FORTUNE

NOVEMBER 1, 2016

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SPACE RACE

LOCKHEED & BOEING VS. MUSK AND BEZOS

THE PIXAR YEARS

HOW STEVE JOBS MADE HIS FIRST BILLION

NIKE AND THE PGA TEE UP IN CHINA

IBM WATSON'S HUMAN MASTER

THE NOTORIOUS SAC

INSIDE HEDGE FUNDER STEVE COHEN'S COMEBACK

STOCKS TO OWN

WHERE TO INVEST NO MATTER WHO WINS THE ELECTION

RED TAPE

HOW THE WRONG KIND OF REGULATION IS STRANGLING BUSINESS —AND WHAT TO DO ABOUT IT

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VOLUME 174 /// NUMBER 6

▲ ON THE COVER:
PHOTOGRAPH BY **THE VOORHES**

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CORRECTION

In "The Deep-Learning Revolution" (Oct. 1), we incorrectly wrote that Geoffrey Hinton was invited to Microsoft in 2009 by research cohead Peter Lee. In fact, Hinton was invited by Microsoft principal researcher Li Deng, whose group then experimented with neural nets for speech recognition. Lee did not join the company until 2010. *Fortune* regrets the error.

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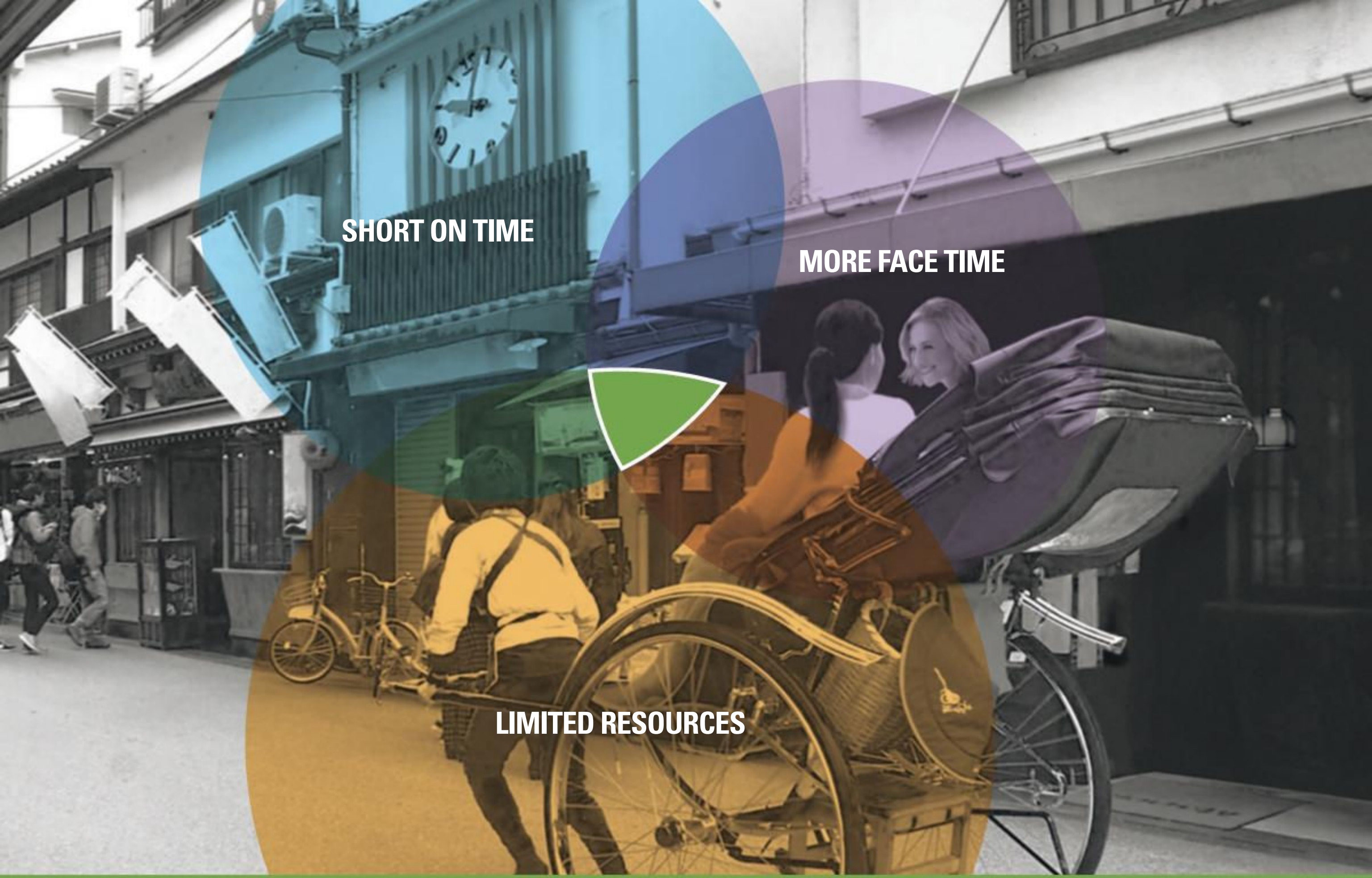

