56 COMPANIES THAT ARE CHANGING THE WORLD

FORTUNE

SEPTEMBER 15, 2017
ASIA PACIFIC EDITION
NUMBER 12

FORTUNE.COM

JPMORGAN CHASE
FUELS A CITY'S REVIVAL

MEET
FORD'S NEW BOSS

BIG FOOD'S
MASS CEO EXODUS

+ THE 100 FASTEST GROWING COMPANIES

TIM COOK, CEO, APPLE

APPLE FINDS ITS CORE

HOW TIM COOK IS GUIDING THE TECH GIANT TO BE A POWERFUL FORCE FOR GOOD


She's a fan.
MANDARIN ORIENTAL
THE HOTEL GROUP

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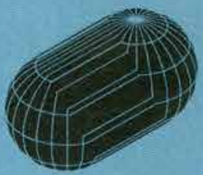
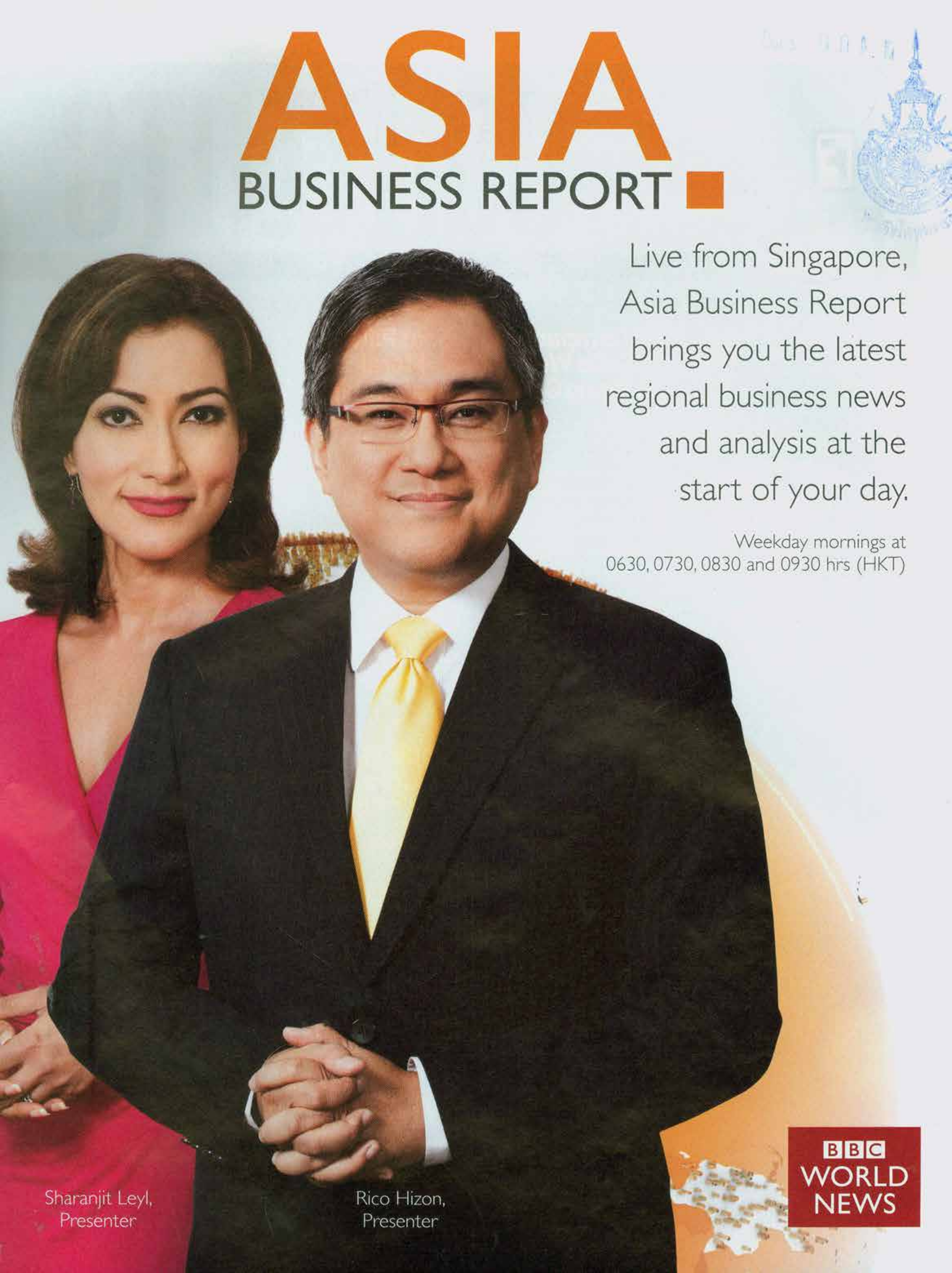
FEATURES

CHANGE THE WORLD 2017



▲ ON THE COVER: TIM COOK PHOTOGRAPHED BY **SPENCER LOWELL**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DEPARTMENTS

MANNEQUIN: TOM SCHIERLITZ; ILLUSTRATION: MICHAEL GEORGE HADDAD

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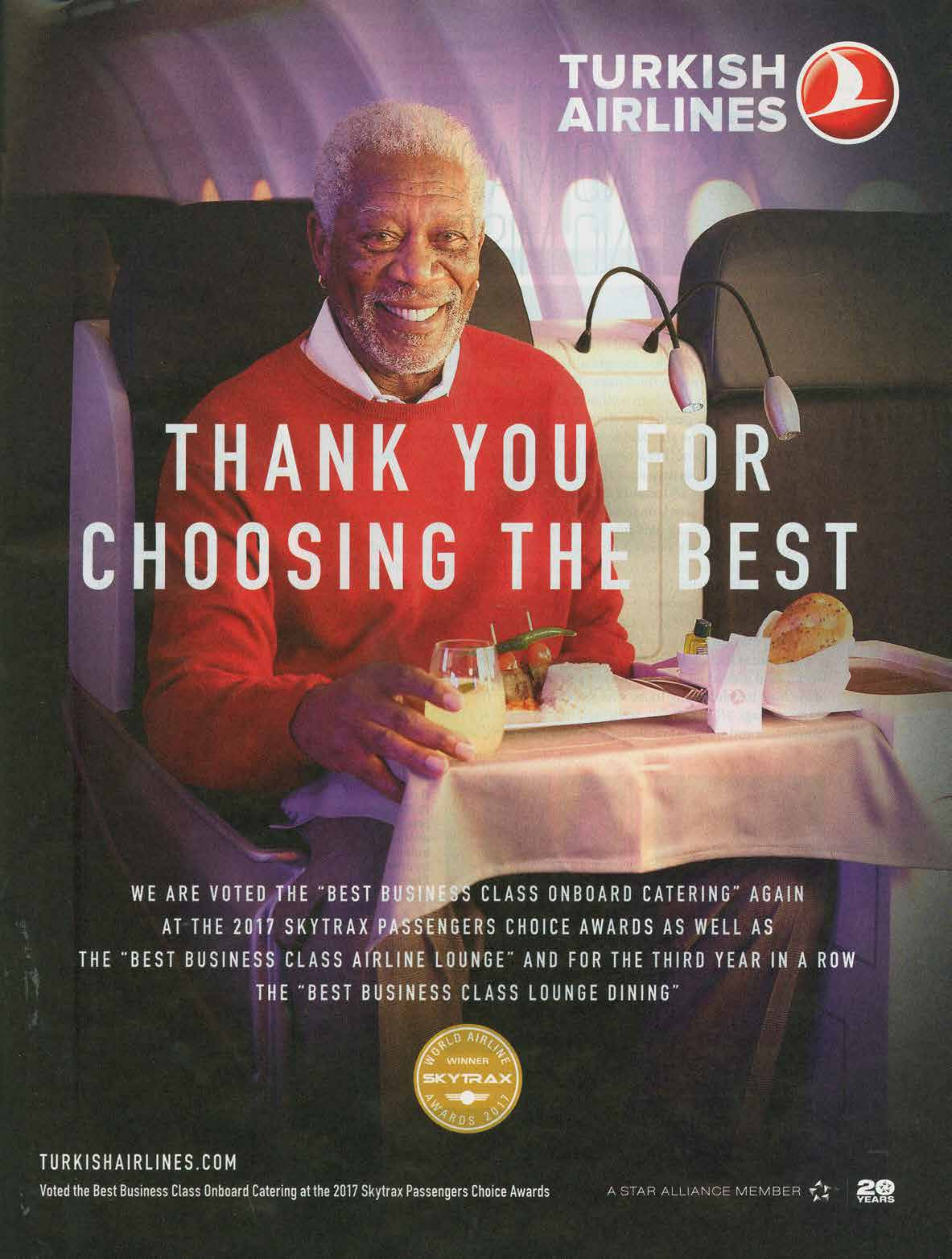
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NO MARGIN, NO MISSION

THERE IS PERHAPS no more central component to the free enterprise system than the profit margin. That margin allows companies to keep running, growing, and investing in the future. That's Capitalism 101. And it's a notion that's worked pretty darn well over the centuries, lifting people out of poverty and broadly raising the standard of living.

So you might not be shocked to learn that, increasingly, that same incentive is driving another worthwhile enterprise as well: Call it everyday problem solving. A positive operating margin, after all, can encourage a company to invest in addressing a societal challenge—be it environmental, economic, health-related, or something else—just as it might steer it to selling widgets, or WaaS (widgets as a service).

As Aetna CEO Mark Bertolini framed it to me in a recent phone call, "No margin, no mission." That, mind you, is not the maxim of some hard-nosed titan of industry, he pointed out, but rather the watchwords of a group of nuns—in this case, the good Sisters who have helped guide Ascension, the large, not-for-profit Catholic health system, to a comfortable operating margin year after year.

Companies that embrace that mindset have the power to change the world. And indeed for the past three years we've devoted an annual issue of *Fortune* to celebrating those who do. Our Change the World list, which starts on page 36, highlights 56 companies around the globe, brand-name companies and rising stars, that are solving problems, serving others, or helping the planet—and furthering their core business aims while doing it.

MOTOWNER Developer Cliff Brown is one of the entrepreneurs being financed by JPMorgan Chase in Detroit.

One of those companies is JPMorgan Chase, the $105 billion-in-revenue behemoth, which is banking big on Detroit (see "Making a Motown Miracle," on page 56). As *Fortune* features editor Matt Heimer reveals in his must-read story, CEO Jamie Dimon has come to believe that reviving America's small businesses and urban neighborhoods will drive growth—rather than the other way around. Matt spent weeks studying Detroit's battered economy and traveling to the frayed but still vibrant neighborhoods that JPMorgan Chase is helping to rebuild. Politicians and policymakers, take note: The bank's multipronged assault on Rust Belt stagnation is a blueprint for revitalizing many of America's hardest-hit cities.

The Detroit project isn't charity; it's a natural extension of what a bank does: putting capital in the hands of people who can grow it. That idea, that doing good can be core to one's business, is also championed by almighty Apple, as executive editor Adam Lashinsky discovers in his exclusive interview with CEO Tim Cook (see page 74). Whether it's Apple's efforts to make coding a "second language" or the company's ambitious investment in digital health applications, Cook clearly sees a business opportunity in all of it. And that's a good thing.

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

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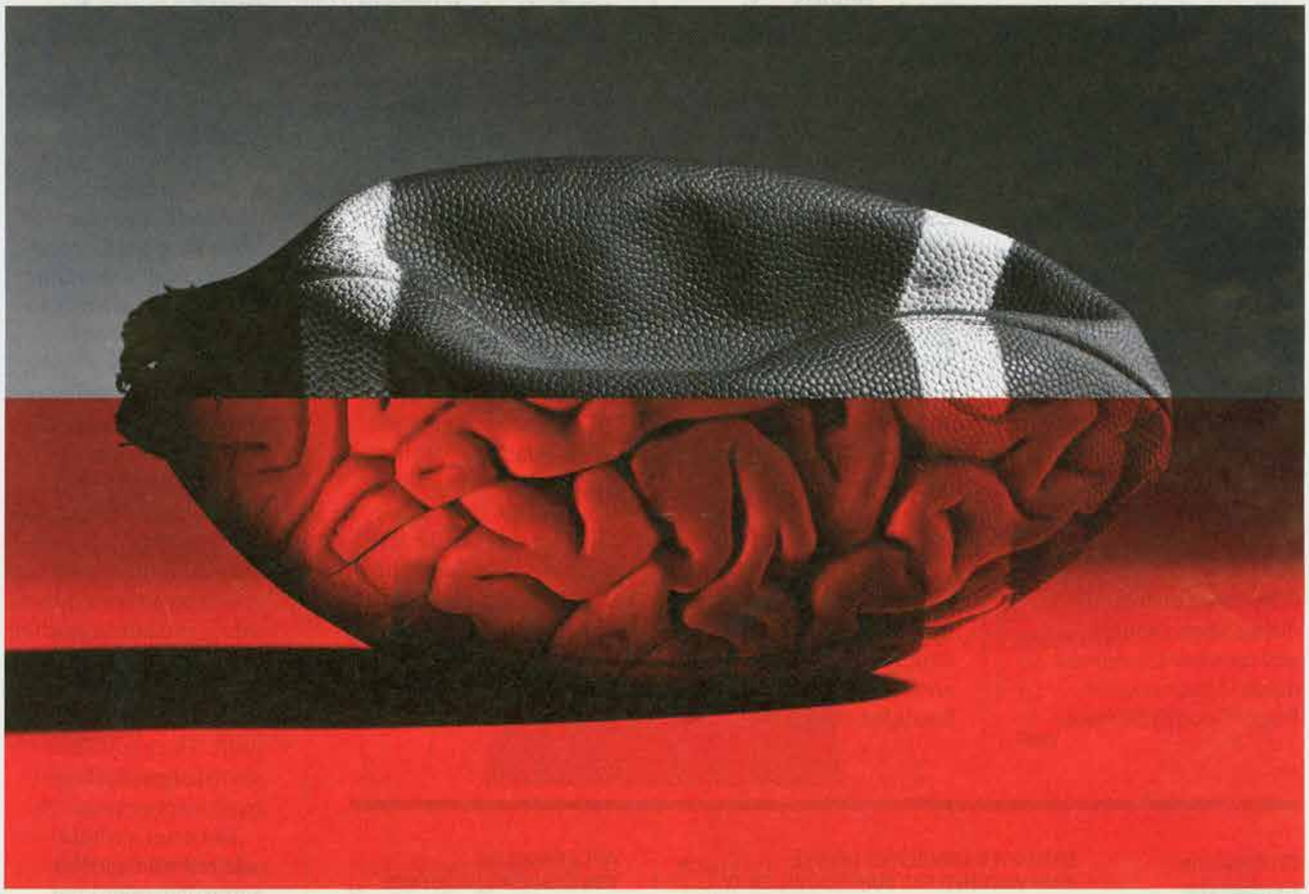
THE WORLD IN 9 PAGES

BRIEFING



Football Absorbs a Knockout Blow

As the evidence mounts that the sport is hurting its players, a multibillion-dollar cultural and entertainment colossus looks ever more deflated.

By Tom Huddleston Jr.

ATHLETICS

IT WAS A FINDING heard around the sports world. Researchers at Boston University announced in July that they had detected evidence of chronic traumatic encephalopathy (CTE) in 110 donated brains of former NFL players. They had studied 111. The result suffered from selection bias—the brains had been donated because those men had demonstrated symptoms of the degenerative brain disease—but the report's ironclad takeaway is that the illness is far more prevalent in pro ▷▷

FOOTBALL: IMAGE SOURCE—GETTY IMAGES; BRAIN: DEBBI SMIRNOFF—GETTY IMAGES football players, subject to years of repeated hits to the head, than in the general public. The unavoidable conclusion: Football's concussion problem is far worse than originally thought.

The results highlight an existential crisis for America's most popular sport. This fall, NFL fans will have to wonder whether the next bone-crunching tackle they see on the gridiron will haunt their favorite player for years to come. And if it seems likely that it will, can they stand to keep watching?

A business empire hinges on the answer to that question. The NFL employs thousands of people and is expected to pull in $14 billion in revenue this year, between ticket sales, merchandising, sponsorships, and massive TV-rights deals. Commissioner Roger Goodell has said he wants that number to reach $25 billion within a decade. College football is also a colossus, with ESPN paying $7.3 billion over 12 years for the rights to televise just seven bowl games a year. But the real economic impact comes from the many ancillary businesses that surround the sport. Fantasy football is estimated to be worth billions annually, and ESPN and other networks rake in billions from subscriptions and advertising. Athletic apparel companies like Nike and Adidas invest millions in licensing and sponsorship agreements with the NFL and NCAA, not to mention the endorsement deals for individual players.

In the near term, industry analysts see few signs of football Armageddon. (Boxing, another sport known for its brutality, saw its popularity wane, but only gradually, over the course of decades.) But there may be some soft spots in the league's armor. For starters, TV ratings for NFL games dipped 9% last year. While that decline could have various causes, there's no equivocation over what's driving a rash of early NFL player retirements. From promising San Francisco 49ers rookie linebacker Chris Borland in 2015, to 26-year-old Baltimore Ravens offensive lineman John Urschel just days after the Boston CTE report, more players are hanging up their cleats over fears of long-term brain damage. In January, Heisman Trophy–winner Bo Jackson told *USA Today* he would never have played if he'd known the risks, adding, "There's no way I would ever allow my kids to play football today."

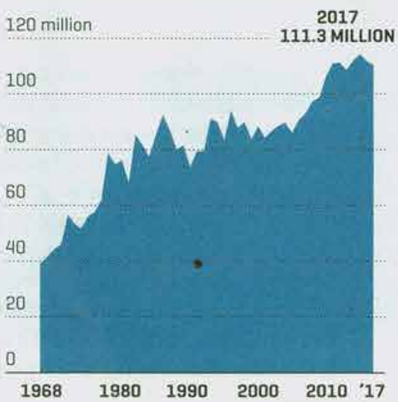
Indeed, the NFL's greatest challenges are yet to come. Last year an HBO/Marist poll found that 44% of parents with sons under 18 were less likely to let them play football—meaning the NFL's talent pipeline (and fan reservoir) could eventually dry up.

The NFL isn't in denial about the problem. It's working with youth football organizations on rule changes aimed at limiting head-on collisions, and is spending $1 million at schools to promote flag football, an increasingly popular collision-free version of the sport. NFL officials have publicly admitted the link between football and degenerative diseases like CTE. And Goodell touts the NFL's efforts to improve player safety, including funding research to curb concussions by upgrading helmets and the field itself. The league has also pledged millions to neuroscience research.

But even a wholesale rethinking of its game play might not fix football's problem. Fans driven from the sport aren't guaranteed to return, especially if dramatic rule changes significantly alter the feel of the game. That's the unsettling paradox of the financial threat looming over America's massive football economy. It's a multibillion-dollar gamble no matter what path the sport takes.

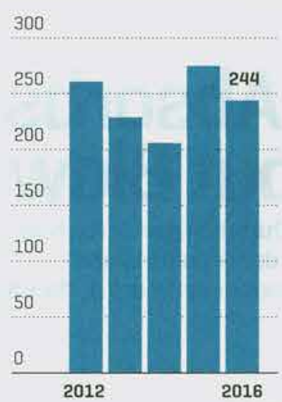
Professional football still commands a massive audience, though Super Bowl viewership has slipped slightly in recent years. A typical season sees more than 200 officially reported concussions.

ESTIMATED NUMBER OF PEOPLE WHO WATCHED THE SUPER BOWL ON TV



SOURCE: NIELSEN

NFL REPORTED CONCUSSIONS INCIDENCE



SOURCE: NFL

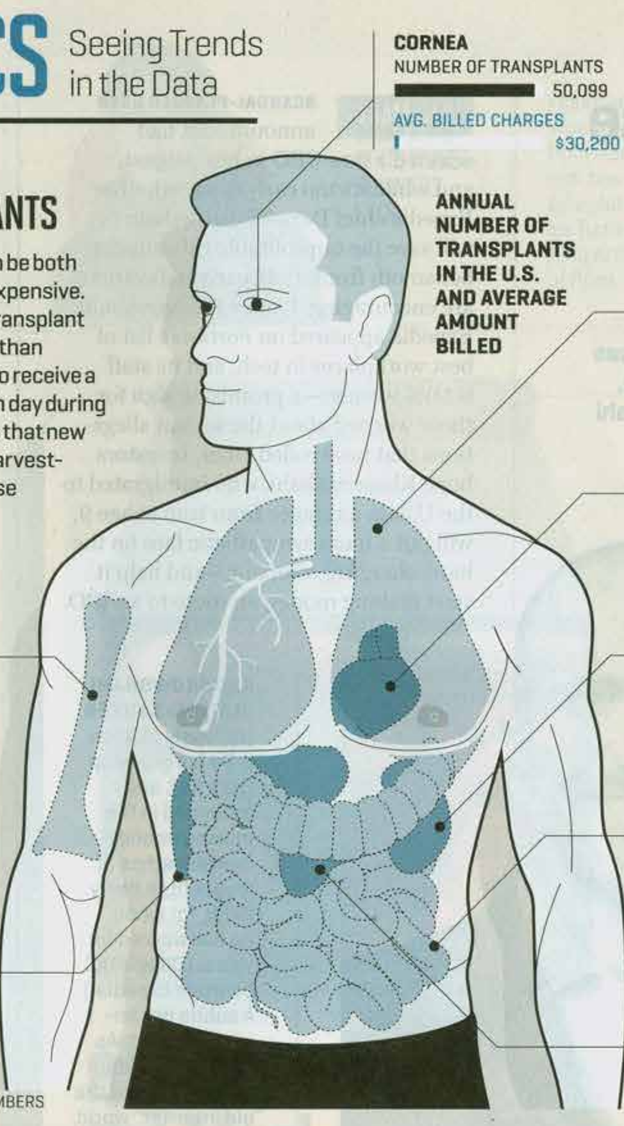
ANALYTICS Seeing Trends in the Data

■ HEALTH CARE

THE COST OF TRANSPLANTS

Organ and tissue transplants can be both hard to come by and extremely expensive. (The cost for the average heart transplant can approach $1.4 million.) More than 116,000 Americans are waiting to receive a transplant, and about 20 die each day during the wait. Soon, researchers hope that new science (including advances in harvesting organs from pigs) will decrease price tags and long wait times.

ANNUAL NUMBER OF TRANSPLANTS IN THE U.S. AND AVERAGE AMOUNT BILLED



CORNEA
NUMBER OF TRANSPLANTS 50,099
AVG. BILLED CHARGES $30,200

LUNGS
SINGLE
NUMBER OF TRANSPLANTS 673
AVG. BILLED CHARGES $861,700
DOUBLE
NUMBER OF TRANSPLANTS 1,397
AVG. BILLED CHARGES $1,190,700

HEART
NUMBER OF TRANSPLANTS 2,725
AVG. BILLED CHARGES $1,382,400

KIDNEY
NUMBER OF TRANSPLANTS 16,804
AVG. BILLED CHARGES $414,800

INTESTINE
NUMBER OF TRANSPLANTS 49
AVG. BILLED CHARGES $1,147,300

PANCREAS
NUMBER OF TRANSPLANTS 136
AVG. BILLED CHARGES $347,000

BONE MARROW
ALLOGENIC
NUMBER OF TRANSPLANTS 9,284
AVG. BILLED CHARGES $892,700
AUTOLOGOUS
NUMBER OF TRANSPLANTS 12,160
AVG. BILLED CHARGES $409,600

LIVER
NUMBER OF TRANSPLANTS 6,158
AVG. BILLED CHARGES $812,500

SOURCE: MILLIMAN, PROJECTED 2017 NUMBERS

■ INEQUALITY WATCH

WAGE GROWTH LOOKS GREAT—AT THE TOP

New research by Thomas Piketty, Emmanuel Saez, and Gabriel Zucman found that wages grew much faster in recent years for the highest U.S. earners. That's a dramatic departure from the past: From 1946 to 1980, lower-wage workers made greater gains.

POST-TAX INCOME GROWTH

SOURCE: RESEARCH PAPER (THOMAS PIKETTY, EMMANUEL SAEZ, GABRIEL ZUCMAN)

■ CLIMATE CHANGE

FLOOD INSURANCE DEBT IS RISING

The long underwater National Flood Insurance Program (NFIP) will incur more debt after this summer's catastrophic flooding in Texas. That's likely to fuel further debate over whether to privatize the system—and raise premiums so that they better match the risk.

SOURCE: GAO

The Bull Case for Uber's New Chief Executive

The world's largest unicorn has taken a reputational beating. Here's why Dara Khosrowshahi could be the right person to bring it back from the brink.

By Adam Lashinsky

HAIL MARY **SCANDAL-PLAGUED UBER** announced it had selected a new CEO in late August, and while it's too early to say whether Expedia chief Dara Khosrowshahi will save the unprofitable ride-sharing behemoth from itself, early indicators are encouraging. Under Khosrowshahi, Expedia appeared on *Fortune*'s list of best workplaces in tech, and its staff is 50% women—a promising sign for those worried about the sexism allegations that have roiled Uber. Investors hope Khosrowshahi, who immigrated to the U.S. as a refugee from Iran at age 9, will put a more sympathetic face on the hard-charging company—and help it start making money, en route to an IPO.

◄ In his first day on the job, Khosrowshahi said he wanted to take Uber public in 18 to 36 months.

KHOSROWSHAHI IS AN EX-BANKER (formerly of Allen & Co.), a grownup (he's 48), and grounded in the making-money-matters ethos of media titan Barry Diller, for whom he has worked for years. (Diller's IAC controls Expedia.) A subtle but important point: As a Seattle resident and member of the "old Internet" world, Khosrowshahi comes from outside Silicon Valley and its strangely entitled ways. In other words, he can walk the digital walk, but he's not part of the oddly constricting mentality that makes it hard for Valley denizens to communicate with real people.

HE CAN KEEP A SECRET.
When Khosrowshahi was selected for the job in August, his name had appeared on no one's list of likely candidates. If not the first choice of the board (which was reportedly hoping to hire former GE chief Jeff Immelt or HPE's Meg Whitman), he seems to bring the potential for unifying the company behind him and the directors above him.

HE IS WELL-CONNECTED.
In addition to being on the board of the *New York Times*, Khosrowshahi is a director at Fanatics, the sports apparel retailer that recently attracted an investment from SoftBank's Masayoshi Son. SoftBank reportedly wants to become an investor in Uber too. If so, the new CEO has Son's number.

$50,000,000

Amount that Uber drivers have taken home, one month after the ride-hailing giant enabled tipping nationally. But the switch isn't an unalloyed good for drivers. When compared with a regular pay hike, tipping is less fair (race has been shown to be a larger factor in tip size than service quality) and less lucrative. Ask any restaurant worker.

© JOHN KEATLEY—REDUX

MARKET POWER

BUSINESSES HAVE HIKED PRICES (WAY) UP

A BLOCKBUSTER new study has found that businesses are increasing their markups—the difference between the marginal cost for a product and its price. Study authors Jan De Loecker and Jan Eeckhout found that the average markup has exploded since 1980 [see chart]. What's happening? Too little competition and too much power for a few players lets companies drive up prices without being undercut, the authors say. The result, they argue, is less output, lower wages, and less workforce participation. Not everyone agrees with the thesis. But count on "market power" being the next buzz term in the economy.
—ANNE VANDERMEY

SOURCE: JAN DE LOECKER AND JAN EECKHOUT

HOLLYWOOD WRAPS ONE OF ITS WORST SUMMERS EVER

THERE ARE some things even Wonder Woman can't save. Once Hollywood's best season, the summer box office has cooled of late, as a glut of expensive action movies fizzled. This year *Valerian* and *King Arthur* were among a big crop of flops. —TOM HUDDLESTON JR.

◀ Blue Apron, king of meal-kit companies, faltered after its IPO this summer.

Big Food Swallows the Meal-Kit Hype

The food-in-a-box space is overcrowded and barely profitable, but there's a reason industry giants still want a piece of it. By Jennifer Alsever

LUNCH BOX

BLUE APRON'S June IPO was so dismal, it has cast a pall over the entire (very crowded) meal-kit industry.

But whispers of a bubble haven't stopped Big Food players from diving into the $4.6 billion market for DIY food-delivery services. In May, Campbell Soup backed Chef'd with a $10 million investment while Unilever led a $9 million funding round for Sun Basket. In June, Nestlé acquired a minority interest in Freshly, leading a $77 million investment round. To pile on, at least seven grocers have made inroads in the business as well, including Kroger, which recently launched its own meal-kit brand, called Prep+Pared.

As the deals keep flowing, industry watchers warn of a coming shakeout—particularly as Amazon makes its own foray into the space. But there's a method to the food giants' apparent madness. One in four Americans (many of them young) purchased a meal-kit delivery in 2016, according to a Harris poll. That appeals to established companies vying with startups for attention. "[Meal kits are] a messaging medium to millennials with money to spend," says Howard Waxman of Packaged Facts. "It's a way to reach them and put their products in front of them." Add to that partnerships with grocers, who can throw branded products into the box, and the price starts to look a bit more reasonable.

TOP: EVERETT COLLECTION; BOTTOM: COURTESY OF BLUE APRON

The Trump team (clockwise from left): Gary Cohn, Steven Mnuchin, Wilbur Ross, Elaine Chao.

Trump's Break With CEOs Is a Big Deal

A pro-growth partnership between business and government is increasingly out of reach.

By Alan Murray

POLITICS **THIS SUMMER,** with his ambiguous response to the unambiguous situation in Charlottesville, Va., President Trump completed his alienation of the congressional leadership of his own party, his top military leadership, and his top allies in the business community. The much-hyped advisory councils have been dissolved. *Fortune* 500 CEOs have publicly distanced themselves from the administration. And Republicans' hopes for big tax reform may have to be scaled back.

August's protests and controversy not only ruptured the nation's social fabric, but also greatly reduced any chance that the President and Congress have of enacting serious legislative reforms. What began months ago as a once-in-a-decade opportunity for a Republican-led government to make progress on health care, infrastructure, taxes, and American competitiveness has descended into disorder. There is blame to go around for that—unsteady congressional leadership, an overzealous press corps, a determined political opposition, gun-shy CEOs. But here, as in Charlottesville, the principal source of the problem is clear.

Many CEOs say they will continue to engage the administration. And many are close to Gary Cohn and Dina Powell in the White House, or to cabinet officers like Treasury chief Steven Mnuchin, Transportation Secretary Elaine Chao, and others. They still believe they can get a far better hearing on their economic concerns from this administration than from the previous one, which they felt was often hostile to business.

But the fact that the nation's leading CEOs feel they can no longer work openly with the President of the United States on measures to strengthen the U.S. economy is a sad, counterproductive—and unprecedented—state of affairs.

Q

IS SLOW WAGE GROWTH BOOMERS' FAULT?

A

IN AUGUST, the San Francisco Fed pinned the blame for slow wage growth in part on retiring workers—whose high salaries are counterbalanced by the lower pay new workers get. But the claim has skeptics. Other economists point out that wage growth still looks sluggish if you control for job title and experience. Plus, says Georgetown's Harry Holzer, with productivity growing slowly, premiums rising, and job vacancy rates nearing historic highs, there are plenty of reasons for employers to keep a tight grip on the purse strings.

—JANE PORTER

© TRUMP: ALEX WONG—GETTY IMAGES; COHN, MNUCHIN, AND CHAO: CHERISS MAY—NURPHOTO/GETTY IMAGES; ROSS: BRENDAN SMIALOWSKI—AFP/GETTY IMAGES

RETAIL

BYE-BYE, DISCOUNTS. HELLO, MARGINS

THE MOST RECENT corporate earnings season brought reassuring signs for retailers. The numbers suggest that they're finally starting to push back at the brand-destroying, margin-sapping discounting addiction among shoppers that they have helped create for years.

Ralph Lauren said its merchandise profit margin rose 2.1 percentage points last quarter, thanks to less discounting and better inventory planning [which

led to less clearance selling]. And Coach reported that in its most recent quarter, 45% of sales came from handbags priced $400 or more, up from 40% a year earlier, a result partially achieved by getting out of department stores that are full of on-sale signage. Even discount chain Target said it's getting customers to pay more for many items.

Still, retailers can't quite declare victory in the war against discounting: Off-price giants T.J. Maxx, Marshalls, and Ross Stores reported some of the best results in the industry last quarter. Some shopping habits are too hard to break. —**PHIL WAHBA**

ACCOUNTING

RUSSIA HAS EVEN MORE OFFSHORE WEALTH THAN WE THOUGHT

Wealthy Russians' foreign assets are three times higher than official estimates say they are, claims a new NBER paper, which also says those offshore holdings are roughly equal to all the wealth held by Russians inside the country's borders. New U.S. rules and sanctions hoping to target the country's elite will have to look far outside its borders.

Back-to-School Shopping Still Exists

It's a digital world, but paper's not obsolete [yet], and the fall shopping season is bigger than ever.

By Jane Porter

THE OLD MATH

IN THE ERA of smartphones, you might expect back-to-school shopping for pens, notebooks, calculators, and other throwbacks to be going the way of the card catalog. Not so, according to data from the National Retail Federation (NRF), which has projected that fall 2017 will be the largest season ever for school-related spending.

This year, the category is expected to grow more than 10%, hitting $83.6 billion. Much of that will go to clothes ($10.2 billion, according to NRF projections), but school supplies like binders and glue are still going strong ($4.9 billion).

There are some changes, though. The Association of American Publishers found that print books accounted for 64% of higher-ed revenue in 2015—and just 59% in 2016. Perhaps related: Backpack sales peaked in 2015, according to the Travel Goods Association, falling nearly 10% last year by volume.

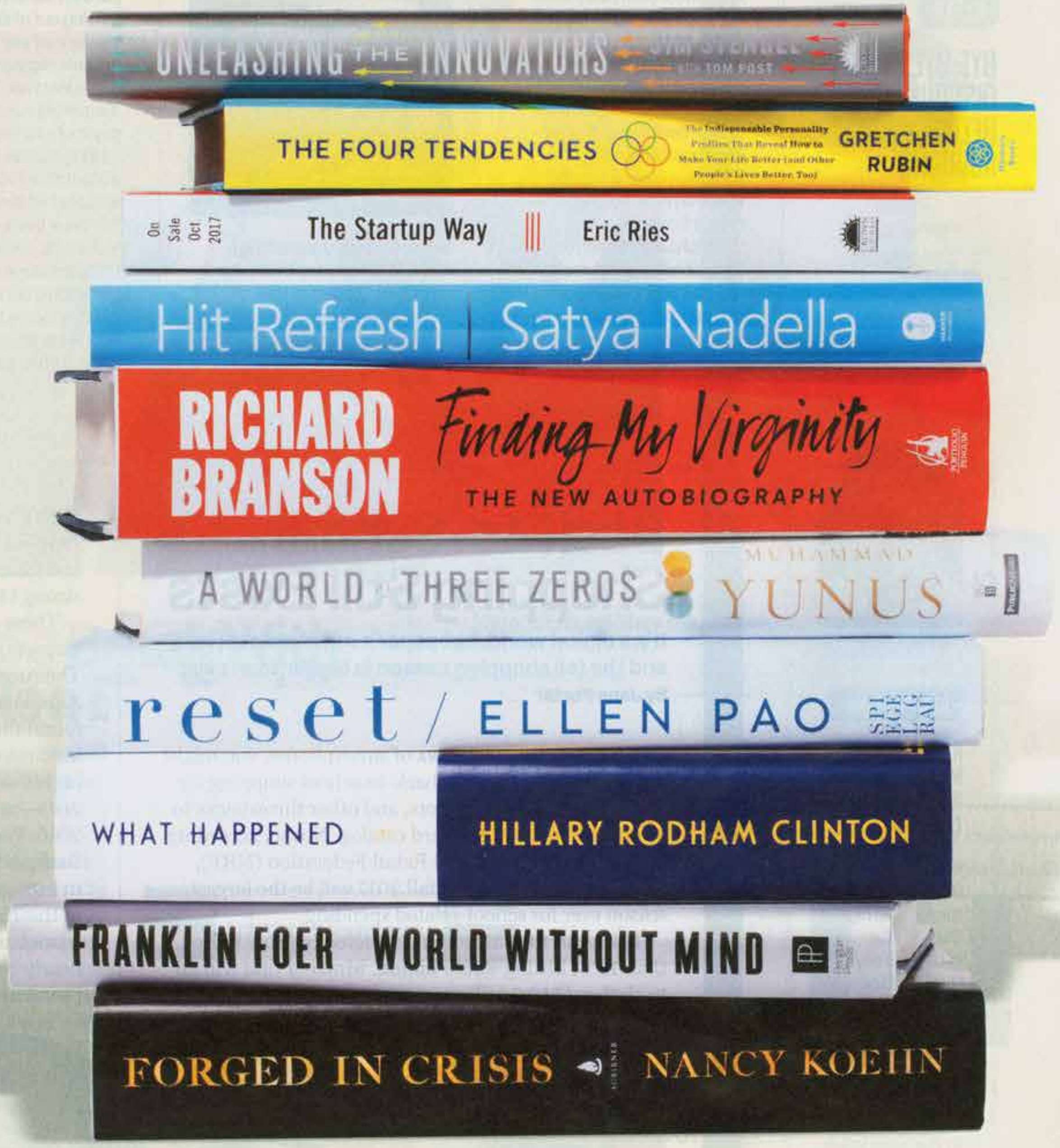
BACK-TO-SCHOOL ELECTRONICS
$8.8 BILLION
[UP 6.4%]

COLLEGE TEXTBOOKS
$579 PER STUDENT
[DOWN 4.5%]

BACKPACKS
$3.4 BILLION
[DOWN 2.3%]

SOURCES: NRF 2017 PROJECTIONS; THE ASSOCIATION OF AMERICAN PUBLISHERS; TRAVEL GOODS ASSOCIATION

COACH HANDBAG: ALEX FRADKIN; VLADIMIR PUTIN: MIKHAIL SVETLOV—GETTY IMAGES; COMPUTER, BACKPACK: ISTOCKPHOTO—GETTY IMAGES; BOOKS: GETTY IMAGES

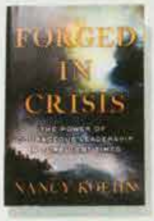


Your Back-to-Work Reading List

EXECUTIVE READ

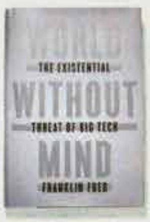
'TIS THE SEASON TO set aside that beachy novel and dive into the latest slate of business books and tell-alls. This fall will see a slew of releases by big-name authors hitting the shelves, from Hillary Clinton's 2016 campaign memoir to Richard Branson's new autobiography. Here, 10 of the most hotly anticipated titles of the season. **BY LAURA ENTIS**

▲ PHOTOGRAPHS BY **MICHAEL CHINI—TIME INC. PHOTO STUDIO**



FORGED IN CRISIS
By Nancy Koehn

A historian at Harvard Business School, Koehn mines accounts of pivotal moments in the lives of five famous figures, including Abraham Lincoln and Frederick Douglass, to deliver broader insights about what leadership should look like. Howard Schultz and Michael Bloomberg are among the book's early acolytes.



WORLD WITHOUT MIND
By Franklin Foer

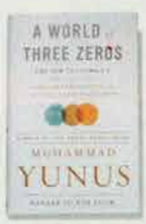
Foer, formerly the editor of *The New Republic*, sets out to examine how the Internet's biggest players (Facebook, Amazon, Google) have radically altered the way we access and spread information—or misinformation. Spoiler alert: He's not a fan.

WHAT HAPPENED
By Hillary Rodham Clinton

It's a question pundits will be puzzling over for a long time. In her new book, Clinton rehashes the 2016 presidential election, easily the most bizarre in recent memory. The release is shaping up to be a return to the public stage for the onetime candidate. She's planning a national tour around the launch. (This time, she'll go to Wisconsin.)

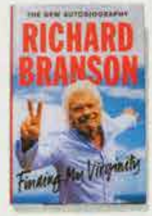
RESET
By Ellen Pao

In 2012, Pao sued venerable VC firm Kleiner Perkins for gender discrimination. She lost the case but helped touch off what would become a series of revelations about Silicon Valley's sexist, systematically exclusionary underbelly. Now, in her debut book, Pao opens up about why she took Kleiner Perkins to court—and outlines strategies for how the tech industry can (finally) start to fix its gender problem.



A WORLD OF THREE ZEROS
By Muhammad Yunus

Yunus pioneered the concept of microcredit in the 1970s and 1980s and won the Nobel Peace Prize in 2006. Since then he's come to believe that capitalism today is broken. In his new book, Yunus makes the case for a new system, based on serving human needs, not maximizing profit, that should take its place.

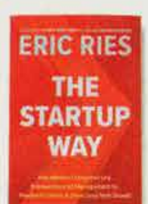


FINDING MY VIRGINITY
By Richard Branson

Branson doesn't really need an introduction, but here's one anyway: Founder of the Virgin Group, the billionaire serial entrepreneur and investor has become an inspirational figure. Now, two decades after his memoir *Losing My Virginity*, he's back with a sequel reflecting on the lessons learned over 50 years in business.

HIT REFRESH
By Satya Nadella

Part memoir, part business story, Microsoft CEO Nadella's new book interweaves personal memories (including stories from his childhood in India) with his strategy for reclaiming Microsoft's position as a cutting-edge leader in the tech industry.



THE STARTUP WAY
By Eric Ries

In his follow-up to *Lean Startup*, a manual for early-stage founders, Ries examines how the GEs, Amazons, and Toyotas of the world can use entrepreneurial management to drive growth.

THE FOUR TENDENCIES
By Gretchen Rubin

Our Founding Fathers understood that the pursuit of happiness is right up there with life and liberty as an inalienable right. Rubin made a name and career for herself helping Americans get there with a series of books on human nature, most notably *The Happiness Project*. Her latest delves into a new set of personality profiles (à la Myers-Briggs) meant to help readers understand and harness their strengths and weaknesses for contentment in and out of the office.

UNLEASHING THE INNOVATORS
By Jim Stengel

How do you infuse startup DNA into a *Fortune* 500 company? The question isn't new, and yet few corporations are able to crack the code. In his second book, Stengel, the former marketing chief of Procter & Gamble, lays out how legacy companies can inject speed, innovation, and new technology into their operations.

BRINGING 'HARD SCIENCE' TO THE MASSES

After years of connecting science startups with venture investors, the brain trust at Breakout Labs are becoming VCs themselves. Here's why they could be formidable contenders.

By Erin Griffith

STEM SELLERS: The key people behind Breakout Labs (from left): Fishburne, Moore, and Parthasarathy.

▲ PHOTOGRAPH BY **WINNI WINTERMEYER**

IN 2010, AS THE DUST from the financial crisis settled, three women working in disparate parts of the economy noticed that startups in "hard science" (think biology or chemistry rather than tech) weren't getting the attention they deserved from big investors. They joined forces with the foundation of Peter Thiel, the well-known contrarian investor, to launch Breakout Labs, an incubator program to help such companies turn their ideas into viable businesses.

Seven years later, those same three women want to *be* the big investors whom they used to court. In July they officially launched Breakout Ventures with a $46.5 million fund, to help those startups take the next step. "Most of our companies are atoms leveraging bits"—lab science aided by computing power—"and they generally take more capital and a longer time horizon to hit those key milestones," says Lindy Fishburne, executive director at Breakout Labs and managing director at Breakout Ventures. Now a science startup can grow from entrepreneurial infancy to adolescence while staying in the Breakout family.

In the postcrisis era when Breakout Labs got its start, investors were leery of backing companies with major "technical risk" (meaning their idea might be nearly impossible to pull off) or an undefined market (even if they pulled it off, who knew if anyone would want it?).

To help entrepreneurs leap such hurdles, Breakout Labs offers guidance, connections, assistance securing grants, and up to $350,000 in seed funding. Since 2011 it has backed more than 35 companies, including Cortexyme, which is developing therapeutics for Alzheimer's disease, and EpiBone, which is attempting to engineer stem cells into patient-specific bone-tissue replacement. The venture fund, in contrast, will directly invest in these startups. (Thiel funded the Labs program through his foundation but is not involved with the venture fund, Fishburne says.)

The thinking behind the fund was simple: Nearly a decade after Lehman Brothers collapsed, venture investors and corporate entities are now hungry to invest in radical scientific ideas again. But most aren't set up to find young startups or properly vet them, and Breakout Labs has increasingly served as the conduit. "We are everyone's first call when someone decides they want some frontier tech," says Julia Moore, a former health care executive and private equity investor and one of the cofounders. (The third is Hemai Parthasarathy, a Ph.D. in neuroscience from MIT and former editor for *Nature*.)

"MOST OF OUR COMPANIES ARE ATOMS LEVERAGING BITS," SAYS FISHBURNE—THAT IS, LAB SCIENCE AIDED BY COMPUTING POWER.

The trio was well aware that, after spending years nurturing startups, its firm couldn't participate in future funding rounds. Breakout Ventures solves that problem and allows its founders to do more with—and benefit more from—their expertise. It has already invested in some companies that graduated from the Labs incubator, including Modern Meadow, a New Jersey–based startup that's biofabricating leather without the need for animals, and 3Scan, a company that enables 3D analysis of tumors and organs.

Aside from its deal pipeline and vetting process, the Breakout team's most attractive asset may be its close connection to big companies that could become investors, acquirers, or customers. That's critical, Fishburne says, because most of their startups will ultimately need to sell or partner. "These are not direct-to-consumer plays," she says. "You're not going to put it up in the App Store." Whether with marketing, distribution, regulatory approvals, or simply helping a startup "productize" its breakthrough, corporations are key players in the ecosystem.

Breakout encourages startups to get commercial feedback as early as possible. "We want [corporations] to be part of the process," Moore says. Executives from *Fortune* 500 companies including General Electric, Johnson & Johnson, Royal Dutch Shell, and BASF have attended Breakout Labs' annual showcases and done "portfolio reviews" of its companies. Breakout also has a formal relationship with BD (formerly Becton Dickinson), which has provided its protégés with grants and a vice president–level mentor.

In an industry in which 89% of partner-level investors are men, a venture capital firm run by three women is rare. Of Breakout Labs' 37 companies, 11 have a female CEO or cofounder; at 30%, that exceeds the gender breakdown of most venture portfolios. Of Breakout Ventures' companies, one (Cortexyme) has a female CEO and another a female cofounder. Some male investors attribute the tech industry's gender disparity to the lack of quality female entrepreneurs, but Fishburne says it hasn't been an issue: "We're seeking radical scientific breakthroughs built by teams ready to change the world, regardless of which box they check." ■

DEAD, BUT NOT FORGOTTEN

Like the earthworms on a forest floor, ERI fulfills an integral part of the food chain, paving the way for new generations of tech to germinate. **By Robert Hackett**

TECH

ELECTRONIC WASTE is a heap of a problem. As technology invades every aspect of our existence, scads of digital detritus—phones, TVs, laptops, servers, refrigerators, you name it—get sloughed off. A United Nations–affiliated group estimates that e-waste is growing faster than almost any other waste type. This year, it's projected to yield 48.2 million metric tons. That's heavier than the Empire State Building 100 times over.

The biggest conundrum: what to do with it all? Countries in the developing world tend to have fewer environmental regulations and present enticing grounds for dumping. According to an investigation conducted last year by Basel Action Network, a Seattle nonprofit that placed hundreds of GPS trackers on dummy devices and sent them through U.S. recycling networks, 40% of 152 deliveries were exported offshore. The majority wound up in junkyards in Hong Kong's New Territories.

"In the U.S. it's completely legal to load up containers full of electronic waste and ship them to Asia or Africa," says Jim Puckett, director of the watchdog group. But this freighting violates the Basel Convention, an international agreement designed to prohibit developed nations from dumping hazardous waste overseas.

Some businesses aim to counter this kind of cross-border trashing. Fresno, Calif.–based ERI, one of the world's biggest e-waste recyclers, gathers and digests tens of thousands of pounds of refuse daily in three gargantuan shredders at its plants in California, Massachusetts, and Indiana. The company crunches, crushes, and crumbles what CEO John Shegerian calls "electronic carcasses." ERI's machinery converts that debris into "liberated commodities," raw materials such as steel, plastic, aluminum, lead, and copper. The company then sells its output to smelters to be melted down and reused.

