets like Dallas ate into its sales.

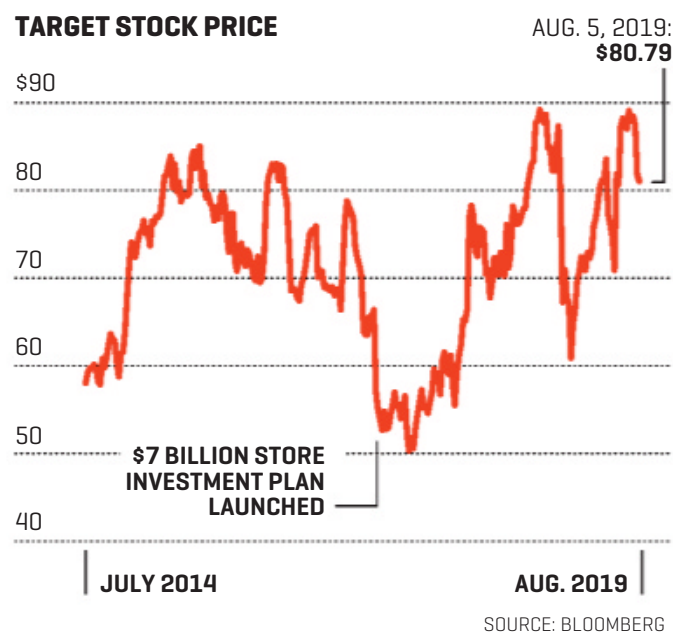
Bigger headaches lurked behind the scenes. Target wanted to bolster its e-commerce with “ship from store” operations, using store inventory to fill online orders. But inventory management was so bad that chief operating officer John Mulligan had to pause an

early pilot project. Target had long struggled with being out of stock on popular items—and it’s hard to ship an item, or invite a customer to retrieve one, if you don’t have it in the store.

This was exactly the kind of lackluster execution that Cornell’s renovation plan was designed to fix. But like other retailers, Target faced a bind with investors: Wall Street wanted brick-and-mortar giants to do more

SECOND TIME’S THE CHARM

Target’s comeback effort under CEO Brian Cornell initially fizzled, but doubling down on stores has revived the retailer’s fortunes.



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TARGET'S REBOUND

to counter Amazon but often dumped shares when a retailer committed money to do so. (In 2015, Walmart announced plans for big e-commerce investments and higher wages—and immediately suffered its biggest share drop in 25 years.)

Little wonder that Cornell's \$7 billion announcement turned stock charts red. The price tag was greater than Target's net profit for the two previous years put together, with no obvious payoff in sight. Target's shares had already been sliding since Cornell stood under that Jumbotron; by the time the stock bottomed out in June 2017, it was down more than a third.

A **S HE TOURS** a renovated Target store in Westbury, N.Y., Cornell points out signs of the redesign plan in action. The location has lower shelves, which reduce the sense of clutter and improve sight lines so shoppers can see farther into

the store. Wood “grower bins” in the fresh food area give the grocery aisles an upscale, farmers'-market flair. And brightly lit display cases draw the eye to “grab and go” snacks. It's all designed to make the Westbury location a place shoppers *want* to go rather than *have* to go. “Foot traffic is the most important barometer of Target's health,” Cornell says.

Today, every big retailer seeks the sweet spot at which in-store and online shopping feed business to each other. At many retailers, digital business simply cannibalizes in-store business, especially when those retailers neglect the in-store experience. “Everybody wanted to act more like a tech company,” Kantar analyst Laura Kennedy says of the industry. “Then they realized: ‘We are retailers and have to figure out how to sell stuff better.’”

In that spirit, Cornell wanted Target to focus on its core business and prioritize initiatives that would pay off quickly. He disman-

5 TARGETS THAT TARGET HIT

Target's comparable-sales growth has recently outpaced that of rivals like Kohl's, Macy's, and mighty Walmart. Here are some key ingredients of the comeback.

• **Spruced-up stores:** Improving stores meant spending billions on essentials like better lighting and longer sight lines. The chain even hired “visual merchandisers” to help it get more out of mannequins and other decor elements. By the end of 2020, about 1,000 of its 1,800 stores will be redone.