SHORT ON TIME
MORE FACE TIME
LIMITED RESOURCES

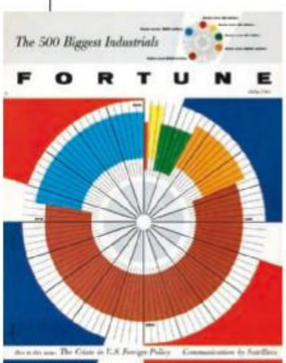
HOPE FOR THE DAY AFTER

THIS HAS BEEN an exceptionally difficult election for anyone who cares about the future of American business or the prospects for American prosperity.

On one side, the Democratic Party has turned increasingly antagonistic toward business. The clearest evidence of that is the strangling entanglement of new regulations that has built up since 2008 and is the subject of this month's cover story (see page 76). Antipathy grew further during the seemingly endless election battle, as a self-declared socialist came within a hairsbreadth of winning the party's nomination. Hillary Clinton's true leanings remain a matter of contradictory evidence, but she has adopted much of Bernie Sanders' fiery language, and if elected she will have to deal with his increasingly fierce supporters.

On the other side, Donald Trump has built his campaign on an attack on the very principles of globalization that fueled post–World War II prosperity. Moreover, he has catered to our basest instincts. His promotion of conspiracy theories, his fomenting of racist sentiment, his abusive comments and behavior toward women, his open adulation of authoritarian leaders, and his determination to trust gut over evidence all make him the least temperamentally suited candidate that either major party has put forward to lead the nation in modern times.

Business optimists imagine a postelection world in which a President Hillary Clinton lacks a clear majority in Congress and is forced to deal with Paul Ryan to negotiate a centrist agenda that addresses the concerns of both business and disgruntled Trump and Sanders voters. The outlines of such a deal are not hard to imagine: corporate tax reform and a moratorium on new regulations; increased spending on public infrastructure; an expanded earned income tax credit; and a much renewed focus on the training and education that American workers will need to survive in a rapidly changing workforce.



A glimpse back at a classic *Fortune* 500 cover, from July 1961.