Unfortunately for e-recyclers like ERI, the global market for commodities has taken a steep downturn in recent years. That part of ERI's business has halved as a share of the firm's gross income since 2012, Shegerian says. (The company will generate more than $100 million in revenue this year.)

To maintain profitability, ERI has repositioned itself as a secure method of electronic disposal, capitalizing on growing concern over security. Customers are ready to pay up, Shegerian says, to properly dispose of devices that might contain traces of either customer or employee data or trade secrets.

Plus, consider the threat to national security. Tom Sharpe, vice president of SMT Corp., a firm that runs quality assurance on computer parts for the defense industry, warns that counterfeit chips, often salvaged from e-waste in China, have a tendency to reenter supply chains.

"A lot of people like to look at this as dirty garbage—let's get it as far away from us as possible," Sharpe says. "That's had a boomerang effect. It's been coming back at us for some time now as counterfeit parts."

Turns out e-waste isn't just an environmental menace, but a cybersecurity one too. ■

▲ ILLUSTRATION BY **NICHOLAS LITTLE**

THE LEDGER

CRYSTAL CLEAR PROVENANCE

Blockchain technology has unlocked a world of possibilities in the finance industry. Now it's set to change an entirely different market: diamonds. **By Jeff John Roberts**

DIAMONDS REPRESENT beauty, luxury, and true love—though some of them have a dark side. Unscrupulous companies mine "blood diamonds," and counterfeiters flood the market with convincing fakes. It can be a challenge to ensure beyond a promise that you're buying an authentic, conflict-free gem.

The blockchain, a distributed computing technology that powers Bitcoin and so many other cryptocurrencies, could be a solution. At its heart the blockchain produces an indelible, tamper-proof ledger. This new type of record-keeping has been heralded as an efficiency that could transform industries like shipping, insurance, and finance. But the diamond business has been one of the first to embrace the technology wholeheartedly.

A London-based company called Everledger has placed more than 1.6 million diamonds on a blockchain. Entries on the digital record include dozens of attributes for each diamond, including the color, carat, and certificate number, which can be inscribed by laser on the crown or girdle of the stone.

"We create a digital twin of the object on the blockchain," says Leanne Kemp, Everledger's chief executive.

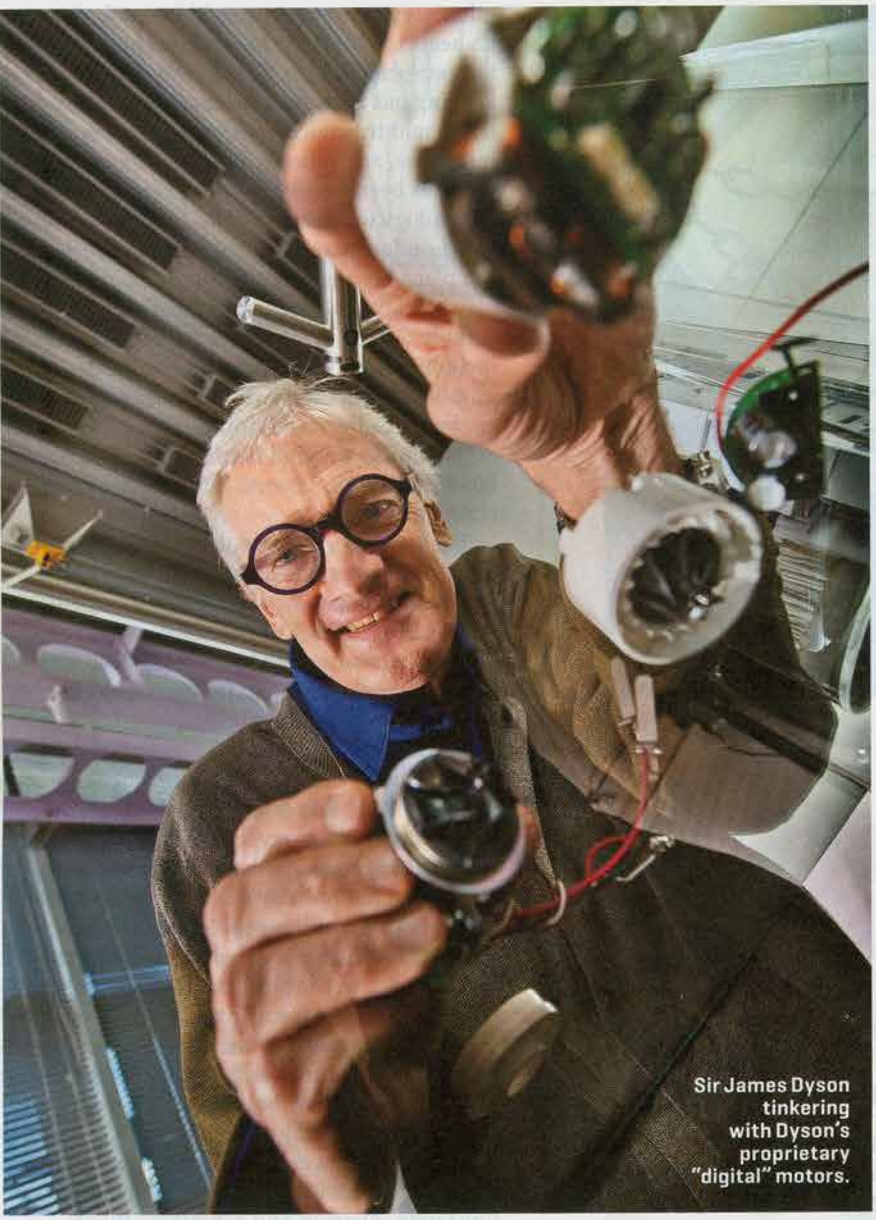
The technology has enabled diamond suppliers (and intermediaries like border agents) to replace a paper certification process with a blockchain ledger. The process involves using computer scanning tools to access what Kemp calls a "digital vault" and to determine the provenance of any diamond.

Everledger is first focusing on industrial supply chains. "This isn't about Aunt Jenny's wedding ring," Kemp says. The company hopes to adapt its technology for retail and consumer use by 2018, meaning that a Tiffany & Co. shopper might one day be able to use a smartphone to determine a gem's provenance.

In the meantime Everledger is adding other luxury goods to the blockchain. The company tracks bottles of wine using hidden codes added to them by vintners, allowing anyone to consult a blockchain to see where the bottle originated and how it was distributed. Everledger is also applying the technology to fine art, a bigger challenge since even tiny inscriptions can be considered destructive. It's exploring applications with museum and exhibition clients.

All of this hints at the sweeping way blockchain technology could change how goods move around the world. The government of Singapore, for instance, is focusing on much larger initiatives than diamonds: global trade. It is building blockchain tools that, if adopted by shippers and merchants, will be part of a new digital trade corridor for commodities. The effort promises faster, more secure supply chains and consumer confidence—a beautiful luxury, no doubt, for businesses worldwide. ■

▲ ILLUSTRATION BY **NEIL WEBB**



Sir James Dyson tinkering with Dyson's proprietary "digital" motors.

PHOTOGRAPH BY ADRIAN SHERATT

FIGHTING HIS WAY OUT OF A PAPER BAG

How Sir James Dyson got started. **Interview by Dinah Eng**

James Dyson hated the dust-filled bags and loss of suction of conventional vacuum cleaners. His solution, a bagless vacuum, became the start of a global company that today brings in $3 billion a year selling air purifiers, hand dryers, lighting, hair dryers, and of course, vacuum cleaners.

MY FATHER DIED when I was 9, and I remember doing the household chores to help my mother. I loathed changing the vacuum cleaner bag and picking up things the machine didn't suck up. Thirty years later, in 1979, I was doing chores at home alongside my wife, Deirdre. One day the vacuum cleaner was screaming away, and I had to empty the sack because I couldn't find a replacement bag. With this lifelong hatred of the way the machine worked, I decided to make a bagless vacuum cleaner.

I had trained as an engineer and as a designer, so how things work really interests me. Back then I was making the Ballbarrow, a wheelbarrow with a big red ball instead of a wheel. I had investors for the wheelbarrow, but they weren't interested in the vacuum cleaner, so I went out on my own.

From 1979 to the early 1980s, I worked on developing the Cyclone technology and was getting further and further into debt. Thankfully, my wife was very supportive. Bankruptcy didn't worry me because I can make things, but I did worry about losing our house. My wife sold paintings and taught art classes, and we borrowed, and borrowed, and borrowed. We grew our own vegetables, and she made clothes for the children.

I'd always been an entrepreneur, but I never thought of going into a business with the vacuum cleaner. I just had a passion for it as a product. In the early 1980s, I started trying to get licensing agreements for my technology.

I wasted so much time and money trying to meet with those who are now my competitors. Some companies—like Conair and Black & Decker—were quite keen on licensing the machine. The talks went a long way until it got to the in-house patent counsel, who then blocked it. In a couple of cases, the companies decided not to diversify their product line, so the talks ceased. The people who rejected it did so for no good reason, which told me they were not interested in technological advances. That gave me the courage to keep going.

We had a breakthrough in 1986. I got a licensing agreement with a little Japanese company named Apex, so we had some income coming in. However, Apex wasn't very successful with it. They sold the machine as a niche product called the G-Force for a quarter-million yen each, nearly $2,000 at the time.

In the early 1990s I decided to make the machine myself, but soon after, other companies that I had talked with started making machines like mine. I ended up fighting legal battles on both sides of the Atlantic to protect the patents on my vacuum cleaner. It all eventually got settled. (In 1991, Dyson and Amway Corp. settled a patent infringement lawsuit. Amway continued to sell its product, and the two sides became joint licensees.)

None of the venture capitalists and banks would lend me money until 1993, when my bank manager, Mike Page, personally lobbied Lloyds Bank to lend me the money I needed for tooling. The bank agreed to lend me $1 million, and I was able to go into production. I got one mail-order catalog to buy it, then another. British department store John Lewis began selling it, and we got into more retailers. Within two years it was the best-selling vacuum in Britain.

Once we established ourselves in England, getting to retailers in other countries was easier, but the fact that it sells in England cuts no dice with people in the United States or Germany because every country thinks it's different. It didn't particularly surprise me because brands are well known, and people trust them. When a new one comes along, people are suspicious. But someone will eventually take a risk with you.

DYSON'S BEST ADVICE

PRODUCT IS KING. Whatever your product is, make sure everyone in the company understands the product. We have every employee on their first day make a vacuum cleaner—even if you're working in customer service.

BAN MEMOS. People live off memos and emails and don't speak to one another. The real value occurs when we meet each other at work, spark off each other, argue with each other. That's when creative things happen. Having a philosophy of disliking emails is healthy.

LISTEN. Create an open environment where everyone's involved and appreciated. If you don't put people down for making a silly suggestion, you can get great ideas. A lot of great new ideas come from silly suggestions or wrong suggestions.

In 2002 our first customer in the United States was Best Buy. A buyer there took our vacuum cleaner home for two weeks and told her boss it really does work. From there, other retailers saw it. Americans recognize success very quickly.

For the U.S. launch, we filmed a television commercial in my house. I took apart vacuum cleaners and explained how the technology worked. The vacuum cleaner had notable early advocates, such as *Friends* actress Courteney Cox. The machine even appeared on *Friends* on a couple of occasions.

We never had a plan for going into the markets we did. Following a logical business plan would be boring for me. Instead we develop new technology and make products where that technology will make a difference. In 2006 we launched our first hand dryer, which is better for the environment than paper towels, then did the Air Multiplier, which is a fan without blades. We did a washing machine with shorter wash cycles for a few years, but we stopped because we weren't making money on it.

Once the sale is made, my philosophy is that we continue to be responsible for the product. We were the first to go to five-year guarantees, but it's more than a marketing thing. If anyone has a problem with our product, we have a problem. If someone spends $400 to $500 on a Dyson vacuum cleaner, they should enjoy the investment they've made.

In the end, it was the rejections or outright thievery of my ideas that galvanized me to do it myself. The recession did not affect us. People have to go on cleaning their homes, and they buy things that will last longer. What is a relatively expensive vacuum cleaner has done very well. ■

The V8 Absolute is Dyson's newest cord-free vacuum.

COURTESY OF DYSON

A RETAILER FINDS ITS VOICE

REI, a mecca for outdoorsy shoppers, has found a new raison d'être. It doesn't just want you to go to the park—it wants you to protect it too. By Claire Zillman

GREAT WORKPLACES

An REI technician does bike maintenance at one of the retailer's stores.

VENTURE

IN LATE OCTOBER 2016, REI opened its fifth flagship location in Washington, D.C. Displayed prominently on the back wall of the 51,000-square-foot outdoor-equipment store in the nation's capital is a neon sign that reads, "For All."

That message would take on new meaning less than three weeks later when the presidential election cleaved the nation in two. CEO Jerry Stritzke says the words, rather than being just a piece of store decor, have become something of a battle cry—one that's recently prompted the company to wade into the political fracas.

COMPANY: REI

RANK: No. 28

HEADQUARTERS: Kent, Wash.

EMPLOYEES: 12,000+

THE BUSINESS: A member-owned outdoor-specialty retailer with 151 locations across the U.S.

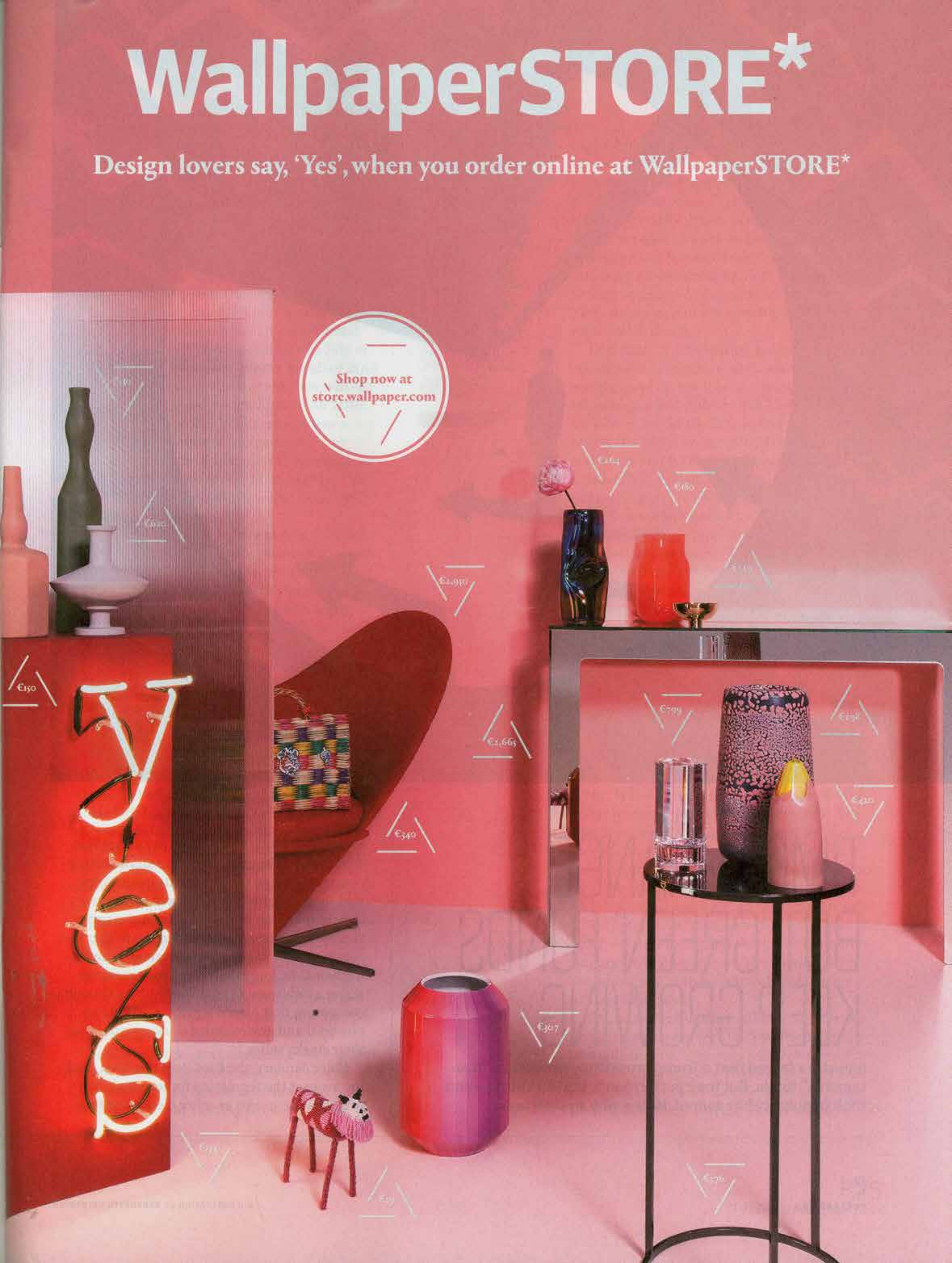
A love of the outdoors appeals to "both Democrats and Republicans," Stritzke says, and it's ingrained in the DNA of REI, founded in 1938 by a couple—Lloyd and Mary Anderson—in search of quality climbing gear. The company actively encourages employees to spend time outside with "Yay Days"—paid time off to spend outside—sizable worker discounts on its gear (30%), adventure trips (50%), and its Opt Outside campaign that closes all 151 stores on Black Friday and pays employees to pass the day in nature.

Those perks are one factor in REI's 20-year streak as one of *Fortune's* Best Companies to Work For.

That commitment to the environment also galvanized Stritzke to speak out against the Trump administration's actions on public lands. In April he wrote that the plan to review the status of more than 100,000 acres of public land was a "cause for concern," and REI later urged people to file comments with Interior Secretary Ryan Zinke, asking him to keep the protections in place.

In an era when businesses run the risk of getting a mean tweet from the Commander-in-Chief, Stritzke acknowledges he carefully considers what issues to take up. "If we don't see a direct impact [on our employees], then we're a lot more reluctant," he says.

But that hasn't kept REI from pursuing causes beyond the environment. Stritzke says less obvious issues—like immigration—merit the company's attention too. Inclusiveness and the notion that everyone is welcome—"we actually think that's consistent with an outdoor experience as well," he says. (REI came out against the President's travel ban, for example.) "That's one of the amazing things about [the outdoors]," Stritzke says. "It doesn't care how you present, what color you are, what accent you have; it's really there for everyone." F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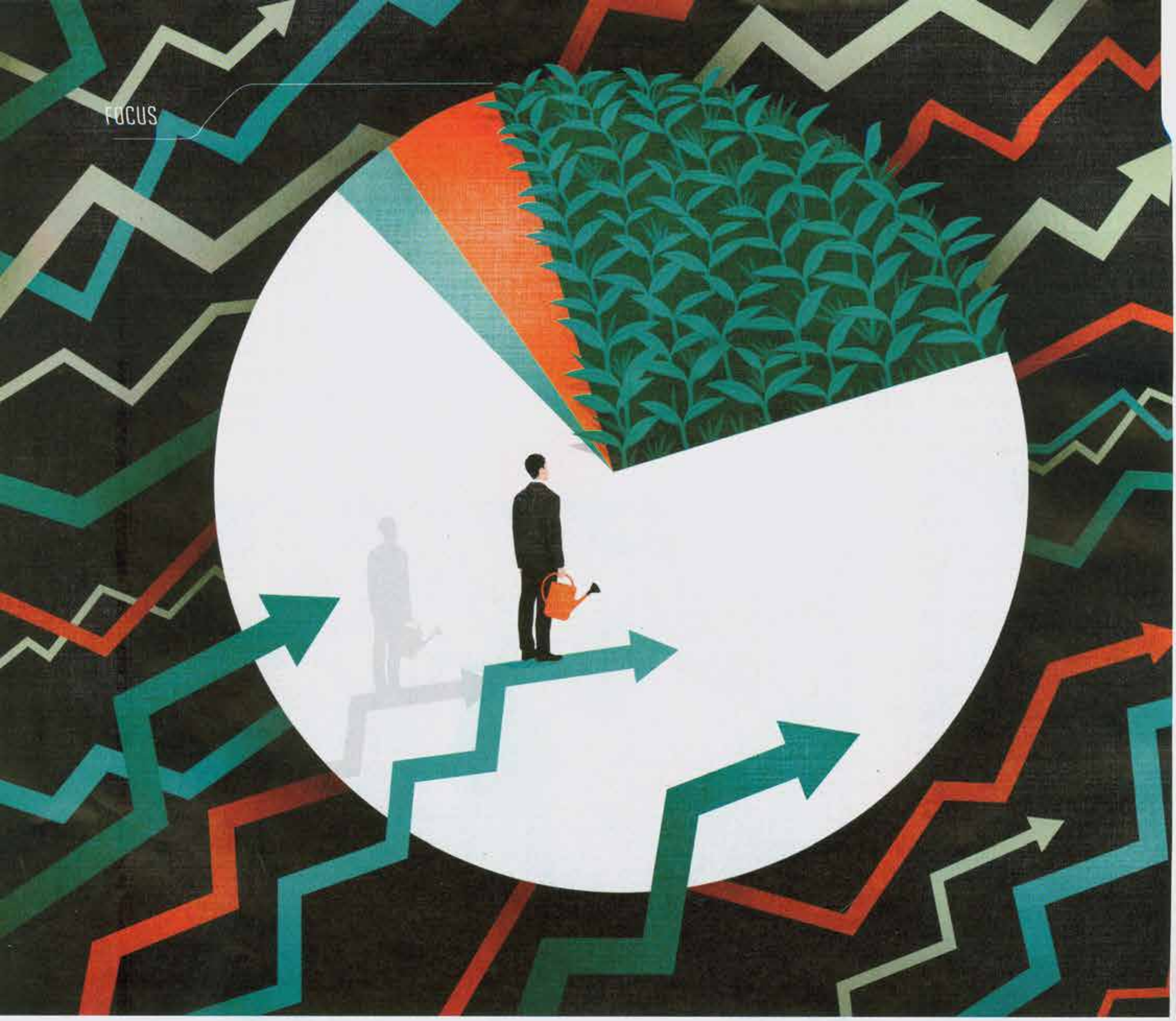


TIMES CHANGE, BUT 'GREEN' FUNDS KEEP GROWING

Investors feared that a Trump presidency would hurt "sustainable" funds. But their performance stayed strong—and their popularity has soared. Here's why. By Chris Taylor

INVEST **DONALD TRUMP RAN FOR OFFICE** last year on promises to slash environmental rules and other regulations, arguing that their benefits weren't worth the costs they imposed on business. After his surprise victory, some investors wondered whether the recent growth of so-called sustainable investing would be lopped off like a mountaintop above a rich seam of coal. Surely, they thought, companies that placed a primary emphasis on social and environmental issues would see their stocks suffer.

Since January, the President has been hacking away at the regulatory forest—making progress there even as other elements of his

▲ ILLUSTRATION BY **BENEDETTO CRISTOFANI** agenda have been stymied in Congress. So how have mutual funds in the "ESG" space (environment, social and governance) fared? To riff on an old saying, rumors of their death have been greatly exaggerated.

As it turns out, funds in this category have kept up with the market—even as the market itself has had a strong year. Just as significant: Investors are pouring new money into the category at an unprecedented rate. To wit: the net \$3.5 billion of inflows into U.S.-based retail ESG funds and ETFs from January to July of this year. That surpasses inflows for all of 2015 (\$2.6 billion), and at the current pace will easily eclipse the record \$4.9 billion set in 2016.

"This field is global in nature and has a tremendous amount of momentum," says Jon Hale, director of sustainable investing research at Chicago-based Morningstar. "In some ways, the election has actually galvanized ESG investors."

Those mutual fund figures are only teensy drops in a larger, responsible-investing ocean. When you include big-money investors like pension funds, high-net-worth individuals, private equity, and sovereign-wealth funds, there was roughly \$9 trillion in ESG assets for U.S.-listed products. There was \$23 trillion worth of such assets globally at the start of 2016, according to the biennial *Global Sustainable Investment Review*, a 25% increase from 2014.

This trend reflects, in part, the growing acceptance of the idea that responsible corporate behavior pays off for shareholders. (For a substantial list of examples, see our Change the World list, beginning on page 36.) Institutional investors' thirst for ESG products continues unabated, says Hale, indicating that this is not a fad but something more lasting and transformative. What's more, sustainable investing is not something localized to America but rather a global phenomenon—minimizing the impact of policy changes at the White House. Take the example of the Paris Agreement: Even if the U.S. withdraws from that climate pact, the rest of the world remains on board, and thus pulls corporate practices and investor assets in that direction.

Demographics—and marketing—are at play here too. Older millennials are now in their mid-thirties, leveling up into their prime earning years and starting to control more

"THERE IS MORE AND MORE PRESSURE TO GET PENSION AND RETIREMENT FUNDS TO ADD SUSTAINABLE OPTIONS."

investable assets. In time, they will be on the receiving end of one of the biggest wealth transfers in history, with inheritances from the baby boomers. As a generation, millennials are especially drawn to the notion of ESG investing: 86% of them indicate interest in it, according to Morgan Stanley, a level of interest about 20 percentage points higher than among boomers. Millennials are also twice as likely to buy a fund if it operates on a socially responsible thesis.

That kind of information is catnip to financial services companies, and more products are being rolled out to soak up those socially conscious assets. A dozen ESG funds or ETFs have launched in the U.S. in this year alone, says Hale. There are now 187 U.S.-listed open-end funds and ETFs in the space, with total assets of \$75 billion.

The bottom line: Environmentally and socially conscious investors may not be able to control policy—but they can control where their own money goes. "For the average person who is concerned about this stuff, who wants to know what they can do, one of their questions should be, 'How do I use the capital I have?'" says Lisa Woll, CEO of the Washington, D.C.–based Forum for Sustainable and Responsible Investment. That may be part of the reason why usage of ESG data on Morningstar's platform, which is employed by asset managers and advisory firms, has quadrupled since Trump's election.

ON THE PERFORMANCE FRONT, results are encouraging. While experts in the space are careful not to promise market-beating returns, they also point out there is no apparent penalty for civic-minded investing. Almost half of large-blend ESG funds—a mix of actively and passively managed—have outperformed the S&P 500 so far this year, compared with only 27% of non-ESG funds, according to Hale. In other words, broadly speaking, ESG investors can expect to mimic the wider market, with the added bonus that their money is being put to some good.

The next front in the battle for sustainable investing may very well be: you. Retail investors still account for a very small share of the ESG investing market. That's largely because companies have been sluggish to incorporate this trend in their 401(k)s. Few retirement ▷▷

▷▷ accounts have a sustainable fund option on their menu.

For investment companies, that's some low-hanging fruit to pluck. "For most people ...most of their assets are likely sitting in their retirement accounts," says Woll. "There is more and more pressure to get pension and retirement funds to add sustainable options."

There is also growing interest in a particular subset of ESG investing known as "social impact" investing. Whereas more general ESG funds might aim for merely avoiding companies that they see as bad for society, such as fossil-fuel companies or weapons makers, social impact funds aim to invest in companies that actively try to make the world a better place. They also put heavy emphasis on measuring that impact and reporting back to investors. (Think of it as the mutual fund equivalent of the way social entrepreneurs approach philanthropy. Shareholders don't want merely nice words or thoughts—they want data, and they want it now.)

WITH MORE ESG FUNDS to choose from, there are some pitfalls to keep in mind. Some funds have noble intentions but very short track records, making them hard to handicap. Many ESG funds are on the small side, and the lack of economy of scale, along with the extra expenses involved in researching and screening companies, can make them slightly more expensive than non-ESG funds. (The average actively managed, large-blend ESG fund carries an expense ratio of 0.96%, according to Morningstar data.)

That said, these funds have earned respect from the experts:

The **Parnassus Fund (PARNX)** is the flagship of San Francisco-based Parnassus Investments, one of the longest-standing ESG-oriented fund companies. It boasts one-year returns of 21% and has averaged returns of 10% annually since its inception in 1984. With $1 billion under management, Parnassus skews toward reasonably priced "value" stocks—its holdings have an average price/earnings ratio five points lower than that of the S&P 500—and it carries an expense ratio of 0.86%. Current top holdings include Gilead Sciences, Motorola Solutions, and Progressive Corp. (The firm also runs a fund called Parnassus Endeavor, whose stock picking relies on some of the same screening metrics as the *Fortune* Best Companies to Work For list; those companies get high marks for treating their employees well, a factor that's often considered in ESG investing.)

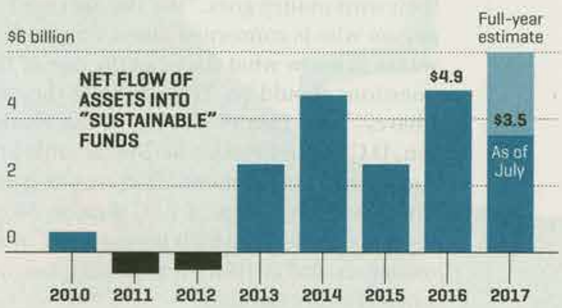
It's possible to do ESG investing with "passive" funds too. **Vanguard FTSE Social Index (VFTSX)** owns a basket of 434 stocks; it has risen 21.6% in the past year and 16.7% annually over five years, with holdings skewing toward tech giants like Apple, Alphabet, and Microsoft. Perhaps most alluring, the $3.3 billion fund has a rock-bottom 0.22% expense ratio.

Socially responsible investing extends beyond the world of equities as well. In practice, the social impact of fixed-income investments can be much easier to measure, since bonds are often tied to specific projects. One attractive fund in that arena is **TIAA-CREF Social Choice Bond (TSBRX)**. The $1.4 billion fund sniffs out "green" bonds: It will avoid bond issuances that pay for deforestation or the sinking of new oil wells but will happily snap up those that finance positive projects like solar panels or electric vehicles. Its holdings are a mix of corporate, government, municipal, and mortgage-backed securities, more than 40% of them rated triple A.

Investors have largely abandoned the notion that helping the planet or making money is an either/or proposition. "Don't be afraid to ask your adviser about how to invest that way," says Hale. "Five years ago, you might have been met with blank stares. No longer." ■

TRUMP BUMP

Since last year's election, investors have shown greater interest in mutual funds and ETFs that focus on environmentally and socially responsible companies.



SOURCE: MORNINGSTAR

MADE TO MEASURE

A custom-fit suit at a price better than a department store's? That's the promise of a new breed of suitmakers.

By Sheila Marikar

A deconstructed jacket on Indochino's form.

▲ PHOTOGRAPH BY **TOM SCHIERLITZ**

1

BESPOKE SUITING once brought to mind cigar smoke and burnished mahogany, and a gray-haired tailor with a measuring tape around his neck and a pin in his mouth. No longer. The past few years have seen a boom in online businesses peddling made-to-measure men's suits at off-the-rack prices, as the Average (nattily dressed) Joe has shifted from revering luxury labels to building out his own brand. "It's the desire to not look like one of a million but one in a million," says Marshal Cohen, chief retail analyst at market research firm NPD Group.

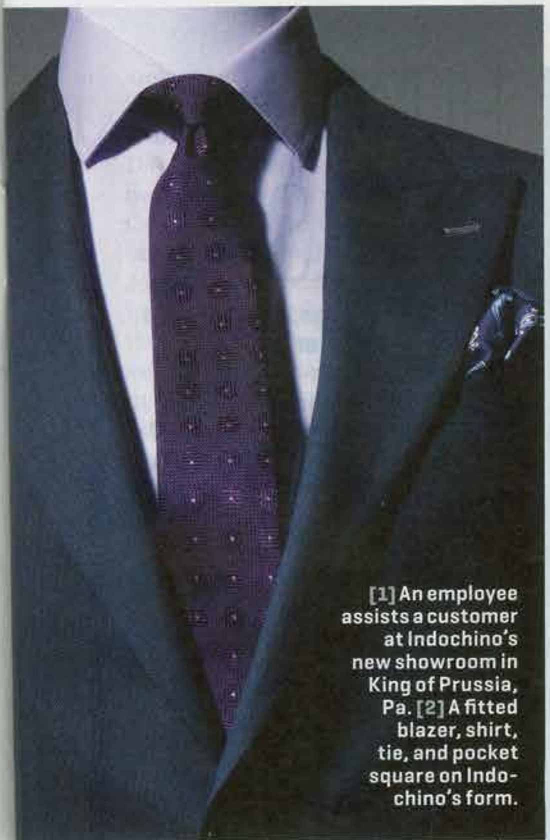
One company on the crest of this wave is Indochino, a Vancouver-based firm founded in 2007 by Kyle Vucko and Heikal Gani, former University of Victoria students who hated shopping for formal clothing.

Here's how ordering a suit online works: Customers follow step-by-step video guides on how to take their own measurements in less than 10 minutes. (No tape measure? They sell one for a dollar—it ships for free.) Sartorially inclined shoppers can then customize details like lapels, linings, pocket placement, and monograms. The cost starts at around $400 a suit (lower for fabrics that are on sale), and the finished garment arrives via FedEx within four weeks, promising a better fit than anything found on the racks of a department store.

Last year, Indochino raised $30 million in new funding from Dayang Group—the China-based manufacturer that makes its clothing as well as garments for Ralph Lauren, J. Crew, and Banana Republic—and it has used some of that cash to increase its footprint offline. "We needed to get away from selling a product and move toward selling an experience," says Drew Green, who stepped in as Indochino's CEO in 2015. On his watch, Indochino has opened 17 showrooms in the U.S. and Canada and tripled the size of its business. "Retail has given us our No. 1 channel of new customer acquisition," Green says.

Green operates under the assumption that while the average guy is loath to try on piles

1 COURTESY OF INDOCHINO; SUIT (PHOTOGRAPH BY TOM SCHIERLITZ)



[1] An employee assists a customer at Indochino's new showroom in King of Prussia, Pa. [2] A fitted blazer, shirt, tie, and pocket square on Indochino's form.

of starched wool-blend in a fluorescent-lit dressing room, he may not want to fork over a few hundred dollars for something he's never seen in real life, either. Indochino's showrooms bridge that gap. A shopper can make an appointment for a free, hour-long consultation with a "style guide" who will measure and walk him through fabrics, fit, and some of the myriad options for customization.

On a recent afternoon at Indochino's showroom in Beverly Hills, one block from Rodeo Drive, a style guide hovered around a middle-aged man trying on a made-to-measure charcoal-gray suit (customers have the option of a fitting once the garment is made). Bolts of fabric line silver racks throughout the shop, a physical manifestation of Indochino's edge over more traditional suit slingers. "It's a virtual inventory model," says Green. "We can open a showroom without spending hundreds of thousands of dollars on inventory, at a fraction of the cost at which our competition opens their stores. That's provided a really efficient way to grow."

Another growth opportunity: weddings. Wedding wear is Indochino's fastest-expanding segment (retail rivals like Macy's are also looking to wedding wear for growth), and the second floor of the Beverly Hills showroom is designed to play host to grooms and their parties, with mannequins in trendy tuxedos—a white jacket with black leather sneakers—cushy armchairs, and a foosball table. "The groomsmen usually bring a beverage of their choice," says Shayna Green, the showroom manager. (Indochino offers complimentary water and coffee, not the hard stuff.) It helps that 65% of Indochino's customers are millennials, a demographic that happens to be attending a lot of weddings. "Millennials really want to connect with the products that they buy," says Drew Green. "We give them the chance to create their own brand, the chance to express themselves."

Indochino has expanded into custom shirting, blazers, and, last year, outerwear. But suits represent the bulk of the business, and Green is focused on meeting that demand before wandering too far into other categories. His goal is for the Beverly Hills outpost of Indochino to have as strong a pull as the designer shops that flank it. "We don't consider our competitors retailers that sell made-to-measure or bespoke," he says. "Our competitors are those that sell ready-to-wear." According to Cohen, Indochino and its ilk have their work cut out for them. He estimates that the entire bespoke-suiting business represents less than 1% of the $50 billion menswear market in the U.S. "The issue for them isn't that they have a good transaction and interaction with the consumer," he says. "The issue is the frequency of purchase. The younger generation isn't buying suits at an alarmingly fast rate." Bespoke T-shirts, anyone?

THE COMPETITION

SUITSUPPLY

Founded in 2000 in Amsterdam, Suitsupply edged into the American market in 2011, when the *Wall Street Journal* pitted a $614 Suitsupply outfit against a $3,625 Armani suit and called it a draw. Suitsupply's getups start at $499 and can be customized online or at their rapidly expanding fleet of showrooms (the U.S. currently has 27, with seven more locations set to open soon).

J. HILBURN

With just three showrooms, J.Hilburn, founded in 2007, relies mostly on a nationwide network of personal stylist consultants who meet shoppers, at no charge, to measure them and figure out how their clothes should fit. J.Hilburn's suits start at $660, and most fabrics come from tiny Italian mills.

BLANK LABEL

Launched in 2009, Blank Label intended to cater to artsy hipsters who didn't want to wear clothes from the usual suspects. The company's tailored shirts and suit separates quickly caught on with mainstream shoppers, and within a year, Blank Label's revenue was in the six figures. Blank Label has five retail locations; suits start at $750.

© COURTESY OF INDOCHINO; SUIT (PHOTOGRAPH BY TOM SCHIERLITZ)

HOLY GRAILS

Instagram, blogs, and Internet forums are fostering a new breed of vintage-timepiece collectors. Auction prices are sky-high and show no signs of abating. When it comes to the Swiss watch market, everything old is new again. By Stacy Perman

AMONG VINTAGE WATCH collectors there are "grail" watches and then there's the Paul Newman Rolex Cosmograph Daytona. An estimated 4,000 were produced between 1963 and 1970; the iconic chronograph, with its tachymeter scale on the bezel and a black, white, and red "exotic dial," earned its nickname from the actor and race-car driver, who owned one of the first in the series, reference 6239. Today, these Daytonas fetch head-scratching

Newman's "Paul Newman" Daytona is expected to fetch a record price for a Rolex at auction.

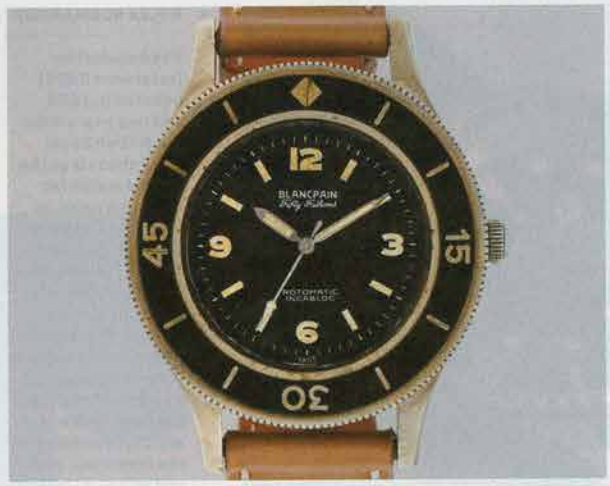
© PAUL NEWMAN: KEYSTONE-FRANCE—GAMMA-KEYSTONE VIA GETTY IMAGES; ROLEX COURTESY OF PHILLIPS/PHILLIPS.COM amounts: starting in the six figures before heading north.

In October, the most famous Daytona in existence, Newman's own, with the inscription "Drive Carefully, Me," on the case-back (a gift from his wife, the actress Joanne Woodward) is going on the block in New York. While Phillips, the auction house handling the sale, has given it a modest estimate—"in excess of $1 million"—watch insiders say the legendary timepiece could hammer down for as much as $10 million.

Vintage watches, by some estimates, have become a $2 billion to $3 billion market—with the value of some watches skyrocketing in recent years. "I remember in 1990 a dealer came in with hundreds of Daytonas, the good ones from the '60s," says Daryn Schnipper, chairman of Sotheby's international watch division. "At the time they were worth $800. There was no market. Now they've gone through the roof." Indeed, this past May, an 18-karat yellow gold Paul Newman Daytona, reference 6263, sold for $3.7 million at Phillips in Geneva.

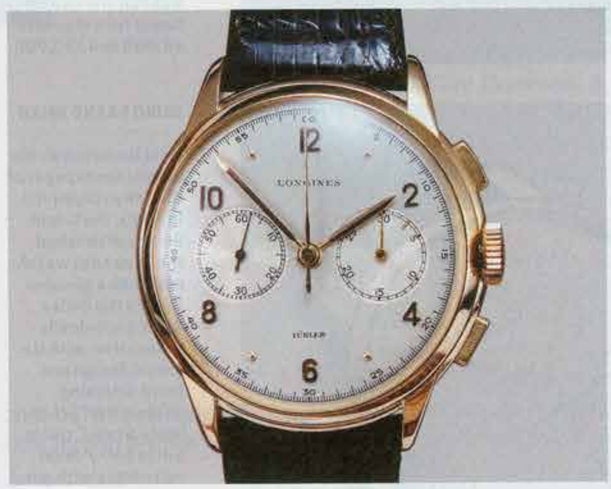
Monster sales and record-smashing auctions have helped drive interest, but so too has the Internet and the explosion of dedicated watch blogs, forums, and Instagram. Together they form a digitized global blue book: encyclopedic in scope, aiding enthusiasts about what to know, what to appreciate—and what these watches are worth.

The pursuit of the rare and exclusive has shifted many collectors away from contemporary pieces. According to the Federation of the Swiss Watch Industry, exports sank nearly 10% last year, their worst record since the global recession hit in 2008. "Collectors have gotten tired of wearing the same thing everybody else has," says Eric Ku, a Berkeley-



BLANCPAIN FIFTY FATHOMS

First conceived in 1952, this dive watch was created for the French Navy's combat swimmers and was so named because it could reach 50 fathoms (300 feet) undersea. Later it became standard issue for the U.S. Navy's combat swimmers. A collectors' favorite today, good examples from the 1950s and 1960s can be had for under $15,000.



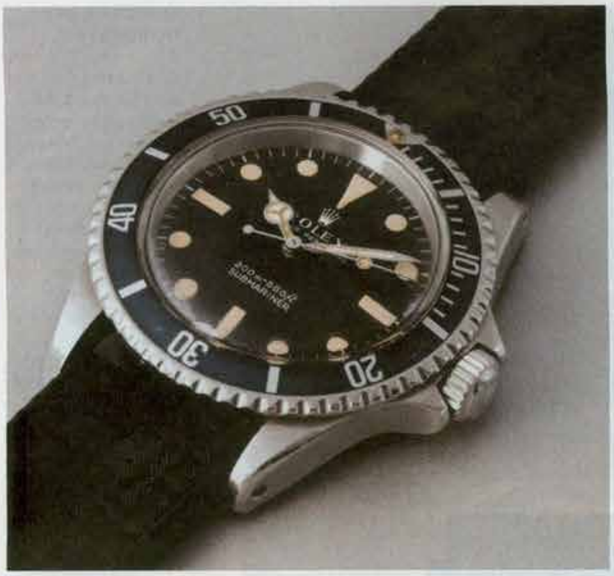
LONGINES CHRONOGRAPH FLYBACK

While the modern Longines is considered a "mall watch," back in the 1940s and 1950s, the brand was one of the world's premiere manufacturers. Among collectors, its caliber 13ZN—the first wristwatch chronograph, launched in 1936, is highly desired. Some examples in gold can still be found for under $10,000.

PATEK PHILIPPE NAUTILUS

Inspired by the shape of a ship's porthole, the simple and elegant sports watch was introduced in 1976 and sold for $2,850, making it the most expensive steel watch at the time. Today a vintage Nautilus from the 1970s and early 1980s can sell for over $50,000. In 2015, a 1982 platinum and diamond example sold at Christie's for $909,319.

BLANCPAIN: COURTESY OF HODINKEE; LONGINES: COURTESY OF CARSANDWATCHES.COM; PATEK PHILIPPE: COURTESY OF HODINKEE



ROLEX SUBMARINER

The Submariner (reference 6204) debuted in 1953, and two years later the British Royal Navy chose it as the official watch for its diving units. In the 1960s, explorer Jacques Cousteau wore one as did Sean Connery in his role as fiction's most famous British naval officer—James Bond. It's still considered by many aficionados as the ultimate tool watch; depending on the condition, year, and metal, a vintage Submariner can be found for between $6,000 and $30,000.

SEIKO GRAND SEIKO

First launched as the official timekeeper of the Tokyo Olympics in 1960, the Grand Seiko established the Japanese watchmaker as a genuine rival to the Swiss. Solid, technically innovative, with its iconic design and hand-finishing dubbed the "Grand Seiko Style," this is a nice entry-level collectible with good examples ranging between $800 and $1,500.

based dealer. "New watches have become so expensive, and prices continue to go up each year, while spending the same money on vintage has proven itself in terms of the resale market, and when it comes to value, it can be a more sound decision."

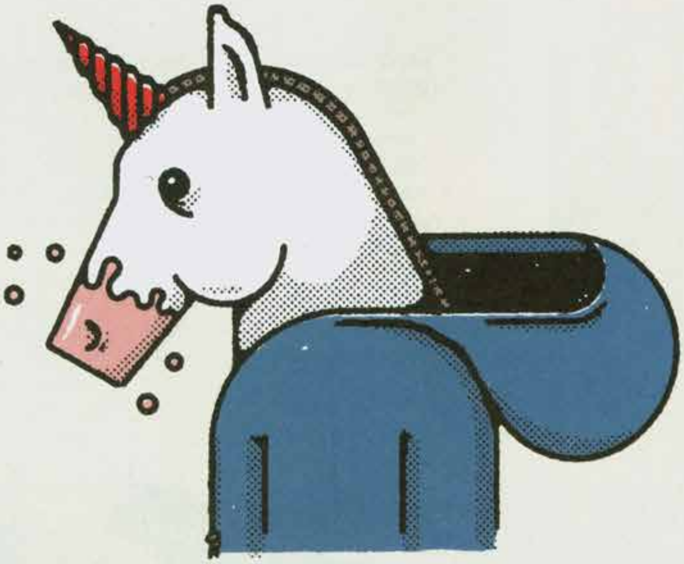
For rarefied collections, vintage Patek Philippe and Rolex are the biggest trophies. Take Patek's highly coveted reference 2499, introduced in 1951, of which only about 349 were made during its 35-year run. In 2012 a platinum version owned by Eric Clapton broke a world record when it was sold at Christie's for $3.63 million. In May a Rolex reference 6062 "Bao Dai" owned by the last emperor of Vietnam hammered down for a record $5.06 million at Phillips in Geneva. And a swath of collectors are flocking to old-school brands such as Heuer (pre-TAG), Longines, Universal Genève, and Vulcain.

This outsize retro interest has trickled upward, as scads of watchmakers are now digging into their archives for design ideas to reset their contemporary collections. For instance, this year Omega introduced a limited-edition trilogy: the Seamaster 300, the Speedmaster, and the Railmaster, modeled after its 1957 classics; while Vacheron Constantin, in collaboration with watch site Hodinkee, offered the Historiques Cornes de Vache 1955 Limited Edition, inspired by one of its 1950s chronographs.

When it comes to vintage collecting, there are two watchwords: condition and rarity. As one collector says, "I'd rather spend $5,000 on a Longines from the 1940s in great condition than $25,000 on a Patek in horrible condition."

The options for enthusiasts are massive. The well-known, rare, and unique can be found at every price point, offering something for the beginner, the speculator, and the high roller. The marketplace is vast, as is evident in auction catalogs, on eBay, and at many specialized online sites and dealers. But buyers, beware—the vintage market has its pitfalls, namely: shady provenance, fakes, and Frankenwatches (timepieces built from non-genuine parts that can render the piece worthless).

Says Ku, one piece of advice is simply: "Buy what you like. Never think of a watch as an investment. It should express your style or taste, and if you buy something you like, you'll be happy every time you wear it." ■



FROM BOOM TO DOOM

Entrepreneurs used to worry about a bubble bursting. Today's startup problems are far more complicated. By Erin Griffith

WHEN WE STARTED this column in late 2015, the technology boom felt like it was in danger of collapse. Mutual funds and institutional investors had created the so-called Age of Unicorns by pouring money into large, highly valued private startups; suddenly investors were in retreat, burned by bad bets. Talk of valuation markdowns, missed revenue targets, cash crunches, and failed acquisitions threw cold water onto a blistering business. Everyone stopped asking the question investors had been debating and fretting over for the past few years: "Are we in a tech bubble?" Nothing had really burst, but it no longer felt bubbly.