• **Integrated e-sales:** Target has upgraded its locations to handle store pickup of online orders,

drive-up order collection, and shipments-from-store. Stores are involved in about 80% of Target's e-commerce sales, which makes those sales more profitable.

• **Speedier delivery:** In 2017, Target bought Shipt and Grand Junction to enable faster delivery, now available from most stores. Building such capabilities from scratch would have taken years, says CEO Brian Cornell.

• **Fresher brands:** Since 2017, Target has launched more than 20 new brands, while ditching older ones that had lost their luster. Store brands often earn higher profit margins, and hipper ones help draw a younger demographic.

• **Selective tech:** Early experiments with innovation labs generated some impractical, pie-in-the-sky ideas; Cornell's team has focused on projects with a more immediate payoff.

tled the team of in-house entrepreneurs mandated with finding “moonshot” tech—electronically lowering the price of an apple as it aged in a produce bin didn’t fit Target’s new mold. The new Target would be less flashy and more focused. “Sometimes you have to turn down the volume,” Cornell says. But it would return to being a retailer where shoppers wanted to browse and explore.

Making that happen required Target to spruce up dreary stores. The company has executed most of its renovations on a gradual, “pardon our appearance” basis, so it hasn’t had to close locations outright—thus reducing harm to cash flow. Linoleum floors are out; slick display cases for groceries are in. So are mannequins. Early in his tenure, Cornell instructed managers to take a page from the department-store playbook and use mannequins to present apparel. The problem: “We didn’t know what to do with them,” he recalls. People with backgrounds in discount retail, it turns out, weren’t sure how to optimize the humanoid sales props. Target spent tens of millions of dollars to hire an army of “visual merchandisers” so that, among other things, the mannequins could have maximum impact. Clothing brands like the Goodfellow & Co men’s line have consequently thrived because the clothing is presented in an appealing way, with items paired to suggest outfits rather than folded and stacked in high piles, as they often are at rivals like J.C. Penney or Sears.

Store brands, including the Universal Thread women’s clothing line, Threshold (home), and Heyday (electronics), are Target’s secret sauce. Along with only-at-Target exclusives made by other



EVERYBODY [IN RETAIL] WANTED TO ACT LIKE A TECH COMPANY. THEN THEY REALIZED: ‘WE ARE RETAILERS AND HAVE TO FIGURE OUT HOW TO SELL STUFF BETTER.’”

LAURA KENNEDY, KANTAR



companies, they generate about 30% of sales and a disproportionate share of profits. Low prices on staples like diapers and detergent may fill parking lots, explains analyst O’Shea, but once you have shoppers on your property, “you sell them Cat & Jack, which is higher margin.”

In all, Cornell’s 2017 plan has included the launch of more than two dozen brands and the jettisoning of others. Mark Tritton, the chief merchant Cornell had poached from Nordstrom a year earlier, has long argued that strong brands would lure back bored shoppers and win younger ones. Whatever the reason, Target appears to be regaining a demographic edge. According to Prosper Insights & Analytics, the average Target shopper is 42.5 years old with a household income of \$77,610, compared with 46 years and \$64,202 for Walmart.

Target has also shortened the time it takes to bring new brands to market, helping the company more quickly capitalize on other retailers’ woes. In toys and sporting goods, Target picked up customers from bankrupt rivals like Gymboree, the Sports Authority, and Toys “R” Us. Three years ago, the L Brands franchise Victoria’s Secret announced it

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TARGET'S REBOUND

would largely exit women's swimwear. Within nine months, Target had launched its own swimwear brand; the retailer says it's now the top U.S. seller of women's bathing suits. Target has also revitalized short-term collaborations that have included such designers as Isaac Mizrahi, Lilly Pulitzer, and Vineyard Vines—which don't yield much revenue but do get people into stores.