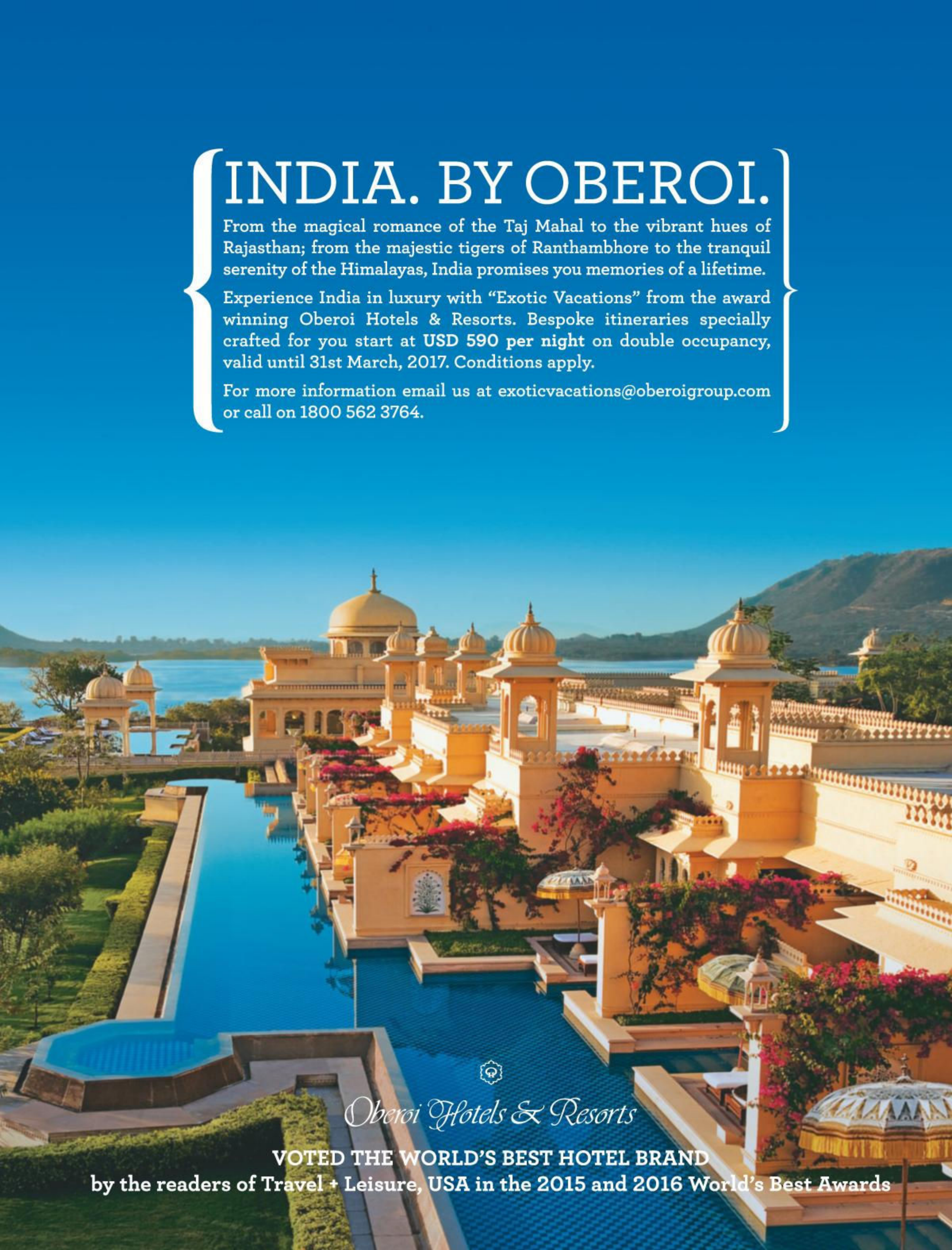
But any hope of such an outcome may founder on the final and potentially most damaging legacy that the Trump campaign threatens to leave the nation: discrediting the legitimacy of the election. The finest tradition of American politics, dating back to the days of George Washington, is that the election loser quietly exits the stage. But Trump's premature insistence that the election is "rigged" against him—by the likes of Clinton, Ryan, the "media," or anyone else who gets in his way—and rumors that he is preparing to build a media outlet of his own to continue the campaign set the stage for a battle that lasts well past Election Day. We hope that's not the case; there is much that needs to be done. But we fear it will be.

This cloudy political outlook reinforces the need for business leaders to take a larger role in addressing the issues that face our society. That's why *Fortune* and *Time* will be assembling a hundred of the world's top business leaders, along with other prominent private sector voices, in Rome next month to begin a conversation about what the private sector can do to make the global economic system work better for all. It's an important conversation, and one we plan to continue in the months ahead.