Nearly three years and 27 columns later, the tech bubble question is beside the point. Inside boom-land, there's a bigger set of issues to fret over. A toxic culture of sexism and sexual harassment has moved front and center, thanks to a growing group of whistleblowers. High-profile instances of shady startup behavior have caused the industry to question its "fake it till you make it" philosophy of hustling your way to success. Uber, the most valuable venture-backed startup in the world, continues to be a shining example of dysfunction as its board of directors, cofounders, and investors snipe at each other in the press and through lawsuits over who controls the company. In 2017, the startup industry is experiencing the fallout from years of prioritizing growth at any cost.

Not every startup is unethical, overvalued, toxic, or dysfunctional. But the tech world's success stories are now overshadowed by big, vexing issues that make the "Are we in a bubble?" question look pathetically myopic. Outsiders are asking things like, Are tech platforms responsible for spreading hatred and misinformation in America? Are Facebook, Apple, Alphabet, and Amazon too powerful? Will technology eliminate our jobs? A few years ago, we wondered if the tech party was coming to an end. Today we ponder if its hosts are fundamentally misanthropic.

How did we get here? In part because the technology industry injected itself into the world beyond its bubble. Software is, as the saying goes, "eating" everything from transportation to hospitality, retail to automotive, health care to education. In the process, the tech industry inherits the world's problems. Outrage over mutual funds marking down Uber's valuation feels beside the point when you consider that as many as 5 million professional drivers in the U.S. could lose their jobs to autonomous vehicles. Boom, meet doom.

While not particularly satisfying, it feels fitting to end this column's run on a gloomy note. The "boom" in its name nods to tech industry growth; the "view" signals an air of skepticism. Never has the world been more dubious of startups and the technology industry than it is today. The tech community could choose to interpret that stance as an attack. I'd rather it do what it's known for—turning problems into opportunities—and fix some of the messes it has made. It's a chance to actually, maybe, seriously, no joke, make the world a better place. ■

FOR MORE
Find previous editions of A Boom With a View at fortune.com/boom.

▲ ILLUSTRATION BY **MICHAEL GEORGE HADDAD**

On the windward coast of Oahu, Lanikai Beach is a jewel-toned haven.

© PHOTOGRAPH BY ZOIA KOSTINA—SHUTTERSTOCK

THE GATHERING PLACE

If you know where to look, the island of Oahu is full of hidden gems. **By Adam Erace**

BLACK BOOK **HAWAII IS A HIKE,** and planning a trip there can be overwhelming—so many islands, so little time. Start with a visit to Oahu, and place yourself in the capable hands of Leea Evaimalo, who runs the concierge desk at the luxurious, year-old Four Seasons Resort at Ko Olina, just afield of Waikiki's tourist crush. Here's where she sends her guests.

1

[1] A craft cocktail at Bar Leather Apron.
[2] Antiquing in Chinatown.
[3] The Shangri La mansion.

Best new restaurant: Herringbone opened in August in Waikiki's International Market Place, which has become a restaurant hotspot since it was redone two years ago. Standout dishes include lemony whole-fish ceviche, caramelized Hokkaido scallops with sweet corn, and *lilikoi* (passion fruit) panna cotta.

Emerging neighborhood: Situated at the end of Honolulu's financial district, Chinatown is a melting pot of cultures, where you'll find lei makers, fresh-seafood vendors, dim sum restaurants, and antiques stores. Every first Friday, vendors from around the island set up shop in the middle of the street.

Cocktail spot: Inspired by the tiny bars in Japan, Bar Leather Apron, located in downtown Honolulu, seats 25 people, max. The whiskey selection is fantastic, as is the detail-oriented service.

Under-the-radar museum: Shangri La is the former estate of heiress Doris Duke. Guided tours are available of the mansion, which showcases Duke's vast collection of Islamic art.

Day trip: When guests want to see another part of Oahu, I send them to the North Shore. Popular local spots include Pupukea Grill's food truck, famous for its kalua pig quesadillas, Mokuleia Beach Park, good for swimming and collecting rare seashells, and Uncle Bryan's Sunset Suratt Surf Academy.

Island-hopping: I recommend the Big Island, which has a little of everything: lush valleys, waterfalls, hikeable dormant volcanoes, even a green-sand beach that gets its color from olivine rocks.

Poke pick: When I'm craving the fish salad, I head to Da Hawaiian Poke Company, a casual joint outside Waikiki. Options range from lobster to *ikura* (salmon roe).

Things to avoid: Steer clear of Dole Plantation, a tourist trap, in favor of Kahumana Farm or Ma'o Organics, which offer more authentic Hawaiian farm experiences.

2

3

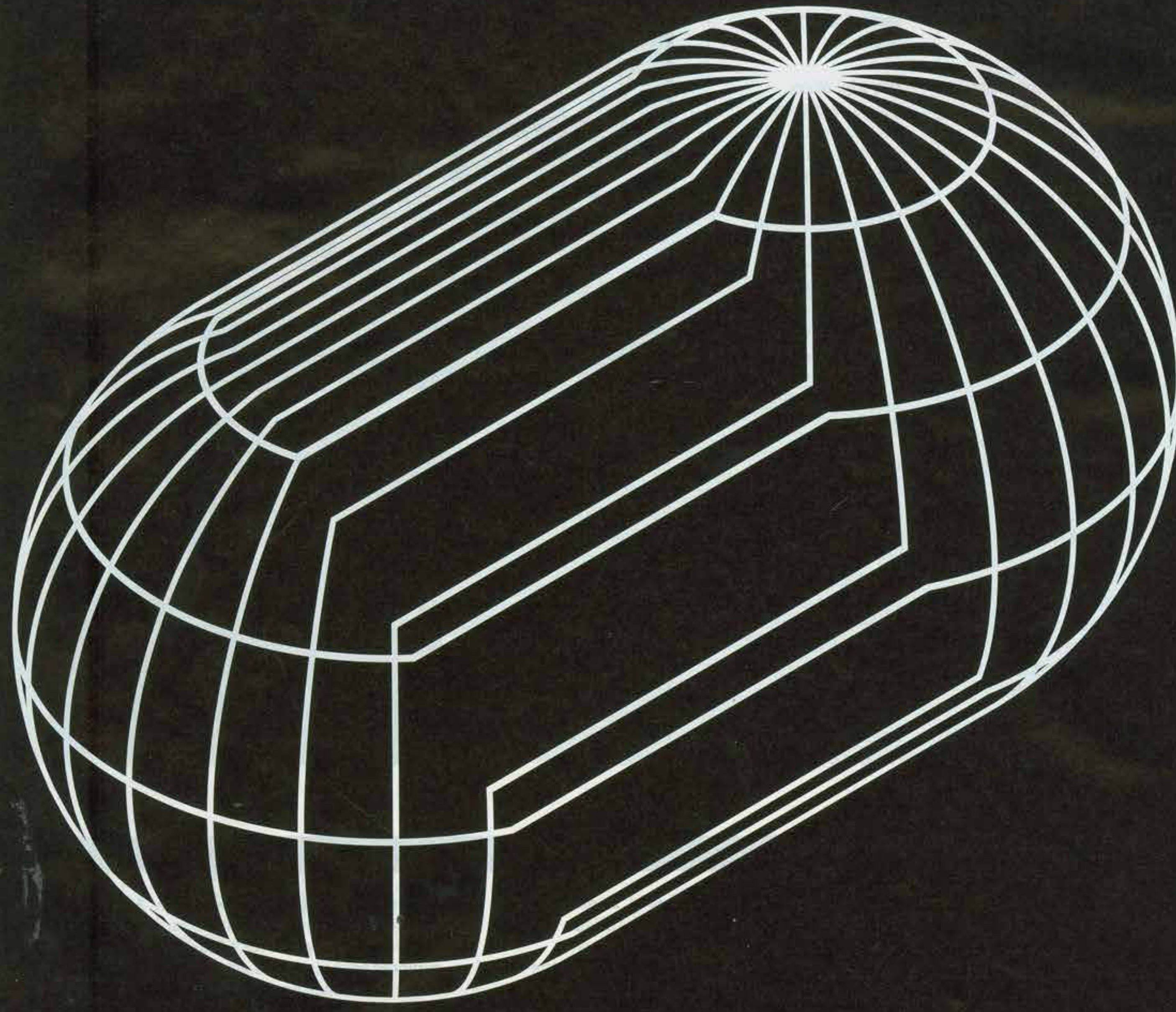
PHOTOGRAPHS BY JOHN HOOK (1); MAXFIELD TERRELL SMITH—NELLA MEDIA GROUP (2); CAROL M. HIGHSMITH—BUYENLARGE/GETTY IMAGES (3)

THE $10,000 DAY

We asked Evaimalo to plan a special, singular day in Oahu: Start by hiring a private chauffeur. First stop: brunch at Chinatown's Scratch Kitchen & Bake Shop, followed by a drive to the Kalaeloa Airport, where your helicopter awaits. Take in Oahu's landmarks and views from above while sipping Champagne, before landing at Kualoa Ranch for a guided horseback ride through the verdant Ka'a'awa Valley. After returning to the hotel, climb aboard the resort's 75-foot private yacht for a four-hour cruise that explores secluded bays along Oahu's leeward coast. Once back on shore, end the day on a high note with a five-course meal, complete with chef-selected wine pairings, at Alan Wong's in Honolulu. F

▲ ILLUSTRATION BY MARTIN LAKSMAN

CHANGE THE



WORLD

!!!!

COMPANIES ARE USING THE PROFIT MODEL TO SOLVE A MULTITUDE OF SOCIETAL PROBLEMS. HERE'S OUR THIRD ANNUAL LIST OF THE BEST OF THEM.

INTRODUCTION

CLIFTON LEAF

HEAD WRITERS

ERIKA FRY
JONATHAN CHEW

WHEN UNILEVER announced its first-half results for 2017 this summer, it had plenty of good numbers to crow about. Revenue, at 27.7 billion euros ($30 billion), was up a healthy 5.5%, growing well ahead of the company's competitive set. Moreover, it was turning those sales into a river of profit, with earnings per share up 24% from the previous year.

But in late August, when I spoke with Unilever CEO Paul Polman on the phone, it was another data point he was most excited about: 1.8 million. That's the number of people who apply to the Anglo-Dutch consumer products giant for a job each year, with a prodigious share of them being millennials.

The company, I should point out, makes soap. And antiperspirant. And mayonnaise. Not that there's anything wrong with those things—but, hey, would you call them sexy?

So what's Unilever's appeal, then? "According to the data," Polman reveals, "60% more or less—I'm rounding it—say it's the Unilever Sustainable Living Plan, and the bigger purpose that we have as a business." The Sustainable Living Plan is the company's blueprint for growing the business while reducing waste, water, and energy use, sourcing raw materials in a smarter way, helping local farmers, and striving for other earth-friendly goals. The wide-eyed applicants who are sending résumés by the trainload may not pine to sell packaged goods to the well-packaged masses—but Polman figures, "They say, 'At the end of the day, I'm going to make a difference that is bigger than I could have done myself.'"

For Polman, the investment proposition behind the Sustainability Plan is easy to compute. "Be it in employee attraction, corporate image, education, engagement, I think it pays back," he says. "It's still difficult to explain it to your shareholders, obviously, but ultimately the people that you employ—or the people you are able to attract—is actually the backbone of your success."

That investment decision, importantly, also seems to get the backing of Unilever's board of directors: "At the board level, at the senior management level, they are apparently 100% behind this," Polman tells me—a proposition tested as recently as February, when Kraft Heinz made an unsolicited offer for the company. (Polman says that the board made clear to the interlopers that Unilever's "business model of longer-term-compounded value creation, by focusing on multiple stakeholders," is the model that the board still believes in—"even when the pres-

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PHIL WAHBA
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CLAIRE ZILLMAN

sure is a little higher.")

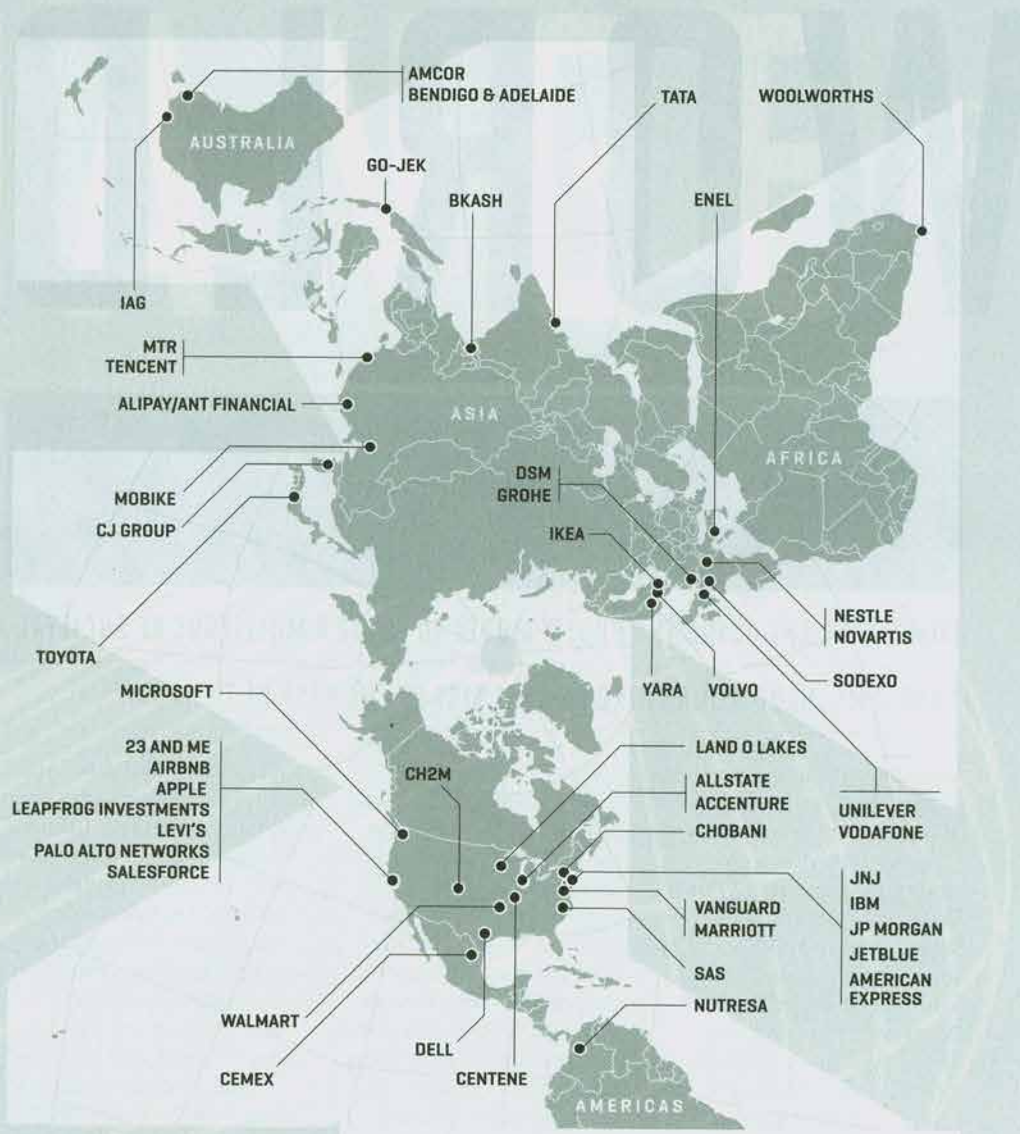
While the board's opinion could one day change, Polman is right about one thing: There is ample evidence to suggest that companies that focus on long-term sustainability outperform those with a shorter-term outlook. Institutional investors are getting the message too (see our story on page 24).

Companies not only *can* do well when doing good, they often do. (We'll let the copy editors figure that sentence out.)

Which is one more reason, if you needed any, to spend some quality time with the list that follows—which *Fortune* put together with invaluable help from our partners at Shared Value Initiative. The 56 companies on our 2017 Change the World list, which includes six smaller rising stars (see page 51), are tackling problems obvious and not-so-obvious—from Accenture, which is using data to reduce E.R. visits, to DSM, a Dutch life sciences company, that is fighting greenhouse gas emissions from a notorious source: cow flatulence. They include IBM, which is helping urban high schools close the STEM skills gap, and 23andMe, which is empowering consumers to learn about their genetic risks—and the lifestyle choices they can make, in some cases, to lower them.

We explore JPMorgan Chase's bold and urgent campaign to revive one of America's iconic industrial cities and Levi Strauss's effort to make life better for some of the 300,000 garment workers who make its jeans. And we seize a rare opportunity to sit down with Apple CEO Tim Cook, who shares his philosophy on why the iPhone and its ecosystem of apps are a potent force for good.

All of these companies, we believe, are changing the world—but please read on and judge for yourself.



THE GLOBAL REACH OF A NEW BUSINESS MINDSET

***Fortune*'s Change the World companies stretch across six continents, and share plenty of common concerns. Here are some of the arenas where companies are making an impact:**

Expanding economic opportunities for lower-income workers: [No. 1 JPMorgan Chase; No. 38 CJ Group; No. 40 Woolworths].
Delivering health care to the underserved: [No. 4 Novartis; No. 19 Centene].
Expanding education to build a tech-savvy workforce: [No. 3 Apple; No. 35 IBM].
Lowering the world's carbon footprint: [No. 2 DSM; No. 34 Grohe]

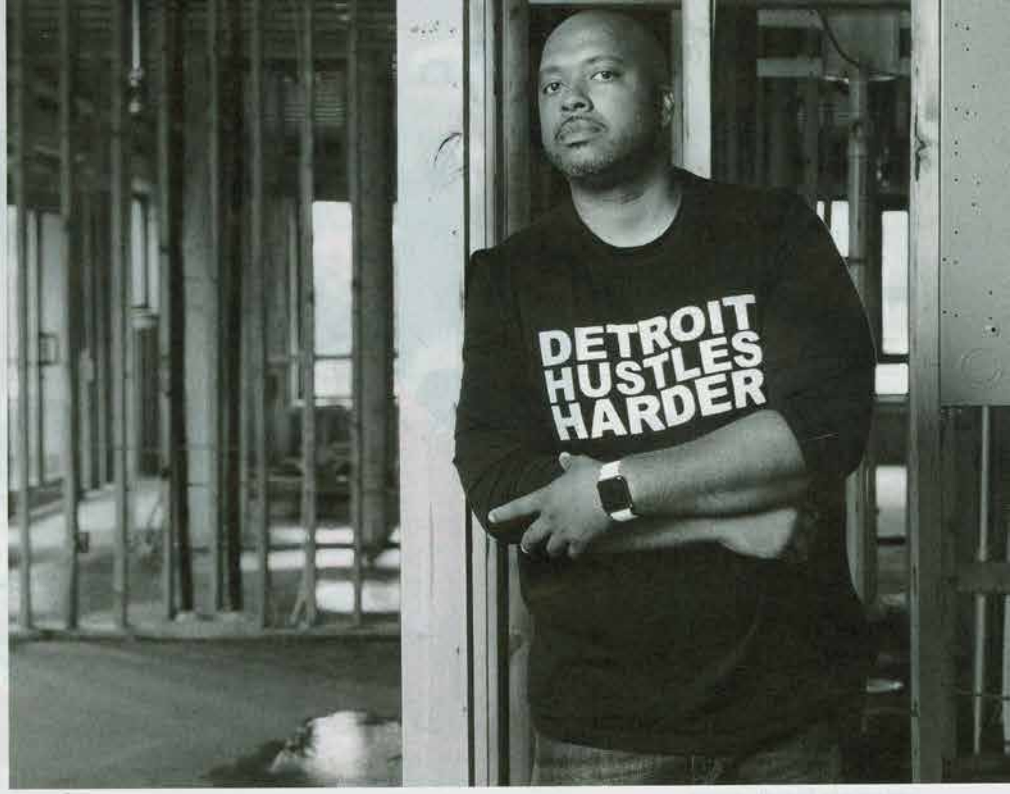
HOW WE CHOSE THE COMPANIES

The Change the World list recognizes companies that have had a positive social impact through activities that are part of their core business strategy. We prioritize companies with annual revenues of $1 billion or more. *Fortune* writers and editors, with help from Shared Value Initiative, evaluate and rank the companies by these three factors:

1. Measurable social impact: **We consider the reach, nature, and durability of the company's impact on one or more specific societal problems. This category receives extra weight.**
2. 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.**
3. 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

1



BUILDER, REBUILDER
Developer Cliff Brown at the Coe at West Village, a real estate project under construction in a rebounding Detroit neighborhood. JPMorgan Chase has invested $150 million in revitalizing the city and retraining its workforce.

JPMORGAN CHASE

U.S.

America's biggest bank designs a blueprint for urban economic revival.

BANK PROFITS don't grow when the economy stalls. And JPMorgan Chase CEO Jamie Dimon and his colleagues believe U.S. GDP growth won't be robust again unless the country does more to revitalize cities hobbled by lost manufacturing jobs. That's one reason America's largest bank is now steering some $250 million annually into community-building investments like small-business development, job-skills training, and neighborhood revitalization, and deploying a "service corps" of advisers to help those investments bear fruit. In Detroit, its efforts have created some 1,700 jobs and seeded more than 100 new businesses since 2014 [see page 56]; this fall, the bank will expand the model to multiple cities. The endgame: A virtuous cycle where healthier cities breed healthier businesses—in other words, an ideal climate for the banking industry.

2 DSM

Netherlands

A food-science company takes the fight against malnutrition to famine's front lines.

THIS YEAR, as decimating famine threatens 20 million lives in Africa and the Middle East, DSM is on the front lines; the fortified-nutrition products it helped the World Food Programme develop reach approximately 31 million people every year. The company is also boosting local economies by enlisting them in the fight against hunger. African Improved Foods, DSM's joint venture with the Rwandan government and development agencies, produces fortified cereals at a plant operated by East Africans, from locally grown maize and soybeans procured from 7,500 smallholder farmers. [For more on DSM's innovative problem-solving, see page 82.]

3 APPLE

U.S.

Serving health, education, and the climate with some of the world's most popular products.

WITH ROUGHLY a billion of its smartphones, computers, and other gadgets in circulation, Apple has a larger cultural footprint than any other tech company. In an interview with *Fortune* executive editor Adam Lashinsky [see page 74], Apple CEO Tim Cook makes the case that those products are intrinsically a force for good—from the process of their construction [Apple runs its own facilities overwhelmingly on renewable energy], to their potential as a tool for medical research, to the 2 million U.S. jobs Apple believes it creates through its "app economy." The value of this $815 billion company, in other words, goes far beyond its market cap.

▲ PHOTOGRAPH BY MARVIN SHAOUNI

4 NOVARTIS

Switzerland

Finding the right balance between a potent drug pipeline and people-friendly pricing.

SWISS PHARMACEUTICAL giant Novartis has made waves with a drug pipeline that includes one of the most talked-about experimental cancer therapies in recent years—a treatment called Kymriah that reconfigures the body's own immune cells to become aggressive blood-cancer killers. Kymriah just won a milestone FDA approval to become the first drug in its class.

Innovation comes in many forms, and the company has shown a willingness to apply this same creativity to its drug pricing structure, adhering to the philosophy that medicines should be judged on their worth. The company's access initiatives in developing nations reflect one aspect of that thinking: Novartis offers treatments for deadly chronic illnesses at $1 per treatment per month to governments and public-sector customers in poor countries, as well as education and screenings in places like India, Kenya, and Vietnam.

Novartis has also set out to change how the biopharma industry and governments approach drug pricing and development. Its Sandoz unit was the first to win U.S. approval of a "biosimilar" drug—a treatment that's the cheaper generic equivalent of some of the world's most expensive therapies. Novartis has several more biosimilars marketed in other countries (as well as an FDA approved copycat of Amgen's bestselling treatment Enbrel, which hasn't reached the U.S. yet due to patent spats), and three others in late-stage clinical development.

CEO Joe Jimenez, who recently announced that he would retire next year, is also cochair for a global "value-based pricing" project that wants to figure out how to best match health care costs with patient outcomes. For Novartis, it's not just a theoretical concept. In the case of Kymriah, the company will get reimbursements only if patients respond to treatment within a month.

8 MM+

Number of trees to be planted this year as part of Ant Financial's energy-saving initiative.

5 LEAPFROG INVESTMENTS

U.K.

Building financial safety nets in Asia and Africa.

In 2008, this private equity firm launched a $135 million social-impact investing fund aimed at emerging markets in Asia and Africa. Today, the firm's 17 portfolio companies reach 111 million people—more than 80% of them in low income brackets—with financial and health services that are hard to access in their home countries. Among the LeapFrog stars: South Africa's AllLife, the first company to offer life insurance coverage to HIV-positive individuals, and Petra, the largest independent pension trustee in Ghana.

6 ANT FINANCIAL

China

A tree-planting app inspires earth-friendly habits.

There are apps for tracking your calorie intake, so why not for your carbon footprint? Ant Financial's Ant Forest app has lured 450 million users in China to do just that, in fulfillment of parent Alibaba Group's pledge to use financial technology to tackle climate change. Users earn points toward planting virtual trees by adopting earth-friendly habits. The company plants a real tree for every 17.9 kg of carbon saved: Over 8 million will be planted in 2017. And the engagement keeps customers loyal to Ant's widely used payment app.

© COURTESY OF NOVARTIS

↖

GENTLE PRESSURE
A Novartis health educator performs a blood-pressure test in Vietnam. The drugmaker's outreach in poor countries helps it develop new markets; at the same time, it works with governments to keep costs down.

7 WALMART

U.S.

The nation's biggest retailer flexes its muscles to make its supply chain greener.

WALMART is using its mammoth clout as the nation's largest retailer to push its tens of thousands of suppliers to gradually get rid of controversial chemicals, like the formaldehyde in wood resin-based products in about 90,000 household items. And the move has inspired competitors, including Target, to also make similar efforts. So far, Walmart says, its suppliers have removed almost all of the priority chemicals from the products it sells.

The changes are a logical extension of Walmart's longer-term sustainability campaign. As of last count, the retailer was successfully diverting 82% of materials that used to be considered waste away from landfills, compared with 64% just a few years ago. And green-consciousness isn't incompatible with success: These initiatives haven't prevented the retailer from racking up three years in a row of growing U.S. comparable sales. The planet-conscious push is also undoubtedly helpful at a time when Walmart is looking to broaden its customer base, particularly among environmentally focused millennials.

8 TOYOTA

Japan

One of the world's biggest automakers leads the charge for a zero-emissions vehicle.

TESLA MAY HAVE made electric motors cool, but Toyota made them ubiquitous. Toyota's Prius sedans are not only the best selling gas-electric hybrid car globally, they also "normalized" a climate-friendly technology that gearheads once viewed with distrust. Toyota has now sold more than 10 million hybrids worldwide.

Now, the automaker is pushing the envelope again, with the first mass-produced fuel-cell vehicle, a zero-emissions car called the Mirai. There are only 39 hydrogen charging stations in the U.S.. But Toyota is helping spur infrastructure development for the Mirai, an effort that happily means helping along fuel-cell technology in general. It's making its patents royalty-free until 2020 for researchers working on advancing the technology for other purposes. So far, 2,000 of the cars have sold globally, and the numbers are accelerating.

Up next: Toyota is developing solid-state batteries, an elusive holy grail that could radically improve range and safety for electric cars. Toyota says it has plans to commercialize the technology by the early 2020s. Fossil fuels have never looked so prehistoric.

9 JOHNSON & JOHNSON

U.S.

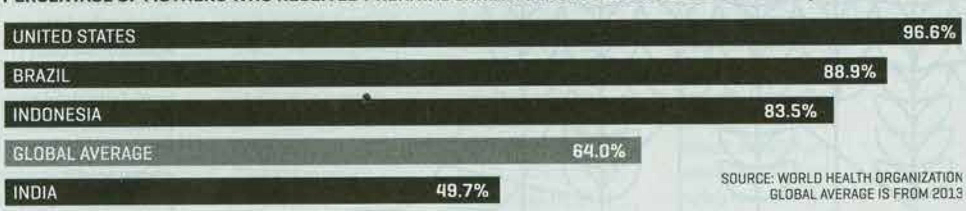
Expanding prenatal and early childhood care in India.

SOMETIMES, a low-tech cell phone can be a literal lifeline—especially if you live somewhere where regular Internet and health care access is a luxury.

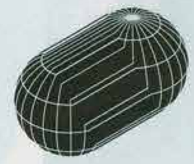
That's why global conglomerate Johnson & Johnson, in conjunction with the nonprofit group ARMMAN and the J&J parent support arm BabyCenter, launched the "mMitra" program in India. Roughly translating to "mobile friend," mMitra is a free service that sends pregnant women and new moms in India voice messages that give them health updates and helpful information about raising children. This might include data about preventive care, proper nutrition, and other early-childhood health issues (all delivered in local languages and dialects).

The service is especially useful because even low-income families in the country have at least one mobile device that they share. More than 700,000 Indian women have participated since the project launched in 2014, according to J&J. India's poorest are getting help from the company in other ways, as well: Its medicine Sirturo, which treats drug-resistant tuberculosis, is being rolled out widely across the country.

PERCENTAGE OF MOTHERS WHO RECEIVED PRENATAL CARE AT LEAST FOUR TIMES BEFORE BIRTH, 2000–2015



MATERNITY GAP
Despite its rapidly growing economy, India lags far behind many other large countries in prenatal care. Johnson & Johnson has helped address that shortfall with mMitra, which sends medical advice to pregnant women and new mothers in remote parts of the country via mobile device.



CHANGE THE WORLD

10 YARA

Norway

A fertilizer maker helps Tanzania's subsistence farmers make the most of their land.

THE NORWEGIAN fertilizer company has been lauded for seeding a green revolution in Tanzania. The firm played a lead role in the conception of SAGCOT, an ambitious public-private partnership dedicated to revitalizing a 300,000-square-kilometer band of arable but underproductive land—a tract about the size of Italy—and boosting the incomes of the smallholder farmers whose livelihoods depend on it. Yara has leaned into the new market, selling fertilizer, of course, but also offering agricultural training; participating farmers have seen their yields increase tenfold in most cases. The firm, which also built a $20 million fertilizer terminal in Dar es Salaam, Tanzania's largest city, is growing with them; it now commands close to a 50% market share in the country.

11 LEVI STRAUSS

U.S.

An apparel-industry standard bearer pushes its suppliers to do more for garment workers.

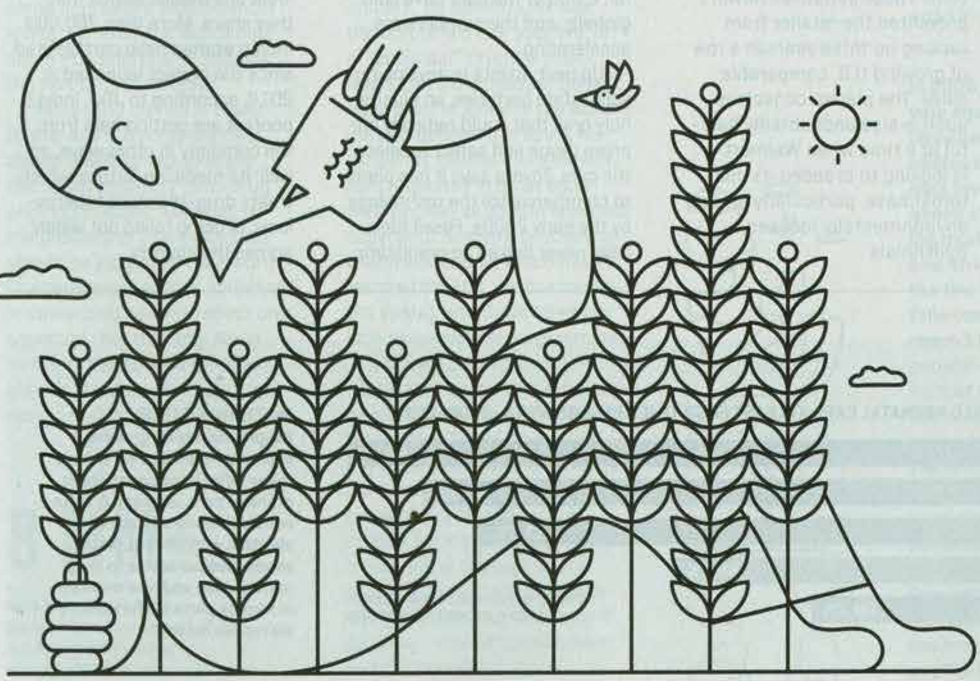
THE INVENTOR of blue jeans launched the industry's compliance movement 26 years ago, to set standards for how garment workers should be treated. Now it's pushing apparel makers to do more than just monitor factories to help the people who work there. That means engaging vendors (rather than just policing them) in a project that Levi's broadly calls Improving Worker Well-Being. The company is agnostic as to what form that takes—be it supervisor training or a factory cooling system—so long as it meets workers' needs. Suppliers are rewarded with less absenteeism and more productive workers, and Levi's gets better partners. The company has already reached 42 of its own vendors (that's 140,000 workers). For more, see page 66.

12 SAS

U.S.

A big-data giant helps crime-fighters find crucial investigative puzzle pieces.

START DISCUSSING big-data analytics, and most people's eyes glaze over. But data wranglers from SAS are putting that talent to valuable use, wringing insights out of huge collections of information to help human rights workers, environmentalists, and educators, among others. Case in point: Local law enforcement organizations know about every hate crime committed in the U.S., but many are never reported to the FBI. At an SAS-sponsored event dubbed the North Carolina DataDive, the Anti-Defamation League got help building tools to match online news reports with gaps in the FBI reports. Another group built a tool to identify stores that illegally sell tobacco products to minors. Big data: It's good business, but it's not just for businesses.



IF I HAD A HAMMER
Cemex's Yo Construyo ("I Build") trains people in sustainable building techniques—imparting skills while creating a generation of future customers. At right, Maria Ruiz, a student in a Cemex masonry class.

13 BENDIGO & ADELAIDE BANK

Australia

Helping isolated communities run their own banks.

In the 1990s, consolidation resulted in the closure of almost a third of Australia's bank branches. Approached by abandoned communities, this bank launched a Community Bank model in 1998 where townspeople could own and operate their own branches. Around 320 localities now run such banks, with almost $165 million disbursed from profits to local causes.

O COURTESY OF CEMEX

18 CEMEX

Mexico

A concrete maker helps put roofs over more people's heads in Latin America.

CEMEX, one of the world's largest suppliers of cement, concrete, and aggregates, has gone to great lengths to foster sustainable building practices in Latin America. Its program, dubbed "Growing," has reached 3 million people. In Mexico alone, an estimated 6.7% of the homes repaired in the last 20 years have benefited from Cemex's green building push.

"Growing" is about more than altruism: It also builds a market for the company's products. One element of the program provides Cemex materials for houses and home improvement to families earning less than $3 a day. Households with slightly higher salaries can obtain loans to finance similar purchases. And other Cemex programs train would-be contractors (and potential future customers) in construction and entrepreneurship.

Cemex has also been tackling one of the region's endemic problems: unsafe stoves. Cemex's Clean Cookstoves are concrete stoves that have been installed to replace dangerous and open stoves in over 80,000 households in Latin America.

14 NESTLÉ

Switzerland

Weaning itself, and millions of customers, from sugar.

The more scientists study sugar, the more they discover how harmful it can be. Nestlé has cut added sugars across most of its portfolio, and plans to cut 5% more by 2020. It has also poured R&D money into changing sugar's structure. By essentially creating a hollowed-out crystal, Nestlé thinks it can reduce the amount it uses in certain products (including chocolate) by up to 40%.

15 TENCENT

China

A ubiquitous app makes life more secure for workers.

In China, WeChat is a digital nexus where consumers pay bills, hail rides, and shop for baby products; 938 million monthly active users congregate on the platform. WeChat is now expanding into the workplace: Over 20 million users have applied for leave or reimbursements through enterprise accounts. That's a valuable service in a country where workers often live far from their employers.

16 VODAFONE

U.K.

Extending the e-commerce boom to African merchants.

This year saw the 10th anniversary of the payments system M-Pesa, launched by Vodafone and Safaricom in Kenya. The platform, which lets people send currency via text message, has spread to 30 million users in 10 nations. The partners hope to extend its empowering effects with an e-commerce site, Masoko, designed to help small merchants find customers.

17 GO-JEK

Indonesia

A motorbike-fueled delivery service drives a boom.

Think of Go-Jek as Uber for motorbikes. This on-demand delivery service—offering rides, food, beauticians, and more—has boosted the economies of famously gridlocked Jakarta and other cities. Small businesses have seen sales soar once they've registered on Go-Jek's platform. Its drivers, meanwhile, get health benefits, vehicle insurance ,and safety training.

19 CENTENE

U.S.

Keeping Affordable Care Act customers covered as uncertainty narrows their options.

IN MID-AUGUST, about 8,000 people in 14 Nevada counties faced the likelihood that they'd have no Affordable Care Act health-plan options in 2018. Then, insurer Centene announced that one of its subsidiaries would serve the state's "bare" counties. This same subsidiary is a key part of Nevada's Medicaid managed-care program. Centene is betting it can succeed in markets that higher-profile insurers have fled in the face of continuing uncertainty over the ACA. The bet is paying off financially: Centene reported $12 billion in total revenues in the second quarter (a 10% year-over-year improvement).

20 ENEL

Italy

A multinational energy company strives to lower the world's carbon footprint.

BECOMING ENTIRELY carbon-neutral by 2050: That's what this company, which generates and distributes energy in 30 countries, has set its sights on doing. In 2015, 46% of the energy Enel supplied was produced without any carbon dioxide emissions. Enel recently created the first geothermal plant in Latin America (in Cerro Pabellon, Chile). It has also been teaming up with smaller energy innovators: Over the past two years, Enel has collaborated on 80 sustainability projects by startups, including a "Vehicle-to-Grid" hub in Denmark that channels surplus energy from electric cars back into the main power grid.

21 UNILEVER

U.K./Netherlands

A consumer-goods and food giant aims to integrate sustainability into, well, everything.

UNILEVER, the food and consumer-goods giant behind Dove soap and Hellmann's mayo, has placed a big bet that it can best grow by "making sustainable living commonplace." Attempts to resolve social challenges like food waste and climate change aren't side projects: They're integrated into how its businesses are run, whether that means cutting back on water use or reducing plastic in packaging. Unilever's board rallied behind that vision this year to help stymie an unsolicited takeover bid from Kraft Heinz; some worried that the latter company's emphasis on cost-cutting would undermine Unilever's ethos.

22 CH2M

U.S.

An engineering firm brings extensive environmental expertise to huge public projects.

WHEN THE Panama Canal Authority insisted that its massive new locks waste less water than the old ones, CH2M helped design and build the solution: cleverly engineered recycling basins. The firm began developing environmental expertise decades ago, a prescient strategy given today's demand for greater sustainability in construction. Current notable projects include a 20-mile elevated railway on Oahu, a 16-mile waterway in Dubai, and London's Crossrail project. Its environmental capabilities were a major attraction for the Jacobs engineering firm, which recently said it would buy CH2M for $3.3 billion.

23 BKASH

Bangladesh

Making money accessible by phone in a mostly "unbanked" nation.

BANGLADESH'S citizens face huge financial challenges: More than one-third of the population lives below the poverty line, and around 60% have no access to a bank or other formal financial institution. Enter bKash, now the country's most popular mobile financial service provider. It allows people to make payments and transfer money via their phones. Some 22% of Bangladeshi adults now use bKash, and more than 4.5 million transactions pass through the system every day. Citizens also benefit from bKash's many competitors; the country's mobile banking transactions topped $20 billion in 2015.

24 ACCENTURE

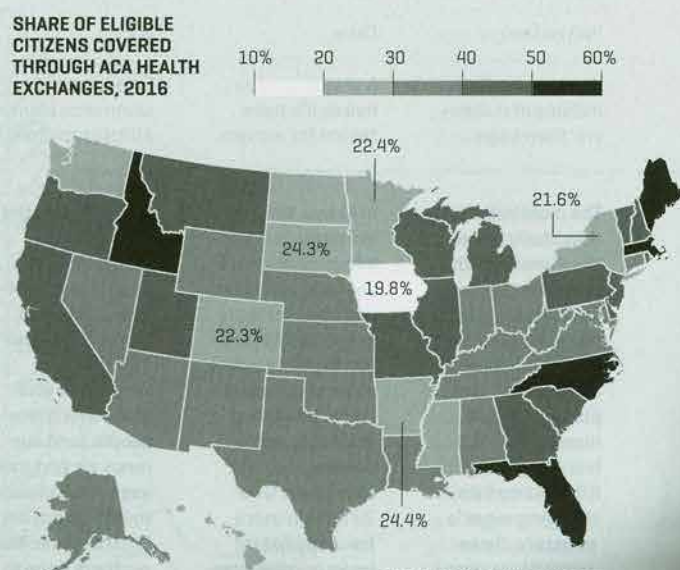
Ireland

Using data analytics to help health care providers make life-saving differences.

SOME PROJECTS of Accenture's Analytics and Health and Public Services teams are literally matters of life and death. In Saga Prefecture, Japan, the consulting firm analyzed transport data and identified inefficiencies, helping to shave a critical 1.3 minutes off emergency transport times. In Valencia, Spain, it reduced hospitalizations and E.R. visits nearly 80% with a predictive analytics solution that identified patients at risk of avoidable, repeat trips. And in the U.S., people using digital tools created by Accenture and insurer Aetna achieved 5% to 10% weight loss, helping prevent the onset of diabetes.

COVERING THE GAPS

The reach of the Affordable Care Act has varied by state—and uncertainty about its future has curbed its expansion. But Centene has remained a key insurance provider in many of the states where the ACA's health exchanges have enrolled the highest proportion of the population.



SOURCE: KAISER FAMILY FOUNDATION

▲ ILLUSTRATIONS BY JONATHAN CALUGI

CHANGE
THE WORLD

↗

CLIMATE CHANGERS
Persistent, severe pollution and a growing government commitment to low-emissions transportation have sparked a surge in bike-sharing in China. About 30 startups, including Mobike (above), compete in the field.

25 MICROSOFT

U.S.

Battling to bring broadband to rural America.

Two years ago, Microsoft CEO Satya Nadella emailed a new mission statement to employees. Their job, he wrote, is "to empower every person and every organization on the planet to achieve more." That empowerment mission includes lobbying the government to free up broadcast spectrum to bring Internet access to the 24 million Americans who don't have it. The endgame: Microsoft wants more people to benefit from software (including its own) that's out of reach if they can't access the cloud.

26 VANGUARD

U.S.

Slashing the cost of investing for retirement savers.

Index funds, which mirror the stock market's performance at low cost, outperform the vast majority of funds run by high-priced stock pickers. Vanguard introduced the first such fund in 1976: Growth exploded four years ago as investors traumatized by the financial crisis began stampeding to index funds, overwhelmingly Vanguard's, into which they now deposit over $100 million *an hour.* The "Vanguard effect" has forced competitors to cut their costs. The result: more comfortable retirements for millions of people.

27 MOBIKE

China

Tackling China's carbon-emissions problem, two wheels at a time.

BEIJING-BASED Mobike is the largest among about 30 Chinese startups vying to become China's dominant, dockless bike sharing platform. The company, backed by Chinese tech giant Tencent Holdings (see No. 15) and Taiwan's Foxconn, has raised over $928 million to fund its vision for sustainable and responsible mobility.

The company encourages city dwellers to ditch their cars and scooters for cheery orange bicycles, which can be rented for less than a dollar per ride by simply scanning a QR code on a free app. The system hasn't been glitch-free—some cities have reported problems with people throwing the bikes away or leaving them in hazardous places. But Mobike now has over 100 million registered users in 100 cities worldwide, and the World Wildlife Federation estimates that the 2.5 billion kilometers collectively ridden by users since the venture's April 2016 launch equates to a reduction of 610,000 tons of carbon dioxide emissions.

The bike's sensors, meanwhile, are assembling a vast trove of data about user habits. The company says the data will be used to determine bike distribution plans and help governments build better transport infrastructure.

0.12¢

Average fee paid by investors for every $100 invested in a Vanguard mutual fund—among the nation's lowest "expense ratios."

© VCG/GETTY IMAGES

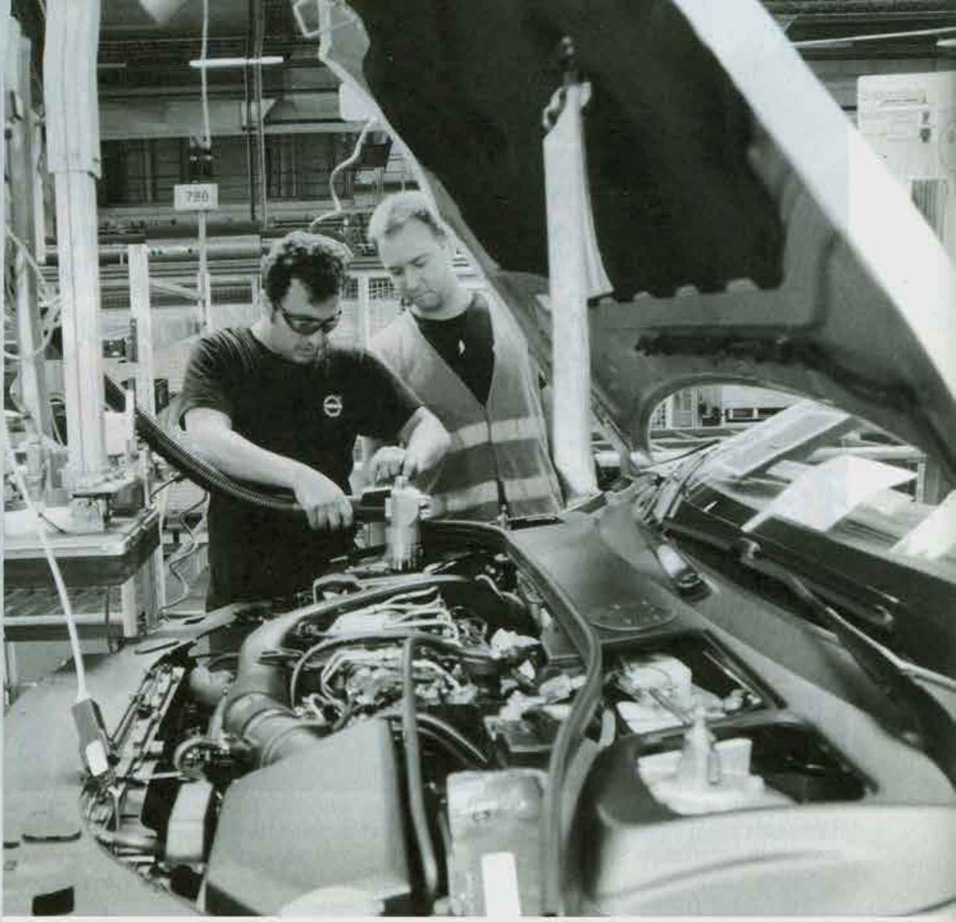
28 VOLVO

Sweden/China

A venerable automobile manufacturer swears off the gasoline-powered engine.

ELECTRIC CARS are moving from the fringes to the mainstream—particularly in China, where the government has offered big incentives to encourage electric-car start-ups. Still, few if any of the world's legacy carmakers have answered the call for a greener, cleaner world quite like Volvo. In July, the Swedish-based, Chinese-owned carmaker announced that from 2019 onwards, every new Volvo vehicle would run on an electric motor—either a purely electric one, or a hybrid—moving away from the internal combustion engine.

Volvo's move marks the biggest, boldest step toward a decarbonized future by a combustion-engine car manufacturer, and while sales of electric cars rode past the 2 million mark last year, Volvo's commitment is urgently needed. Around 95% of the world's transportation energy comes from petroleum-based fuels, and in the U.S., motor vehicles account for nearly one-fifth of greenhouse gas emissions. Volvo is reforming itself from a position of strength: It sold 534,000 cars last year worldwide, up 6.2% from the previous year.