Managing all these initiatives puts new demands on workers. Target has raised employees' pay, pledging its lowest hourly wage will jump to \$15 by late next year, in part because of how much more involved the typical job has become. Target is training workers to have expertise in particular merchandise categories, notably apparel and beauty products, rather than be a "general athlete." That approach echoes the classic department-store model—an interesting twist, given that Target was originally founded as an offshoot of a Minnesota department-store chain. "What Target has become is the modern department store," says Neil Saunders, managing director of GlobalData Retail.

Target was late in rolling out its own e-commerce platform, and in that category, it lags far behind Walmart and Amazon. Last year, digital sales grew 36% but reached only \$5 billion, not enough to crack the top 10 U.S. e-tailers, according to eMarketer. In 2017, Target bought two delivery tech startups that have allowed it to offer same-day delivery. But rather than compete with the giants head to head, Target has aimed to build tight coordination between stores and digital shoppers.

Target's longer-term plan is to minimize the number of orders filled via delivery from expensive

distribution centers. Mulligan, the COO, notes that when you deliver to an online customer from a store, you can save 40% of the costs of handling an item at a distribution center and then shipping it. If the customer picks up an item at a store, you save 90%, a big deal in a low-margin business. (If that customer buys some additional items in the store, so much the better.) This is where modernized stockrooms really matter. And on this front, too, Target's campaign is paying off: Stores now play a role in 80% of online sales, which means more digital revenue flows to the bottom line.

All of Target's approaches to retail come together in its small urban stores. There are now about 100 such outlets, up from 30 in February 2017. But they punch above their weight: Mulligan says that while the typical suburban Target generates about \$300 in sales per square foot annually, city stores do almost triple that. More important, they get Target into markets where Walmart stores don't compete and create e-commerce distribution hubs in more affluent urban areas. The logistics of supplying city stores are more complex: The new Target in Manhattan's Herald Square, for example, keeps relatively little spare inventory and instead gets five shipments a day, while a big suburban store might get five shipments a week. But Mulligan is adapting that "just in time" nimbleness from the urban stores to their suburban cousins—hoping to make the whole chain better at responding to demand.

THIRTY MONTHS after Cornell's big announcement, Target's shares trade at 40% above their 2017 lows, and Wall Street forecasts revenue



GROCERIES TO GROW ON Target says shoppers who buy food or beverages at its stores spend twice as much per visit as those who don't.

growth for 2020 of a strong 3.4%, to \$78 billion. Even so, the threat of a slowing economy can make its gains seem tenuous. Target's stock, along with those of many other retailers, took a sharp tumble in early August after the Trump administration imposed tariffs on a host of the Chinese-made items that fill store shelves.

Many industry watchers see groceries as a place where Target can boost revenue in a category that's relatively resistant to economic upheaval. Groceries account for only 20% of Target's sales, compared with 56% of Walmart's. Improvements here could add billions to Target's top line. Kurt Jetta of TABS Analytics says that while Target can't compete with Walmart as a full-service grocer, the right food offering could add \$40 to \$50 per visit from shoppers who buy food. Indeed, Stephanie Lundquist, the head of Target's \$15 billion food

business, says Target shoppers who buy a food or beverage item spend twice as much per visit as those who don't.

Outside of the grocery aisle, Target is consolidating its gains. In interviews, executives fret about letting its new brands go stale as some older ones did. Julie Guggemos, senior vice president for product design and development, says that to prevent backsliding, the company is creating a team to provide "proper governance" for brands, making sure each one is growing at the expected rate, and polling customers regularly.

But Target will be playing just as much offense as defense. Now that the chain has its house in order, Cornell says, it should be able to take advantage of turmoil elsewhere in retail. "As competitors around us close stores, we have market share opportunities," he says. "The winners and losers are breaking away from each other at an accelerated pace." The losers' customers, presumably, will be welcome under the sign of the bull's-eye. **F**