As a side note, you'll notice in this issue we have changed our look to adapt to changing times. The new design harkens back to the best of *Fortune* past but also provides a striking, clear visual representation that we believe will help carry us into the future. Our readers are united in facing the two great business challenges of our times—adapting to an unprecedented pace of technological change and creating a new social compact that will allow business to prosper. With its strong, clean new look, *Fortune* intends to be their trusted guide.

ALAN MURRAY
Chief Content Officer, Time Inc.
Editor-in-Chief, *Fortune*
@alansmurray

PHOTOGRAPH BY **WESLEY MANN**


INDIA. BY OBEROI.
From the magical romance of the Taj Mahal to the vibrant hues of Rajasthan; from the majestic tigers of Ranthambhore to the tranquil serenity of the Himalayas, India promises you memories of a lifetime.
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THE WORLD IN 7 PAGES

BRIEFING

NOVEMBER 1, 2016

VICTOR J. BLUE—BLOOMBERG/GETTY IMAGES

What Happens After the Election

Most Americans don't actually hate trade, business, or globalization. But this campaign season's tide of populist outrage will last long past November. BY TORY NEWMYER

CLOSER LOOK

IT WOULD BE EASY, surveying the political landscape these days, to conclude Americans are keen to slam the brakes on globalization. For the first time in modern history, the two major-party presidential candidates are competing to see who can sound more hostile to free trade. President Obama, despite riding some of the highest approval ratings of his presidency, faces long odds winning congressional approval as a lame duck for the massive Pacific Rim trade pact he has made a top second-term priority.

And the gusts of anti-globalization sentiment at home join a windstorm abroad, from Brexit to the collapse ▷▷

BRIEFING

▷▷ of negotiations on the Transatlantic Trade and Investment Partnership, a sweeping deal to link European Union markets to the U.S. Indeed, trade faces new resistance globally and is on pace to register its slowest expansion since the financial crisis. That fact contributed to the International Monetary Fund's cutting 2017 growth forecasts—to 3.4% globally, 2.2% in the U.S.—and warning that stagnation could fuel even more protectionism.

But at home, at least, the nativist pitchforks aren't as legion as they appear. It's true that pressure from her left during the Democratic primary forced Hillary Clinton to abandon support for the Trans-Pacific Partnership (TPP) she helped champion as secretary of state. And Donald Trump has gone even further, flouting decades of Republican orthodoxy with his pledge to throw up trade barriers, including slapping steep tariffs on goods from Mexico and China. Yet it's hardly clear that the Republican nominee's call to withdraw from the world will survive his candidacy.

For one thing, the presidential campaign itself has distorted the debate. Candidates have devoted outsize attention to Rustbelt swing states hardest hit by deindustrialization, largely skipping trade-friendly states like California, Louisiana, or Texas, already firmly in one party's column or the other. "The antitrade folks are very loud, well organized, creative, and persistent," says Bill Reinsch, former president of the National Foreign Trade Council. "But in big parts of the rest of the country, it doesn't play."

It turns out Americans are much friendlier to globalization than campaign rhetoric would have you believe. Sixty-five percent say it's mostly good for the U.S., according to a September poll by the Chicago Council on Global Affairs. Even more—70%—say globalization improves things for them personally as consumers, and 60% approve of the TPP. There's more evidence that while antitrade voices may be the loudest, they don't carry on election days: Liberal groups pledged last year to exact revenge on the 28 House Democrats who supported a procedural move to ease TPP's passage. Some faced primary challenges from the left, but none lost.