© COURTESY OF VOLVO

29 INSURANCE AUSTRALIA GROUP

Australia

Devoting dollars to driver safety.

Australia's largest issuer of motor vehicle insurance is also the country's only insurer with a dedicated research facility, and it puts its findings to use to keep drivers safer. It developed Australia's first system that rated a vehicle's resistance to theft; it also offers customers premium discounts of up to 15% if their vehicle has autonomous emergency braking, technology that can sharply reduce fatalities.

30 TATA CONS. SERVICES

India

Putting software savvy to work for small farmers.

TCS became India's biggest information services company by serving giant multinationals. But the company also applies its software savvy to help India's poorest farmers. Its mKrishi, a mobile advisory service, gives farmers access to customized advice from agricultural experts to help them decide what crops to raise, anticipate weather changes, and predict when crops will fetch the best price.

31 AIRBNB

U.S.

A sharing-economy pioneer shares more with hosts.

In the gig economy, fees charged by the "platform" companies can make a big dent in users' income. But people who rent out their homes via Airbnb, the lodging juggernaut, keep up to 97% of the cost of the rental [that compares with 70% to 80% at ride-sharing companies]. That generosity empowers hosts who need the money, and it hasn't stopped Airbnb from becoming profitable.

32 IKEA

Sweden

Expanding a supply chain to help the neediest find work.

Ikea relies on more than 1,000 suppliers to help produce its globally popular furniture. Its social entrepreneurs initiative widens that circle to include the disadvantaged. The company is working with an NGO in Jordan that plans to employ about 200 Syrian refugees to produce goods like textiles and rugs. Other initiative projects employ women entrepreneurs in India and female immigrants in Sweden.

THAT ELECTRIC FEEL Workers assemble a Volvo V60 plug-in hybrid automobile at a plant in Sweden. The company has promised to produce only hybrids and purely electric cars beginning in 2019.

33 MTR

Hong Kong

A pollution-fighting transit system will soon get greener.

Hong Kong's Mass Transit Railway runs on schedule 99.9% of the time, and commuters enjoy one of the lowest fares in the world. Remarkably, the railway runs without direct taxpayer subsidies: Its "Rail plus Property" model allows it to profit from development rights on land along its routes. Next up: a new generation of low-carbon transit projects, funded in part by a $600 million "green bond" issuance.

34 GROHE

Germany/Japan

A plumbing-fixture maker devotes itself to saving water.

GERMANY HAS some of the world's toughest sustainability standards, so a German company that routinely wins awards in that department is worth noting. Grohe, part of Japan's Lixil Group since 2014, has an obsessive approach to eradicating waste and minimizing energy use. It recycles 99% of the water it uses in making its kitchen and bathroom fittings. Its smart home system shuts down a residence's water supply if it detects a leaky pipe; and its water filtration systems provide bottled-quality water from the faucet with a carbon footprint 40% smaller than that of normal bottled water. Corporate standards are maintained by staff training sessions, while suppliers are subjected to strict audits to ensure they meet social and environmental benchmarks.

35 IBM

U.S.

A tech leader partners with public schools to close the STEM skills gap.

PLENTY OF corporations have bemoaned the shortage of highly skilled American workers. Few have gone as far to address it as IBM. Pathways in Technology Early College High School, or P-Tech, launched in Brooklyn in 2011. Its six-year program blends the traditional four-year high school experience with two years of college, so graduates earn associate degrees in a STEM field. The approach has proven so popular that some 300 other corporate partners have adopted it, helping launch 70 P-Tech schools in the U.S., Australia, and Morocco. And IBM's own P-Tech schools—it's now the corporate partner at eight—are funneling graduates into its workforce. Of 100 graduates so far, 11 now work at IBM; the majority of the rest are pursuing four-year degrees.

36 SALESFORCE

U.S.

A CEO's outspoken stances on social issues help his company win the talent wars.

CEO MARC BENIOFF practically invented the modern-day marriage of sincere do-gooderism and shrewd marketing for the corporate good. By instituting a 1-1-1 model early on—Salesforce donates 1% of equity, 1% of product, and 1% of employees' time to charity—he institutionalized a culture of giving back. But the mindset paved the way for acts that also served the bottom line. Case in point: giving away access to applications to non-profits, a low-cost way to create a pool of potential future customers. Benioff also tapped into the zeitgeist of younger employees who want to work somewhere where they make a difference. Talking up Salesforce's software and schlepping code are a lot more interesting when balanced with donating time and money to cherished causes.

37 23 AND ME

U.S.

Arming people with detailed information about their bodies, and the freedom to act on it.

38 CJ GROUP

South Korea

Creating jobs for older workers in a society that often forces them to retire early.

39 ALLSTATE

U.S.

An auto insurer's app encourages (and sometimes pays) drivers to make safer decisions.

40 WOOLWORTHS

South Africa

A retailer helps small businesses and farmers fight drought—including the economic kind.

THE NOTION OF a Silicon Valley unicorn that collects your genetic information makes some people reflexively nervous. But 23andMe cofounder and CEO Anne Wojcicki makes a strong case that her firm is about personal empowerment.

The startup won a milestone Food and Drug Administration (FDA) approval this year: Now, 23andMe is allowed to sell its at-home DNA testing kits directly to consumers and provide them with detailed risk reports for a variety of conditions like Alzheimer's and Parkinson's disease—with no prescription required. For Wojcicki, the technology extends to people the right to know as much as possible about their own bodies. She points out that a huge slice of 23andMe customers have made lifestyle changes based on what they learn from the company's tests. Users can also choose to share their data to assist clinical drug research. 23andMe says it now has more than 2 million customers across the globe.

FOR SOUTH KOREANS, age isn't just a number, but a problem in a land where the elderly population is growing rapidly. By 2050, more than half of its workers will be over 50, and almost half of those over 65 years today are in poverty. Aggravating this issue: Mandatory retirement ages of 55 or 60 are common in the country.

Conglomerate CJ Group has offered those who are cast out of the workforce a way back in: delivering its packages. Under CJ Logistics, the company has trained older people to be delivery agents across most of the country's provinces. Over 1,000 jobs have been created, and the average monthly income is 180% higher than that offered in part-time public-sector jobs for seniors. CJ aims to expand this model to those with disabilities and low-income populations. "One of the most important things a corporation can do is to create jobs," said Heekyung Jo Min, a social-responsibility executive at the company.

SELF-DRIVING CARS may someday save us from ourselves, mooting the human error that causes most car accidents. But for now, we drivers are all too human, and still need reminders to stay vigilant.

That's the premise behind Allstate's Drivewise app, which debuted in 2010. The app syncs up to a telematics device that plugs into a vehicle's dashboard. The app tracks risky behaviors, including speeds exceeding 80 miles per hour and instances of "extreme" braking. App users can get real-time alerts when they go astray, but those who don't want that distraction can check their histories on an online dashboard. If seeing a scoreboard doesn't prompt a driver to change bad habits, getting discounts for improving those habits just might.

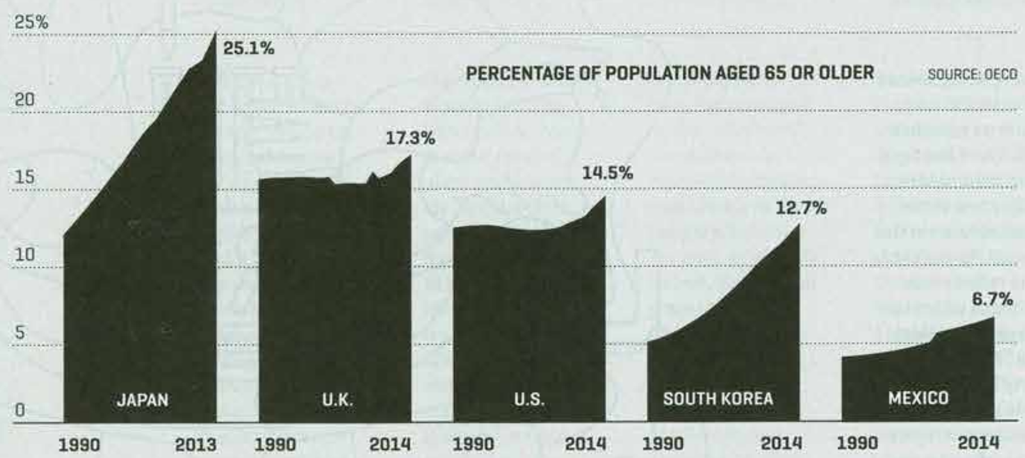
Allstate benefits from safer driving too, of course, thanks to lower accident payouts; it also uses the data to create new safety-related products and services.

UNEMPLOYMENT and agricultural challenges have been pressing issues in South Africa over the last decade. Beginning in 2007, retail and food giant Woolworths took aim at addressing them with the Good Business Journey, a major pivot that puts the company on a path towards sustainability.

Solutions at Woolworths (which has no connection to the similarly named U.S. and Australian chains) have been manifold. The Supplier and Enterprise Development program brought in black- and women-owned small businesses; it gave out almost $2 million in loans to 48 suppliers last year. Woolworths has also brought 95% of its primary produce suppliers into Farming for the Future, imparting good environmental practice in a country that ranks as one of the driest in the world. In the first three years of that program, suppliers have decreased water usage by 16%, and have halved the usage of pesticides and herbicides.

AGING FAST

People over age 65 make up a growing share of the population in most of the world. But their rise has been particularly sharp in East Asian countries, and those countries' economies have struggled to absorb their fast-growing ranks of elders. South Korea's CJ Group has been addressing the problem by creating more job opportunities for older workers.



GLOBAL HOSTS Workers at a training session prior to the 2015 opening of a new Marriott in Port-au-Prince, Haiti, in 2015. Marriott's commitment to hiring and training locally has widened its economic impact in the 122 countries where it operates.

© MARK PETERSON—REDUX

41 AMERICAN EXPRESS

U.S.

A financial giant gives a big boost to small merchants.

"Small Business Saturday," the day after Black Friday, began as an American Express marketing idea in 2010. But so accurately did the campaign capture the zeitgeist that, by last year, 112 million consumers spent $15.4 billion at local stores on the day, a huge windfall for small shops. The small business focus, which includes a program to help such operations win government contracts, has given AmEx a competitive edge: It's now the leader in small business credit cards, with about 27% of the market.

42 AMCOR

Australia

Keeping food safe for those who need it most.

For the 20 million people facing starvation around the world, getting food that arrives intact and ready to endure the worst conditions can be a matter of life and death. Since 2015, the Australian-based packaging giant Amcor has been working with the World Food Programme on improving the way aid and foodstuffs are delivered to the most remote parts of the world. Already, revamped packages housing vital nutritional supplements have saved almost $3.2 million for the WFP, and reduced packaging waste by 275 tons.

43 MARRIOTT

U.S.

The world's biggest hotel chain builds a ladder to the top for lower-skilled workers.

A HOSPITALITY company is unlikely to succeed if its customer-facing employees are unhappy. So hotel operator Marriott has made it a top priority to keep its employees engaged. Some 92% of Marriott's workforce (now up to 140,000 since its mega-merger acquisition of Starwood) say they are proud to work for the company, according to a recent survey by Great Place to Work.

What's more, Marriott has made it a priority to help employees feels like they can have careers there and not just be grunt workers. Some 50% of Marriott managers started out in hourly positions. This pays off in the form of lower turnover: Of the company's employees, more than 13,000 have been with the company for 20 years or more; the average general manager has been with the company for more than 25.

CHANGE THE WORLD

INCLUSIVE CULTURE Chobani founder and CEO Hamdi Ulukaya (left) trains workers in a Twin Falls, Idaho plant. Chobani's workforce includes several hundred resettled refugees.

44 CHOBANI

U.S.

A fast-rising food company shares the wealth with resettled refugees.

AT A TIME when immigration continues to be a hot-button topic, Chobani and its founder and CEO, Hamdi Ulukaya, have doubled down on their efforts to help immigrants and refugees integrate into U.S. life—even as the company has weathered physical threats and the specter of boycotts. Some 30% of the yogurt juggernaut's 2,000-employee workforce in Idaho and upstate New York was born abroad, and of those, several hundred are resettled refugees. Ulukaya's efforts go beyond his adopted home country; the Turkish-born entrepreneur has also pumped $5 million into a program to encourage startups in his native land.

The Chobani brand, meanwhile, hasn't been hurt by the attention: Annual sales are now running at about $2 billion, and it's now the No. 1 Greek yogurt brand in the U.S. and the No. 2 yogurt maker overall. Ulukaya has thanked his employees in a very specific way: Last year, he pledged to give away 10% of the company's shares in the event of an IPO or a sale, a windfall potentially worth hundreds of millions of dollars at current valuations.

45 GRUPO NUTRESA

Colombia

A greener approach to coffee and ice cream.

Nutresa, the leading processed-food company in Colombia, has masterfully reduced its environmental impact by cutting energy and water consumption and scaling back greenhouse gas emissions, helping Colombian coffee growers produce beans with up to 90% less water. It's also fighting malnutrition by teaching vulnerable farmers to live more sustainably off of their own land.

46 JETBLUE

U.S.

A small airline sets the pace on renewable fuels.

The sixth-largest airline in the U.S. can't help but use enormous quantities of fuel, water, and metals. But by relying more on eco-friendly fuel and recycling all sorts of waste, from crew uniforms to plane parts to food, JetBlue is reducing its impact on the planet. The airline last year agreed to buy over 330 million gallons of renewable fuel over the next decade, one of the largest such deals yet.

47 SODEXO

France

Bringing the physically challenged into the workforce.

A food service company with 425,000 workers, Sodexo is a leader in hiring physically challenged people—an underrepresented group often overlooked by employers—and has pledged to make programs for disabled people accessible to 100% of its workforce by 2025. Sodexo also helps farmers with disabilities or health conditions modify their equipment to address mobility challenges.

48 DELL TECHNOLOGIES

U.S.

Mailing more goods in green packages.

Earlier this year, the tech giant that pioneered build-and-mail-to-order computers began collecting ocean-bound plastics from beaches and waterways—and recycling the waste into "trays" for shipping its high-ticket consumer laptops. The program is expected to keep 16,000 pounds of plastics out of our oceans; it has also saved Dell more than $1 million, and Dell has big plans to expand.

49 PALO ALTO NETWORKS

U.S.

Empowering businesses to fend off cyberattacks.

Protecting a business from hackers requires more nimbleness today, and cybersecurity giant Palo Alto Networks has helped pioneer a firewall that gives companies some needed flexibility. Their tool allows IT pros to control data flows, analyze traffic, and filter and block threats accordingly. Palo Alto is repositioning itself as a platform for others to build security apps—their own plates of armor—on top.

50 LAND O'LAKES

U.S.

Turning America's farmers into earth allies.

Agriculture accounts for about 9% of U.S greenhouse gas emissions; Land O'Lakes wants to bring that figure down. The nearly 100-year-old farmer-owned cooperative, which touches half of the harvested acres in the U.S., launched a new business unit last year; it uses ag-tech to help farmers up their efficiency while improving soil health and water quality. F

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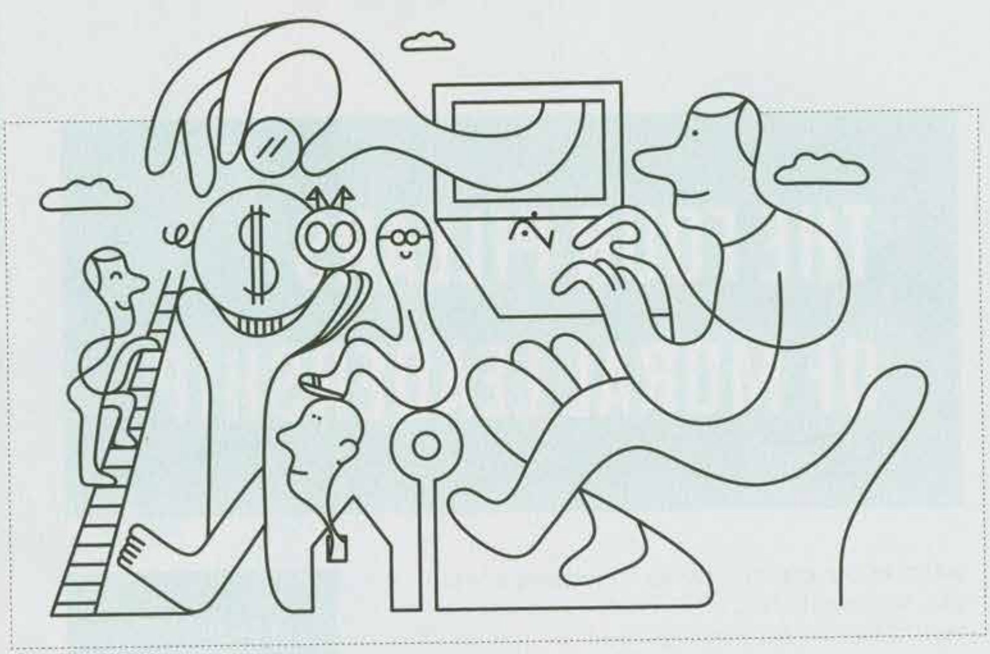
CHANGE THE WORLD

RISING STARS

Big ideas sometimes come in little packages, and plenty of smaller businesses have a big influence on their communities, their customers, and the planet. Our Rising Stars list honors companies with less than $1 billion in annual revenue whose positive impact far exceeds their size.

—SYDNEY AGUS AND JONATHAN VANIAN



BLACKBAUD	U.S.	Some of the country's most noteworthy nonprofits owe their fundraising success to Blackbaud. The company, based in Charleston, S.C., sells enterprise software that can manage big philanthropic and charitable projects; it helped power 2014's ice bucket challenge, in which the ALS Association raised $115 million to fight Lou Gehrig's disease. And its own shares have more than doubled in the last three years.
TABLEAU	U.S.	Seattle-based Tableau specializes in data analytics and visualization. Partnering with PATH, an international health organization, it helped build a disease surveillance system that has decreased reported malaria infections in Zambia by 93% since 2014. On tap is a partnership with the World Food Programme on a system that could steer food aid more quickly to vulnerable communities.
MEDENTECH	Ireland	Millions of people can thank this disinfectant manufacturer for their potable water. When inserted in contaminated water, Medentech's Aquatabs kill the microorganisms that cause cholera, typhoid, and dysentery within 30 minutes. Some 20 countries and major aid agencies rely on the tablets in emergency and disaster scenarios; the tablets have agricultural applications too.
VIEW	United States	Using a process called electrochromism, which enables materials to change color based on its exposure to light, View has created a dynamic glass that sharply diminishes heat and glare. That not only boosts work productivity, but lowers electricity consumption by up to 20%. Since its founding in 2007, View has supplied windows for over 500 commercial buildings.
HACKERONE	United States	Through "bug bounty" programs, this San Francisco startup connects companies with highly skilled hackers to find software vulnerabilities before they are exploited. Some organizations, including the Defense Department, General Motors, and Starbucks, pay for the services, but HackerOne works pro bono for some of the open-source projects that provide much of the Internet's infrastructure.
PEAT	Germany	When plants are attacked by disease or pests, they produce distinct visible patterns on their leaves. Peat has created an app for farmers, Plantix, that allows a phone camera to detect the patterns at early stages, and then sends instructions about specific treatments. In some parts of India, where up to 30% of harvests are lost each year to diseases and pests, it has become an invaluable tool.

© ILLUSTRATION BY JONATHAN CALUGI

THE FOUR PILLARS OF MORAL LEADERSHIP

MASTERCARD CEO Ajay Banga remembers hearing Dov Seidman lecture at the World Economic Forum in Davos a few years ago. Seidman was one of the more unusual speakers on the agenda—thanks partly to the way he spoke, gliding easily from history to philosophy to the curious anthropology of Facebook. (Seidman holds a pair of master's degrees from UCLA and Oxford as well as a law degree from Harvard.) But what made him truly stand out in the cacophony of CEO chatter was the topic of his remarks: "moral leadership." His words were challenging, surprising, and inescapably relevant, Banga thought. Indeed, it was a topic the *Fortune* 500 CEO had wrestled with himself.

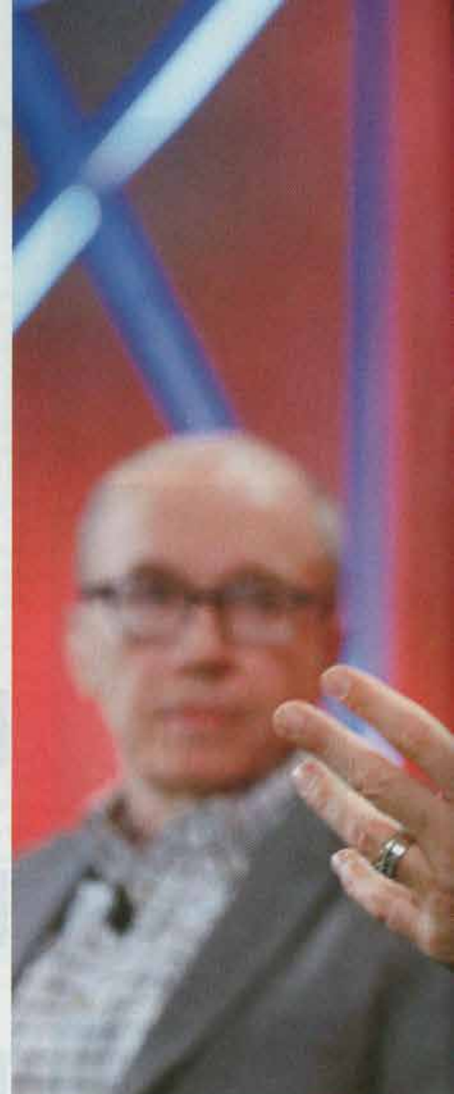
When Banga later sought Seidman out, the two soon found themselves rapt in conversation. They talked about the dangers of leading "in a vacuum," Banga recalls. You may think "you can build a silo and run your company inside there and not worry about these currents and tides flowing just outside your boardroom," he says. "But sooner or later the environment you're working in will have an impact on you." As for Seidman, his counsel, importantly, didn't derive merely from philosophy books but also from his own business. He's the founder and CEO of a 23-year-old tech company called LRN, which markets ethics and compliance software and content to corporations like Apple and Pfizer.

When I asked Aetna CEO Mark Bertolini and Unilever CEO Paul Polman the same question as Banga—"What is so unique about this corporate whisperer?"—both answered in much the same terms: Seidman, they said, has a rare ability to take the challenges that CEOs and other leaders face in their day-to-day roles and place them in a broader context of decision-making—one that brings into greater focus the real effects on coworkers, community, and the enterprise itself.

That seemed reason enough to invite him to offer *Fortune* readers a framework for how to lead today. Here, his four principles. — **CLIFTON LEAF**

IN AN AGE WHERE THE RULES OF ENGAGEMENT SEEM EVER TO BE CHANGING, HERE ARE SOME GUIDING PRECEPTS THAT HAVE STOOD THE TEST OF TIME.

BY DOV SEIDMAN



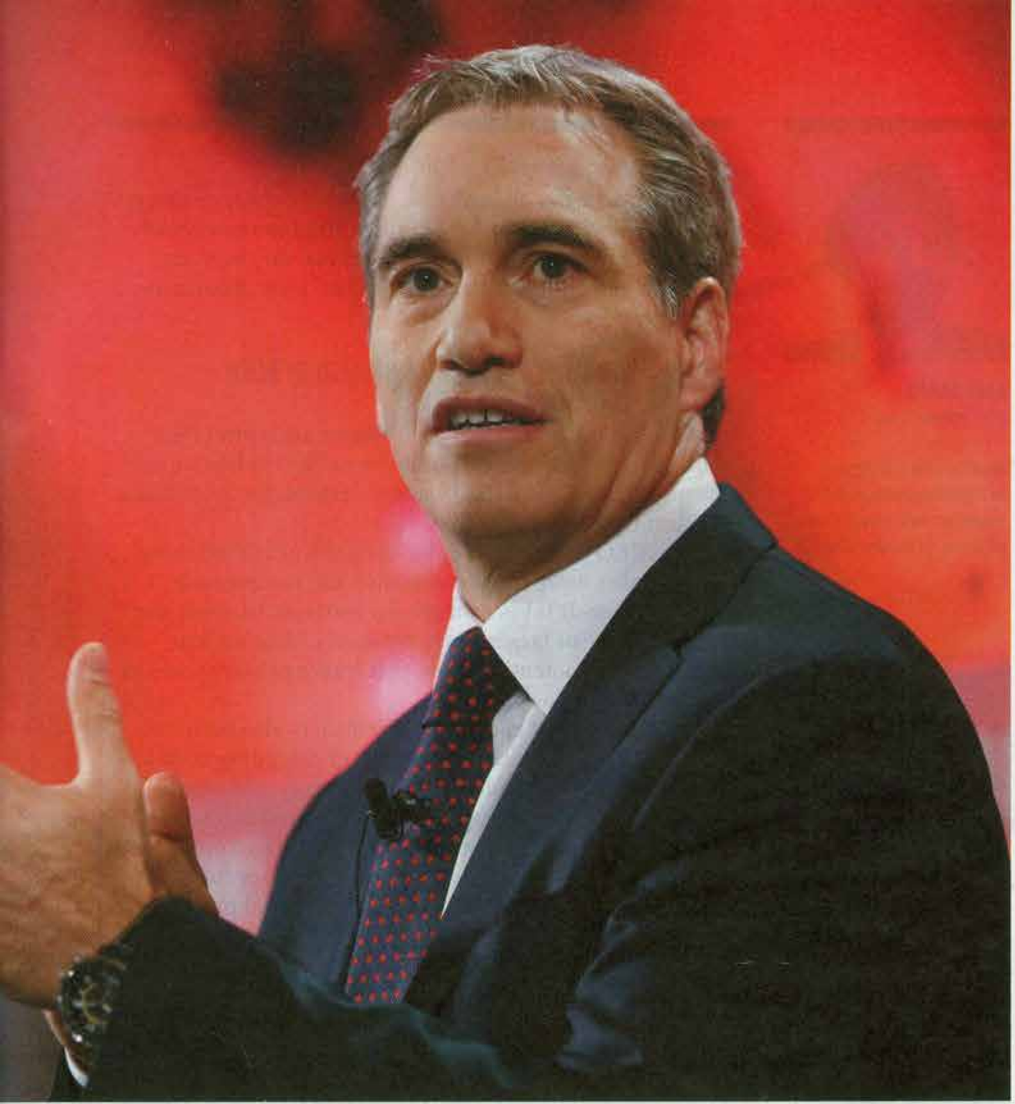
© DAVID YODER—FORTUNE GLOBAL FORUM

THE ANIMATING SPIRIT OF BUSINESS has always been an ambition to do big things—to build something valuable, to solve a difficult problem, to provide a useful service, to explore the frontiers of human possibility.

At its essence, therefore, business is about human endeavor. And for humans to endeavor together, there must be an animating ethos and ethic of endeavor.

But it's getting harder for leaders to foster this ethos, and to lead through it on the way to doing big things. That's because they're trying to do so in a world that is not just rapidly changing, but in one that has been dramatically reshaped. And the world has been reshaped faster than we've been able to reshape ourselves, our institutions, and our models of leadership.

First, individuals around the world have gone from being merely connected a generation ago to globally interdepen-



CHANGE
THE WORLD

Seidman (right) is interviewed by *Fortune*'s Alan Murray in December at the *Fortune* + *TIME* Global Forum in Rome.

morally unmoored, with few bulwarks to lean on. Trust has broken down—between citizens and elected officials, between business leaders and employees, between consumers and suppliers, between people with opposing opinions.

For executives who pride themselves on facing up to hard truths, here's one: No one is exempt from this moral crisis and its consequences. Leaders can't afford to dismiss it or to watch it unfold while privately thinking, "It doesn't affect me and my business." The forces behind it are sweeping, indiscriminate, and unforgiving, and the time to reckon with them is now.

dent today. The behavior of any one person can affect so many others, even those a continent away, as never before.

Second, technology is bringing strangers into intimate proximity at an accelerated pace, affording us richer experiences, but also demanding new levels of empathy and understanding. When the swipe of a smartphone can bring a traveler into our bed, a handyman into our home, and a stranger into our car, *how* we behave becomes more critical. Social media, likewise, has shrunk the distances between nations, between citizens and their governments, and between consumers and businesses everywhere. Any one of us, at any time, can amplify our sentiments with a tweet or post about who's good or bad—meting out sympathy and scorn, condemnation and redemption, to a potentially global audience.

Third, these same technologies are granting us MRI-like vision into the innermost workings of once-opaque organizations and even into the mindsets of their leaders.

The forces reshaping the world—interdependence, proximity, and forced transparency—have left us disoriented and

Only one kind of leadership can respond to this moral crisis of trust—and that's moral leadership. It doesn't come, however, from formal authority. You don't get it by winning an election, or being named the boss, or locking it up with supervoting shares. You can't buy or seize it. Moral leadership stems from an authority that must be earned every day.

How? It isn't easy. But in my years studying leadership in business, government, and other pursuits, I've found that the most authentic practitioners, at every level in their careers, follow certain principles. Here are four guideposts for building and sustaining moral authority.

1 MORAL LEADERS ARE DRIVEN BY PURPOSE.

True authority is formed when leaders pursue—and are seen by others to be pursuing—a worthy, valuable, and noble purpose connected to human progress or the betterment of the world. Purpose is about the fundamental nature of an organization's endeavor. The more worthwhile the endeavor, the more it elevates and can

CHANGE THE WORLD

generate dedication, devotion, and hope. Above all, when leaders pursue their purpose in ways that are bigger than themselves, it creates the space for others to share in the mission. People who marry their own sense of purpose to a larger one are people others want to join.

Moral leaders see the path ahead as a journey and frame it explicitly as such for those whom they lead. In so doing, they leverage what journeys are about: focusing on the progress, not just on results and the bottom line. Journeys challenge us to be resilient and hopeful, because journeys are hard, long, and curvilinear. They go up and down, they zig and zag. Journeys force us to learn, adapt, and experiment—and to embrace and learn from mistakes and failures as we strive forward. The ability to do these things together, and to stick together when up or down, calls forth from us all that is moral. What makes it moral is *how* we journey—how we maintain hope, truth, and the will to find our way when we are lost.

2 MORAL LEADERS INSPIRE AND ELEVATE OTHERS.

Those with moral authority understand what they can demand of others and what they must inspire in them. Honesty, for example, can be demanded. But loyalty must be inspired. Moral leaders do not ask for personal loyalty. Just like we ask government leaders to take an oath and be loyal to the Constitution, by analogy, moral leaders ask people to be loyal not to them, but rather to the overall purpose and mission of the organization.

For these leaders, how they wield authority follows directly from how they view others. They don't see direct reports but fellow journeyers, animated by hopes and longings, struggles and dreams. Therefore, every decision is made with consideration of others' full humanity. And because they see that humanity in others, they're more inclusive and better able to listen to and learn from those whom they lead.

AJAY BANGA
CEO, Mastercard

"Dov has an ability to bring disparate points together and steer them all back to leadership."

MARK BERTOLINI
CEO, Aetna

"It's good to have somebody who tweaks you, and asks, 'How did you think about that action?'"

PAUL POLMAN
CEO, Unilever

"We need to create more of an awareness of the leadership skills needed in the 21st century."

3 MORAL LEADERS ARE ANIMATED BY BOTH COURAGE AND PATIENCE.

Many leaders use their formal authority (their rank or position in the corporate hierarchy) to keep doing the next thing right. Moral leaders, instead, focus on doing the next right thing.

For a CEO or political leader to do the next right thing, it often takes more than intelligence and competence; it takes courage. It takes courage, for instance, to speak out for a principle or larger truth, especially when such an action has the potential to put that leader in an uncomfortable or vulnerable territory.

But courage isn't enough. Moral leaders also need patience. Think of patience as a way of extending trust to others by allowing them the time to be more thorough, rigorous and creative. Patience allows for reflection and the chance to consider the broader, longer-term outcomes of any action. While those with mere formal, or top-down, authority often feel captive to the moment and pressured to act, those with moral authority feel empowered—and, indeed are entrusted by others—to do the next right thing.

4 MORAL LEADERS KEEP BUILDING MUSCLE.

Authentic leaders don't stop learning and growing just because they've accumulated formal authority in an organization. They continue to build moral muscle—I call it "going to the moral gym"—by wrestling with questions of right and wrong, fairness and justice, what serves others and what doesn't. Their wisdom comes from viewing the world through a lens that magnifies their own actions; their moral authority is enhanced when they frame issues by how their own actions impact the greater good.

This isn't about not making mistakes. We all make them. (A lot.) Rather, it's about what we do and say after those failures and shortcomings. It's about how authentically we apologize and make amends. Those with moral authority challenge themselves—and ask whether the mistake came from a deviation of principle or, perhaps, as the direct result of a misguided strategy. Moral leaders pause. They continually ask if what they're doing—or what their company or organization is doing—is compatible with their purpose and mission. Reflecting on their own actions and leadership in this way builds knowledge and wisdom that can be shared with their teams, helping others to see their own impact on the world around them.

This is all an important part of the shared journey. It makes the world better and wiser. And that's a worthy journey to be on. ■

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MOTOR CITY VISION
JPMorgan has helped Detroit make headway against some dire economic challenges. "We could do Detroit in three or four places a year, and we could do a 'Detroit lite' in another 10," says Dimon.

MAKING A MOTOWN MIRACLE

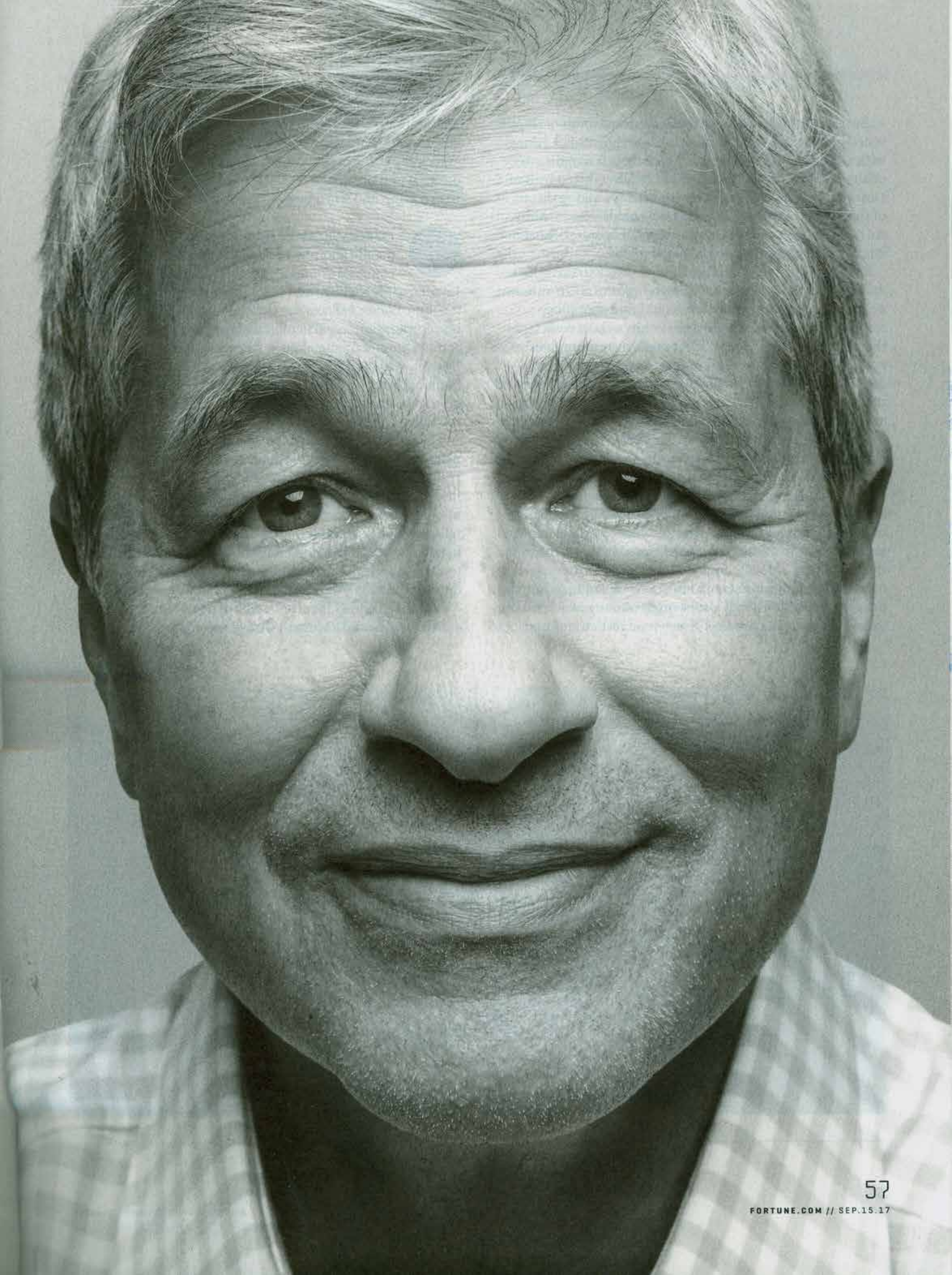
BY
MATT HEIMER

PHOTOGRAPH BY
BEN BAKER

JAMIE DIMON HAD A FRONT-ROW SEAT FOR DETROIT'S COLLAPSE. NOW HE AND JPMORGAN CHASE ARE FUELING THE CITY'S REVIVAL. THEIR STRATEGY IS A BLUEPRINT FOR REBUILDING AMERICA'S CITIES.

T**HERE ARE TWO KINDS OF** storefronts on this stretch of Detroit's West McNichols Road: Boarded-up and "Why isn't this boarded up?" Most of the one- and two-story buildings are clad in drab painted plywood or the gunmetal gray of security shutters. At 10:30 on a Thursday morning, the liquor store on the corner of San Juan is the only business with noticeable traffic—unless you count the one being run out of the Honda coupe idling at a bus stop. The driver is conducting a cash-for-something-in-a-sandwich-bag transaction with a passerby, both of them oblivious to the horn blasts from the westbound Number 30 whose space they occupy.

It's a tableau that epitomizes what people who don't live in Detroit imagine when they think about Detroit. It's the picture you might conjure when you read that the city's population has shrunk by 60% since World War II, or when you see 50th-anniversary remembrances of the riots of 1967. It's an almost-perfect image of Rust Belt stagnation; the only detail missing from the stereotype is that none of the shuttered stores is actually on fire.



But the real Detroit is not a blank canvas for apocalyptic visions of decline—and neither is McNichols Road. Along with nearby Livernois Avenue, McNichols is a main artery of a residential area that has stayed healthy through all of Detroit's well-publicized woes. It's within walking distance of thousands of middle-income households—and within six blocks of two college campuses and a hospital, "anchor employers" supporting decent-paying jobs.

That's why a coalition of Detroiters wants to turn this unlikely tract into an economic hub—part of a "20-minute neighborhood" where residents could find shopping, restaurants, recreation, and jobs within a short walk from their homes. A developer plans to take over more than 100 abandoned houses and renovate or replace them, creating mixed-income housing along a "greenway" park that will link the college campuses. And nonprofit groups are acquiring some of these blank-faced storefronts, aiming to remake them to host small businesses owned by local entrepreneurs who would hire locally—creating opportunities where they've long been absent.

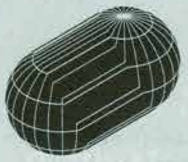
A few blocks north, Melinda Clemons shows off a bigger building on a corner lot. This was once a B. Siegel department store, the centerpiece of a stretch of Livernois known as the Avenue of Fashion. B. Siegel closed in the 1970s; the last tenant, a dollar store, fled in 2005. But Clemons is overseeing a project that could turn this vacant hulk into its own mini-neighborhood: a cluster of 10 sunny two-bedroom lofts, sitting atop a parade of street-level restaurants and boutiques. Clemons, who spent her toddler years nearby, gestures down a scrappy block lined with diners, wig shops, and clothing stores that hint at the neighborhood's prosperous past and present potential. "You could live here," she says with a grin, "and you'd have all this."

I**T TAKES A VILLAGE** to rebuild a city, and the list of people and businesses collaborating on Detroit's recovery is long. But the planning underway in Livernois/McNichols, and in a growing roster of other neighborhoods, reflects the expertise and financial clout of one corporation in particular: JPMorgan Chase. CEO Jamie Dimon's financial powerhouse is the largest bank in Detroit, with a titanic 65% market share in consumer banking. Since 2014, the company has been doubling down on that relationship, in a daring experiment to help revitalize Detroit's middle-class core.

The bank's effort, called Invested in Detroit, is a neighborhood-by-neighborhood campaign to revive local real estate, launch small businesses, and train residents for in-demand jobs—all at the same time, as quickly as possible. "If you don't have jobs, you don't have housing," Dimon tells *Fortune* in an interview at JPMorgan Chase's New York headquarters. "If you don't have housing, people can't get to their jobs. If people don't have skills, people can't buy homes. You've got to make progress on all these fronts."

Making progress involves a deft dance with carefully chosen partners. JPMorgan Chase isn't directly paying for

▲ PHOTOGRAPHS BY **MARVIN SHAOUNI**



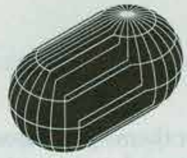
a thicket of new apartments or a cohort of newly trained truck drivers—but it's putting up the money to make those efforts possible. The bank has committed $150 million to the project, while deploying a rotating team to help Detroit's reformist mayor, Mike Duggan, and local nonprofits decide which neighborhoods and industries to saturate. It's those stakeholders who ultimately decide where the money goes. "We have the intelligence that larger organizations may not have," says Clemons, the Detroit Market Lead at Capital Impact Partners, one of the bank's teammates. And that intelligence is steering funds to businesses that wouldn't otherwise qualify for them—for reasons as simple as inexperience, or as complicated as Detroit's legacy of racial discrimination.

The program may lift up the needy, but it isn't charity. JPMorgan Chase wants to foster businesses with the skills to pay the bills—with interest. Some 55% of the money it has distributed to date has been made up of loans, says Peter Scher, the bank's head of corporate responsibility. Give a woman a fish, and she'll eat for a day. Teach her how to fish, and then lend her money to build a fish-and-chips restaurant, and you've gone beyond philanthropy—you're doing good while doing good business.

And the business case for investing in Detroit looks increasingly strong to Dimon. Since the financial crisis, the CEO has become convinced that the gap separating lesser-skilled workers from good job opportunities has itself become a drag on economic growth, nationwide. Do more to close that gap—by fostering small businesses and training workers—and you build a virtuous circle, where more people with stable incomes foster greater prosperity. If that means more entrepreneurs and would-be homebuyers become creditworthy borrowers, JPMorgan Chase wins too. In the Detroit metro area, where the bank has $20 billion in deposits, "We're gaining share," Dimon notes. "Chase is the home bank." Imagine the returns that those $20 billion could earn in a faster-growing local economy, and a $150 million investment in city-building becomes more than simple altruism.

This summer, JPMorgan Chase gave *Fortune* a closer look at the work it's supporting—a string of small projects

GETTING A NEW HEART West McNichols Road (left) was once the commercial center of Detroit's middle-class Bagley neighborhood (below); a JPMorgan Chase-funded initiative plans to turn the strip into a walkable mini-downtown.



whose cumulative impact is large. Scher's team calculates that Invested in Detroit has created or preserved nearly 1,700 jobs, financed about 100 new businesses, and reached some 15,000 people through training programs. In a city with unemployment above 10%, those numbers represent real progress. More important, they're a proof of concept. Thanks to Detroit, the bank is confident that this full-court-press approach is a blueprint that could work across the country—and in the next few months, they'll be taking components of the Motown model nationwide.

YOU CAN FRAME the magnitude of Detroit's decline with a single statistical juxtaposition: Today, the city has about 675,000 residents, down from 1.8 million in 1950. By the Eisenhower era, the automakers and defense contractors who had fueled Detroit's boom were already adopting new technology that enabled them to shrink their workforces. Manufacturers moved to suburbs or other states with ample space for new, more efficient factories, and over time, tens of thousands of workers followed the companies out of town.

Racial discrimination, baked into local politics and institutions, burdened those who stayed. Many Detroit suburbs maintained a de facto segregation that kept African-American workers from going where the jobs were. Meanwhile, "redlining" by banks—the practice of classifying minority-dominated neighborhoods as too dangerous for lending—kept black families from building wealth through home equity, and starved entrepreneurs of capital, even as "white flight" made Detroit a majority-black city.

Civil rights advances in the 1960s and 1970s lowered some barriers, but the erosion continued. The city took a decisive kick in the teeth from the 2007–09 financial crisis, which not only drove General Motors and Chrysler into bankruptcy, but exposed how many Detroit homeowners held subprime mortgages. Some 140,000 Detroit homes were foreclosed on between 2005 and 2014, according to research firm RealtyTrac, shredding the city's already decimated tax base and helping precipitate its own bankruptcy.

Among those witnessing this train wreck was Dimon, who's been doing business in the city since the 1980s. When Dimon became CEO of Chicago-based Bank One, that institution was Detroit's biggest lender. JPMorgan Chase inherited that mantle when Dimon engineered its merger with Bank One, in 2004. "We've been watching Detroit be an accident waiting to happen for years," he says.

But Dimon also had a front-row seat for a revival. Detroit built Ford Field, a downtown stadium, to host Super Bowl XL in 2006. That helped spark some downtown redevelopment, and the movement gained momentum in 2011, when Quicken Loans CEO Dan Gilbert moved his headquarters from suburban Livonia to Campus Martius Plaza, steps from city hall. Since then, Quicken and Gilbert's development company, Bedrock Detroit, have reshaped

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THE CONDUIT
Melinda Clemons of Capital Impact, which steers funding to businesses that can't qualify for bank loans. JPMorgan Chase has financed a fund that helps Capital Impact seed real-estate deals around Detroit.

downtown, spending some $2.5 billion to acquire and develop more than 100 properties. Dan Mullen, president of Bedrock, describes its philosophy as, "Create enough density in one area until it busts at the seams, and then that density sells itself." Other *Fortune* 500 companies—from car-seat maker Adient to Microsoft—have been drawn by the critical mass, establishing offices downtown, and several thousand knowledge workers have moved there too.

Visit the central city now, or take the Quicken-funded "Q train" up Woodward Avenue to Midtown, and you'll see the kinds of homes, brands, and amenities that white-collar hipsters love. John Varvatos? Warby Parker? Got 'em. An old-fashioned ballpark you can walk to from your loft? Check. Restaurants where the cocktails come with a single, huge ice cube? Roger that.

This vision of recovery is buzzy, fun—and incomplete. In a city where only 13% of working-age residents have a bachelor's degree, the benefits of an influx of finance and tech jobs only stretch so far. Mayor Duggan is adamant that he doesn't want a stratified city. "I've studied closely what happened in Washington, D.C.," he tells *Fortune*. "My daughter lives in Brooklyn. I've studied what happened there. We are adopting strategies so that doesn't happen." But how could you spread downtown's recovery through the city's sprawl of blue- and pink-collar neighborhoods? How could you keep Detroit's boom from replicating America's economic divide?

Duggan had some ideas—and so did JPMorgan Chase.

Detroit's reemergence coincided with a philosophical shift at the bank. It's already a formidable donor: In 2016, it gave $250 million to nonprofits. But after the financial crisis, its leadership began considering how to make that money count for more. Under Peter Scher, it retooled its giving to tackle economic insecurity itself—focusing on small-business expansion, job-skills training, neighborhood development, and financial counseling. In 2012, about 40% of JPMorgan Chase's corporate giving was devoted to those four pillars, Scher says; today, it's 95%. It's an approach that leverages what banks already do well—lending people capital, and giving them advice about how to deploy it.