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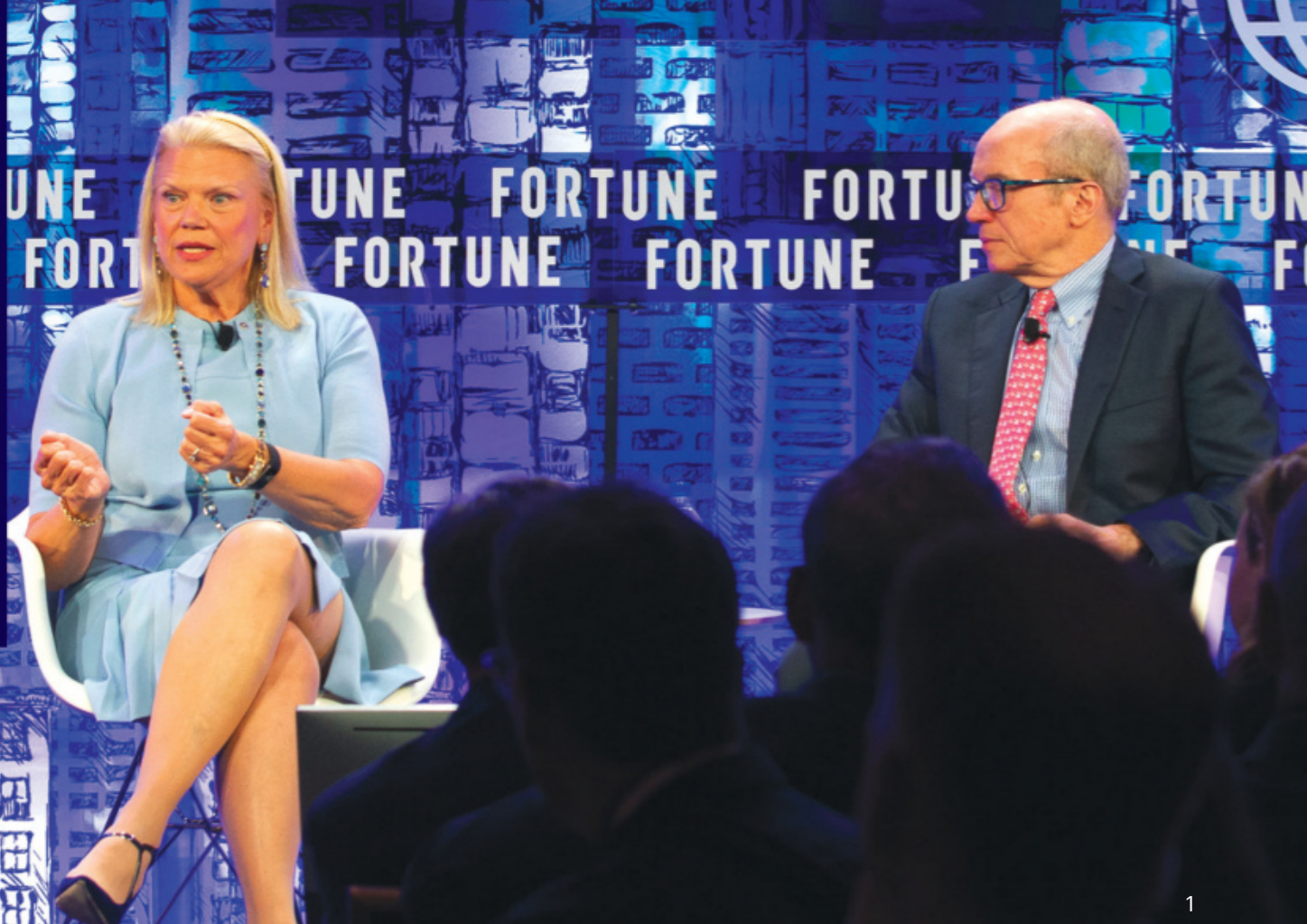
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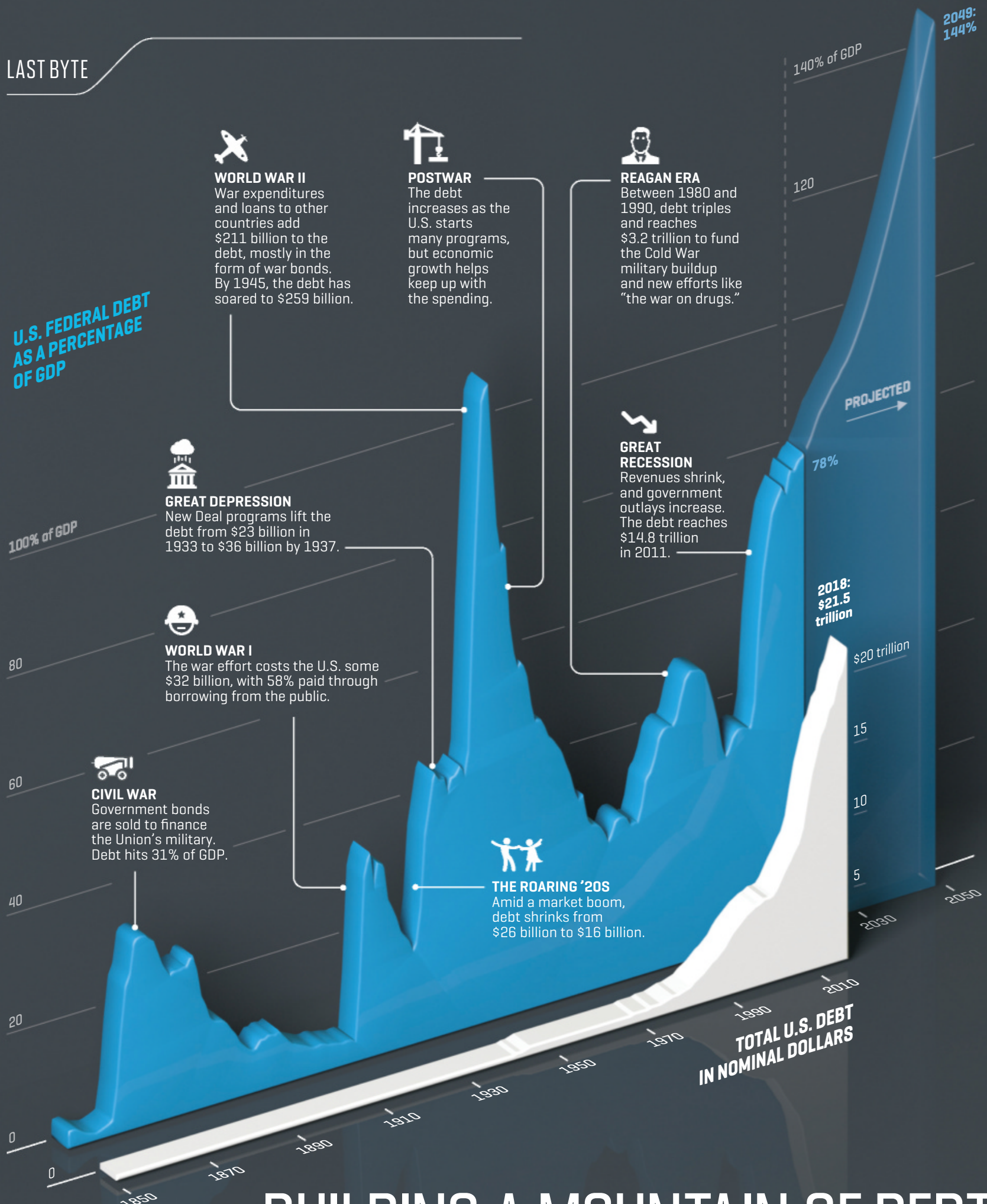
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BUILDING A MOUNTAIN OF DEBT

PILING UP DEBT IN TIMES OF TUMULT IS A STRATEGY with a long, successful history in the U.S. When confronted with wars or cataclysmic downturns, the government borrows heavily—driving up debt relative to U.S. GDP—and rebalances after good times return. But a decade after the most recent crisis-driven borrowing binge, the Great Recession, U.S. debt continues to soar. According to the Treasury Department, federal borrowing is set to hit \$1.23 trillion in 2019 on top of \$1.34 trillion in 2018. Absent major legal or policy changes, the Congressional Budget Office projects the debt-to-GDP ratio will rise into uncharted territory in decades to come. —BRIAN O’KEEFE

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