Still, reading their ranks, leaders on both sides of the Capitol say TPP doesn't have the support it needs. The White House is deploying a new pitch focused on national security, arguing the pact will check a rising China. But even allies acknowledge that the strategy amounts to a Hail Mary. And if it isn't approved before the next President is inaugurated, it will languish for the foreseeable future. That is, writ small, the challenge facing globalists: The arguments for more integration may be sound, but against a rising tide of skeptics, gains in global trade won't keep coming just because they have for the past half-century. ■

ANALYTICS: SEEING TRENDS IN THE DATA

■ PLACES OF INTEREST

OHIO, OURSELVES

THE BUCKEYE STATE has been considered a bellwether since at least 1840, when a newsman first uttered "As Ohio Goes, So Goes the Union" about that year's presidential contest. Many years later it remains a battleground and a reflection of a changing America with all its contradictions—the good, the bad, and the ugly. —**ERIKA FRY**

Ohio is the nation's eighth-largest exporter, shipping $50.7 billion, and roughly 47%, of its manufactured goods abroad in 2015. Still, the state is a stronghold of antitrade fervor, which was on display at Cleveland's 2016 GOP convention.

The hard-hit state bounced back from the recession—and 11% unemployment—quickly, thanks in part to trading partner Detroit's auto bailout. And, like a few other U.S. success stories, shale deposits in the state's northeast helped too.

Once a manufacturing mecca, Ohio is still home to 24 *Fortune* 500 companies, including Procter & Gamble and Kroger in Cincinnati. A good sign: The state's economy has diversified away from heavy industry in recent years.

The seventh-largest state remains relatively homogenous, with a population that is 79.8% white (compared with 61.6% nationwide). So far it has resisted the demographic trends of immigration that are turning many states blue.

■ ALCOHOL

FORGET STEMWARE. BEHOLD THE RISE OF WINE IN A CAN

CHANGE IN SALES OVER THE PAST YEAR

CAN: +176%

BOX: +6%

▲ GRAPHICS BY **NICOLAS RAPP**

RETAIL

STORES' BLEAK BLACK FRIDAY

3.3%

AMOUNT IN-STORE SALES ARE EXPECTED TO RISE THIS HOLIDAY SEASON

Here's the good news for retailers: Consumers appear eager to shop in November and December. Analysts are expecting the best season in years. The bad news? Stores are falling behind online.