In late 2013, this model was new for the bank. But Dimon and Scher saw in Detroit an ideal laboratory for it. There was rare harmony between Duggan—an energetic, bulldozer Democrat who had just won an election, amazingly, as a write-in candidate—and Michigan Gov. Rick Snyder, a Republican. "All they spoke about was, 'We need jobs, we need housing, we need to turn the lights on,'" Dimon recalls. "Not the ideological yelling and screaming." Detroit's exit from bankruptcy enabled the city to shed some of its elephantine debt obligations and dedicate more tax revenue to improving the city. Most important: Scher and Duggan found they shared many beliefs about neighborhood-building and economic empowerment. By July 2014, JPMorgan Chase had put $100 million on the table for Invested in Detroit.

DETROIT'S REVIVAL RECIPE

HERE'S HOW JPMORGAN CHASE HAS TURBOCHARGED DETROIT'S ECONOMIC RECOVERY, AND HOW THE SAME GAME PLAN COULD WORK IN OTHER CITIES.

© BRITTANY GREESON—REUTERS

Mayor Mike Duggan (left) at a ground-breaking ceremony for a new Detroit factory.

1 **CHOOSE TEAMS WISELY.** Detroit's mayor, business leaders, and community groups had agreed on many of their main priorities before Invested in Detroit launched. "When you're throwing money at something, and the people aren't all aligned, it just isn't going to work," says CEO Jamie Dimon.

2 **DEPLOY YOUR DATA.** Detroit has steered its neighborhood rebuilding efforts toward struggling areas that have pockets of economic strength. JPMorgan Chase built a huge database of info about consumer spending, incomes, schools, and other variables to help the city choose its targets.

3 **LEND TO THE UNBANKABLE.** Depressed property values in struggling cities can make it hard for developers and businesses to get loans. JPMorgan Chase has channeled funding to Detroit entrepreneurs through CDFIs, nonprofits that can lend to higher-risk borrowers.

4 **BUILD BIGGER.** Mixed-use buildings combining residential units and retail can be a kind of Swiss Army knife for neighborhood development: They can host multiple small businesses, and they're well suited to the kinds of loft spaces favored by affluent younger renters—the kind who love to patronize local small businesses.

5 **CLOSE THE SKILLS GAP.** Many jobs that pay a middle-class wage don't require a college degree. JPMorgan Chase conducted surveys in Detroit to find gaps between job supply and available workers, then funded training programs to fill them.

6 **REPEAT STEPS 1–5.** Results in Detroit convinced Dimon's team that its multipronged model works. The bank will be unveiling related initiatives in several cities this fall.

CHANGE
THE WORLD

IT'S FAIR TO ASK why JPMorgan Chase, a bank that generated $106 billion in revenue in 2016, wasn't already lending like crazy to Detroit's entrepreneurs. The answer was that it essentially couldn't—because those borrowers weren't "bankable."

That fact reflects the self-perpetuating math of Detroit's decline. Most banks are required by law to keep "loan-to-value ratios"—the ratio of the loan amount to the estimated worth of the project it funds—below a certain threshold, typically 80%. But property values in most of Detroit have sunk so far that most real-estate projects easily break that ceiling; by definition, they would cost more to build than they would be worth once completed. For similar reasons, entrepreneurs can seldom scrape together collateral for a loan. Quicken Loans didn't face this problem—its early downtown investments were self-financed. And Detroit's big corporations can almost always find lenders. But small businesses and local developers are often stymied.

JPMorgan Chase spotted a way around the obstacle. Community development financial institutions (CDFIs) specialize in lending to lower-income communities. They're usually nonprofits, and the Treasury Department exempts them from some rules that govern for-profit banks. CDFIs can take greater risks, accepting higher loan-to-value ratios and extending relatively lenient payment terms. They can also lend to entrepreneurs whose credit scores or lack of a track record would drive banks away. Guided by vice president of global philanthropy Tosha Tabron, a Detroit native with extensive CDFI experience, JPMorgan Chase chose three as partners. It has since extended more than $50 million to them through loans and grants—and given them a free hand to get it to the right places.

One such group is the Entrepreneurs of Color Fund, an initiative operated by the Detroit Development Fund (DDF). The fund has loaned $4.2 million since its inception in 2015, to 47 borrowers, "95% of whom could not get a bank loan," according to DDF president Ray Waters. Waters and his partner groups help them develop business plans and train them in accounting and marketing, so they're able to sustain what they build. The biggest have about $800,000 a year in revenue—too small to get attention from banks, but big enough to make a neighborhood impact. "You open a little taqueria, you've got 10 employees who are all walking to work" because they live nearby, Waters says. "How can you feel bad about that?"

CDFI loans typically carry interest rates of 7% or 8%, Waters says, compared with 4% to 5% for a bank business loan. That reflects both the costs of the additional support the lenders offer, and the greater risk. Default rates at DDF, at a little over 4%, are more than twice as high as the 1.35% average for commercial loans. But the nonprofits' most successful protégés can grow large enough to be "bankable"—and look like much less risky bets.

Adrienne and A.K. Bennett, mother and son, run their plumbing and HVAC contracting firm, Benkari Mechanical, out of a cluttered cinder-block building on the city's northwest side. Last year, Benkari got a big opportunity: The chance to work on Little Caesars Arena, Detroit's new hockey venue. But it didn't have the cash to cover payroll for the 60-to-90 days between when the job started and when the checks arrived—and it wasn't well established enough to borrow it from a bank.

The Entrepreneurs of Color Fund extended a $300,000 loan to cover the costs—enabling Benkari to win the bid. The arena work has put Benkari on track for its first million-dollar year in 2017. And having proved it can skate with the

BUILDING ON THE PAST Older shops and new neighbors on Livernois Avenue, the "Avenue of Fashion." JPMorgan Chase is helping to finance new businesses near established retail hubs that survived the worst of Detroit's slump.

pros, Benkari is a candidate for some lucrative contracts at federal buildings downtown. If the momentum continues, will the Bennetts expand their 10-person staff? "If?" retorts Adrienne. "It's not 'if.' It's 'when.'"

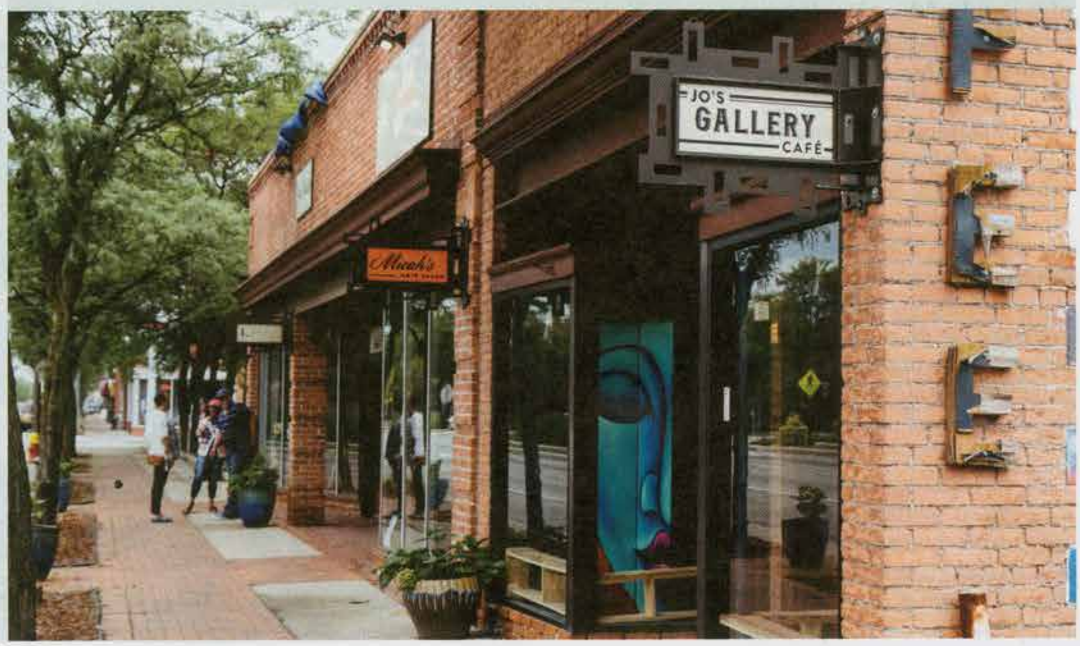
AH, NICE, it's trash day," says Dave Blaszkiewicz. "You learn a lot on trash day." He's piloting an enormous SUV down a narrow residential street, just north of the McNichols retail strip. To the untrained eye, the health of this block of brick bungalows might be hard to gauge. Some homes are pristine, some are rundown, some are abandoned "broken teeth." But most have big plastic trash bins waiting for pickup in their driveways—and that's a sign of neighborhood strength.

Blaszkiewicz is the president and CEO of InvestDetroit, a CDFI with a focus on real estate and small-business development; it's another JPMorgan Chase partner. Working on the downtown and midtown revivals converted him to the "density is everything" mantra. Even in neighborhoods that look blighted, he says, there's often enough pent-up demand among residents to kindle a small-business boom.

JPMorgan Chase has invested some $30 million in Detroit-based funds that fuel that kind of growth by spotting neighborhoods that could be about to "tip." The problem: In much of Detroit, the pockets of strength aren't big enough, and no amount of investment can lure business back, at least right now. As Duggan puts it, "I can't tell the shoe store or grocery store or the coffee shop where to go."

High on the wish list for Detroit's CDFIs was a database that could help them predict which neighborhoods could best take advantage of a push. To build one, JPMorgan Chase brought in four employees from around the country to flex their data-science muscles. The team gathered anything they could quantify about neighborhood health—number of sit-down restaurants, transit availability, quality of local schools. They looked at credit card transaction data, gleaning insights about spending patterns. And they went to dozens of neighborhood meetings to learn what kinds of businesses residents wanted. "It's like in investment banking, where you rank an opportunity 'green,' 'amber,' or 'red,'" says Joyce Chang, the bank's New York–based global head of research for corporate and investment banking, who mentored the team.

The result was a flexible, user-friendly database that could shape decision-making. "They did in a month what would have taken someone else six," says Blaszkiewicz. The kinds of assets that the database is designed to detect are on display in the first three eight-to-15-block "microdistricts" targeted by Invested in Detroit—including Livernois/McNichols. Within walking distance of the desolate part of McNichols Road, for example, are two prosperous tracts, Sherwood Forest and the University District, where household incomes average around $80,000. A short distance north is the Avenue of Fashion. The shoe stores and dress shops on those blocks have a time-capsule air about them—many of the signs are of Motown vintage—but



they do brisk business, and the momentum they generate could help nearby blocks grow too.

"I didn't witness the heyday of the city," says JPMorgan Chase's Tabron, who grew up in the University District. But neighborhoods like hers have sustained a commercial pulse, she says, and "now we've got this template to expand it."

IF THAT TEMPLATE has an architectural signature, it's the "mixed-use" building—boxy new construction that combines residential units with ground-floor retail. These projects can be a Swiss Army knife for development: They can host multiple businesses; they're well suited to loft spaces that attract affluent renters; and they can accommodate affordable housing. Under current plans, each of the microdistricts targeted by Invested in Detroit's partners will have at least two new mixed-use hubs.

Capital Impact, Clemons's CDFI, specializes in these projects. The B. Siegel project on Livernois is one, and on a hot afternoon, Clemons and a colleague take me to another. We pull into a site due to open in November as "the Coe at West Village." It sits about a block from two beloved "anchors" of the West Village neighborhood: a barbershop, Heavyweight Cuts, and a bakery, Sister Pie. Cliff Brown, a broad-shouldered man on whom a construction helmet looks comically small, shows us around. It's one of his first projects as a developer, and he almost certainly couldn't have financed it with a traditional loan; just under half of the $4 million cost is coming from funds backed by JPMorgan Chase.

Construction is still in the drywall stage, but seven of the 12 units are leased, Brown says, and the owner of a spinning gym is eyeing the retail space. He shows off the shell of an affordable-housing unit that will rent for $944 a month. The studio has huge picture windows and a balcony, just like its bigger neighbors in the complex. "I grew up with kids who lived in beat-up housing projects," Brown says. "When I got into construction, I thought, 'What kind of house would I build for our friends?' This is that idea in action."

Of course, $944 a month is a stretch for many in Detroit. Median household income in the city is under $26,000—less than half the national average. Making sure that more Detroiters have jobs that can keep up with higher rents is a job for Chauncy Lennon. Lennon is JPMorgan Chase's head of workforce initiatives, and his group's mandate includes steering workers without college degrees toward "middle skill" jobs that pay middle-class salaries—jobs that often go unfilled because of talent shortages. "A lot of families and educators have a 'B.A.-or-bust' mentality," Lennon says. "That's not wrong as far as it goes, but its not helping people make the best choices."

In Detroit, Lennon's team helped spearhead a survey of the job market, to identify the gaps between demand and supply. To date, JPMorgan Chase has invested $15 million in filling those gaps. Lennon's group is helping design

↘

GATHERING PLACES The Coe at West Village [left] will offer mixed-income housing in a fast-gentrifying area; the Metro Detroit Barber College [right] is a Bagley neighborhood anchor that could help draw customers to new businesses nearby.

career-themed curriculums at 20 public high schools—and organizing businesses to hire students for apprenticeships and internships in fields like plumbing and hospital work.

The bank is also funding nonprofits like Focus: HOPE, a vocational center where students in an "integrated advanced manufacturing" course work with the kind of robotics tools used in today's factories. When Duggan and Scher hosted a press conference in May to announce that JPMorgan Chase was steering another $50 million to Invested in Detroit, bringing the total to $150 million, they chose Focus: HOPE as the venue. Audience members sometimes had to strain to hear them; they were competing with the metal-on-metal clangor from the shop-class floor.

REBUILDING DETROIT'S neighborhoods is nothing if not a long game. The projects in the first three microdistricts should be finished by 2021; the city hopes to build out 10 neighborhoods by 2026. Cultivating jobs to sustain those neighborhoods will take just as long. Fantasize about a shopping trip to Livernois/McNichols, in other words, but don't book it any time soon.

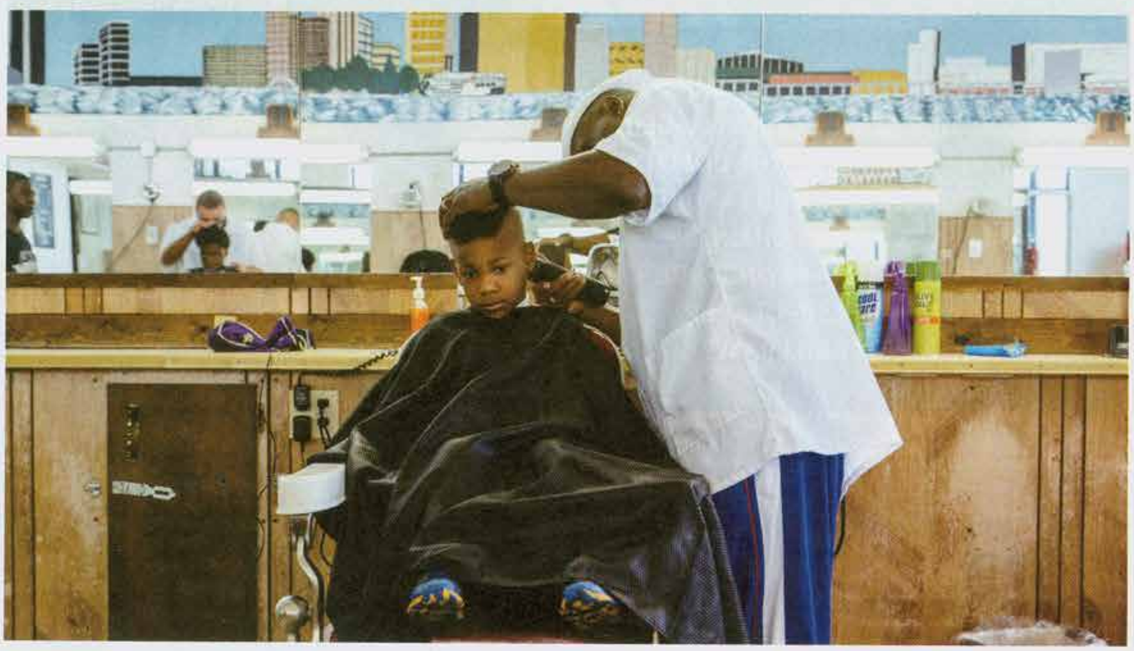
JPMorgan Chase's leaders aren't fazed by the wait. "A politician has a four-year horizon," Scher says. "A banker can have a 20-year horizon." But so far, the bank's bet is paying off. Its loans to CDFIs have already reaped returns, with $8.9 million to date repaid and cycled back into Invested in Detroit projects; Scher says there hasn't been a single default.

The project is also helping the bank retain and develop top talent. JPMorgan Chase has cycled more than 80 employees through its Detroit Service Corps to provide advice and training for a few weeks at time. Those postings are competitive, with multiple candidates applying for each opening. "It's so much more in touch with what people in their twenties want to do," says Chang, the executive who worked on the neighborhood scorecard.

But most important, three years of progress with Invested in Detroit has convinced Dimon and his leadership team that they've assembled the right tool kit for revitalizing American cities. And by the end of the year they'll have planted the flag beyond Michigan.

In August, JPMorgan Chase announced an investment in BSD, a vocational center on Chicago's South Side modeled after Focus: HOPE. Later in September, the bank will unveil its support for neighborhood-building projects in three more cities, to be financed by grants from its Pro Neighborhoods Fund. Around the same time, the bank will launch a new Entrepreneurs of Color fund in the San Francisco Bay Area. And another major metro area, to be announced this fall, will be the next to get the full Motor City treatment—a multipronged blitz of funding for small businesses, residential development, and job-skills work that could help rebuild its middle class.

"We can't do Detroit everywhere," Dimon says. "But we could do Detroit in three or four places a year, and we could do a 'Detroit lite' in another 10." Figuring out how, and where? "It's on the list," he says. ■



↘ **GARMENT WORKERS** in a factory owned by a Levi's supplier in Nazareno, Mexico. They're passing a ball of yarn as part of a team-building exercise.

THE TIES THAT BIND AT LEVI'S

BLUE-JEANS GIANT LEVI STRAUSS IS ROLLING OUT A "WORKER WELL-BEING" PROGRAM TO IMPROVE THE QUALITY OF LIFE FOR THE 300,000 LABORERS IN ITS GLOBAL SUPPLY CHAIN. IN A FAMOUSLY LOW-PAYING INDUSTRY, CAN PERKS AND RESPECT KEEP WORKERS HAPPY AND LOYAL?

BY
ERIKA FRY

PHOTOGRAPHS BY
LIVIA CORONA

IT'S 11 A.M. ON A TUESDAY, and a section of Linea 1 has left their stations to form a ring on the factory floor. As their supervisor stands in the center, the workers toss a ball of blue yarn back and forth across the circle, each holding on to a segment of string to create an elaborate cat's cradle. As they pass the ball, they take turns making promises, telling each other the things they plan to say and do later. One says she'll keep her town's plaza clean. Another says he'll speak up when he feels he's been treated unfairly.

It may take a moment to recognize the ritual: It's a team-building exercise, the stuff of many a corporate retreat. This team, however, is distinctly uncorporate. These are apparel workers, some of the low-wage workhorses who power the global garment industry. Their voices are nearly drowned out by the thrum of sewing machines as others around them furiously cut, sew, and assemble Levi's five-pocket denim pants. Still, as they share the string, some are laughing; almost everyone looks genuinely happy.

You're looking at one, tiny piece of jeans giant Levi Strauss's ambitious experiment to improve the lives of the 25 million men and women in the world's apparel supply chain—and better its business results in the process. The players from Linea 1 are finishing a 10-week course designed to teach them about health, hygiene, and sanitation, as well as communication and critical thinking. The string game? That's intended to make everyone feel personally invested in and accountable for acting on what they've learned. The cat's cradle is a web of commitments, representing their new connectedness—a physical reminder that their bonds are stronger, surer than before.

The Levi's initiative—"Improving Worker Well-Being," officially—is about getting an industry to recognize that workers aren't faceless cogs in giant profit machines, but people with feelings and needs. "This is about creating a culture that embraces well-being," says Kim Almeida, who heads the program. "It's a mindset shift."

That may sound squishy, but Levi's efforts, and the business case for them, all become clearer when you zoom in on one of the vendors that are on board. (Those 42 vendors encompass 72 factories and 140,000 workers, almost half of the Levi Strauss supply network.) The goal is to build a network of more productive, better-run factories—with happier, healthier employees and lower rates of costly absenteeism and turnover. That would be good for suppliers, but also for Levi's, which will get more reliable, cost-efficient sourcing partners—while generating positive vibes that resonate with young talent and with consumers who want their values reflected in everything they buy.

Take this factory in Mexico, a cut-and-sew facility employing 1,200 people in a dusty, desolate town called Nazareno. Ten weeks after team-building activities began there, workers, line supervisors, and managers speak of a workforce transformed. The reason is simple, but powerful: Before, workers were afraid to speak. Communication was a one-sided exchange, and generally, it involved yelling. Workers didn't particularly like to come to work. "We had lots of people complaining their supervisors didn't have the right leadership style—they were too strong, too blunt, they didn't treat them well," says Oscar González Franch, the president of Apparel International (AI), the longtime Levi's vendor that operates the factory.

The peer-led sessions at the facility are organized by a Mexican NGO, Yo Quiero Yo Puedo ("I Want and I Can"). Once the group started training supervisors and got them leading the daily exercises at AI, things changed; supervisors began relating to the people they'd been barking orders at. González Franch says supervisors have gotten better at speaking to groups and doing it with respect. (Workers and supervisors told *Fortune* the same.) "We're teaching them to be better leaders."

Though González Franch doesn't yet have hard data, he sees a difference—not only in the ways his employees relate to each other, but in productivity. He suspects absenteeism is down, and he's optimistic he might have the formula to reduce the plant's stubbornly high 30% to

40% annual turnover rate. He expects these benefits are translating to his bottom line as well. "It's a win-win situation, believe me," he says.

González Franch's aha moment is the sort Levi's was hoping for in 2015, when it decided to make a commitment to worker well-being a condition of doing business for every key partner in its supply chain. It's a move that's all the bolder because the company is asking every supplier to design its own game plan—to recognize their own workforce's needs and address them however they see fit. Levi's offers some funding and guidance, but what it really wants is to see suppliers like AI take the idea of Worker Well-Being and run with it.

↖ **IMPROVEMENT ON THE FLY** Keny Yair Favela cuts buttonholes in jeans at the Nazareno plant. Under Worker Well-Being, management has been quick to upgrade the factory campus with a soccer field, an ATM, and better fans.

IT WOULDN'T BE THE FIRST TIME Levi's shook things up. Sustainability has been part of its fabric since its founding in 1853, as have the progressive values that came to typify San Francisco, the city it calls home. Privately held and family-owned, Levi's was one of the first companies to desegregate factories, to embrace same-sex marriage, and to educate employees about HIV/AIDS. For years, it has worked to reduce its environmental pant-print, pioneering ways to wring water and chemicals from the jeans-making process.

But if there's a pin Levi Strauss wears most proudly, it's probably the one for its standard-setting role in the garment industry. The company began moving production abroad in the early 1990s, around the same time that brutal conditions in overseas sweatshops started making headlines (Levi's figured in some of them, due to a scandal in Saipan). This prompted the company to create a code of conduct for all its suppliers; wherever they were in the world, they would rise above weak labor laws.

Known internally as Levi's "Terms of Engagement" (TOE), the document stipulated everything from the minimum age of employees to the placement of fire exits. It was quickly emulated across the apparel business, establishing

CHANGE
THE WORLD

A LEG UP ON COMPETITORS
Workers "distress" jeans in a plant in Torreón, Mexico. Levi's hopes that its Worker Well-Being program will boost its bottom line by reducing vendors' absenteeism and turnover.

a baseline of expectations for factories and the brands they did business with. It's now unthinkable that any company—let alone giant brands with now-robust compliance programs like Nike, Gap, and Adidas—wouldn't have a code of conduct for their manufacturers.

This was progress, but hardly a solution. Despite frequent inspections and the armies of auditors enlisted in this cause, labor abuses and poor working conditions have continued to stain the fashion industry. And wages, depressed by global competition and consumers' addiction to cheap togs, remain stubbornly low.

As the 20th anniversary of the TOE approached, some at Levi Strauss wondered if there was more they could do. They saw promise in another internal program. Over the years, the Levi Strauss Foundation had funded "worker empowerment" programming in apparel factories. They'd seen especially good results with programs that focused on life skills and health. Participating factories had registered positive outcomes for workers, who enjoyed improved quality of life, and their businesses—which tallied declines in absenteeism and increased productivity. One facility in Egypt reported a 4-to-1 return on investment, largely because women, who typically stayed at home when they were menstruating, had access to education and sanitary pads.

Still, all of these programs had been temporary, lasting 12 to 18 months at most. Making them a sustainable part of factory life seemed like Levi's best next move. The company had just begun piloting Worker Well-Being when Chip

Bergh came to Levi's as CEO in 2011.

Bergh faced big business challenges: The brand had experienced a precipitous revenue decline and muddled through the aughts, and many speculated the venerable company, having lost its way in the age of designer denim, might never come back in style. But Bergh, a Procter & Gamble alum, had also been drawn to the company for its purpose-driven ethos. "The company had such an amazing legacy... of not being afraid to stick its neck out on important social issues," says Bergh. He fully supported the well-being initiative: If anything, he thought the company needed to think bigger. "If this is going to be sustainable over time," he recalls thinking, "we have to prove to the factory owners that this is good for their business so they fund it on their own."

For the next couple of years, the company took its lumps. Compared with the prescriptive, black-and-white world of compliance, Worker Well-Being was broadly defined and open-ended. Levi's struggled to figure out the right level of engagement in the process—how much to guide its vendors, how much to give. It became apparent that it had overdone the former. "We learned we couldn't come in with a paternalistic approach," says Kim Almeida. "We needed to step back and listen to vendors." Then there was the question of measurement: How the heck do you know what's working?

Still, early signs of progress appeared in pilots in far-flung locations—Egypt, Cambodia, and Haiti among others. That convinced Bergh, as well as his supply chain chief Liz O'Neill, that the initiative should be rolled out to all key Levi's vendors, and made mandatory beginning in 2020.

Though that would be a huge task, Levi's had organized itself in a way that would improve its chances of success. Years earlier, Levi's had embedded its sustainability team in the supply chain, putting everyone on the same team. In other words, the person who is asking a factory to deliver 5,000 orders tomorrow is the same person who has asked them to do it using 50% less water. Now, the team responsible for workers' well-being is similarly embedded. "That's the virtue of our structure—all those teams are pulling in the same direction," says O'Neill.

WHEN IT LAUNCHED the initiative, Apparel International was one of the first suppliers Levi's called. AI was founded in 1988, a company with 20 seamstresses. Back then, because of U.S trade regulations, only the sewing of jeans could happen in Mexico—the garments were typically cut and finished in El Paso, Texas. That all changed with the North American Free Trade Agreement, when much of the industry, chasing lower wages, moved south. Within a few years, Torreón, the city of 1 million where AI is based, was producing 5 million pairs of pants per week. For a time, Torreón was described as the "blue jeans capital of the world." The boom times didn't last. Many companies, chasing cheaper labor still, moved to Asia, and AI, which once made jeans for a host of brands including Gap, now works only for Levi Strauss.

Nazareno is just over the mountains and across a state line from Torreón, a 45-minute drive that in its final stretches turns to rutted unpaved roads that require a certain amount of negotiation with stray dogs, pedestrians, and large trucks. AI owns the only factory there, in a town of 8,000 that lacks, among other things, a hospital, an ambulance, and a bank. There's a railroad track, but no station; once a day, La Bestia, a freight train known for carrying U.S.-bound migrants north, blows through.

González Franch has run AI alongside CEO Tomas Bello Garza for almost 30 years, and by their own admission the broader well-being of their 4,000 employees wasn't something they'd spent a lot of time thinking about. But as O'Neill and Almeida presented the idea, it resonated with them. Among Levi's suppliers, AI was known for its ingenuity on the environmental front—they'd found new ways to save water, and made a whole collection of jeans sans chemicals—why not innovate on the people side as well?

Still, the duo weren't sure how to tackle the broad mandate they'd been given. Levi's had provided them a "needs survey" to get started, but after circulating it in Nazareno, González Franch and Bello Garza realized it presumed a level of development (like access to financial services and health care) that didn't exist in the community. Almeida saw them struggling and sent in Community Empowerment Solutions, an NGO, to help. "That was the turning point," says González Franch. AI did a second survey, this one better suited to the Nazareno population. They focused on new workforce improvements, and interviewed more than a dozen local NGOs to help with in-factory training sessions.

Today, the peer-led programming in health and communications—the yarn-toss curriculum—is just one aspect of what's happening in Nazareno. Management has added to the factory campus a breastfeeding room, a soccer field, an ATM (the only one in town), and a sun-protected shed to store motorbikes. They've installed microwaves and griddles in the cafeteria and facial recognition tech to check workers in for duty (that may sound creepy, but it frees them from losing pay to the whims or forgetfulness of supervisors).

By far the most popular improvements have been basic ones: cooler water (new water fountains), cooler air (new overhead fans), and kinder, more communicative supervisors. What's remarkable is that management added almost all these touches in response to employee feedback—a dynamic that would have been unthinkable not long ago.

Worker Well-Being has also prompted AI to invest in the town of Nazareno itself. "We didn't see the community getting up to speed as we thought it would," says Bello Garza, who like González Franch has become a Worker Well-Being evangelist. Now, the duo swell with pride when they show off the work AI has done beyond its factory walls. When I visited in late August, we stopped by the city's only health clinic, a small concrete building in the center of town. Until

It's intuitive that happier employees will be more productive employees. What's less clear is what makes them happier: A supportive manager? Free snacks? More autonomy? Or the thorniest option of all: higher wages?

That's a question that Levi's has more or less assigned to its vendors, sidestepping the elephant-in-the-room issue confronting apparel companies—just how much people in their supply chain are getting paid. Low wages are a brutal reality in an industry in which every innovation seems to drive down prices more efficiently than the last. The minimum wage for garment workers in Mexico is $5 a day, a rate that makes tortilla griddles in the cafeteria look a little less generous. If you really want to improve workers' lives, why not just pay them more? Levi's and AI say that their workers make more than the minimum, plus fringe benefits, and that higher wages didn't top the list of priorities in employee surveys; Levi's adds that health, financial inclusion, harassment, and discrimination tend to rank higher.

From that perspective Worker Well-Being is a step forward. AI may be the current exemplar for what Levi's hopes to achieve—a shift in the way the industry thinks about its workers and acknowledges their needs. Says Almeida, "Worker Well-Being is less a program than a journey. You start working in a different way when you realize the value of serving workers." Still, Almeida is full of caveats—Levi's is early in its journey. To help determine whether it will result in a real improvement in the lives of garment workers or in business results, Levi's has enlisted Harvard's School of Public Health to rigorously measure and study the initiative.

Levi's feels good about what it has seen so far. The company has achieved four years of top and bottom line growth, excluding foreign-currency impacts. The fact that its rollout has coincided with this period would seem to suggest, at the very least, that the initiative hasn't hurt, and that Levi's can keep implementing it from a position of strength.

Beyond any workforce productivity tailwinds, the company says, Worker Well-Being has deepened its relationships with suppliers. And there are always the public-relations benefits: Millennials love this stuff. Chip Bergh hopes the rest of the industry will, again, follow Levi's lead. (As with all the sustainability work it does, Levi's is open-sourcing its processes and lessons learned.) "This goes way beyond making a profit," says Bergh. "We are demonstrating there is an opportunity for companies to redefine their role in society, and that's good for business." ■

recently, the state-run center saw only five people a day; people seeking care would line up at five in the morning. AI provided the center an administrator, and a computer for record-keeping; they set up an appointment line and posted its phone number around town. The doctor now sees 20 scheduled patients and eight walk-ins per day.

AI also developed a financial model to sustain its well-being programs—a foundation that generates income by turning Levi's fabric scraps into goods that are sold locally. As we pass by a community center where a sewing class is learning to make those goods, and a playground that the company refurbished, González Franch says AI is just getting started. An ambulance is next, and a day-care center. The company will soon roll out Worker Well-Being to its remaining factories. He ticks through the many projects on his Worker Well-Being wish list—which is to say, his wish list for his workers.

↖ **CONVERTS AT THE TOP** Apparel International president Oscar González Franch (left) and CEO Tomas Bello Garza. González Franch believes Worker Well-Being is helping the firm's bottom line: "It's a win-win situation, believe me."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Binder
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LILY'S SUPPLIES
~~Backpack~~
~~Lunchbox~~
All
Sept
Week
Month
MON September 4
All day Dutton Family Camping Trip (Lake Chelan)
All
TUE September 5
All day First day of school
Emily Ryan Lily
7:10 p 10:00 p Mariners vs Astros
David Ryan Lily
WED September 6
6:30 a 8:00 a Swim team practice (Arbor Heights)
Emily
4:00 p 5:30 p Soccer practice (Madison field)
Ryan
7:00 p 9:00 p Book Club (Cafe Ladro)
Anne
THU September 7
B-day Michael's birthday (Turns 40)
All
9:00 a 10:00 a Return library books
Anne
4:30 p 5:30 p Orthodontist appt
Lily
6:30 p Curriculum night (Gatewood Elementary)
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Tim Cook, photographed at Apple's headquarters in Cupertino on Aug. 30, 2017.

APPLE FINDS ITS CORE

BY
ADAM LASHINSKY

PHOTOGRAPH BY
SPENCER LOWELL

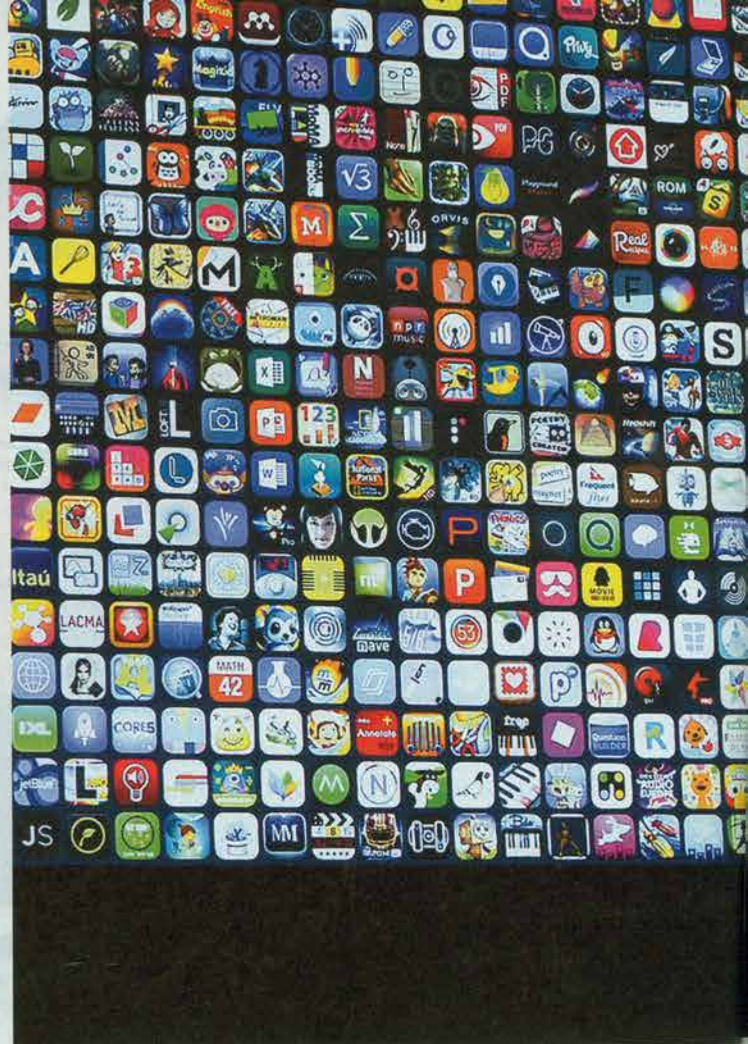
IN AN EXCLUSIVE Q&A, CEO TIM COOK TALKS ABOUT HOW THE TECH GIANT IS EMBRACING ITS CORPORATE MISSION BY INVESTING IN EVERYTHING FROM RENEWABLE ENERGY TO EDUCATION TO, YES, WORLD-CHANGING PRODUCTS.

“**WE'RE HERE TO PUT** a dent in the universe,” Steve Jobs once famously said. “Otherwise why else even be here?” If ever a company was self-consciously focused on making an impact—changing the world, in the argot of *Fortune*'s annual list—it's Apple.

And yet, for Jobs the dent that he intended for Apple to make in the universe revolved almost totally around creating new products that would change people's lives. Those products would be gorgeous and useful and fun and surprising, but rarely “good” in and of themselves. Despite a hippie-dippie veneer and earnest marketing, Apple under Jobs was a ruthlessly efficient moneymaker that largely left social programs to others.

Apple CEO Tim Cook, 56, who joined the company in the middle of his career and has assumed the zealousness of a convert, is no less commercially minded than Jobs. And when asked to explain how Apple changes the world he answers immediately with two words one can imagine Jobs saying too: “our products.”

But Apple under Cook is a company transformed in terms of how it projects onto the world its social awareness and its place in the



corporate community. *Fortune* executive editor Adam Lashinsky, who first profiled Cook in a 2008 magazine cover story titled "The Genius Behind Steve," sat down with the CEO in late March to discuss Apple's view of itself as a force for good.

Some of what Cook said is surprising, including why he personally rejected the idea of establishing a corporate foundation. Or that some of Apple's health care initiatives—which sprang from apps designed for the Apple Watch—have no discernible model for making money and may never.

Cook also paints a picture of Apple's philanthropic and otherwise commercially beneficent activities as of a piece with the company's ethos on product development: It tries to do relatively few things so as to better focus on them. Apple's biggest priorities include renewable energy (it runs its own facilities overwhelmingly on them), education (it is focused on teaching coding from kindergarten through community college), and health care (including the $130 million it has raised for HIV/AIDS through its PRODUCT (RED) partnership with the Global Fund).

Ultimately, Cook sees Apple's greatest societal contribution coming through the 2 million U.S. jobs it believes it creates through its "app economy" as well as the "many millions" more it supports in the rest of the world. For Apple, everything comes back to its products, about a billion of which are denting the universe at this very moment.

Q+A

***FORTUNE:* Has Apple changed the world?**

TIM COOK: Yes, I think in numerous ways. I think the No. 1 way Apple changes the world is through our products. We make products for people that are tools to enable them to do things that they couldn't otherwise do—to enable them to create or learn or teach or play. Or do something really wonderful.

So that's the primary way we change the world. We also try to change the world by the way we run the company. And whether that's being very focused on the environment and making sure that we have a no-carbon footprint, essentially, or running our company on 100% renewable energy.

We advocate for human rights, because Apple has always been about making products for everyone. And, arguably, if people are treated as second-class citizens in any part of the world, then it's kind of hard to accomplish that objective.

We believe education is a great equalizer. And so we try our best to bring education to the mainstream. And right now our major thrust is in coding because we think that coding is the sort of the second language for everyone in the world. And that's regardless of whether they're in technology or not. I think that you don't have to be in technology for coding to be very important.

We try to advocate for people's privacy because we are living in a world where technology can do lots of things, but there's things that it shouldn't do. And so we try very hard to protect people's privacy and security and hopefully keep some of these bad things at bay for them.

So we try to do all of those things in the way that we conduct ourselves and run the company. But the primary way we will always change the world is through our products. Because we touch so many more people in that manner.

You say that Apple makes its products for everyone to be able to use. But Apple's business strategy is to make premium-priced, high-margin, high-end products, which is why you're the most valuable company in the world.

Well it's not high margin. I wouldn't use that word. There's a lot of companies that have much higher margins. We price for the value of our products. And we try to make the

© XINHUA/EYEVINE/REDUX

↖ Cook giving a speech at Apple's Worldwide Developers Conference in San Francisco last year. Between the "app economy" fostered by its devices, manufacturing, and its own employment, Apple says it has created more than 2 million jobs in the U.S.

CHANGE THE WORLD

very best products. And that means we don't make commodity kind of products. And we don't disparage people that do; it's a fine business model. But it's not the business that we're in.

But if you look across our product lines, you can buy an iPad today for under $300. You can buy an iPhone, depending upon which one you select, for in that same kind of ballpark. And so these are not for the rich. We obviously wouldn't have over a billion products that are in our active installed base if we were making them for the rich because that's a sizable number no matter who's looking at the numbers.

Talk about the economy that exists around Apple.
Think about Apple empowering people, particularly developers. The tool that we're giving developers is not only a device but the developer kit that goes with the device so that they can in turn utilize their passion and creativity to build their product.

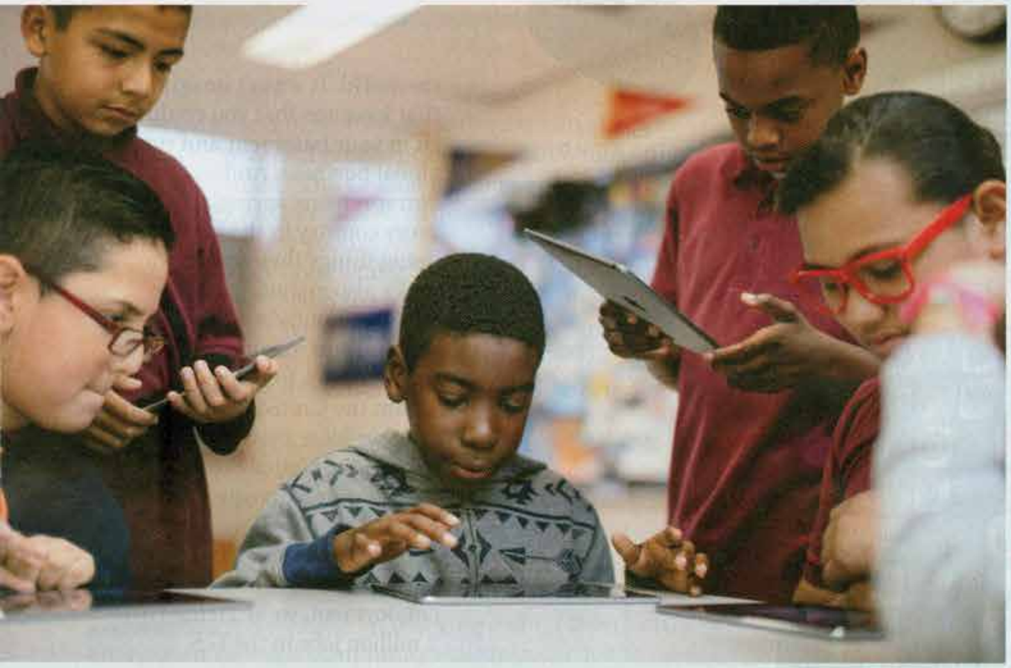
And then the App Store gives them the ability to sell to the world. It wasn't imaginable that long ago that you could sit in your basement and run a global business. And so there's entrepreneurs springing up in every country in the world and doing things they want to do.

We also manufacture. We don't do it ourselves but we have third parties manufacturing for us. We have a ton of companies within the United States that do that; we have a ton of companies outside the United States that do that. But we create a lot of jobs in that way. Between the app economy and manufacturing, and then of course our own employment, we've created over 2 million jobs in the U.S.

What's the corresponding figure for the world?
It's many millions.

Recently Apple has become interested in health. Is this a potential moneymaker, or something more altruistic?
We started working on the Apple Watch several years ago. And we were focused on wellness. And wellness was about activity monitoring and also about performing some measurements of your health that people were not measuring, at least continually. Like your heart. Very few people wore heart monitors. So when we got into working on the watch we began to realize that the things that we could do were even more profound than that.

We're extremely interested in this area. And, yes, it is a business opportunity. If you look at it, medical health activity is the largest or second-largest component of the economy, depending on which country in the world you're dealing with. And it hasn't been constructed in a way where the focus at the



some of it it's clear there's not. And some of it it's not clear. I do think it's a big area for Apple's future.

Why does Apple not have a foundation the way so many companies do?

That's a really good question. We looked at it in some detail.

When?

I looked at it in early 2012. And I decided not to do it. And here's why. When a company sets up a foundation, there is a risk, in my judgment, of the foundation becoming this other thing that is not connected to the company. It has a separate board of directors. They make reasonably independent decisions sometimes. It becomes a separate thing. I don't want that for Apple. I want everybody involved. Because I think that the power that we bring, the things that we can do is because we're stronger—it's with our unity there. It's when we put all of ourselves in it.

We don't work on that many things. But we try to put all of ourselves in it.

With the environment we're working from the design and development of our products, the kind of materials that we use. In manufacturing we're looking at the renewable energy sources. When we put a data center in, we want to make sure that's with renewable energy. On Earth Day we want all of our stores involved in making our customers aware of things they can do. We try to get all of us involved because it makes a much bigger difference. We can be the ripple in the pond then. If we had a foundation, my fear was it becomes something that 10 or 12 or 20 or 50 people do. And all of a sudden for the

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Students at Walton Middle School in Compton, Calif., using iPads to collaborate on a class project. Apple has given devices to underserved schools across the country through its ConnectED program. Says Cook: "We think everybody should learn coding."

device level is making great products from a pure point of view. The focus has been on making products that can get reimbursed through the insurance companies, through Medicare, or through Medicaid. And so in some ways we bring a totally fresh view into this and say, 'Forget all of that. What will help people?'

One of the things that we've learned that we've been really surprised and delighted about is this device, because of the monitoring of the heart, has essentially alerted people through the collection of the data that they have a problem. And that spurred them to go to the doctor and say, 'Look at my heart rate data. Is something wrong?' And a not-insignificant number have found out if they hadn't come into the doctor they would have died.

We also discovered, somewhat by happenstance out of our curiosity, that the way that research was being conducted was sort of an old-world kind of thing. People were still putting classified ads in to try to get subjects to sign up. We put out ResearchKit [a software developers tool] and made it a source so that people could run enormous-sized studies. And there have been studies in Parkinson's and so forth that literally are the largest studies ever in the history of the world. And we're just scratching the surface right now. There's no business model there. Honestly, we don't make any money on that. But it was something that we thought would be good for society and so we did it. Will it eventually lead us somewhere? We'll find out. I can't answer that today.

There's much more in the health area. There's a lot of stuff that I can't tell you about that we're working on, some of which it's clear there's a commercial business there. And

COOK SAYS HE DECIDED THAT APPLE SHOULDN'T CREATE A CHARITABLE FOUNDATION. "SOME PEOPLE FELT THAT BY HAVING A FOUNDATION IT WAS A SIGNAL THAT YOU CARED. I SEE THAT AS MARKETING ALMOST, AND WE DON'T 'DO GOOD' TO MARKET. THAT'S NOT WHAT WE'RE ABOUT."

120,000, it's just this separate thing out there. People work here to change the world. So I think that should be integral to what the company does. Not peripheral in a foundation.

Did anyone disagree with your decision?

I got several recommendations, all of which were to set up a foundation. But I think my own judgment was when you really started asking the five whys, they all eventually landed on, because everybody else has done it. Or because some people felt that by having a foundation it was a signal that you cared. I see that as marketing almost, and we don't 'do good' to market. That's not what we're about. And I realize there's tax benefits with a foundation and all that kind of stuff. But look, again my perspective is, if you want to do good you maximize how to do good.

My view, we do a lot more good with a 120,000 people behind it than we would putting 12 people over in a corner to make decisions. I'm not criticizing people that do that. I think maybe they found a way and maybe it's great. But it wouldn't be Apple.

Let's turn to education, which I know was a passion of Steve Jobs.

He was very interested in education as a market, but more than that. He was very keen on learning. And Steve was a lifelong learner, and he knew the value of it. And he felt that the traditional education approaches were not working.

And he thought one element of modern education was the digital classroom. And so at various stages, in early days, he was pushing Macs in classrooms. Actually pre-Mac he was pushing Apple computers in classrooms. And then iPad. Because he saw what iPad could unleash, he wanted to get all the textbook guys on the iPad because he saw kids walking with these 50 pounds of books, this little kid that weights 50 pounds trying to carry 50 pounds of books. And also that the book was flat. That there was nothing exciting. So he went out and spent $10 million on one textbook to show what was possible.

What we've tried to do is take that now to the next step. And our next step was we think everybody should learn coding. Not only because there's a huge shortage of people that know how to code today, but because we see technology increasingly horizontal in nature and not vertical. A lot of people think of technology as kind of a vertical like all the others. I don't really see that. I see that technology has become very horizontal.

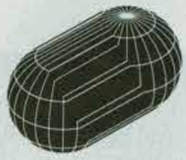
But when we looked at it we found that there were multiple issues. One issue was that coding was viewed as being for computer scientists, that it was for a certain type of student, a very technical kind of student. And so we created a new programming language called Swift. And the whole concept of Swift is you make a coding language that has the ease of use of our products. And so everybody can learn it. Yet, it's powerful enough to write the most complex apps that you'd ever want to dream up. And then we thought, well, what else can we do, and so we came out with Swift Playgrounds, a curriculum for say K4, K5, sort of in that age range. And that began to take off. And so then we took a step back and we made a bigger program for all of K–12 called "Everyone Can Code."

And all this curriculum stuff is free. Anybody can have it that wants it around the world. We've done it in multiple languages. And then with things that we've learned over the last year, year and a half or so, we thought, We're not hitting community colleges. And we need to hit community colleges. To our surprise we've already got 30 community college systems set up.

Apple has taken a hard line on privacy, relative to others in the tech industry. Is the industry moving more toward Apple's position?

I don't think there's very many people that place it at the top of the list as we do. What I do see is that the broader user community, the importance of privacy is increasing. And the importance of security is exponentially increasing. And that's because of all of the hacks, all of the reports of things that have gone on. You would be hard pressed to find very many people that haven't had a problem I think, or heard of a problem from credit cards to whatever.

And so I think people appreciate it more and what I believe will occur, because companies that don't follow



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customers don't do very well, and so I think that will mean that more companies will put a higher priority on it.

And I hope that happens because our data is very private, our personal information is private stuff. And also, these devices can make your life so much better, but you want them to be secure.

How do you deal with the fact that many people view iPhones and iPads as tools of bad social behavior, like distractedness and children who stare for too long into a screen?

Our whole premise is to infuse our products with humanity. And so if you think about what the watch does, other than all the stuff we've already talked about from a wellness point of view, one of the things the watch does it allows you to have a curated level of connection without being absorbed in it. And so if you just want certain people to be able to message you or whatever, you're waiting for that important message.

Or there's some kind of notification that you really need, you can do that here and sort of be in the moment in a conversation. As opposed to waiting and continually picking this thing up to find out.

Also, with iOS 11 [the newest operating system for the iPhone and iPad], when you start traveling, you're going to find out your phone is not going to accept notifications when you start moving in the car. And if you pick your phone up, you can say, "I'm not driving," and it will give them to you. And if you want you can go in there and turn that off. But we're trying to help people protect themselves and help people do the right thing.

I think that all companies should do that, to really think through how their products are used. Using a product is somewhat like eating healthy food. It's really great. But you can eat too much of healthy food. And you can use something too much.

The watch also has—I see you're not using one—but there's a breathing app on here. And every so often it will tap you and prompt you to go through a one-minute breathing exercise. If you did this just for one week, it's amazing how you'll feel at the end of the week vs. not doing it.

"USING A PRODUCT IS SOMEWHAT LIKE EATING HEALTHY FOOD. IT'S REALLY GREAT. BUT YOU CAN EAT TOO MUCH HEALTHY FOOD. AND YOU CAN USE SOMETHING TOO MUCH."

You do it?

I do it. Sometimes it taps me at an inconvenient time and I can't. But I can go in there and prompt it later. And it's sort of a "Whooo..." So we really do try to think about all of this.

But surely the problem is bigger than a breathing app or a safety app.

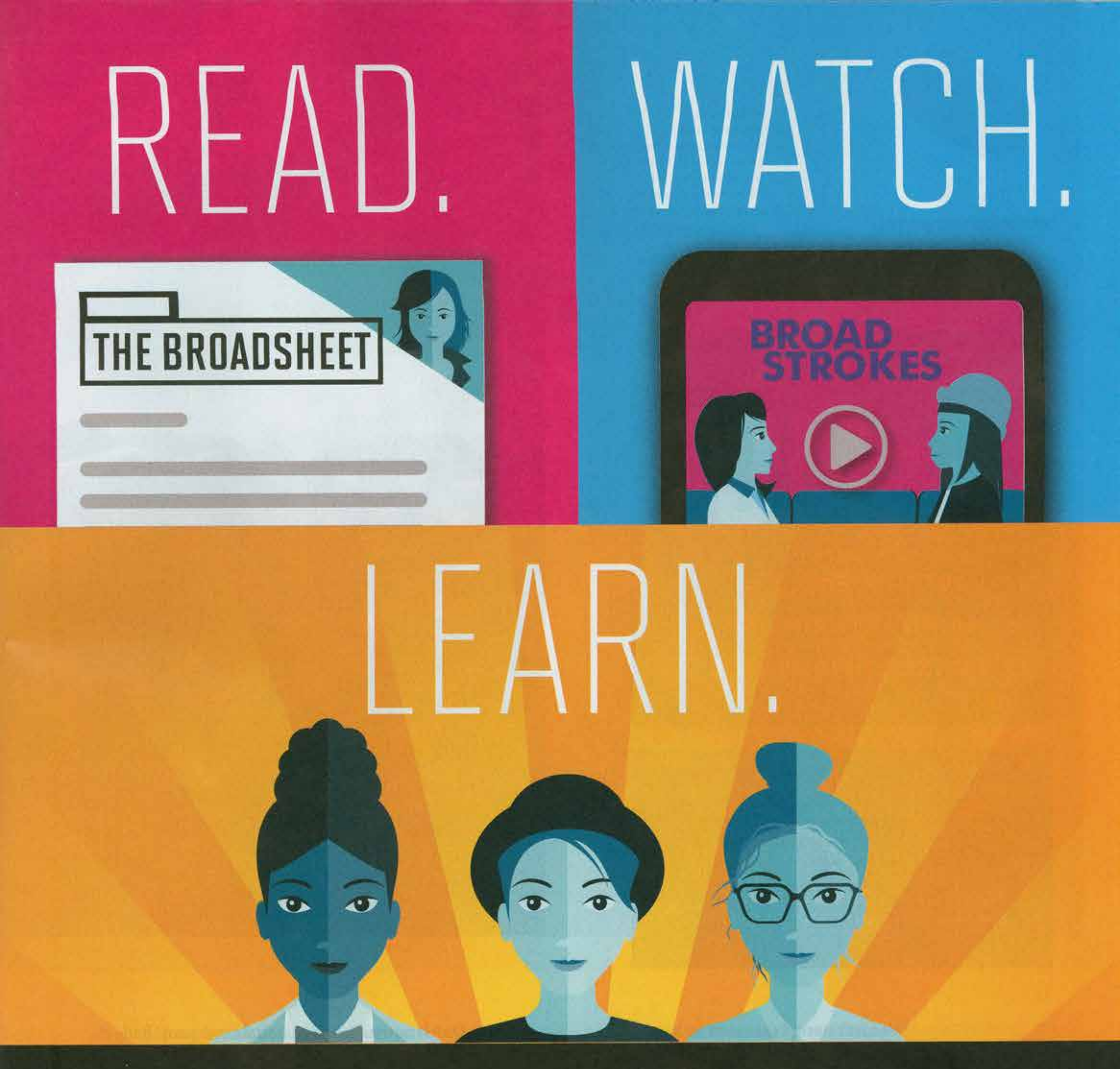
It's the set of many things. If you want to use this 24 hours a day [he motions to his iPhone], I'm probably not going to prevent you and probably shouldn't. Because that's the country we live in. You're free to do that. But I ought to, as the provider of that, think through some things I could do that might be helpful for you. And we really try hard to do that.

Very last thing. There appears to be ample evidence that many parts of the public believe that corporations are bad, that they're not a force for good in the world. You clearly believe one corporation in particular is a force for good. Is it a valid concern though on the part of the public and do corporations need to do better?

I think that corporations are like anything else in that there are some that are good and some that are not. So I don't think you can paint all with one brush. Just like people. Most people are really big hearted. But occasionally you meet somebody that's not. And so corporations are like that too, I think. I don't subscribe to "all are good" or "all are bad." I think life is not simple like that.

The ultimate objective of *Fortune*'s list, after all, is to celebrate companies that are making a positive impact on the world.

We will always try to change the world for the better. That was the motivation behind creating Apple when it was created back in the '70s. And it's still the motivation today. It's what drives us. We want to do what's right, not what's easy. Because a lot of what we do is not easy. And we take some spears along the way. But we always try to do what's right. ■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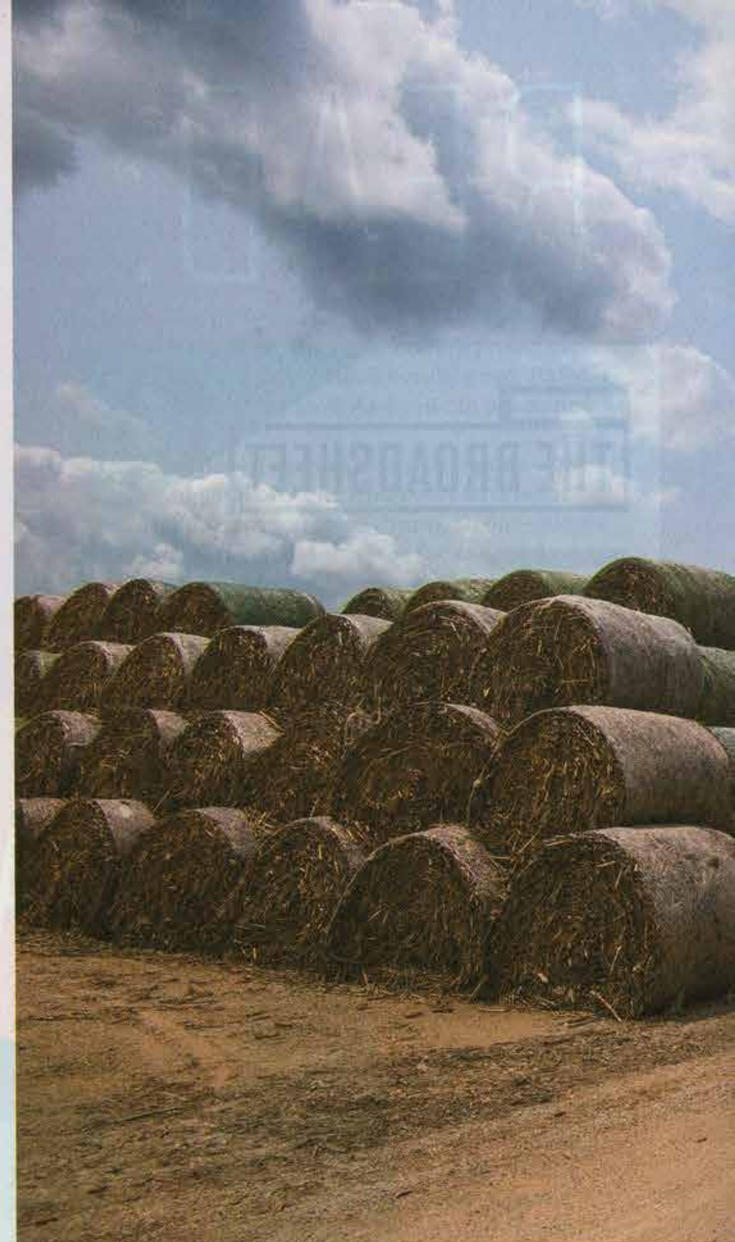

FUEL CELLS
Biomass—basically, farm waste—at a cellulosic ethanol plant in Emmetsburg, Iowa. DSM has developed an enzyme to convert biomass into cleaner fuel.

E=MC²

EARTH FRIENDLY = MANUFACTURING × CONSCIENTIOUSNESS ²

DUTCH SCIENCES GIANT DSM REINVENTED ITSELF TO TACKLE GLOBAL PROBLEMS LIKE HUNGER AND CLIMATE CHANGE. THE RESULT: AN $8.8 BILLION COMPANY WHOSE STOCK IS NEAR AN ALL-TIME HIGH. HERE'S DSM'S FORMULA FOR BALANCING PLANET AND PROFIT.

BY **ERIKA FRY**

PROJECT LIBERTY LAUNCHED in September 2014 with ambitions as lofty as its name. The project, a speck of industry just outside tiny Emmetsburg, Iowa, was to be the nation's first-ever cellulosic ethanol plant to operate at commercial scale. Cellulosic ethanol—a biofuel produced not directly from corn, a food crop, but from its waste, like cobs and husks—had become a holy grail in the clean-fuel sector. Its potential for minimizing pollution was huge, but breakthroughs had been elusive: Many companies had quit the effort, or run out of money in the pursuit.

DSM, a Dutch nutrition and materials company, had cracked the bioengineering code. DSM developed the enzymes and yeasts that convert fibrous, woody biomass to fuel; its partner, Poet, a U.S. ethanol giant, had the production know-how. So momentous was their joint venture that the King of the Netherlands and then-U.S. Agriculture Secretary Tom Vilsack (as former governor, veritable Iowa royalty) came to Emmetsburg for the ribbon-cutting ceremony.

But DSM and its partners had overlooked one thing: rocks. When farmers swept up corn waste, it turned out they didn't just get biomass; they also got debris—stones and pieces of farm equipment and other foreign objects. All that flotsam clogged the plant's equipment, and for its first couple of years, Project Liberty was barely functional.

It could have been a deflating defeat—but like many leading-edge projects that DSM has tackled in recent years, it turned into a figurative win. The plant's staff engineered a solution, using huge blowers to separate corn parts from debris. Project Liberty now produces tanker truckloads of cellulosic ethanol every week. The plant is short of the partners' eventual goal of 20 million gallons per year. But it remains a successful prototype and another planet-conscious innovation from a little known but transformative company.

Though few recognize DSM by name, the global company's traces are everywhere. It makes ingredients that go into scores of branded foods and beverages. Those same ingredients go into animal feed and a host of personal care products, from sunscreen to high-end cosmetics. (Thanks to the latter, DSM owns the world's largest venomous-snake farm; the venom provides paralytic agents for Botox-like skin creams.) It makes the plastics that make your cars and electronics lighter; paints and coatings that cover your walls, floors, and solar panels; and just about every vitamin sold at GNC. Also in its trove: the first fully recyclable carpet, the world's strongest fiber (used in bulletproof vests, ocean cleanup nets, and the uniforms of the Dutch cycling team); and a digestive aid that makes cows fart a lot less.

The portfolio may seem like a grab bag, but there is a common theme: DSM is in the business of improving the planet and the lives of people on it.

That's the vision that CEO Feike Sijbesma set a decade ago, when DSM was in the bulk chemistry business and

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THE REINVENTOR
As CEO, Feike Sijbesma led DSM's transformation from a bulk chemical company to one focused on social impact.

Sijbesma, a biologist by training, had just taken the helm. He looked at his company's opportunities in the context of both succeeding financially and tackling pressing global problems. The world didn't need another petrochemical "cracker." What it did need were solutions to malnutrition and climate change. Accordingly, Sijbesma branded DSM's playbook: "People. Planet. Profit." And since then, the company has channeled its proficiency in applied sciences in novel, life-enhancing directions.

Sijbesma sees this as good strategy: Purpose draws and motivates talent, and adapting to a changing world (as Sijbesma calls it, "future proofing") keeps the lights on. It's in this spirit that the company has undergone a radical transformation—swapping out unsustainable businesses for more sustainable ones. Sijbesma took over in 2007: He soon sold DSM's $2 billion industrial chemicals business and its pharmaceutical unit, while making 25 major acquisitions. Since then, the human and animal nutrition business, with sales of $5.7 billion, has nearly doubled. And by DSM's measure, products that measurably improve either the environment or human health (compared with competing products) account for 63% of revenue, up from 34% in 2010.

Sijbesma says the world changed for him when he had children. He didn't want his legacy defined by Ebitda and net profit, he says: "People will forget those numbers." Instead, he wanted to be guided by principles that his coworkers could rally around. "They are proud if they can say, 'Our company is changing the world, making the world cleaner, the food healthier.'"

As of right now, though, he's succeeding on both fronts. While DSM's $8.8 billion in annual revenues are slightly off where they were a decade ago, the stock is up 61% since Sijbesma became CEO—and profits have soared recently. Still, success hasn't robbed Sijbesma of his humility: He knows that the path to success isn't often a straight line.

PURPOSE MOTIVATES EMPLOYEES BETTER THAN PROFIT, SAYS SIJBESMA: "THEY ARE PROUD IF THEY CAN SAY, 'OUR COMPANY IS MAKING THE WORLD CLEANER, THE FOOD HEALTHIER.'"

IT WAS INTENDED to be a weapon to fight "hidden hunger" at the Kakuma Refugee Camp in Kenya. The product—a micronutrient powder called MixMe—was a simple, low-cost antidote to the malnutrition and anemia that afflicted the camp's 50,000 residents. And yet, when the product arrived at the camp in February 2009, many residents wouldn't touch the stuff.

The thing was, MixMe—which came in a small, foil sachet—looked a lot like a condom. And the sachets were packed in a box with an illustration of a man, woman, and child, a happy (Western-size) nuclear family. This packaging embarrassed some; it made others suspicious—and rumors spread—that MixMe was a sinister exercise in population control.

Needless to say, this was not what DSM was going for. MixMe was the fruit of an ambitious partnership with the World Food Programme and one of DSM's first major forays into realizing Sijbesma's vision. "We had to learn the hard way that maybe all of our Western norms and traditions and practices don't have the same application in all geographies," admits Hugh Welsh, DSM's president in North America.

But DSM did learn. MixMe now comes in a larger, less prophylactic-like package. The WFP partnership blossomed: Over the past decade, products that DSM helped develop have fed an average of 31 million people per year in conjunction with the organization. And DSM's Nutrition Improvement Program division, which supplies nutrients to aid agencies and governments, has become a profitable if low-margin business. "Without being

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SEA SWEEPER
Ecologists plan to use giant nets made from DSM's ultrastrong Dyneema fiber to clean waterborne trash, as shown in this rendering by NGO the Ocean Cleanup.

LEFT: QILAI SHEN—BLOOMBERG/GETTY IMAGES; RIGHT: ERWIN ZWART—THE OCEAN CLEANUP profitable, it's not sustainable," says Welsh. "And if it's not sustainable, it's not ethical."

DSM takes pains to reinforce that ethic internally. Since 2010 the company has rolled out a remuneration policy for all its 300-some executives, in which half of short- and long-term compensation, in the form of bonuses and stock options, is tied to sustainability goals. It took about three years for executives' collective mindset to adjust (or for employees who weren't on board to depart). But the progress the company has made would have been impossible otherwise. "For years, we tried to encourage plant operators to go to renewable energy," says Welsh. "When we tied this rhetoric to remuneration, though—all of a sudden they're very willing participants." He points to the company's vitamin facility in Belvidere, N.J., now powered, in part, by one of the largest solar fields in New Jersey.

Sijbesma was barely a year into his "People. Planet. Profit." transformation when the financial crisis hit. The CEO remembers being at home one weekend and thinking, "Everyone has 'values' when things are good"; he didn't want to abandon them just because times got tough. Sijbesma found himself fighting a similar battle with investors as well. At the annual shareholders' meeting in 2010, one man questioned the resources DSM had dedicated to helping WFP. Sijbesma was appalled; many of WFP's donors had already slashed their contributions, while needs had grown. He refused to spend a penny less on the work. After he said so, applause broke out, and one woman in the audience stood and cheered, "That's the kind of company I want to invest in!"

Not that DSM is inflexible with shareholders. In 2014, shares took a beating from the depreciation of the Swiss franc and problems in the vitamin E market. Activist investors, including Dan Loeb, pounced, and some pressed the company to break up. While DSM resisted those pressures, it did spin off some businesses and implement a new cost-savings strategy. Loeb made a pile of money, and DSM grew more efficient—profits rose 604% year over year in 2016, and 2017 is shaping up to be strong as well—but the company never wavered philosophically.

Meanwhile, Sijbesma has emerged as an outspoken advocate of the power of business to do good. In recent years, he has mobilized the corporate community to fight malnutrition and climate change. He is the longest-serving member of Chinese premier Li Keqiang's advisory body of global CEOs and sits on the board at Unilever, another company that puts a premium on eco-friendliness. "Many CEOs are so busy with their job problems and advancing themselves, they forget about the wider world and become myopically focused on shareholders," says Paul Polman, Unilever's like-minded CEO. "Feike is trying to drive broader change."

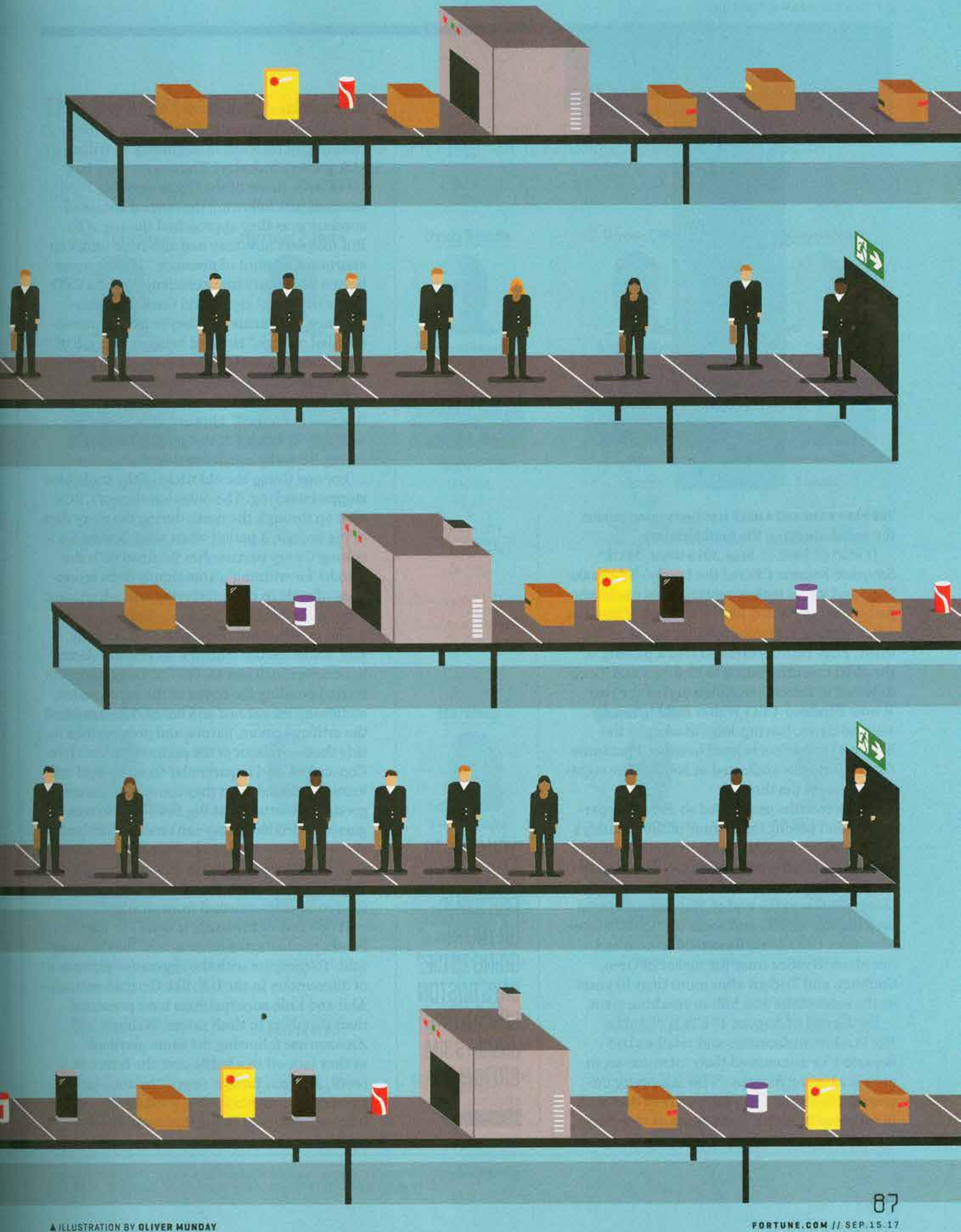
In some cases, DSM's innovations have outpaced the world's readiness for such change. The company faces challenges, for example, in finding a market for Clean Cow, its bovine flatulence reliever. DSM developed the product in part on the premise that a tax on greenhouse-gas emissions is inevitable. (It's estimated that cows produce as much as cars.) But for now, the feed additive, which has to be given to cattle at every meal, is an added cost that farmers have little incentive to absorb. Governments have expressed enthusiasm, but so far shown no interest in purchasing it. DSM is now courting dairy companies like Danone, which with Clean Cow could tout a more sustainable product and drastically reduce its own emissions.

After a decade at the helm, Sijbesma seems sanguine about such short-term frustrations. Experience suggests DSM will resolve them: His attitude is, they're getting there. "I think his values are stronger than the setbacks he's had along the journey," says Polman.

BIG FOOD'S MASS CEO EXODUS

THE HEAD HONCHOS OF PACKAGED-GOODS COMPANIES ARE UNDER IMMENSE PRESSURE FROM A RADICALLY CHANGING CONSUMER, A HYPERCOMPETITIVE RETAIL LANDSCAPE, ACTIVIST INVESTORS, AND 3G CAPITAL. NO WONDER SO MANY HAVE STEPPED DOWN.

BY BETH KOWITT



▲ ILLUSTRATION BY **OLIVER MUNDAY**

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THE PAST YEAR AND A HALF has been open season for headhunters in the food industry.

It started back in May 2016 when Mark Smucker became CEO of the family's namesake jams and jellies maker, replacing his uncle who had served in the top job for 15 years. Then that fall, a wave of leadership change began at Big Meat: First Hormel orchestrated a passing of the chief executive baton in October, and Tyson followed in December. At the end of the year Whole Foods co-CEO Walter Robb officially stepped down, leaving John Mackey as the high-end grocer's sole head honcho. That same day, Paul Bulcke abdicated at Nestlé after eight-plus years on the throne.

As the months progressed so did the departures—and among them some of the industry's lions. Muhtar Kent left his post at the pinnacle of Coca-Cola this spring after more than eight years on the job; Ken Powell did the same at General Mills at the end of May as he crept up on a decade tenure; and some two months later Mondelez CEO Irene Rosenfeld announced her plans to retire from the maker of Oreo, Cadbury, and Trident after more than 10 years as the head of the $26 billion snacking giant.

By the end of August, 17 CEOs of public Big Food manufacturers and retailers had departed, or announced their intention to, in almost as many months. "This is a pretty unprecedented situation where you see that level of turnover in such a short space of time," says Bernstein analyst Alexia Howard.

"YOU HAVE TO RESHAPE THE PORTFOLIO, OR YOU'RE GOING TO DIE," SAYS BOSTON CONSULTING GROUP'S JIM BRENNAN.

Is this coincidence, or evidence of some meaningful moment in the nearly $1 trillion U.S. grocery industry? The answer may be a bit of both. Some of the CEOs were Big Food veterans just following the normal course of succession as they approached the age of 65. But for years now they had also been under an enormous amount of pressure. "There's never been a time that's more challenging for a CEO in the industry," says David Garfield of consultancy AlixPartners. "They're facing unprecedented change." Howard believes the rash of departures is clearly linked to the deterioration in the broader Big Food climate. The former industry executives she talks to are telling her "it's really changed," Howard says. "They're relatively unbiased at this point, and they're saying it's really tough out there."

For one thing, the old tricks of the trade have stopped working. The outgoing class of CEOs rose up through the ranks during the glory days of big brands, a period when what Boston Consulting Group partner Jim Brennan calls the "model for winning" came simply from economies of scale in manufacturing and advertising, plus an annual boost from population growth.

But over the past decade, this "historically safe, stable insular industry," as Howard deems it, became much less so. For one thing, shoppers started avoiding the center of the supermarket, eschewing the canned and boxed offerings—and the artificial colors, flavors, and preservatives inside them—in favor of the perimeter's fresh fare. Consumers, and in particular those coveted millennials, wanted what they considered natural goods. No matter what Big Food does to reengineer its products, they can't seem to convince shoppers that anything has changed. "Consumers have lost trust in legacy food products," says Howard. "As a result we're seeing big packaged-food companies attacked from all sides."

If one side of the battle is what's in Big Food's products, the other is how they're being sold. To compete with the aggressive expansion of discounters in the U.S. like German entrants Aldi and Lidl, supermarkets have pressured their suppliers to slash prices. Walmart and Amazon are following the same playbook as they face off in a battle over the future of retail. Amazon further upped the ante—and the sleepless nights for Big Food CEOs—when it acquired Whole Foods this summer for

THE SUPERMARKET SHUFFLE

Consumer packaged-food companies have gone through a major changing of the guard in the past 18 months, with some big-name CEOs in the sector stepping aside. Below, a shareholder report card.

INCOMING CEO | OUTGOING CEO

J.M. Smucker

Mark Smucker

Richard Smucker

TENURE (IN YEARS)
15

CUMULATIVE TOTAL RETURN TO SHAREHOLDERS
625%

CUMULATIVE RETURN OF S&P OVER THAT SAME PERIOD
120%

Hormel Foods

Jim Snee

Jeffrey Ettinger

TENURE
10.8

CUMULATIVE TOTAL RETURN TO SHAREHOLDERS
472%

CUMULATIVE RETURN OF S&P OVER THAT SAME PERIOD
114%

Dean Foods

Ralph Scozzafava

Gregg Tanner

TENURE
4.2

CUMULATIVE TOTAL RETURN TO SHAREHOLDERS
47%

CUMULATIVE RETURN OF S&P OVER THAT SAME PERIOD
73%

Coca-Cola

James Quincey

Muhtar Kent

TENURE
8.8

CUMULATIVE TOTAL RETURN TO SHAREHOLDERS
121%

CUMULATIVE RETURN OF S&P OVER THAT SAME PERIOD
125%

Mondelez

Dirk Van de Put

Irene Rosenfeld*

TENURE
11.5

CUMULATIVE TOTAL RETURN TO SHAREHOLDERS
173%

CUMULATIVE RETURN OF S&P OVER THAT SAME PERIOD
151%

Pinnacle Foods

Mark Clouse

Bob Gamgort**

TENURE
6.8

CUMULATIVE TOTAL RETURN TO SHAREHOLDERS
107%

CUMULATIVE RETURN OF S&P OVER THAT SAME PERIOD
40%

Tyson Foods

Tom Hayes

Donnie Smith

TENURE
7.2

CUMULATIVE TOTAL RETURN TO SHAREHOLDERS
430%

CUMULATIVE RETURN OF S&P OVER THAT SAME PERIOD
151%

Hershey

Michele Buck

John P. Bilbrey

TENURE
5.8

CUMULATIVE TOTAL RETURN TO SHAREHOLDERS
124%

CUMULATIVE RETURN OF S&P OVER THAT SAME PERIOD
100%

General Mills

Jeffrey Harmening

Ken Powell

TENURE
9.7

CUMULATIVE TOTAL RETURN TO SHAREHOLDERS
164%

CUMULATIVE RETURN OF S&P OVER THAT SAME PERIOD
96%

Nestlé

Mark Schneider

Paul Bulcke

TENURE
8.7

CUMULATIVE TOTAL RETURN TO SHAREHOLDERS
92%

CUMULATIVE RETURN OF S&P OVER THAT SAME PERIOD
99%

*ROSENFELD: RETURN CALCULATED THROUGH 9/1/2017. ROSENFELD WILL STEP DOWN IN NOVEMBER.
**GAMGORT: RETURN IS CALCULATED FROM FIRST DAY OF TRADING ON 3/28/2013.

DANIEL ACKER—BLOOMBERG VIA GETTY IMAGES; BUCK: COURTESY OF HERSHEY; BILBREY: LUCAS JACKSON—REUTERS; HARMENING: DENIS BALIBOUSE—REUTERS; POWELL: RICHARD DREW—AP; SCHNEIDER: DENIS BALIBOUSE—REUTERS; BULCKE: PIERRE ALBOUY—REUTERS

$13.7 billion. It promptly slashed prices on key items the day the deal closed. This has all left legacy CEOs with some dire choices. "You have to reshape the portfolio," says Boston Consulting's Brennan, "or you're going to die."

THE ONLY THING more worrisome to Big Food CEOs than consumers' new penchant for green juice is 3G Capital. The Brazilian private equity group is the specter looming over the industry. When 3G acquired Heinz and subsequently merged it with Kraft, it immediately implemented what *Fortune*'s Geoff Colvin has described in these pages as a "blitzkrieg of cost cutting." Kraft Heinz now has the highest margins among its Big Food brethren, proving to some that management teams should be able to increase earnings despite the sector's intense pressures. "Companies have been on edge ever since," says Andrew Hayes of executive search firm Russell Reynolds Associates. "They're concerned that they might be the next victim and have tried to 3G themselves to preempt it." The $58 billion Unilever found itself in the eye of the 3G storm when Kraft Heinz made an unsolicited bid for the Anglo-Dutch company in February. Though Unilever's board roundly rejected the overture, the company did later move to cut spending and improve profitability. But in the packaged-goods realm, the Brazilian threat remains. 3G is "able to cut costs in a very unemotional and clinical way," explains food industry veteran Alan Murray, who has operated in both the Big Food and startup worlds. Since much of the industry's management has come up through the ranks, "they cannot cut as brutally," he says.

If legacy food companies don't adopt the 3G model themselves, activist investors have shown they will do what they have to in order to force the company's hand. Nelson Peltz's Trian has agitated for change over the years at Cadbury, Heinz, PepsiCo, Danone, and Mondelez, where Bill Ackman's Pershing Square has also held a stake. Jana Partners pushed for a shake up at Whole Foods, which led the grocer to its deal with Amazon. Meanwhile Daniel Loeb's Third Point recently disclosed a stake in Nestlé. "There is no quadrant or zip code in the industry that's off-limits to activists," says Garfield of AlixPartners. Even the biggest companies with the most cherished brands are now fair game.

"THEY'RE NOT JUST GETTING FORCED OUT," SAYS STONYFIELD CHAIRMAN GARY HIRSHBERG. "THEY'RE TIRED. IT'S NOT AN EASY BUSINESS NOW."

Amid this backdrop some CEOs were no doubt encouraged by their boards to leave early, industry veterans say. Tyson, for example, had signaled that Tom Hayes would likely succeed longtime CEO Donnie Smith, but the *Wall Street Journal* reported that the transition was "expedited partly because of the dimmer outlook on profit." (Tyson vehemently denies this characterization, saying in a statement that the decision "had nothing to do with the company's profit outlook, which was very positive. When his departure was announced, Tyson Foods had just completed a record year, and we were projecting a record fiscal 2017, which we're on track to attain.")

But others may simply have been worn out. Rosenfeld, who had to deal with two activist investors at Mondelez, told *Fortune* twice in an interview upon the announcement of her retirement that she was happy to say goodbye to the nonstop nature of the job: "I won't miss the 24/7 fires that have to be fought." "It's getting a lot harder," says Stonyfield chairman Gary Hirshberg, whose company was sold by Danone in August to French dairy Lactalis. "They're not just getting forced out. They're tired. It's not an easy business now." Murray says he was working with a public company CEO who had one request: "He said, 'Al, this is not fun anymore. Get me out of here. Get me out of here elegantly.'"

SO WHO COULD BOARDS possibly select to fill these increasingly challenging roles? It turns out they look a lot like their predecessors. Several executive search firms said that while boards are being more rigorous in their search process, they are still for the most part selecting insiders. "What surprises me is the board is putting in people who are part of the existing management team, who will not depart radically from the pre-existing strategy," says Credit Suisse analyst Robert Moskow. Take Coca-Cola's James Quincey and General Mills' Jeffrey Harmening, who both were at their companies for more than 20 years before taking the top job. Some companies are "comfortable with somebody who grew up in their culture who is going to be very loyal and careful," says Hirshberg. "That doesn't necessarily mean they're going to be the best engine of growth."

A few companies have broken the mold. The selection of Hayes, who joined Tyson in 2014

Mondelez's Rosenfeld announced in August she would step down as CEO this fall. She began her reign as head of Kraft, where she spun off the North American grocery business in 2012 to create the global snacking giant with remaining powerhouse brands like Cadbury, Oreo, and Nabisco crackers.

© ROMAIN GAILLARD—REA/REDUX

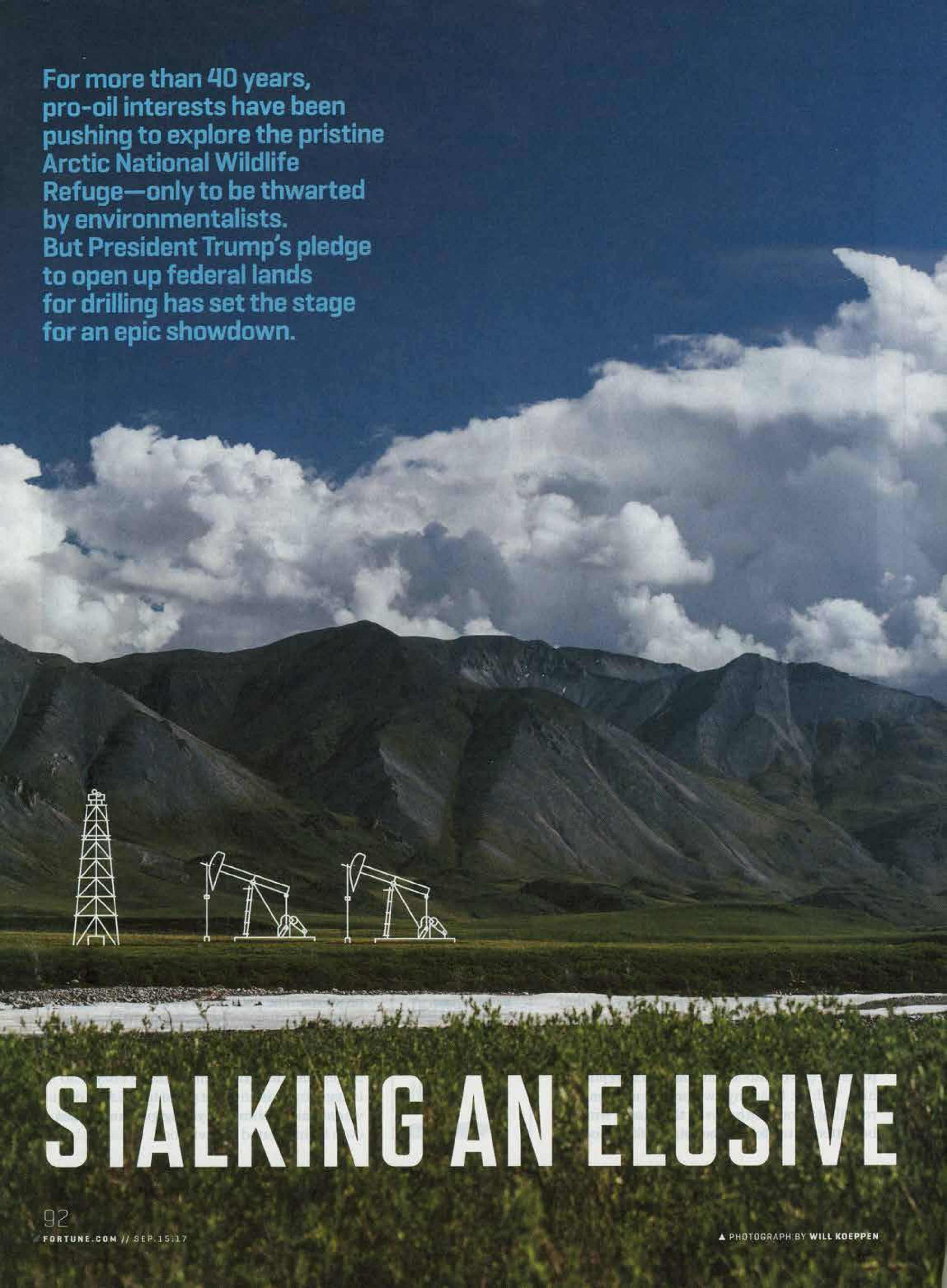
through its acquisition of Hillshire Brands, was considered more radical than going with a company lifer. Mondelez surprised industry watchers with its pick of Dirk Van de Put, CEO of Canadian frozen french-fry company McCain Foods. And Nestlé's new CEO, an outsider and health care executive, was considered a shocking and bold choice.

The industry, however, is still thinking mostly inside the box. "If we compare Big Food to retail, retail is a sector that's on fire, and it's burning. Therefore they're bringing in people from the outside who can really take a different view," says Greg Portell, lead partner in the retail practice at A.T. Kearney. Howard Schultz of Starbucks, which hasn't even suffered close to the trials of the rest of the industry, handpicked tech veteran Kevin Johnson to replace him. "I think I had my own private moment of realizing I honestly believed that Kevin would be better suited to run the future of Starbucks than myself," Schultz told me this spring.

This new batch of CEOs may want to prepare itself for a shorter tenure at the top. "The pace of change is increasing so much," says Gaurav Gupta of strategy firm Kotter International. "What business needs today and five years from now are going to be dramatically different." Murray believes that will lead to a second wave of CEO turnover in which the next generation isn't made quite so much in the same mold. "The 60-year-old guy passes the baton to the 50-year-old guy who's grown up at the same school. Can he effect the changes that need to take place?" he posits. "The patience is now much shorter."

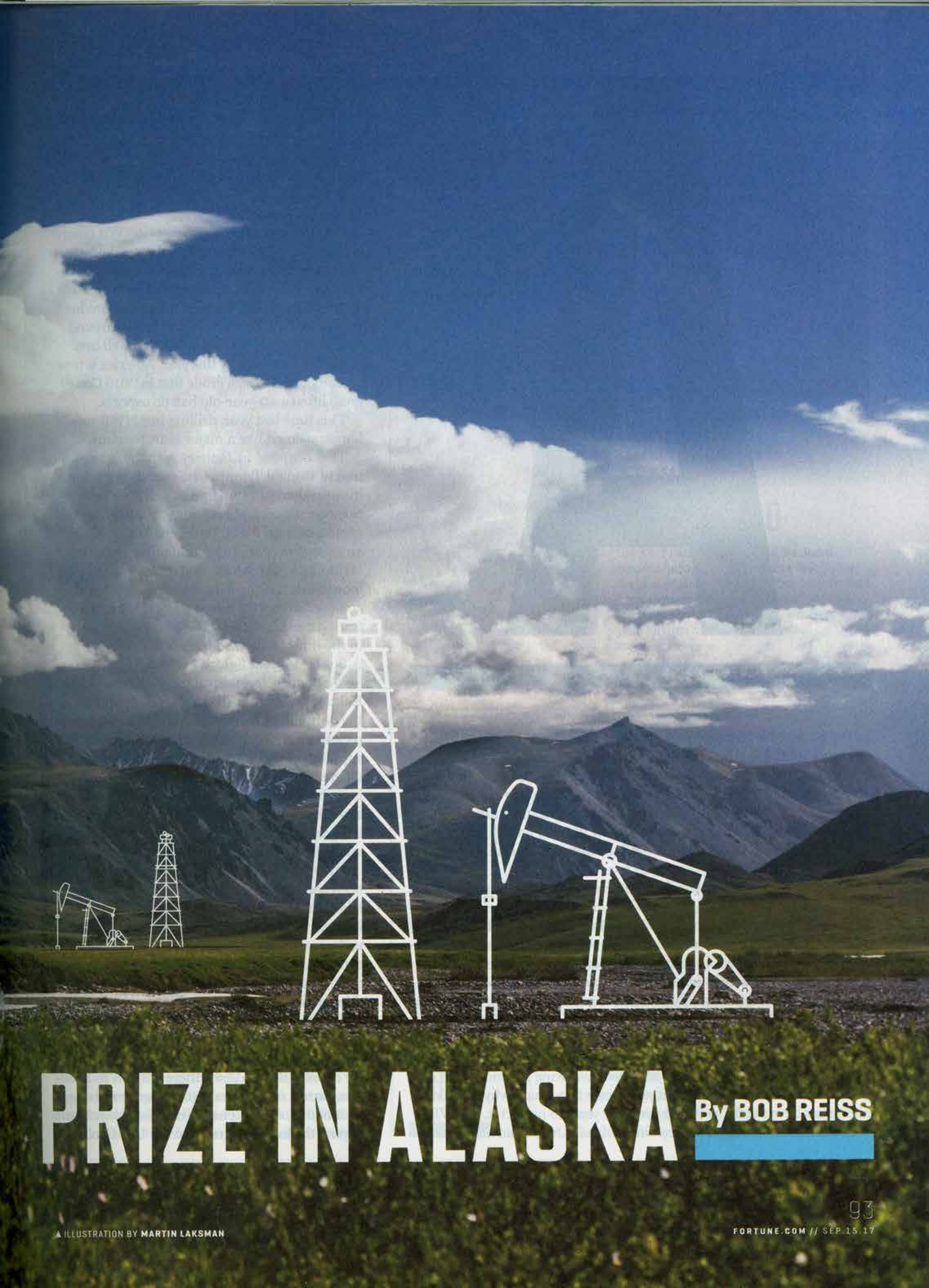
When that second wave comes, there's concern there won't be the talent to fill it. The Big Food slump has made the industry's companies far less sexy for graduating MBAs. They'll no longer be the innovative place to go. And even worse, this new crop of young guns might not even be interested in their food. ■

For more than 40 years, pro-oil interests have been pushing to explore the pristine Arctic National Wildlife Refuge—only to be thwarted by environmentalists. But President Trump's pledge to open up federal lands for drilling has set the stage for an epic showdown.



STALKING AN ELUSIVE

▲ PHOTOGRAPH BY WILL KOEPPEN



PRIZE IN ALASKA

By BOB REISS

▲ ILLUSTRATION BY MARTIN LAKSMAN

A

AS THE 19-SEAT Beechcraft breaks from the clouds over the northeastern coast of Alaska, the oil industry's long-cherished prize comes into view. At first glance, you'd never think that the Eskimo village and brown tundra below would represent the "longest running, most acrimonious environmental battle in American history," as naturalist Peter Matthiessen once called it. But it's not what's on top of the ground that Big Oil covets—it's the billions of barrels of crude oil that may lie below.

For more than four decades, Alaska's congressional delegation and their oil and gas allies have been pushing to drill here in the Arctic National Wildlife Refuge, or ANWR. And more than once they've almost succeeded. (The devastating Exxon Valdez oil spill in Prince William Sound on the southern coast of Alaska in 1989 was a major setback.) There's a simple reason for their persistence: ANWR is "the largest unexplored, potentially productive geologic onshore basin in the United States," the U.S. Energy Information Administration reported in 2000.

It's also one of the rare pieces of unspoiled wilderness left in the world—home to polar bear dens and caribou calving grounds—and remains much the same as it was 10,000 years ago. That's why environmentalists have fought so fiercely over the years to protect it. "ANWR is an American Serengeti. You can have the oil. Or you can have this pristine place. You can't have both. No compromise," says Robert Mrazek, a former New York congressman and chair emeritus of the Alaska Wilderness League.

The argument for exploring in ANWR gained traction as U.S. oil production dropped precipitously throughout the 1980s and '90s and the early 2000s. In recent years, however, the so-called fracking boom has caused oil production to surge in the U.S., from a low of around 5 million barrels per day in 2008 to well over 9 million barrels daily this year. America is now gushing out so much crude that in 2016 Congress lifted a 40-year-old ban on exports.

This time last year, drilling in ANWR no longer seemed like a major issue to many.