17%

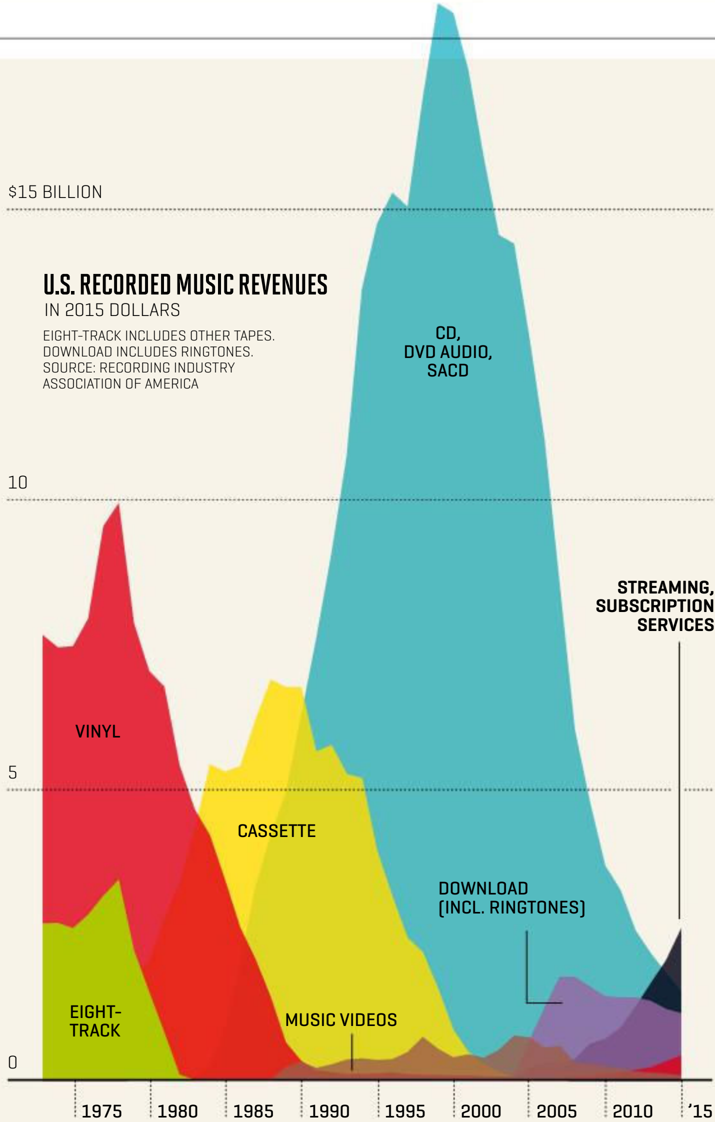
AMOUNT E-COMMERCE SALES ARE EXPECTED TO RISE

Data firm eMarketer projects sales will increase online five times as fast as in stores. Plus, e-commerce revenue will hit a big milestone, reaching 10% of all spending for the first time this year. Web traffic is also outpacing store visits.

50%

AMOUNT OF E-COMMERCE SEARCHES THAT START ON AMAZON.

The big winner here? Amazon. BloomReach data shows it's dominant online. Major retailers like Walmart and Target are already padding digital offerings in a scramble to catch up.
—**PHIL WAHBA**



MUSIC

THE RECORD INDUSTRY SEES A SAVIOR IN STREAMING

VINYL
As CD sales continue their descent, vinyl records have enjoyed an audiophile-driven resurgence—with record sales making up 31% of physical music sold in the first half of this year.

STREAMING
Downloading music, thought to be the future of the industry as à la carte iTunes purchases climbed, lost out to on-demand streaming, which brought in $385 million last year.

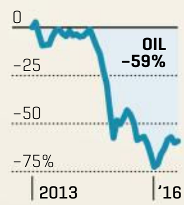
REVENUE
Record-industry revenues adjusted for inflation are nowhere near what they were in the '70s, but there's a bright side: They're starting to climb again, and margins too.

COMMODITIES

THE MANY EFFECTS OF OIL'S BIG BUST

WHEN THE price of oil tumbles, road trips aren't the only things that get cheaper. Low prices for crude and natural gas have also driven down the cost of producing food, and the price of fertilizers used to produce it. Shoppers, rejoice.

In the past five years the price of oil has collapsed ...



... helping drive a drop in fertilizer prices ...

... which adds to downward pressure on grocery bills.

SOURCES: EIA; WORLD BANK; BUREAU OF LABOR STATISTICS

BOTTLE: +5%

WINE—typically found in a bag, box, or bottle—now has a new provenance: the can.

The more-than-decade-old idea has recently caught on, with national retailers like Whole Foods and CVS carving out shelf space and big wine producers including E&J Gallo Winery and Terlato Wine Group jumping on the bandwagon.

Nielsen reports that canned wine is the fastest-growing segment in the U.S. Credit—or blame—millennials. Younger drinkers love the anticonnoisseur brands and their easy-to-pack single-serving sizes. But industry pro Rob McMillan warns the craze might not last as their palates develop. —**JOHN KELL**

RETAIL

IT'S MARATHON TIME. HERE'S WHO'S WINNING

PEAK MARATHON season is upon us, with major 26.2-mile races in Washington, D.C.; New York City; and Philadelphia all coming up this fall.

According to road-racing industry group Running USA, almost 2 million people ran a half-marathon in the U.S. in 2015, and 509,000 ran a full. That's down 8% from the previous year's high, but the market for running shoes is still picking up speed. Last year, Americans spent $3.2 billion on them, according to the National Sporting Goods Association, up 40% since 2010.

For hard-core runners, who tend to be more affluent than average, smaller brands hold sway. According to a Running USA survey of 10,000 people this year, Brooks was the most recently purchased shoe brand by serious runners (23%), followed by Asics and Saucony. —PHIL WAHBA

The brands marathoners are buying (sorry, Nike).

SOURCE: RUNNING USA

A group celebrates their citizenship in Canada, where newcomers are selected partly by economic potential.

Canada's Brain Gain Strategy

The U.S. should refashion its immigration laws to look like its northern neighbor's.