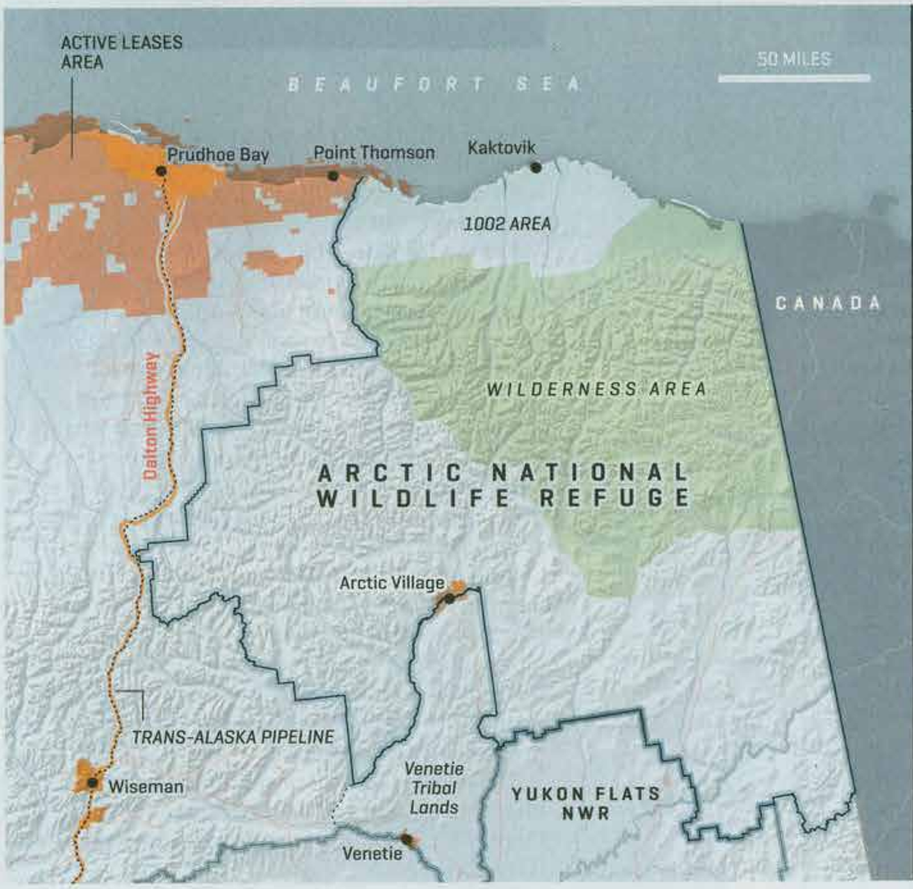
That changed in January with the inauguration of Donald Trump, who promised during his presidential campaign to pull back restrictions on the oil and gas industry and encourage exploration. In April, President Trump signed an executive order to expand offshore drilling, including in the Arctic, and open up protected federal land. He's pledged that America will achieve "energy dominance." And his administration has identified ANWR as a top priority in the hunt for new sources of U.S. oil.

So the 40-year fight is back on.

We bounce, landing on the short runway in Kaktovik, a dot on Alaska's Arctic coast and the only village located in ANWR. Residents in pickup trucks or four-wheelers wait to unload supplies, or collect relatives coming home from downstate. It's June and, offshore, tumbled ice is visible in water black as coal. To the south, snow-topped mountains sit mirage-like against the gray sky, across grassland that looks spongy and brown. This is what ground zero looks like.

Over the years, tens of millions of dollars have been spent on the battle for ANWR—for lawyers, lobbyists, fact-finding missions, public meetings, and ads highlighting the refuge's isolated valleys and remote rivers. ANWR's 19.3 million acres make it four times the size of Massachusetts—mostly protected wilderness, blocked from development. But the 1.5 million-acre coastal plain, known as the "1002 area," where Kaktovik is situated, can be drilled if Congress okays it.

How much oil is really here? Nobody knows for certain. But allegedly there are four to 12 billion barrels of recoverable oil, "the mean being 10.3 billion, a very sensible estimate," says Mark Myers, the former director of the U.S. Geological



SHOWDOWN AT THE TOP OF THE WORLD

The 19.3 million-acre Arctic National Wildlife Refuge covers an area four times the size of Massachusetts. Pro-oil interests want to explore the "1002 area" around Kaktovik on the Arctic coast, which could yield billions of barrels of crude.

Survey under President George W. Bush, which made the estimate. Myers is one of a handful of people who've ever seen the results of the lone exploratory well drilled in ANWR—a joint project by BP and Chevron back in the mid-'80s. The report may be the most closely held secret in Alaska. There's no shortage of rumors about what it shows, though. Back in Anchorage, people trade tales of a massive field that could provide a windfall in new oil royalties.

Alaska could use the money. Listen to Alaskans, and you can feel their desperation—in their homes, offices, from commuters passing Anchorage's rooftop ConocoPhillips sign, in radio reports on the $3 billion state deficit. Oil helped build the state. The oil industry employs a third of its workers. And the Alaska Permanent Fund, created with oil royalties, pays each resident an annual dividend—just over $1,000 last year. Alaska once supplied 20% of U.S. oil, but now it's output is dwindling. From a high of more than 2 million barrels per day in 1988, Alaska's daily production has fallen below 500,000 barrels. "We're basically hanging on, waiting for new supply," says Thomas Barrett, president of the Alyeska Pipeline Service Co., which operates the Trans-Alaska Pipeline System.

> "ANWR IS THE AMERICAN SERENGETI. YOU CAN HAVE OIL. OR YOU CAN HAVE THIS PRISTINE PLACE. YOU CAN'T HAVE BOTH."

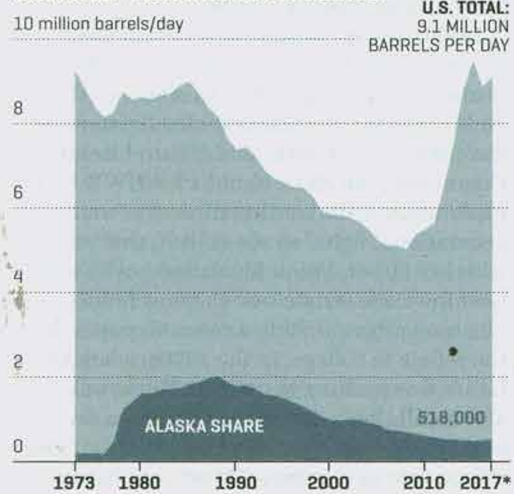
In the spring, Alaska's two Republican senators, Lisa Murkowski and Dan Sullivan, introduced new legislation to open up ANWR. To Murkowski, the state's senior senator and the chair of the Energy and Natural Resources Committee, the effort to unlock ANWR for oil exploration is the continuation of a "multigenerational fight," as she calls it, that started with her father, Frank Murkowski, who once held the same senate seat she now holds. She remembers writing a research paper on the refuge in college, in the 1970s, when her father was pushing to open it. Murkowski also recalls her astounded son, then a seventh grader, asking on the day of a "big" 2005 refuge vote in Congress, "Mom, you haven't opened ANWR yet? I've been hearing about it my whole life!" She lost that vote.

With Trump in power and Congress under Republican control, Murkowski feels that 2018 will be the best chance for success that the pro-ANWR-drilling movement has had in 25 years. But one wrinkle is that Murkowski herself has recently clashed publicly with President Trump. In July, Murkowski defied Trump and Senate Majority Leader Mitch McConnell and cast a key vote against the Obamacare repeal bill. Trump immediately went after her on Twitter, writing that she "really let the Republicans, and our country, down yesterday." Adding, "Too bad!"

To finally win on ANWR, Murkowski will now have to not only smooth things over with the President but also overcome an organized, determined resistance by the environmental community. In the native communities around the refuge, not all of the citizens that Murkowski represents are rooting for her to succeed.

NO ONE UNDER the age of 45 in Kaktovik has memory of any time when outsiders were not battling over the refuge's 1002 area. That's the part of ANWR which might be opened—it's also their primary food supply as both a hunting ground and the basis of a proud Iñupiat subsistence culture. Buy food? A pound of meat in Kaktovik's store costs $27. A loaf of white bread is $6. Protecting wildlife here is daily survival, many people say.

U.S. FIELD PRODUCTION OF CRUDE OIL



SOURCE: EIA *ANNUALIZED BASED ON FIRST FIVE MONTHS OF 2017

"FIRST THEY GIVE US THE LAND, AND THEN THEY TELL US YOU CAN DO NOTHING WITH IT," SAYS ONE NATIVE CITIZEN WHO FAVORS DRILLING. "OUR LAND IS HELD HOSTAGE. IT'S ANOTHER INJUSTICE."

But the flip side, which has all eight villages of Alaska's North Slope seesawing back and forth in perpetual angst about drilling, is that oil tax revenue pays for borough schools, old-folks homes, streetlights, plumbing, and even the lawyers who have helped stop—over the years—federal or corporate efforts to halt whale hunting or to allow offshore drilling along whale migration routes. The idea of offshore drilling can be terrifying here. Onshore is more acceptable to Iñupiats.

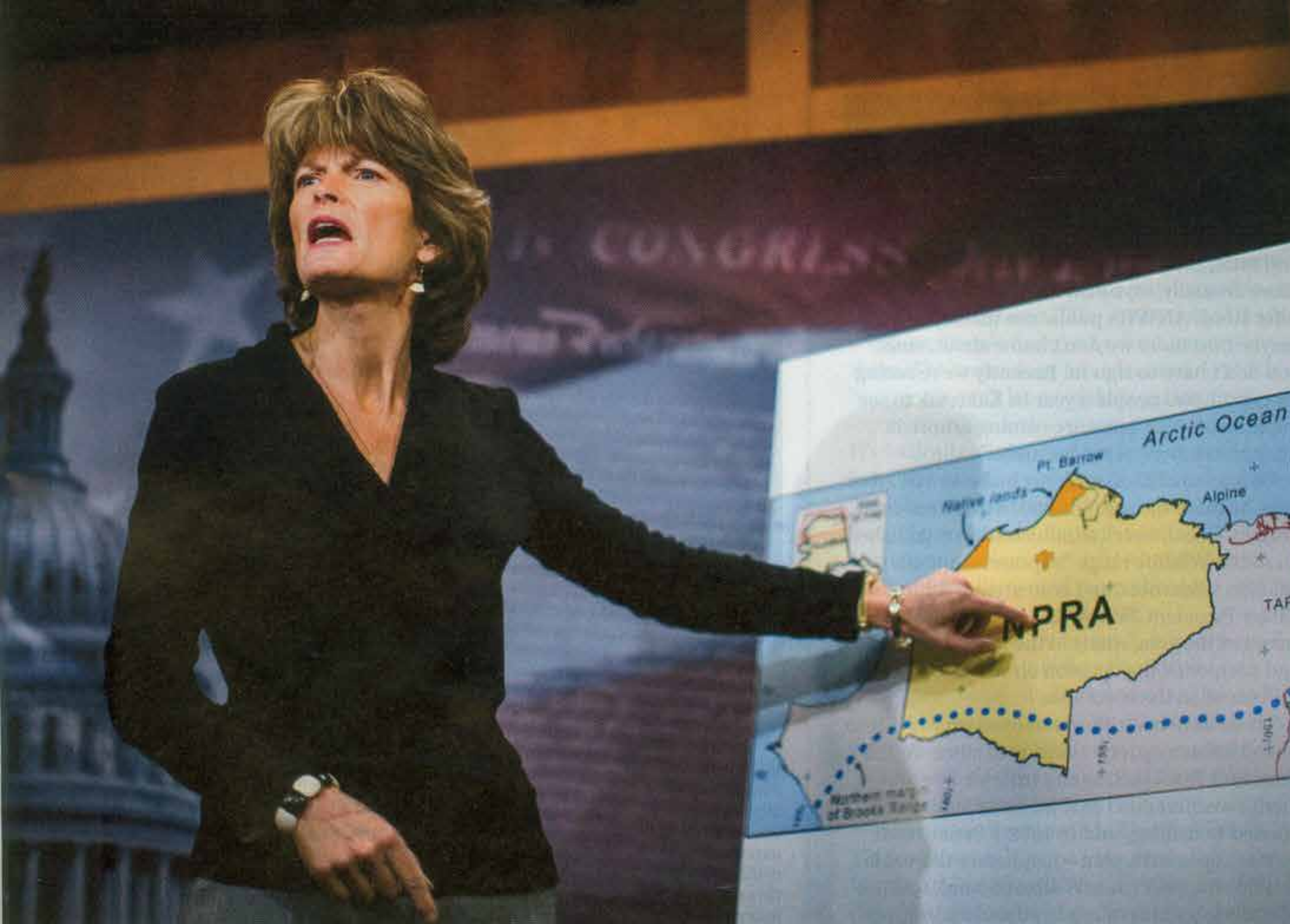
Elders in North Slope villages grew up burning whale blubber for heat, they tell me, chopping ice for drinking water. That changed after oil was discovered at Prudhoe Bay in 1968, and the Iñupiats created the North Slope Borough as an entity to tax big oil. If the oil dries up here, so do basic amenities.

The debate takes place at dinner tables, community meetings, and on the Internet. Fight it? Or pray for it? *Oil worsens climate change* vs. *oil creates jobs*.

I'm warned to watch out for polar bears—two were spotted yesterday in Kaktovik—as I walk over to meet Mayor Nora Jane Burns. The village is a collection of one-story homes set on pilings to keep them from melting into permafrost. Front yards are testimonials to people who value outdoors; filled with snowmobiles, drying caribou or bear skins, boats for whale hunting. The new school—paid for by oil taxes—looks impressive.

Mayor Burns, 59, is a gray-haired, whale-hunting crew member whose family, she says, gets half their diet from the wild. At one time she supported drilling. But after watching extraction around the nearby village of Nuiqsut, she changed her mind. "Nuiqsut has been highly impacted," she says. "Their hunting has changed. They must go extra miles to harvest animals. They suffer more respiratory disease. If our ecosystem is destroyed, what will we eat? Oil?"

A five-minute walk brings me to a smaller wooden building where Eddie Rexford, 59, also a hunter, is angry for the opposite reason and tends to represent the viewpoint of many Iñupiats. He pokes maps on his wall delineating land inside ANWR. Rexford is vice president of the "Kaktovik Iñupiat Corporation," estab-



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lished by the Alaska Native Claims Act of 1971, in which the U.S. government—rather than creating reservations for natives—formed tribal corporations, and gave them land. Tribal members are stockholders and get dividends annually. The Kaktovik Iñupiat Corporation owns 92,000 acres of surface land in ANWR, so if oil is found there, members will share royalties with a larger native company—the Arctic Slope Regional Corporation (ASRC)—which owns subsurface rights. Rube Goldberg seems to have designed federal land policies in Alaska.

ASRC has even sold an oil lease to Chevron and BP on tribal land—but under federal law, no drilling can happen unless the entire 1002 area is opened. Which angers Rexford.

We spend a few minutes discussing well-documented injustices perpetrated on North Slope natives since the Russians sold them to the U.S. as part of Alaska in 1867. Whaler-brought flu wiped out whole villages in the 1800s. In the 1950s scientist Edward Teller arrived in Alaska with a plan to create a deep-

Sen. Lisa Murkowski of Alaska, shown here in 2015 arguing against the Obama administration's plans to protect a big swath of federal land from drilling, has spent her career trying to open up ANWR for oil exploration.

water harbor by exploding atomic bombs near the Iñupiat village of Point Hope. Alaska politicians liked that idea. Residents fought it off.

Now, Rexford fumes, the U.S. government won't allow the Iñupiats to drill on their own land. "First they give us the land, and then they tell us you can do nothing with it. Our land is held hostage. It's another injustice."

A **REFUGE IS NOT** like a national park, which has paved roads and uniformed rangers and lodging and groomed trails. You can't hunt in a national park. You can in a refuge. There are souvenir stands in a national park. Forget the moose logo T-shirts in ANWR.

That's because America's refuges are dedicated to "wildlife conservation over human use," says Greg Siekaniec, Alaska Regional Director of the U.S. Fish and Wildlife Service, which manages ANWR. Siekaniec opposes drilling in the refuge. The ecosystem comes first, he asserts. Not people. And how many people actually come to ANWR? Between 1980 and 2011, roughly 1,000 visitors hiked or rafted there annually, says Fish and Wildlife's Jennifer Reed, ANWR's public use manager. "Plus maybe 500 more we don't know about, since you don't have to sign in. Recently we're seeing an extra 1,500 people a year in Kaktovik to see polar bears. The bears are coming ashore in greater numbers as sea ice melts."

Only a handful of outsiders had ever visited or even heard of the area in 1960, when President Dwight Eisenhower's administration established an Arctic Wildlife range "to preserve unique wildlife, wilderness, and recreational values." Under President Jimmy Carter, Congress enlarged the area, changed the name to ANWR, and postponed the decision on whether or not to drill for oil in the 1002 area.

There have been efforts to open up ANWR to the oil industry pretty much ever since. In 1987, President Ronald Reagan's Interior Department recommended that the coastal plain be opened to drilling, and in 1989 a Senate committee approved a plan—just before the Valdez ran aground in Prince William Sound, spilling 10 million gallons of crude oil and ending any chance of passage that year. In 1990, as Kuwaiti oilfields burned during an Iraqi invasion, global oil prices skyrocketed, and Frank Murkowski proposed an amendment to the defense appropriations bill to open the refuge. He lost. In the mid-1990s, with the Republicans in control of Congress, both houses passed a budget including a provision to open up ANWR. President Bill Clinton vetoed that part.

Next round: President George W. Bush included the opening of ANWR as part of his energy plan, but it was opposed by Democrats and by some Republicans, such as Sen. John McCain. "If they found oil in the Grand Canyon, I don't think I'd drill in the Grand Canyon," McCain said at the time.

President Obama tried to lock up the coastal plain, making it protected wilderness, and failed.

Last November, after Trump's surprise victory, "we thought, 'Here we go again,'" says Kristen Miller, interim executive director of the Alaska Wilderness League in Washington. Strategy sessions on both sides started within hours of the election. .

Senate Bill 49—on the table now—would limit ANWR's development to only 2,000 acres, or "the size of Dulles airport," Senator Sullivan tells me. That would include airports, roads, warehouses, and even pilings on which a pipeline might be built. Add in tribal land that could also be drilled if ANWR opens, and 94,000 acres in all of the 19.3 million could be opened to development, and hundreds of thousands of acres could be leased for exploratory drilling. Legally, exploration and extraction are different things.

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In late April, President Trump signed an executive order to expand offshore drilling in the Arctic and to open up more federal land for oil and gas exploration.

After Murkowski's 'no' vote on the Obamacare repeal, Trump reportedly directed Interior Secretary Ryan Zinke to call Murkowski and Sullivan and express his displeasure. The Interior Department's Office of Inspector General subsequently opened an investigation into whether or not Zinke had threatened the senators with reprisals—and then closed it when the Senators declined to participate. Murkowski and Zinke have both downplayed the disagreement. As of now, the fences appear to be mended enough for Trump and the Alaskan contingent to work on pushing through ANWR legislation.

The Senate bill sidesteps a need for a new environmental impact statement by recognizing one made years ago as valid. And by making the effort part of the budgetary process—as it appears they intend to do—the Republicans may greatly increase the odds of its passage. If the ANWR provision is attached to a budget reconciliation bill, it would require just 51 votes to pass in the Senate, or 50 votes with Vice

President Pence voting to break a tie.

But don't expect ANWR's defenders to roll over so easily.

Maps shown to *Fortune* by ANWR exploration proponents outline a teeny area slated for development at the edge of the 1002 area. This, they claim, is the entire extent of the potential footprint.

Maps shown by environmentalists like Peter Van Tuyn, by contrast, portray an enormous spiderweb of interlocking roads, pipes, gravel pits, and warehouses across the entire 1002 area. He doesn't trust the likes of BP and Chevron, or Alaska's politicians, to be caretakers of the area's wildlife.

Van Tuyn and I meet in his Anchorage office, beneath photos of bears and moose. He's an affable, passionate ex–New Yorker and hiker, who received a "hero of the Arctic" award from the Alaska Wilderness League a few years back. His clients have included the Gwich'in steering committee—an Alaska/Canada Athabaskin native group opposed to opening ANWR—as well as the Sierra Club and the Audubon Society.

"There may be endangered species concerns," Van Tuyn says, anticipating legal challenges to opening the refuge. "There may be marine-mammal protection concerns. Polar bears are marine mammals, and they den on land. A lot of issues come into play. The bill claims to be environmentally sound. It's blatantly not."

Van Tuyn adds, "The 2,000-acre thing is the most disingenuous thing ever in Congress."

EXXON'S REMOTE Point Thomson oil and gas facility sits on the coastline of the Arctic's Beaufort Sea, 60 miles from ANWR. On a June day it is 26 degrees, the coldest spot in the U.S., according to the TV news. Point Thomson sends up to 10,000 barrels per day of ultralight oil into the Alaska pipeline, and it is here that ANWR oil would probably flow. "You can almost throw a snowball from ANWR to Point Thomson," Senator Sullivan tells me. Connecting the two places, he adds, is a no-brainer way to limit development.

I've come here in search of, well, nothing.

Nothing is key, because pro-development people argue that this place is a good example of "small-footprint" development; what you'd see if ANWR opened. Nothing like Prudhoe Bay, the massive facility run by BP, Exxon, and Conoco.

WHY IS THE OIL INDUSTRY SO INTERESTED IN ANWR? BECAUSE THE REFUGE IS "THE LARGEST UNEXPLORED, POTENTIALLY PRODUCTIVE GEOLOGIC ONSHORE BASIN IN THE UNITED STATES."

Senator Murkowski is among those arguing that drilling now will have a minimal environmental impact. "The effect is imperceptible on the surface," she says. "The caribou don't know it's there. People flying over don't know it's there. The technology has advanced so much, but people can't let go of their old images."

Prudhoe Bay is the epitome of that image. It's basically a large-scale industrial park on tundra, a massive complex of gravel mounds—"pads"—on which rest pumps, warehouses, housing, and roads. Experts estimate that if current technology had existed when it was built, the facility would move the same amount of oil at 20% to 50% of its size.

Point Thomson, by contrast, is smaller and less built-up. The building doors open into polar bear cages—steel enclosures to protect workers in case a bear is outside. Staffers wear protective eye gear when driving, since flying rocks routinely break windows. Nearby I spot a few caribou on the tundra, ducks, even a fox.

Exxon uses directional drilling at Point Thomson, meaning that lines extend outward from a single well, enabling the tapping of hydrocarbons miles away, and cutting down on the number of wells formerly needed to tap a field.

I stand before a two-story, cube-shaped building inside of which sits a pipe going down 13,000 feet. Then it makes a turn and continues out for two more miles, and sucks hydrocarbons. The Exxon guys tell me they've had marksmen shoot bullets at pipeline-thick steel to test Iñupiat fears that hunters might accidentally puncture it. They boast about caribou monitoring by satellite and their bear radar.

Scanning the horizon, all I see is tundra and open water for miles. There's plenty of nothing.

THE ARCTIC IS melting as the earth heats up. It was warmer from 2011 to 2015 than at any time since 1900, when record taking with instruments began. In Eskimo villages, elders have stopped teaching young men to hunt because they fear that the ice is changing so fast that old lessons won't apply. In Norway this May, I visited Ny Alesund, the northernmost permanent research settlement on earth, where the Austre Broggerbreen glacier lost six feet of depth in 2016. In Svalbard, the global seed vault, con-

structured in deep permafrost to preserve samples of world crops, was closed for repair because permafrost around it is melting. "This was not anticipated," staffers told me.

In Alaska, ice melt has opened the sea-lanes off Kaktovik. Cruise ships now pass on their way in or out of the once iced-over Northwest Passage. The open-water season has increased by one to three months since the 1970s, the Arctic Council recently announced. Russia is building Arctic military bases and will begin shipping natural gas to Asia this fall through the Bering Strait, "waving at us as they go by," says Mead Treadwell, Alaska's former Lt. Governor and the former head of the U.S. Arctic Research Commission, venting his frustration. The message: Russia is assuming prominence in the region while in the U.S. Arctic policy—over building icebreakers or not, over whether to sign international treaties governing sea bottom, over whether to drill for oil or gas—gets bogged down in arguments in gridlock.

The effects of the changing climate are apparent inland as well.

It's near midnight—the dawn of a new day in the Arctic—as Charlie Swaney hits the accelerator on the camouflage-patterned Honda runabout and we bounce up a steep incline to his caribou hunting camp.

A patrol chases a polar bear out of Kaktovik, Alaska. As the sea ice they rely on for hunting seals recedes, owing to warming in the Arctic, the bears are coming ashore in greater numbers in search of food.

Arctic Village, Swaney's home, is a Gwich'in Native American settlement of roughly 200 in the Brooks Range foothills, 146 miles south of Kaktovik, near the southern end of ANWR. The porcupine caribou herd provides almost 80% of the diet of the Gwich'in, after passing each year during the longest migration of any animal on earth—2,700 miles in a loop between Northern Canada and Alaska. The herd of 180,000 labors over mountains and across ice-covered streams, swims rushing rivers, and moves relentlessly almost 20 hours a day, as they have for 10,000 years. The range is huge, but calving occurs in a small part of it—specifically, in the 1002 area, where cool ocean breezes protect them from the principal cause of calf mortality: mosquitoes. The fear is that development will push them into more dangerous spots.

The caribou have no idea that they constitute a political football. But they're part of the reason that Sen. Maria Cantwell of Washington, the ranking Democrat on the Energy Committee, opposes developing the area. "ANWR is one of the most unique places on earth. People travel the world to see intact ecosystems like

JOSH HANER—THE NEW YORK TIMES/REDUX

this," says Cantwell. "We don't need the oil."

Swaney, 60, is a lanky, muscled man with a quiet assertiveness and a habit of repeating the last couple of words of a thought. He moved here 30 years ago and married into the community. Like other residences in Arctic Village, his lacks running water. The toilet is a bucket. Drinking water is filtered from the river. Heat comes from a wood-burning oil-drum stove.

But he's not interested in the promise of oil money. "Fifty years from now the oil will be gone, even if they find it. If they drill ANWR, caribou will be gone too," he tells me.

Arctic Village is one of eight Gwich'in communities along the caribou route. Unlike North Slope Iñupiats, the Gwich'in rejected native corporations, instead forming the Gwich'in Steering Committee to fight ANWR development. They regard the caribou calving ground as holy, barred from visitation.

"People up north chose money over subsistence," Swaney says, shaking his head. "Bad idea. You lose power up north and you will freeze to death. If we lost electricity, we'd still have our woodstoves to keep us warm."

From our perch at his camp, Swaney scans the valley below and points out ways that the climate is changing things here. The spruce forest used to be more expansive. New willow trees provide cover for more moose. He points out oval patches on the grass below that are dried up lakes, due to permafrost melt. Animals that depended on these lakes are watching their drinking water dry up, he says.

And what if oil development adds more stress on the caribou? What if oil wells cause the herd to calve elsewhere, or to change their migration route so they no longer pass close to the village?

It could be the last straw, he frets. Which causes me to remember a talk with scientist Jason Caikoski.

Caikoski, an Alaska Department of Fish and Game biologist, has monitored Alaska caribou for years. When I asked him whether the Prudhoe Bay development affected the "Central" caribou herd there, he explained that the herd, "grew from relatively few to an all-time high, and then declined. We don't know what effect the oilfield had on that."

When it comes to predictions about the porcupine herd, "The bottom line is, we don't know the scale of footprint," Caikoski said.

"ANWR IS ONE OF THE MOST UNIQUE PLACES ON EARTH. PEOPLE TRAVEL THE WORLD TO SEE INTACT ECOSYSTEMS LIKE THIS," SAYS DEMOCRATIC SEN. MARIA CANTWELL OF WASHINGTON. "WE DON'T NEED THE OIL."

Without more information on the development: "Impact unknown."

Down in Arctic Village I sit with Sarah James in her small home. James and President Bill Clinton shake hands in a photo, near a "No whining" bumper sticker stuck to the fridge. James, 74, has traveled to Europe and the Earth Summit as an ambassador of the Gwich'in. "If you drill for oil here, you will be drilling into the heart of our people," she says.

James was given a lifetime job by G'wch'n elders back in 1978, at a tribal convocation, she says. "The leaders gave four of us authorization to go out and educate the world. They said, 'This fight is going to be huge. We'll need help.' They said, 'You are going to do this for the rest of your life.'" In the late 1980s, she lived in D.C. for a year, working with the Alaska Wilderness League and "eating a lot of Subway sandwiches."

With President Trump in the White House, says James, "everyone asks me what is going to happen to the Gwich'in people if they develop the refuge. I still have hope. But I don't know the answer."

HOW TO FIND balance? Where's the line between jobs and nature, natural heritage and new capital, energy and human culture? How much oil—even if you believe in development—is enough?

Some perspective comes from Richard Glenn, vice president of lands for the Arctic Slope Regional Corporation and a drilling proponent. He's a renaissance guy—piano player, scientist, whale hunter. It's quite possible, Glenn suggests with a bemused smile, that the fight over ANWR will go on for another 40 years. Indeed, Alaskan cynics have been known to say that the principal industry associated with ANWR is not oil but the lobbyists and fundraisers on either side.

It's also possible, he reminds me, that it'll turn out in the end that there's no oil in ANWR, if it ever does open up. It wouldn't be the first time an expected find turned dry. "We're like two people arguing over the contents of a closet," says Glenn. But neither knows exactly what the prize really is.

Bob Reiss is the author of The Eskimo and the Oil Man *and was the Anchorage Museum writer in residence in June 2017.*

Ford Finds a New Leader, By Design

CEO Jim Hackett brings an intellectual approach and an outsider's perspective to the job. Here's how he plans to transform the underperforming automaker.

BY **ADAM LASHINSKY**

ILLUSTRATION BY
CRISTIANO SIQUEIRA

SOME COMPANIES take a cookie-cutter approach to selecting their CEOs. They might favor home-grown talent, for instance, or engineers steeped in the company's products, or salespeople who excel at spinning a corporate yarn. The next CEO tends to look like the previous CEO, and will be followed by someone cut from the same cloth.

The Ford Motor Co., on the other hand, follows no discernible pattern at all. In the past two decades alone it has toggled from an operations whiz (Jacques Nasser) to a young scion of its founding family (Bill Ford) to an exec who was an automotive neophyte (Alan Mulally) and back again to another true-blue insider (Mark Fields).

With the unexpected sacking of Fields this spring and the appointment of 62-year-old former Steelcase CEO Jim Hackett, Ford has once again zigged where before it had zagged. Hackett isn't a car guy. And unlike Mulally, who had previously piloted Boeing's commercial airplane business, he hasn't run a giant industrial concern. Instead, Hackett is as close to an intellectual as the executive suite is ever likely to see, a strategist obsessed by so-called design thinking as a blueprint for doing business. As a young CEO, Hackett traveled annually to the chin-stroking TED conference long before it was cool. Over the years he has drawn inspiration from thinkers as diverse as "complex systems" theorist Geoffrey West of the Santa Fe Institute and the late University of Michigan football coach Bo Schembechler. (Hackett was a reserve offensive lineman for the Wolverines in Schembechler's heyday.)

HACKETT WANTS TO EXPAND FORD'S BUSINESS BEYOND JUST SELLING CARS AND TRUCKS: "WE DON'T WANT TO CEDE THE FUTURE TO ANYBODY ELSE."

Having led Steelcase from cubicle purveyor to designer of sleek open-plan offices, Hackett has a similar transformation in mind for Ford. Mulally kept Ford out of bankruptcy during the financial crisis and invigorated the automaker, but lately the company's momentum has stalled. Its profits have been in decline, it is behind on electric vehicles and self-driving cars, and its overreliance on the standout F-150 pickup truck leaves Ford a laggard in cities as the world becomes more and more urban. While rival GM's stock has soared 18% over the past year, Ford's share price has fallen 8%.

At a high level—a level where Hackett frequently dwells—his plan for Ford revolves around focusing the company on revenue sources other than making vehicles with internal-combustion engines. These include producing electric and autonomous cars as well as offering services like the Ford-owned Chariot "micro-transit" system and "curb-management" software that eases congestion in cities. In an interview, he refers to the opportunities in front of Ford as a "mobility smorgasbord"—mobil-

PREVIOUS SPREAD: ILLUSTRATION FROM A PHOTOGRAPH BY DAVID PAUL MORRIS—BLOOMBERG/GETTY IMAGES; BELOW: LUKE SHARRETT—BLOOMBERG/GETTY IMAGES

ity being a catch-all phrase for nontraditional revenues at Ford. Says Hackett: "We don't want to cede the future to anybody else."

As for specifics, Hackett is purposely vague for now. This summer he instituted a 100-day review of the company. And shortly before coming to San Francisco in mid-August for a Ford-sponsored conference on the future of cities, he presented his preliminary findings to a group of 300 top Ford executives in Michigan. Hackett talks in terms of corporate "fitness" and says he wants to speed decision-making at Ford. "I have some things that are going to be coming out in the fall," he promises.

ONE OF THE CLOSEST business relationships of Hackett's career is with the design firm IDEO, and specifically with its founder, David Kelley. Steelcase for years owned a controlling stake in IDEO, and Hackett and Kelley were so close that they constructed what they called a "worm hole" between Kelley's office in California and Hackett's in Grand Rapids, Mich. Using matching Cisco TelePresence systems, the two had cameras focused on each other's desks all day long. "I could engage him very efficiently," says Kelley, who also founded Stanford's famed d.school, ground zero for the study of human-centric design thinking. "It was all rather *Jetsons*-like," says Kelley. "I didn't have that with my wife, but I had that with Jim Hackett."

Creepiness of 24/7 workplace cameras aside, the Kelley-Hackett relationship speaks volumes about how Ford's new CEO intends to approach his job. Design thinking is something of a religion among its adherents, and Ford execs would do well to brush up on the gospel. At Steelcase, Kelley helped Hackett understand how contemporary office workers wanted to work. "They were building cubicles," says Kelley. "And it just hit Jim that the future was going to be about 'we' space as much as 'I' space." Kelley believes design thinking, properly applied, represents nothing less than the changing of the culture at an organization like Ford. "The old way was about disciplines. The new way will be about projects and understanding what people want."

Kelley is no mere bystander observing Hackett's efforts at Ford. Hackett retired from Steelcase in 2014 and served a brief stint as athletic director at his alma mater. (His tenure

O Left: Ford remains heavily reliant on sales of F-150 pickups, like these being assembled at a plant in Louisville. Below: Chariot, a San Francisco jitney service startup, gives Ford a new business in urban markets.

O DREW KELLY

stands out for one major coup: He successfully wooed San Francisco 49ers head coach and fellow Michigan alum Jim Harbaugh to Michigan to run the football program.) Before leaving Steelcase he had joined the board of Ford, and in 2016 he stepped off it to take a job at the company running "mobility services." One of his first acts was to set up Greenfield Labs in Palo Alto, with IDEO as the key partner. (The name is a nod to Henry Ford's outdoor museum in Dearborn, Mich.) There, Ford and IDEO work in secret on future Ford products. After becoming CEO, Hackett hired IDEO to work on a larger engagement at corporate headquarters.

Hackett uses design thinking to inform everything he does. He is using the process of "ideation" and rapid prototyping to review everything at Ford from how it runs its parts and services organization to how capital is allocated in the product-development process.

Design thinking isn't a completely new concept at Ford. Its Escape "crossover" vehicle, for example, is one of several that has a function that allows owners to open a hatch by passing their foot under the rear bumper, the better to off-load an armful of groceries without fumbling for a key. But IDEO's Kelley, who won't divulge what projects he's working on at Ford, predicts a radical change in corporate behavior. "There'll be a bunch of short prototyping projects," he says. "Most CEOs want a polished presentation. Jim wants to see the work really early on so he has some say over the direction."

IF THERE IS A CLEAR window into Hackett's vision of Ford's future, it is in the downtown San Francisco offices of Chariot, the three-year-old jitney service started by entrepreneur Ali Vahabzadeh. Chariot operates a commuter service that cleverly crowdsources routes based on where riders live and work. Using 14-passenger Ford Transit Wagons, it operates in San Francisco, Austin, Seattle, and, as of August, in New York City. It caters to individuals as well as to corporations who want to offer partly or wholly subsidized transportation but aren't big enough to operate their own "Google bus" fleet.

Chariot, says founder Vahabzadeh, employs all its drivers, just one of the ways it positions itself as the anti-Uber. "We don't want to be a niche business for the advantaged portion of the country," he says. "We're for the masses." For Ford, which bought Chariot last summer when it had just 12 employees—it has more than 100 now—the startup is a way to make money in cities without necessarily selling cars.

Hackett's hunch is that services like Chariot, bundled together, can constitute a new kind of vehicular operating system—and that Ford can own it. "We're working on a market basket of ideas," he says, around the concept of services for a network of smart vehicles. "It's going to have more applications that are really helpful. And the network that it rides on or works in is going to go from just having stop signs and traffic lights and painted lines to the Internet of things that are sensing the nature of what environments are pinging back and forth to each other. This isn't far-fetched at all."

Far-fetched or not, Hackett will have only so much time to prove his hypotheses. "Some of these business models aren't currently making money even though they have tremendous valuations on the private market," says Brian Johnson, an auto analyst with Barclays. "It's not clear he can make money on these." Instead, investors are looking for signs that Hackett can improve Ford's core business by rationalizing its product line, wringing out costs, and streamlining the company's supply chain. Hackett plans to go public with the first phase of his blueprint in an Oct. 3 meeting with Wall Street.

Already, Hackett is moving decisively. Fields, his predecessor, had maintained Mulally's "knights-of-the-roundtable" management-team approach by having more than 20 top executives report to him. Hackett slashed that to eight, and he deputized two Ford veterans—marketing head James Farley and operations chief Joseph Hinrichs—to run two of the company's most important traditional functions.

That leaves Hackett to think deep thoughts and also to reposition the automaker to respond to the needs of current and future customers—as opposed to simply designing snazzier cars or sturdier pickups. Ford is 114 years old, and currently has about 100 million vehicles on the road—a captive, installed base, in Hackett's view, for selling future goods and services. "Because we have the intersection of this magic, there's lots of different options in the way to move people, unlike in the past," he says. "So we're having a broader sense of defining what our options are to move people that Ford should have a hand in." And he's got to keep selling cars and trucks too. ■

HACKING HACKETT: THREE OF THE NEW FORD CEO'S KEY PRECEPTS

1

CHANGE ISN'T SO MUCH GOOD AS INEVITABLE
Hackett played football for famed Michigan football coach Bo Schembechler, and he's fond of quoting Bo, who believed, "we would either get better at what we do, or we would get worse. We would not stay the same."

2

FOCUS ON USERS, AND PRODUCTS WILL FOLLOW
Ford sponsors Motivate's bike-sharing service in San Francisco, and despite being in the car business, it has searched for insights, with design consultant IDEO, on self-propelled locomotion.

3

BE OPEN-MINDED
Hackett says Ford needs to think beyond cars. For example, he's studying urban congestion woes, including parking, for opportunities: "If you fix parking you might change the way people actually move themselves around."

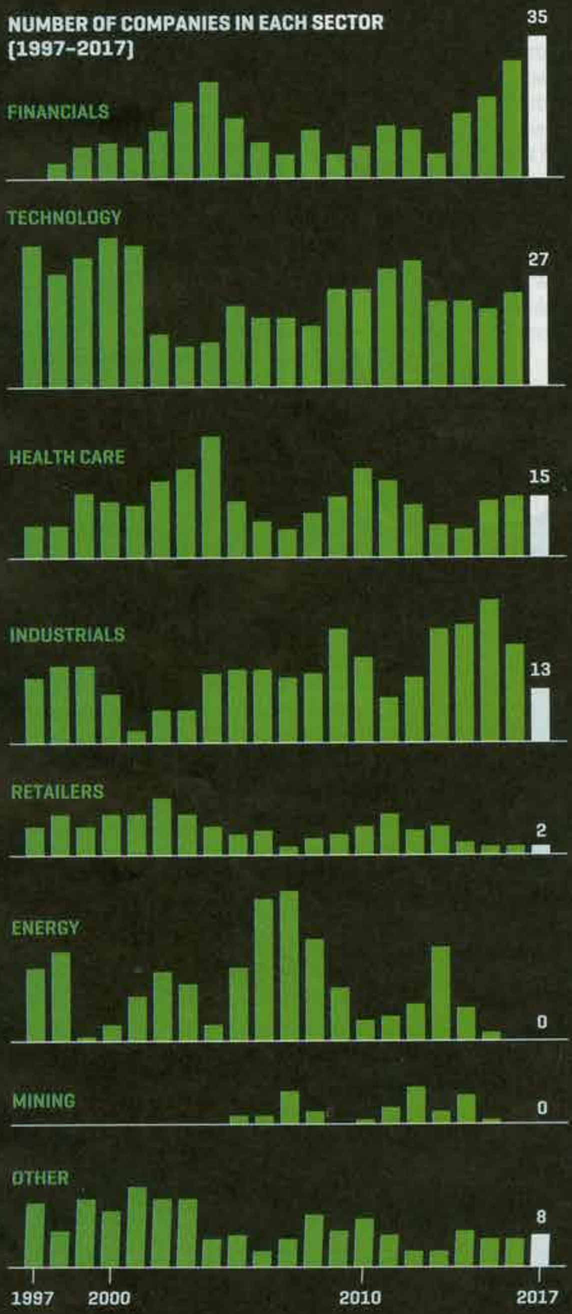
100 FASTEST-GROWING COMPANIES

EVERYBODY LOVES an up-and-comer. Whether in sports, music, or even business, there's something undeniably exciting about a fast-rising, fresh face. For this, the 31st edition of *Fortune*'s list of Fastest-Growing Companies—which reveals the top three-year performers in revenues, profits, and stock returns (the methodology is explained on page 112)—we present 100 companies on the ascent. For an in-depth look at one of the brightest of these corporate stars, LendingTree, see page 114. But first, explore the full list of high achievers on the pages that follow.

LIST BY **SCOTT DECARLO, DOUGLAS G. ELAM, AND KATHLEEN SMYTH** TEXT BY **SYDNEY AGUS, CHRISTINA AUSTIN, ROBERT HACKETT, BETH KOWITT, ADAM LASHINSKY, MICHAL LEV-RAM, ANDREW NUSCA, BRIAN O'KEEFE, JEFF JOHN ROBERTS, AND JEN WIECZNER**

THE MONEY'S IN THE BANKS

Nearly a decade after the financial crisis, the banking business is surging. A host of fast-growing regional and community banks made financials the best-represented sector on this year's list, followed closely by tech.



RANK 2017	RANK 2016	For an explanation of Fortune's methodology, go to the end of the list.	EARNINGS PER SHARE: THREE-YEAR ANNUAL GROWTH RATE (%)	EARNINGS PER SHARE: RANK
1	1	**NATURAL HEALTH TRENDS** *Rolling Hills Estates, Calif.*	112	7
2		**PAYCOM SOFTWARE** *Oklahoma City*	231	2
3	10	**LENDINGTREE** *Charlotte*	177	3
4	8	**ABIOMED** *Danvers, Mass.*	88	11
5		**MIMEDX GROUP** *Marietta, Ga.*	88	10
6	3	**FACEBOOK** *Menlo Park, Calif.*	67	19
7	27	**NETEASE**[1] *Beijing*	35	55
8		**ELLIE MAE** *Pleasanton, Calif.*	43	42
9		**AMAZON.COM** *Seattle*	121	6
10		**ARISTA NETWORKS** *Santa Clara, Calif.*	49	38
11		**AMN HEALTHCARE SERVICES** *San Diego*	61	26
12		**SILICON MOTION TECHNOLOGY**[1] *Kowloon, Hong Kong*	55	33
13		**NV5 GLOBAL** *Hollywood, Fla.*	28	78
14		**HESKA** *Loveland, Colo.*	73	15
15	26	**BANC OF CALIFORNIA** *Santa Ana*	48	39
16	19	**BEAR STATE FINANCIAL** *Little Rock*	93	9
17		**WALKER & DUNLOP** *Bethesda, Md.*	51	36
18		**VEEVA SYSTEMS** *Pleasanton, Calif.*	45	41
19		**AKORN** *Lake Forest, Ill.*	97	8
20	33	**DYCOM INDUSTRIES** *Palm Beach Gardens, Fla.*	72	16
21		**PACIFIC PREMIER BANCORP** *Irvine, Calif.*	34	58
22		**HOOKER FURNITURE** *Martinsville, Va.*	38	52
23	11	**TAL EDUCATION GROUP**[1] *Beijing*	20	97
24		**GRUBHUB** *Chicago*	67	20
25		**IES HOLDINGS** *Houston*	319	1
26		**CENTURY COMMUNITIES** *Greenwood Village, Colo.*	51	35
27		**CENTENE** *St. Louis*	30	72
28	2	**VIPSHOP HOLDINGS**[1] *Guangzhou, China*	63	24
29		**CENTERSTATE BANKS** *Winter Haven, Fla.*	56	31
30		**ESSENT GROUP** *Hamilton, Bermuda*	34	61
31	29	**MOLINA HEALTHCARE** *Long Beach*	56	32
32		**NEXSTAR MEDIA GROUP** *Irving, Texas*	125	5
33		**CONSOLIDATED-TOMOKA LAND** *Daytona Beach, Fla.*	63	25
34	62	**INTERCONTINENTAL EXCHANGE** *Atlanta*	60	29
35		**TUCOWS**[2] *Toronto*	61	27

GRAPHICS BY **NICOLAS RAPP**

†Through the quarter ended April 30, 2017.
[1]Incorporated in the Cayman Islands. [2]Incorporated in the United States.

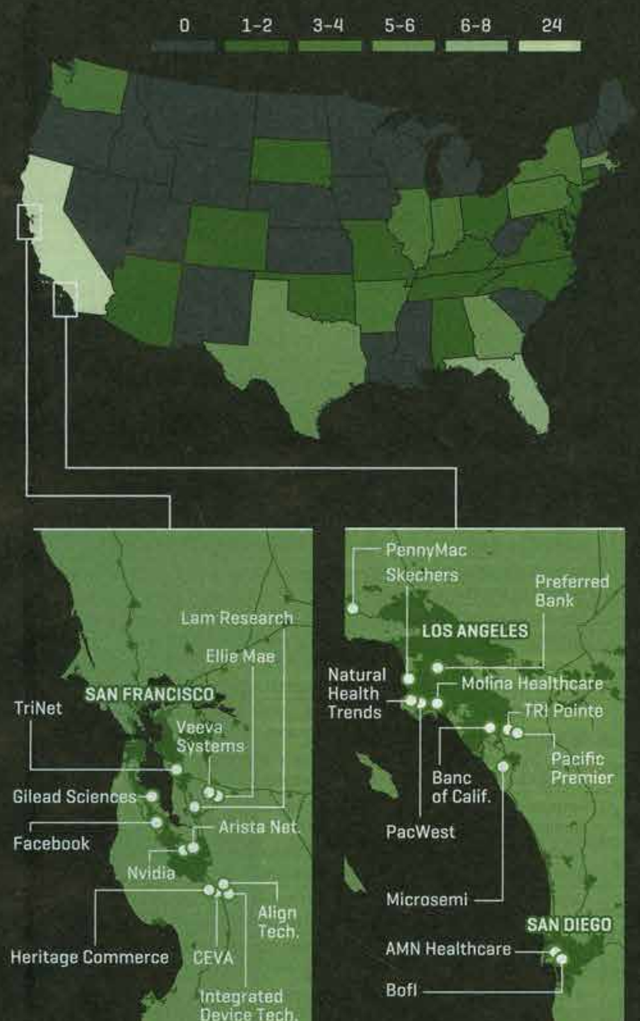
NET INCOME	REVENUE		REVENUE	TOTAL RETURN			
PAST FOUR QUARTERS† ($ MILLIONS)	THREE-YEAR ANNUAL GROWTH RATE (%)	RANK	PAST FOUR QUARTERS† ($ MILLIONS)	THREE-YEAR ANNUAL RATE* (%)	RANK	P/E, CURRENT FISCAL YEAR PROFITS (EST.)	
54	73	2	273	64	7	5^	The two-year reign of this multilevel marketer of health and beauty products may be ending. Sales in Hong Kong, its primary market, have plummeted lately.
51	47	17	359	67	5	98	The Oklahoma City payroll processor has been winning bigger customers and adding online HR and other financial applications, like tax-filing services.
29	44	23	422	81	3	85	In its nine years as a public company, the online loan broker has delivered a 47% average annual return to shareholders.
52	36	37	445	79	4	66	Maker of the first artificial heart, Abiomed's revenues have been racing on sales of the Impella heart pump for patients with heart failure, a growing market.
15	58	7	264	28	46	54	A designer of a kind of modern medical alchemy, MiMedx creates tissue grafts from recovered placentas that are used to treat soft-tissue wounds.
11,542	50	12	30,288	31	38	32	Still growing fast, Facebook has thrived by packing its platforms with mobile advertising and by building up acquired franchises like Instagram and WhatsApp.
1,860	63	4	6,253	59	10	19	This Web 1.0 Chinese Internet company—founded in 1997—has surged with online growth in China by offering services including advertising and games.
45	45	22	380	52	12	97	Low interest rates and robust home sales had been buoying this maker of loan-origination software for years—before sluggish sales bashed its stock in July.
2,582	22	68	142,573	44	18	229	The online retail giant has become a dominant purveyor of web-hosted software services. Its purchase of Whole Foods promises to make it a grocery titan too.
231	44	24	1,222	34	31	44	A Cisco killer run by a former top Cisco executive, Arista is benefiting from nimbler execution and better technology than its archfoe.
112	28	54	1,929	47	15	14	This health care staffing company has been on a shopping spree—completing three acquisitions in 2016, including an executive search firm.
111	36	35	571	36	29	13	The smartphone boom has propelled the biggest supplier of a key component of NAND flash, a data storage tech that doesn't require power to preserve data.
12	49	14	243	63	9	19	A nearly 70-year-old engineering and consulting services firm, NV5 gets more than half of its revenue from public and quasi-public sector clients.
14	18	87	133	112	1	57	Heartworm and digital imaging products have bolstered sales at Heska, a maker of veterinary diagnostic products primarily for dogs and cats.
113	40	26	634	30	40	24	Recapitalized in the aftermath of the financial crisis, the Banc of California launched foreign-exchange services and new banking teams last year.
19	58	8	95	**6**	89	17^	Buying Metropolitan National Bank in 2015 has boosted the community bank company, which operates 48 locations in Arkansas, Missouri, and Oklahoma.
142	24	62	640	51	13	11	The country's eighth-largest commercial and multifamily mortgage servicer is striving to nearly double its revenue to hit $1 billion by the end of 2020.
92	35	40	582	34	30	100	Veeva, a cloud-computing company focused on products for the life sciences industry, is now expanding into servicing other sectors like manufacturing.
183	55	10	1,102	**0**	95	22	Specialty drugmaker Akorn produces generic and branded prescription drugs in hard-to-make dosages like oral liquids and injectables.
163	20	80	3,076	42	20	17	A major push for fiber-optic networks in homes and offices is behind the stellar growth at the Florida telecom service provider.
41	38	32	194	38	27	21	The 34-year-old bank has lately been consolidating the California community-banking market, acquiring a company every year since 2011.
27	34	43	586	39	24	16	Hooker, a Virginia-based maker of home and office decor, cited a postelection run-up in economic confidence to explain its surging sales earlier this year.
115	46	18	1,043	65	6	78	More than 20 million students in education-hungry China now utilize TAL's in-person and online education programs.
57	47	16	537	**7**	86	53	Since merging with Seamless four years ago, the online food-ordering powerhouse has expanded its service to more than 1,200 U.S. cities plus London.
117	16	99	781	40	23	16^	Formerly Integrated Electrical Services, IES provides industrial infrastructure services in a range of areas—from mining to snow removal.
50	79	1	1,039	**4**	90	9	A comeback in housing demand has allowed the Colorado homebuilder to tap into thriving markets in Nevada, Texas, and, more recently, Charlotte.
717	53	11	45,378	28	44	16	Centene's 2016 acquisition of Health Net made it the nation's top Medicaid provider and helped boost its annual revenue by nearly 80%.
300	64	3	8,581	**-17**	100	19	This Chinese online bargain retailer has seen its number of active customers and total orders more than double in the past three years.
64	24	61	261	31	36	18	A takeover spree—five deals in three years—grew its reach to 78 branches; two more acquisitions in August made it Florida's largest community bank.
241	48	15	483	23	54	14	Founded amid the 2008 housing crisis to insure mortgage lenders and investors against loan defaults, Essent is thriving in the current real estate boom.
105	40	28	18,343	16	71	33	A major Obamacare insurance player, Molina ousted its CEO and CFO—both sons of its founder—in the spring and saw its stock spike.
76	35	41	1,388	**7**	88	19	The Texas telecom company has been broadcasting lots of good news to investors lately—like its handsome EPS growth of 125% in the past three years.
28	41	25	91	**8**	84	15	A real estate company, Consolidated-Tomoka's holdings include income properties and more than 8,100 acres of land in the Daytona Beach, Fla., area.
1,555	31	50	5,873	22	56	22	Investors have been bidding up the stock price of Intercontinental, whose holdings include the NYSE and several futures exchanges.
14	15	100	215	64	8	31	The Internet is a big place, so selling website addresses is a solid business for Tucows, the world's second-biggest domain name registrar and reseller.

* Through June 30, 2017. The S&P 500 returned 9.6% annually over the same period. **[Company returns lower than that of the S&P are bolded.]**
^P/E estimates for the current fiscal year are not available. The figure shown is the trailing 12-month P/E ratio.

CALIFORNIA, HERE THEY COME

When it comes to growth companies, the Golden State is the gold standard. California has 24 companies on this year's list, or nearly a quarter of the total. That's up from 19 in the past two years. And it's more than three times as many as Florida, which ranks No. 2 with seven companies on the list.

NUMBER OF LISTED COMPANIES PER STATE



NORCAL VS. SOCAL GROWTH

It's a tale of two sprawling metropolitan areas. In the Bay Area and Silicon Valley, growth is all about the tech industry, and semiconductor companies are heavily represented on the list. In Greater Los Angeles (plus nearby San Diego), banking and health care are surging.

RANK 2017	RANK 2016	For an explanation of Fortune's methodology, go to the end of the list.	EARNINGS PER SHARE: THREE-YEAR ANNUAL GROWTH RATE (%)	EARNINGS PER SHARE: RANK
36		**NVIDIA** *Santa Clara, Calif.*	43	45
37		**NUTRISYSTEM** *Fort Washington, Pa.*	61	28
38		**CIRRUS LOGIC** *Austin*	33	65
39		**UNITED FINANCIAL BANCORP** *Glastonbury, Conn.*	65	23
40	41	**PATRICK INDUSTRIES** *Elkhart, Ind.*	37	53
41		**BSB BANCORP** *Belmont, Mass.*	77	14
42	16	**JINKOSOLAR HOLDING**[1] *Shangrao, China*	66	22
43		**MICROSEMI** *Aliso Viejo, Calif.*	130	4
44		**LEGACYTEXAS FINANCIAL GROUP** *Plano, Texas*	41	46
45	7	**SKECHERS U.S.A.** *Manhattan Beach, Calif.*	53	34
46	76	**AMERIS BANCORP** *Moultrie, Ga.*	35	57
47	15	**SKYWORKS SOLUTIONS** *Woburn, Mass.*	47	40
48	43	**PACWEST BANCORP** *Beverly Hills*	38	50
49		**CAMBREX** *East Rutherford, N.J.*	43	43
50		**REGENERON PHARMACEUTICALS** *Tarrytown, N.Y.*	38	51
51		**MEDIDATA SOLUTIONS** *New York City*	67	21
52		**CEVA** *Mountain View, Calif.*	40	49
53		**AUTOHOME**[1] *Beijing*	29	76
54	21	**UNIVERSAL INSURANCE HOLDINGS** *Fort Lauderdale*	26	82
55		**CRITEO** *Paris*	34	60
56	68	**ULTA BEAUTY** *Bolingbrook, Ill.*	28	80
57		**TRINET GROUP** *San Leandro, Calif.*	80	13
58	83	**TRANSDIGM GROUP** *Cleveland*	69	18
59	13	**AERCAP HOLDINGS**[3] *Dublin*	30	71
60	53	**NORWEGIAN CRUISE LINE HOLDINGS**[4] *Miami*	41	47
61	86	**HERITAGE FINANCIAL** *Olympia, Wash.*	35	56
62	59	**SIMMONS FIRST NATIONAL** *Pine Bluff, Ark.*	33	62
63	17	**GILEAD SCIENCES** *Foster City, Calif.*	58	30
64		**META FINANCIAL GROUP** *Sioux Falls, S.D.*	21	93
65	91	**ALMOST FAMILY** *Louisville*	32	68
66	23	**YY**[1] *Guangzhou, China*	32	69
67		**INTERDIGITAL** *Wilmington, Del.*	71	17
68	48	**BOFI HOLDING** *San Diego*	34	59
69		**PENNYMAC FINANCIAL SERVICES** *Westlake Village, Calif.*	30	70
70	69	**BANK OF THE OZARKS** *Little Rock*	29	77

†Through the quarter ended April 30, 2017.
[1] Incorporated in the Cayman Islands. [3] Incorporated in the Netherlands.
[4] Incorporated in Bermuda.

NET INCOME PAST FOUR QUARTERS† ($ MILLIONS)	REVENUE THREE-YEAR ANNUAL GROWTH RATE (%)	RANK	REVENUE PAST FOUR QUARTERS† ($ MILLIONS)	TOTAL RETURN THREE-YEAR ANNUAL RATE* (%)	RANK	P/E, CURRENT FISCAL YEAR PROFITS (EST.)	
1,965	17	91	7,542	101	2	53	The market for graphics chips is booming, and Silicon Valley's Nvidia hasn't missed out on the fun, rewarding investors with a three-year return of 101%.
40	16	97	596	49	14	29	New diet programs to slim down its customers have helped Nutrisystem fatten up its profits to the tune of a three-year annual EPS growth rate of 61%.
261	28	53	1,539	40	22	16	Soaring demand for its audio and graphics processing chips has caused the Texas "fabless" semiconductor supplier's stock price to double in four years.
51	35	38	246	11	79	16	The owner of New England's United Bank reported record revenue and earnings per share this year thanks in part to strong loan growth.
60	27	55	1,289	33	33	18	This RV outfitter built its post-recession resurgence on some 30 acquisitions in complementary businesses, such as makers of home and office furnishings.
13	23	63	67	19	64	19^	Once a sleepy savings bank, this 132-year-old Massachusetts institution is emerging as a regional powerhouse.
234	45	21	3,354	**-12**	99	14	The Chinese solar power developer's sales leapt 30% to $3.1 billion last year, but concerns about oversupply might dim investors' ardor.
216	20	82	1,760	20	60	17	A spate of acquisitions along with growth in its defense and aerospace business has kept this California semiconductor company humming.
94	39	29	382	15	74	18	Revenue blows into LegacyTexas from dozens of bank branches in the northern part of the Lone Star State, and generous dividends blow out to shareholders.
240	23	65	3,673	25	51	18	Investors have come running to the footwear company thanks to big revenue gains driven by strong overseas sales.
81	26	58	359	32	35	18	Ameris Bank bought up banks on the cheap in the Southeastern U.S. to help it vault up the list from No. 76 last year.
915	22	71	3,353	28	45	18	Makers of smartphones, wearable gadgets, and Internet of things devices share an appetite for the semiconductor manufacturer's radio-frequency chips.
338	46	19	1,117	**7**	87	16	PacWest Bancorp has grown its top line through savvy acquisitions such as CU Bancorp, owner of L.A.'s California United Bank.
87	16	94	501	42	19	21	The N.J. biotech has grown on strong demand for its pharmaceutical ingredients. It has been expanding facilities in the U.S., Italy, and Sweden.
963	33	45	4,979	20	61	45	With four FDA-approved drugs, this biotech firm based in Tarrytown, N.Y., has seen its share price surge as much as 40% this year.
34	18	85	486	22	55	99	As complexity grows for clinical trials and studies, Medidata, which makes cloud-based software to help automate them, is profiting handsomely.
15	16	96	77	45	17	61	Bluetooth. LTE. 5G. DSP. CEVA licenses its intellectual property for these technologies to top companies like Apple and Intel, and the royalties are rolling in.
186	61	6	885	10	82	25	Autohome, which lets dealers advertise new and used cars on its website for a fee, is riding in the fast lane thanks to rising car ownership in China.
105	35	39	696	29	43	8^	One of the largest property and casualty insurers in Florida, Universal is now looking beyond the hurricane-threatened Gulf Coast for growth.
78	39	31	1,915	13	76	30	The French online ad targeter is benefitting from an expanding base of advertisers entranced by its effective algorithms.
446	22	72	5,096	46	16	31	The cosmetics and personal care purveyor is gaining market share thanks to a large network of profitable stores outside the declining shopping mall market.
79	21	75	3,135	11	80	36	TriNet, which makes HR software for small and medium-size companies, has been adding customers in droves and outperforming expectations.
590	17	92	3,360	20	59	24	High-flying TransDigm designs, produces, and supplies aircraft components and soars with proprietary products its customers can't get anywhere else.
1,085	62	5	5,071	**0**	94	9	The largest independent aircraft-leasing company, which specializes in "mid-life" aircraft (about seven years old), is benefiting from new-model backlogs.
622	25	60	4,947	20	63	15	Norwegian's 2014 acquisition of Prestige Cruises helped it generate record revenue. Dry-docking its ships for upgrades is making them more profitable.
39	26	57	171	22	57	20	The regional bank, which services the Pacific Northwest, finished its last fiscal year with a 10% increase in net loans—four percentage points over its projection.
95	37	33	444	13	77	16	Launched in Arkansas in 1903, Simmons now operates across four states, with more than 150 locations, and has $9.1 billion in total assets at its disposal.
12,637	32	48	29,101	**-4**	96	9	Hepatitis C treatments are an integral part of the biotech's product line. Recent approval for a competitor's comprehensive Hep C drug adds new pressure.
48	32	47	247	32	34	16	Founded in 1954 with just $10,000, this once-tiny South Dakota bank company now has more than $4 billion in assets.
17	18	86	671	41	21	20	The health and hospice provider got a big boost in sales due to its $129 million purchase of a majority stake in another caregiving leader, CHS Home Health.
266	57	9	1,255	**-8**	98	14	This China-based live-streaming site has a fast-growing user base—more than 122 million monthly users and counting.
315	16	95	653	19	66	21	Royalties from wireless patents have charged up the IP company's sales. Upcoming implementations of 5G networks should juice them again.
132	36	36	447	**9**	83	12	Bank branches are so 1999. Coincidentally, that is the year the mostly online BofI Holding—which operates just one branch—was launched.
72	45	20	1,251	**3**	91	7	Founded by the former No. 2 at the now-defunct mortgage lender Countrywide Financial, this lender is facing some new headwinds: a slowdown in home sales.
307	39	30	866	14	75	15	Shares of the community bank recently tumbled 12%. Why? Its vice chairman and president abruptly resigned, sparking concerns about the bank's health.

* Through June 30, 2017. The S&P 500 returned 9.6% annually over the same period. **(Company returns lower than that of the S&P are bolded.)**
^ P/E estimates for the current fiscal year are not available. The figure shown is the trailing 12-month P/E ratio.

GROW FAST. RINSE. REPEAT.

Achieving the kind of growth that lands a company on our list isn't easy. What's even harder? Sustaining it. Of the companies on this year's edition, Gilead takes the title for most total appearances with eight, despite falling off a few years ago. Four companies tied for the longest current streak: four years.

RANK 2017	RANK 2016	For an explanation of Fortune's methodology, go to the end of the list.	EARNINGS PER SHARE: THREE-YEAR ANNUAL GROWTH RATE (%)	EARNINGS PER SHARE: RANK
71		**ARGAN** *Rockville, Md.*	22	92
72	57	**MARTIN MARIETTA MATERIALS** *Raleigh, N.C.*	40	48
73		**LCI INDUSTRIES** *Elkhart, Ind.*	33	64
74		**CHURCHILL DOWNS** *Louisville*	29	74
75		**ENTEGRIS** *Billerica, Mass.*	50	37
76		**EBIX** *Johns Creek, Ga.*	28	81
77	87	**WESTERN ALLIANCE BANCORPORATION** *Phoenix*	24	87
78		**JAZZ PHARMACEUTICALS** *Dublin*	83	12
79	51	**ORBOTECH** *Yavne, Israel*	25	84
80		**HOMESTREET** *Seattle*	30	73
81		**NATIONAL GENERAL HOLDINGS** *New York City*	20	96
82	75	**TYLER TECHNOLOGIES** *Plano, Texas*	29	75
83		**MERCADOLIBRE**[2] *Buenos Aires*	17	99
84	28	**LAM RESEARCH** *Fremont, Calif.*	32	67
85		**TRI POINTE GROUP** *Irvine, Calif.*	43	44
86	12	**NOAH HOLDINGS**[1] *Shanghai*	17	100
87		**ILG** *Miami*	25	86
88		**PREFERRED BANK** *Los Angeles*	20	95
89		**MKS INSTRUMENTS** *Andover, Mass.*	23	88
90		**TRISTATE CAPITAL HOLDINGS** *Pittsburgh*	33	63
91		**ALIGN TECHNOLOGY** *San Jose*	23	90
92		**CUSTOMERS BANCORP** *Wyomissing, Pa.*	25	83
93		**SERVISFIRST BANCSHARES** *Birmingham, Ala.*	18	98
94		**BRIDGE BANCORP** *Bridgehampton, N.Y.*	22	91
95		**HERITAGE COMMERCE** *San Jose*	23	89
96	77	**GRAY TELEVISION** *Atlanta*	32	66
97		**INTEGRATED DEVICE TECHNOLOGY** *San Jose*	37	54
98		**THOR INDUSTRIES** *Elkhart, Ind.*	25	85
99		**PINNACLE FINANCIAL PARTNERS** *Nashville*	21	94
100	78	**HOME BANCSHARES** *Conway, Ark.*	28	79

[†]Through the quarter ended April 30, 2017.
[1]Incorporated in the Cayman Islands. [2]Incorporated in the United States.

2017 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 30, 2017, and have been trading continuously since June 30, 2014. Companies must have revenue and net income for the four quarters ended on or before April 30, 2017, of at least $50 million and $10 million, respectively, and have posted an annualized growth in revenue and earnings per share of at least 15% annually over the

NET INCOME PAST FOUR QUARTERS† ($ MILLIONS)	REVENUE THREE-YEAR ANNUAL GROWTH RATE (%)	RANK	REVENUE PAST FOUR QUARTERS† ($ MILLIONS)	TOTAL RETURN THREE-YEAR ANNUAL RATE* (%)	RANK	P/E, CURRENT FISCAL YEAR PROFITS (EST.)	
79	40	27	775	19	65	16	The Maryland-based holding company's portfolio includes an engineering and construction company, as well as a tech wiring firm.
423	21	76	3,874	20	62	26	This building materials supplier operates in more than half of the U.S. Business in the Southeast, particularly in North and South Carolina, has been robust.
137	19	83	1,754	29	41	18	LCI supplies parts for recreational vehicles and trailers. It has made more than 40 acquisitions in the past 15 years.
113	22	69	1,300	28	47	28	The company that runs the Kentucky Derby has expanded to casinos, and its portfolio includes the leading American online wagering company.
113	18	84	1,226	17	69	22	This Massachusetts electronics-parts supplier works with cell phone, computer, and other device makers, as well as car and drug manufacturers.
98	16	98	306	57	11	20	Ebix is a 41-year-old provider of software and other solutions to insurers with offices across the world in Brazil, New Zealand, and India, among others.
272	27	56	779	27	48	17	Operating primarily in Arizona, California, and Nevada, the bank exploits profitable niches such as financing for hotel franchisees.
408	18	88	1,528	**2**	92	21	Jazz, which became an Irish company after its merger with Azur Pharma in 2012, has a drug portfolio focused on narcolepsy and hematology.
79	23	66	804	29	42	14	Orbotech's tagline is the "language of electronics," and the Israeli company supplies solutions that enhance the manufacturing of tech, like circuit boards.
61	32	46	581	15	73	17	This bank has been in business since 1921 and offers services in the Pacific Northwest, California, and Hawaii, where it continues to open new branches.
157	50	13	3,877	**7**	85	12	An insurance-market dislocation finds National General Holdings, which offers personal lines insurance, in a plum position—particularly its auto segment.
124	22	70	776	24	52	53	Tyler Technologies makes software and services for local governments, and it's booking deals all over the country as municipalities seek efficiency.
155	22	73	961	39	26	63	MercadoLibre, a Latin American e-commerce company akin to Alibaba of China, is seeing sales soar as the region's economy begins to grow again.
1,430	16	93	7,215	30	39	13	As computer chips make their way into everything, Lam Research, which sells equipment that chipmakers use to build microscopic features, benefits.
175	26	59	2,374	**–6**	97	10	Residential homebuilder TRI Pointe (Maracay, Pardee, Quadrant, Trendmaker, and Winchester homes) has been outpacing guidance on new home deliveries.
93	30	51	380	27	49	18	A flood of new millionaires in China has lifted the Shanghai-based wealth manager, which now plans to open branches in Canada and Australia.
287	36	34	1,622	11	81	23	ILG, a major player in the time-share industry, manages more than 250 vacation resorts in 80 countries as a licensee for brands like Hyatt and Westin.
38	21	74	137	33	32	18	Founded in 1991 to cater to Chinese-Americans, Preferred today is one of California's largest independent banks, with an increasingly diverse customer base.
152	20	77	1,549	31	37	15	MKS provides equipment and systems to help optimize the manufacturing of high-tech products like semiconductors, flat-panel screens, and solar cells.
30	20	81	153	21	58	20	Formed a decade ago to serve middle-market businesses in three main markets—New Jersey, Ohio, and Pennsylvania—the bank is now in New York too.
219	17	90	1,151	39	25	50	Smiles are a booming business for Align, which makes 3D scanners used by orthodontists as well as the popular Invisalign clear teeth-straighteners.
86	34	44	363	12	78	11	Since 2009, the assets of the Pennsylvania community bank company have grown from $250 million to more than $10 billion.
84	20	79	241	38	28	21	From its base in Birmingham, this bank with a creatively spelled name serves customers around the Southeast. Its 2Q net income jumped 28% over last year's.
35	35	42	155	15	72	17	The parent of Bridgehampton National Bank operates some 40 branches, mostly on Long Island, and dates back to 1910.
28	23	64	107	23	53	18	What better place to be a bank than smack dab in the middle of Silicon Valley? That's the case for Heritage, which earned a record $7.4 million in the 2Q.
64	32	49	842	**1**	93	16	The demise of TV has been greatly exaggerated. Gray owns or operates stations in more than 50 markets that reach nearly 10% of U.S. television households.
110	18	89	728	19	67	21	Located in San Jose, Integrated serves its tech neighbors by providing semiconductor solutions for a range of products.
338	20	78	6,605	25	50	14	Thor is a power player in the RV industry, manufacturing motor homes and trailers under brand names such as Airstream, Land Yacht, and Four Winds.
139	29	52	510	18	68	18	Pinnacle Financial Partners' acquisition of three competitors within a calendar year exemplifies the growth of this Tennessee-based bank.
183	23	67	540	17	70	18	The acquisition of Stonegate Bank, announced earlier this year, will add 25 branches in Florida and over $3 billion in assets to Home Bancshares.

* Through June 30, 2017. The S&P 500 returned 9.6% annually over the same period. **(Company returns lower than that of the S&P are bolded.)**
^P/E estimates for the current fiscal year are not available. The figure shown is the trailing 12-month P/E ratio.

three years ended on or before April 30, 2017. ¶ *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 30, 2017. (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, companies about to be acquired, and companies that lost money in the quarter ended on or before April 30, 2017. 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 and Lexis Securities Mosaic.*

LendingTree founder and CEO Doug Lebda with Lenny the spokespuppet at the company's headquarters in Charlotte.

▲ PHOTOGRAPH BY JEREMY LANGE

AT LENDINGTREE, IT'S ALL FIST BUMPS—AND HYPERGROWTH

Business is booming at the online marketplace for consumer credit, and its stock has soared 120% this year alone. Better yet: The company's big idea—allowing borrowers to comparison shop online—is still gaining traction. **By Shawn Tully**

DOUG LEBDA DOESN'T ENJOY telling people that they're being stupid. For that, the founder and CEO of LendingTree, the booming online loan platform, typically turns to his friend Lenny. An irreverent personality, Lenny is more than happy to explain how you just got fleeced on your mortgage, and in blunt language. A typical Lenny-ism: "Taking the first mortgage offer you get is like marrying the first person you kiss."

It softens the blow that Lenny is small and green, with a big, open smile. Oh, and that he's a puppet. LendingTree hired Jim Henson's Creature Shop to create the wisecracking character in 2013, and since then Lenny has appeared in a series of TV ads for Lebda's company. "The idea was that Lenny could be more obnoxious than a real person, and tell people point-blank that they're idiots not to shop around" says Lebda.

Lenny's message appears to be getting through to consumers, who are flocking to Lebda's online marketplace for consumer credit. Despite a sluggish U.S. economy and stagnant loan market, LendingTree's revenue jumped 62% in the first half of 2017 vs. the year before. The company's revenues from connecting customers with competing mortgage lenders—which accounts for just under half of its business—grew by 28% in the first six months of 2017 despite a 4.2% overall decline in U.S. mortgage originations.

And LendingTree's fees from non-mortgage products—franchises encompassing personal loans, credit cards, and home equity—fared even better, rocketing up 112%.

Such explosive growth has propelled LendingTree's stock into the stratosphere. As of late August, its shares had soared 120% this year, to $223. Since going public in 2008, LendingTree has multiplied shareholders' money 30 times, delivering annual returns of 47%. Its nine-year record ranks third among all companies with market caps that now exceed $2 billion, trailing most notably the 50.1% annual gains at Netflix.

Thanks to this potent combination of business expansion and investment returns, LendingTree ranks No. 3 this year on *Fortune*'s 100 Fastest-Growing Companies list. But if you ask the CEO, there is plenty more growth to come for his two-decade-old company. Lebda, who has personally made $500 million on LendingTree in stock and options, justifiably claims that his brainchild is helping to lead a revolution in the way consumers buy financial services. "Lending is way behind every other industry in entering the Digital Age," he tells *Fortune*.

LendingTree offers consumers the same kind of platform for evaluating loans that, say, Expedia provides for hotels and eBay proffers for sundry products. Though money is the largest and purest of commodities, where choices should logically be based almost entirely on price, borrowers do far less comparison shopping online for loans than they do for pretty much any other type of product—even though the biggest purchase of most families' lifetime is a mortgage-funded home.

"WE WANT TO TURN THE TABLES," SAYS LEBDA. "TODAY, CUSTOMERS FEEL THANKFUL FOR GETTING A LOAN, AS IF THE LENDER HAD DONE THEM A FAVOR."

A recent study by the Consumer Financial Protection Bureau found that 47% of all homebuyers don't compare mortgage offers before choosing a lender. Yet the potential savings are gigantic, because the offers vary so widely in interest rates and points. A LendingTree survey found that customers who received five quotes on its platform for a typical 30-year home loan of $223,000 witnessed a difference of 52 basis points from the highest to the lowest quotes. Taking a 4.0% vs. a 4.52% rate would save the borrower $24,000 over 30 years.

The more consumers become aware of that math, the bigger LendingTree's future growth could be.

TO LEBDA, THE LOOMING digital disruption in financial services is as much cultural as financial. Today, getting a mortgage is the least web-enhanced of any big purchase. In the new era of tight credit, folks are extremely unsure of winning approval for a home loan. Hence, consumers still rely heavily on lending officers recommended by their realtors or financial advisers to steer them through the labyrinthine process. Choosing someone whom their realtor swears by trumps shopping for a lower rate. And when borrowers succeed in securing a home loan after four months of shuffling reams of paperwork, their overwhelming reaction is frequently gratitude to the lender for providing the funds to close. The whole "relationship" system discourages customers from shopping for the best prices.

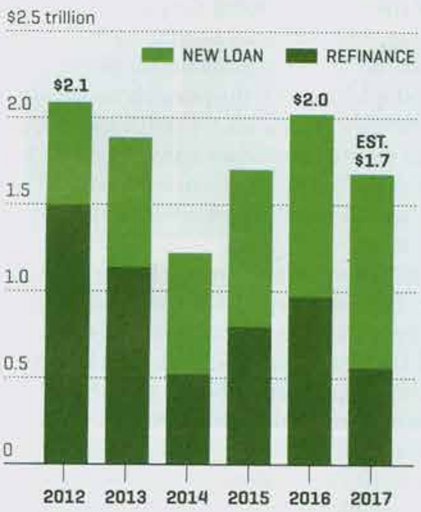
Lebda aims to put the customer in charge. "We want to change the balance of power," he says. "Today, customers feel thankful for getting a loan, as if the lender had done them a favor. We want the banks to come to you. That means making them compete directly by putting their offers side by side, so that customers can choose on what really matters in this business—prices measured in rates and points."

To grasp LendingTree's potential, it's essential to understand its mechanics. LendingTree does not make loans. It's a search engine that matches customers with lenders via its online marketplaces for a wide array of loans. For example, people seeking mortgages visit LendingTree.com, where they're guided through a series of around 20 prompts calling for such information as credit scores, the loan amount requested, and the proposed percentage down payment. Within moments of hitting the submit button, two pages of quotes pop up from a minimum of four, and maximum of five, lenders. This writer invented a profile using a better-than-average credit score of 700 and received 11 quotes from four lenders on a mythic $300,000 mortgage—five on a 30-year fixed loan, four on a 15-year, and two on a five-year adjustable-rate mortgage, or ARM.

The spread in pricing boldly illustrates the importance of bargain hunting. The best deal was 4.362% on the 30-year with an upfront fee (defined as "points") of $3,430. A rival was offering 4.689%, or 33 basis points more, with a higher fee. The differences were similar for the no-fee loans, competing quotes ranging from 4.625% to 4.375%. Choosing the lower number on the no-fee loan would save a borrower almost $4,000 over the first five years.

LendingTree generates revenue by selling leads. Every time one of its 400 lenders provides a quote for a customer seeking a mortgage, that lender pays LendingTree a fixed fee, whether it eventually writes that borrower a

TOTAL U.S. MORTGAGE ORIGINATIONS



LENDINGTREE MORTGAGE REVENUE

STOCK PRICE CHANGE SINCE IPO

SOURCES: LENDINGTREE; S&P GLOBAL

mortgage or not. The fee is determined in an auction similar to Google's system for selling clicks. The lenders bid for a place among the four or five slots depending on which types of customers, and how many, they seek to reach.

For purchase loans, the fees range from $3 to $35 per quote, or "match." "If a lender wants very large volumes, say they want to be guaranteed 2,000 matches a month, they would pay higher fees," says Neil Salvage, LendingTree's president. If a small lender seeks customers in targeted areas, such as four zip codes in North Carolina, they'll also pay higher fees. Getting referrals on the most creditworthy borrowers, those with high incomes and 800 credit scores, and the most likely candidates to qualify for the mortgage, also commands a premium.

Though it's a growth machine, LendingTree is far from a digital giant. It forecasts revenues for 2017 of just under $600 million, a figure too low to secure a place in the *Fortune* 1000. What excites shareholders, it seems, is how rapidly it's gaining traction, and its role in transforming the way Americans shop for money. Since 2013, loans generated from LendingTree leads have soared from 0.5% of the total U.S. mortgage market to an estimated 1.4% in 2017. So although the total mortgage market has shrunk from $1.9 trillion in 2013 to a projected $1.7 trillion this year, LendingTree's dollar volumes have more than doubled, from $9.6 billion to a yearly pace of $22.5 billion.

Those numbers make LendingTree by far the industry's dominant player. Lenders now originate 4% of their mortgages from online comparison-shopping platforms, and the figure is growing fast. LendingTree's portion, meanwhile, accounts for over one-third of the sector. The remaining two-thirds is divided among a number of rivals, including Bankrate, QuinStreet, and Zillow. LendingTree is also the leader in home equity, a separate category of home loans, where its market share has multiplied 19 times, to 1.9% since 2013.

What gives LendingTree its edge? Its scale is a big advantage. As the industry's pioneer, LendingTree's been building a powerful brand for two decades, far longer than its current rivals. It cycles two-thirds of its revenues into advertising, with big chunks going to TV spots and securing top placement on Google. "The heavy ad spending gives us a 'flywheel' effect," says Lebda, using an analogy from business strategist Jim Collins. "The more we advertise, the more leads we can generate for lenders. And the more leads we generate, the more lenders join our network. That adds more revenues, which generates more advertising. The flywheel keeps spinning faster." LendingTree also attracts customers by ranking lenders based on reviews from its multitudes of borrowers: For example, its biggest lender, Quicken, gets 4.0 out of 5 stars. Though lenders don't like getting publicly bashed by customers—a major reason that some of its rivals don't provide ratings—they tolerate LendingTree's ratings because they need its leads.

In the past couple of years, Lebda has aggressively diversified into underserved, high-growth areas such as credit cards and personal loans. Non-mortgage products, in fact, now account for 53% of

LendingTree's revenues. The company has been especially successful with personal loans. It's a rare lending category that's growing fast, and banks struggle to make money in personal loans, leaving the field wide open to digital newcomers.

LENDINGTREE'S TWO-DECADE HISTORY is a primer in the art of survival. In 1994, Lebda was seeking a loan to purchase a condo in Pittsburgh. "I looked up the rates in the newspaper," he recounts, "but the banks didn't offer the rates as advertised." So Lebda invented a platform where lenders would present real, actionable quotes online instead of the typical teaser rates that he'd encountered. Two years later as a 26-year-old MBA student at the University of Virginia's Darden School, he launched the precursor to LendingTree.

Lebda's startup initially prospered as the first company ever to provide online comparison shopping for financial services. But the dotcom bust hammered lending, and in 2003, Lebda sold LendingTree to Barry Diller's IAC for a handsome $734 million. ("That's probably a lot more than it was worth," Lebda remarks.) He rose to become president of IAC in 2006, overseeing the growth of such brands as Ticketmaster and Home Shopping Network. But in 2008, LendingTree was reeling once again, this time from the financial crisis, and IAC planned to spin it off. Lebda's mentor at the company was GE legend Jack Welch, who served as a consultant for IAC. "Jack walked into my office and said, 'You're crazy if you don't take your creation back when they sell it,'" Lebda recalls.

He took the advice. And in a reversal of fortune, the financial crisis caused a big shift in the mortgage market, hugely benefiting LendingTree. Banks retreated on home loans, issuing few purchase mortgages, and relying on the booming refi market for fresh business as rates plummeted. Refis are a lot more automated, more web-friendly, and easier to close than mortgages for purchase. So aggressive newcomers like Quicken and LoanDepot captured big shares of the refi market from the major banks. Unlike the banks, Quicken and LoanDepot relied on comparison-shopping sites for their leads. "It was the refi boom that lifted the nonbank correspondent lenders that got many of their customers from LendingTree," says Jeff Douglas, founder and CEO of Wyndham Capital in Charlotte, one of the new wave of lenders. Wyndham gets more than half its customers for its $1.8 billion in annual originations via referrals from LendingTree.

> "YOU'RE CRAZY IF YOU DON'T TAKE YOUR CREATION BACK," GE LEGEND JACK WELCH TOLD LEBDA WHEN IAC SPUN OFF LENDINGTREE.

Today the market is shifting once again—and this shift presents the biggest showdown yet between the new digital model epitomized by LendingTree, and the traditional, realtor-and-branch-driven channel to landing a mortgage. In this new, rising-rate environment, customers are shunning refis, in part because so many folks already refinanced their homes at great prices. Now, lending for purchase is rebounding, and the banks need those purchase volumes to compensate for the fall in the previous staple: refis. In the past, banks sought to generate their own leads for purchase loans, relying on realtors and advertising. "We didn't have any of the top 10 banks on our platform in 2013," says Lebda. "They were anything but early adopters."

To drive growth now, LendingTree is aiming to attract far more business both from the online lenders that have fueled its recent expansion and the traditional holdouts—big banks such as JPMorgan Chase, Bank of America, Wells Fargo, and Capital One. And the change in the mortgage mix is luring the latecomers. "The banks aren't generating sufficient organic volume in their branches now," says Lebda. "It's like a Marriott or Hilton when demand is low, they go to Expedia for the extra customers." Now most of the major banks are paying fees to obtain matches from LendingTree.

Lebda predicts that the more the banks automate their clunky lending process, the more business will flow to the comparison-shopping sites, and especially LendingTree. The easier the process becomes, the less power the branches, real estate brokers, and relationships will exert. "The banks are saying, 'People are going to the Internet. We need to catch this wave,'" he says. The banks, he reckons, are likely to gravitate to LendingTree because it can generate the highly targeted customers they need far more cheaply than serving them through branches and running their own ads on Google.

Still, Lebda isn't necessarily counting on a boom in fees from the big banks to lift LendingTree. He plans to grow either way. In his view, the old relationship model will fade as customers move to comparison shopping on the web, as they have in everything from hotels to airlines to books. If branch-heavy lenders don't move rapidly onto the digital marketplaces, he says, his big customers, the Quickens and LoanDepots, will simply keep poaching their traditional customers.

And the banks can't say they weren't warned. Lenny told them all along. ■

WHEN GUANGZHOU MEETS FORTUNE

Roadshows tell Guangzhou story

Since last December, a year before the 2017 *Fortune Global Forum* will take place in Guangzhou, the city has been holding road shows across the world to promote both the forum and the city itself.

The 14 events, with more than 2,000 enterprises and *Fortune Global 500* companies participating, have provided good opportunities for CEOs and high government officials to learn new economic opportunities and technological trends in this southern Chinese city. The promotions, initiated in Beijing and rolling across Paris, Hong Kong, New York, Washington D. C., Tokyo, Singapore, Taipei, Chicago, Munich, London, Shanghai, San Francisco and Barcelona, have created an upsurge of global media coverage on China's innovations, uplifting Guangzhou's image to a new high.

The promotions also provided the right interface for the world to learn about opportunities in China, especially amid an era of global economic downturn and a rise of trade protectionism. Sir Peter Bonfield, chairman of world-renowned NXP Semiconductors, said more and more European enterprises now hope to make forays into the Chinese market. When it comes to choosing a specific location, many enterprises only knew Shanghai and Beijing in the past. But now, they are looking for a new region with more opportunities.

Through the *Fortune Global Forum* promotions, major international enterprises also have become aware of the southern Guangzhou district and port of *Nansha*, which is both a pilot free trade zone and part of the booming Greater Bay Area of Guangdong-Hong Kong-Macao. As Cai Chaolin, director of the forum's Executive Committee, announced, "*Nansha* will become an investment hot bed for industrial movers and shakers."

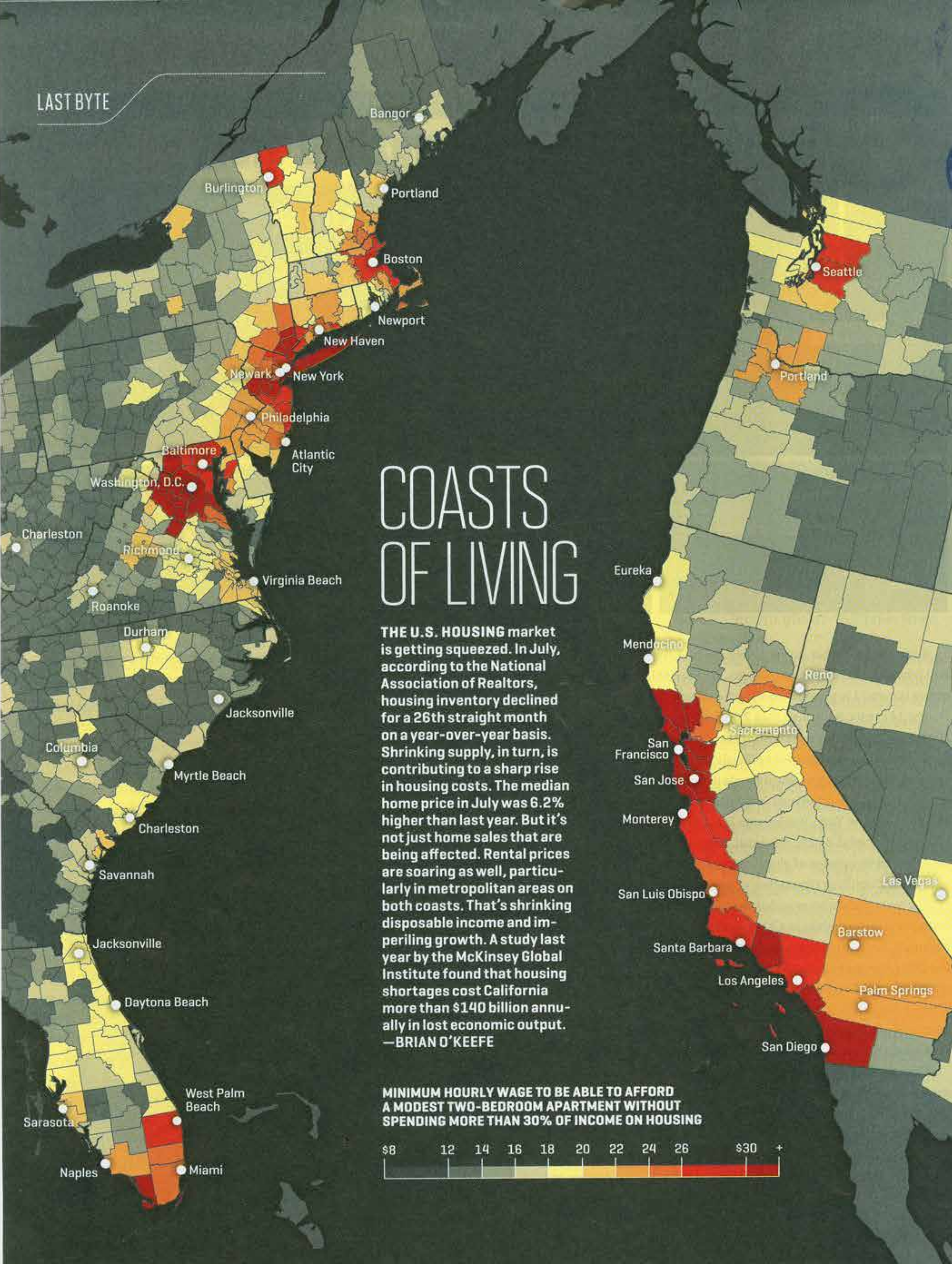
A 30-second promotional video, named "Guangzhou, Flower City in Bloom," was displayed at New York's Times Square during the Guangzhou's promotion in New York and Washington. The video features the city's iconic kapok flower in Cantonese embroidery, the landmark Canton Tower, the International Convention and Exhibition Center Complex at *Pazhou*, and a Guinness Record of a flying performance of 1,000 unmanned aerial vehicles (UAV). These and other scenes combine to present the world a beautiful, dynamic, open and friendly city.

Matching this lovely image of the city are Guangzhou's high rankings in global listings of various city matrix.

- In June 2017, Guangzhou was ranked 40th out of 361 global cities in the World Urban System Rankings, released by the Globalization and World Cities Research Network (GaWC), becoming a first-tier international city for the first time.
- In March 2017, Guangzhou was named the top Chinese city of opportunity for the second consecutive year in a study by the Chinese Cities of Opportunity, released jointly by PwC China and China Development Research Foundation.
- In March 2017, Guangzhou was listed for the first time by the Global Financial Centers Index (GFCI), compiled by Z/Yen and China Development Institute, ranking 37th as an emerging global financial center.
- In December 2016, Guangzhou retained its top spot among Chinese cities in the China Sustainable Cities Report 2016: Measuring Ecological Input and Human Development, released by the United Nations Development Program. The report showed that Guangzhou achieved a balanced development and the highest level of comprehensive development among Chinese cities.
- Over the past six years, Guangzhou has ranked first five times in Forbes' China List of Best Cities for Business.

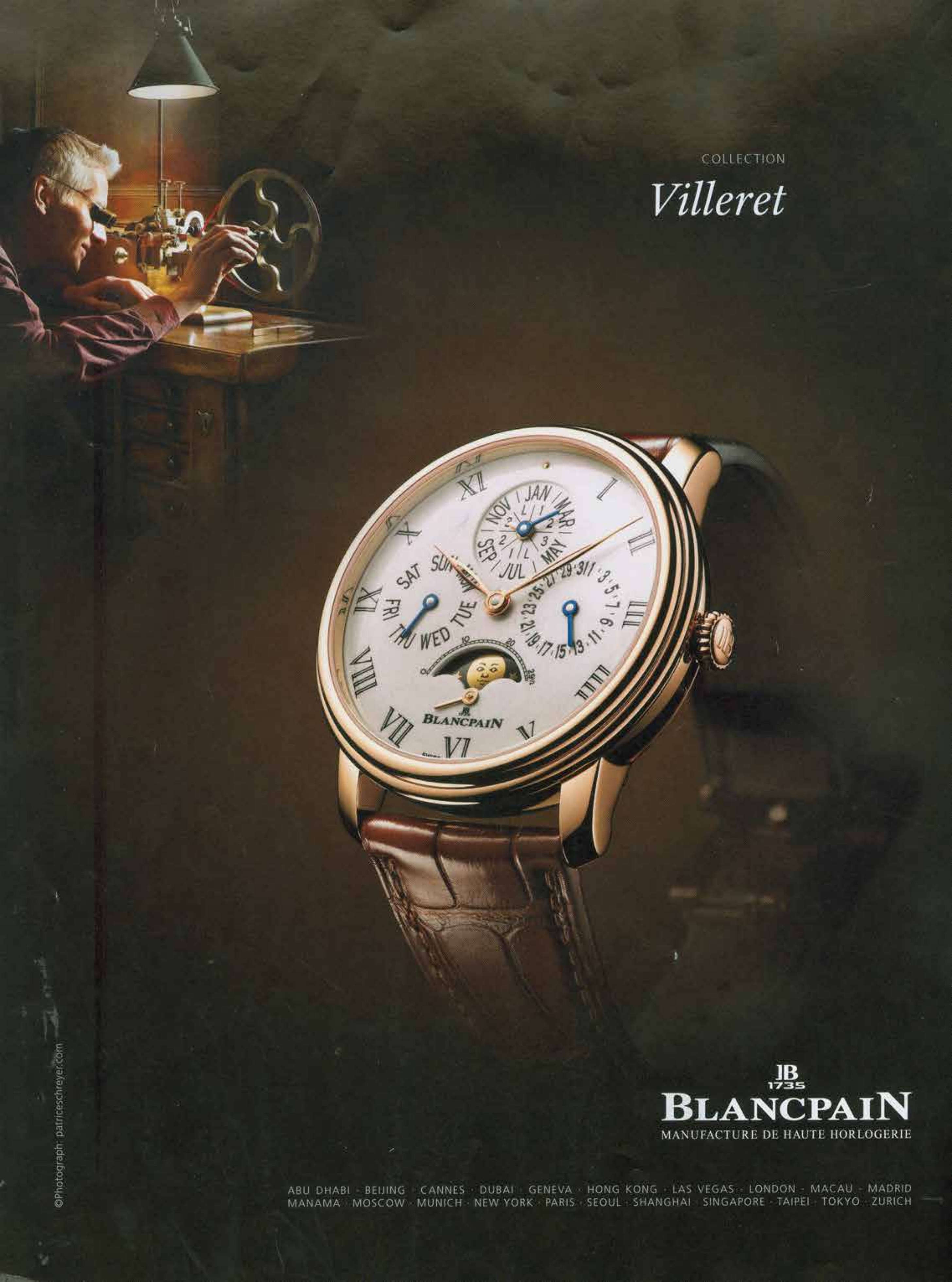
COASTS OF LIVING

THE U.S. HOUSING market is getting squeezed. In July, according to the National Association of Realtors, housing inventory declined for a 26th straight month on a year-over-year basis. Shrinking supply, in turn, is contributing to a sharp rise in housing costs. The median home price in July was 6.2% higher than last year. But it's not just home sales that are being affected. Rental prices are soaring as well, particularly in metropolitan areas on both coasts. That's shrinking disposable income and imperiling growth. A study last year by the McKinsey Global Institute found that housing shortages cost California more than $140 billion annually in lost economic output.
—BRIAN O'KEEFE



SOURCE: NATIONAL LOW INCOME HOUSING COALITION

GRAPHIC BY NICOLAS RAPP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