BY CHRIS MATTHEWS

POLICY

NO ISSUE has driven the politics of the 2016 election like immigration. Donald Trump has capitalized on economic and racial anxieties by promising to build a wall on the Mexican border. Liberals, meanwhile, have driven up Google searches for "move to Canada," worrying Trump will win.

A better solution for disillusioned voters isn't decamping for Canada, though, but emulating it—particularly when it comes to immigration.

According to a 2016 survey by the Public Religion Research Institute and the Brookings Institution, 61% of white working-class voters believe immigrants weaken the U.S. by taking jobs, housing, and health care. That compares with the 52% of college-educated whites who think immigrants strengthen the country.

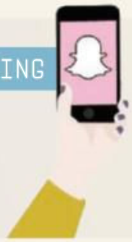
It's not surprising that attitudes toward immigration break down along class lines. The way the U.S. chooses which immigrants to allow into the country privileges immediate relatives of citizens over other types of immigrants—including skilled workers. That puts pressure on the wages of unskilled and middle-skilled Americans, helping fuel political backlash.

Which leads us to Canada. The country maintains support for high levels of immigration relative to its population by crafting a policy that allows people in based on their skills and ability to drive economic growth. Roughly 60% of new permanent residents over the past five years were admitted primarily for economic reasons, compared with just 26% for family reasons. That means that the other workers at their level are typically more educated and have more tools at their disposal to compete with new arrivals.

But there's one group Canadians don't see many of: Yankees. Fewer than 9,000 Americans emigrate north each year, despite whatever threats your uncle has made on Facebook.

BROOKS: COURTESY OF BROOKS; ASICS: ALAMY STOCK PHOTO; SAUCONY: COURTESY OF SAUCONY; NIKE: ALAMY STOCK PHOTO; NEW BALANCE: COURTESY OF NEW BALANCE; OTHER: COURTESY OF NIKE; GEORGE ROSE—GETTY IMAGES


The Subaru Legacy.®
Like snow other.
The 2017 Subaru Legacy. It's not just a sedan. It's a Subaru. Symmetrical All-Wheel Drive with 34 mpg* cuts through the snow. Being a 2016 IIHS Top Safety Pick+ with EyeSight® lets you take on the season with confidence. Winters will never be the same.
Love. It's what makes a Subaru, a Subaru.
SUBARU.
Confidence in Motion
Legacy. Well-equipped at $21,995†
Subaru, Legacy, and EyeSight are registered trademarks. *EPA-estimated hwy fuel economy for 2017 Subaru Legacy 2.5i models. Actual mileage may vary. †MSRP excludes destination and delivery charges, tax, title, and registration fees. Retailer sets actual price. Certain equipment may be required in specific states, which can modify your MSRP. See your retailer for details. 2017 Subaru Legacy 2.5i Limited pictured has an MSRP of $30,835.



TRENDSETTING

TECH COMPANIES NEED WOMEN

SNAPCHAT, the mobile messaging wunderkind, is eyeing an IPO at a jaw-dropping valuation of $25 billion. Much of the narrative surrounding the app has focused on its young, trendy users, but there's a more important distinction that's not getting as much attention: Most of those buzz-generating early adopters were women. In 2013, about when Snapchat first hit it big, the company's users were 70% female, CEO Evan Spiegel said at the time. (It has since evened out to roughly equal.) The picture looks similar if you examine the other major social networks—aside from LinkedIn—according to research firm eMarketer. Women are typically the first to join; men follow suit. Plus, women spend more time and money on mobile. Courting them has never been more important. —**VALENTINA ZARYA**

The Rise of the Ailment Shopper

Beset by health problems, Americans are turning to food as treatment—and spending billions to do so.

BY BETH KOWITT

FOOD

IT TURNS out that one of the biggest common denominators across the diverse U.S. consumer base is illness. A recent survey by Nielsen found that 39% of shoppers suffer from some kind of condition, ranging from allergies to acid reflux to Alzheimer's.

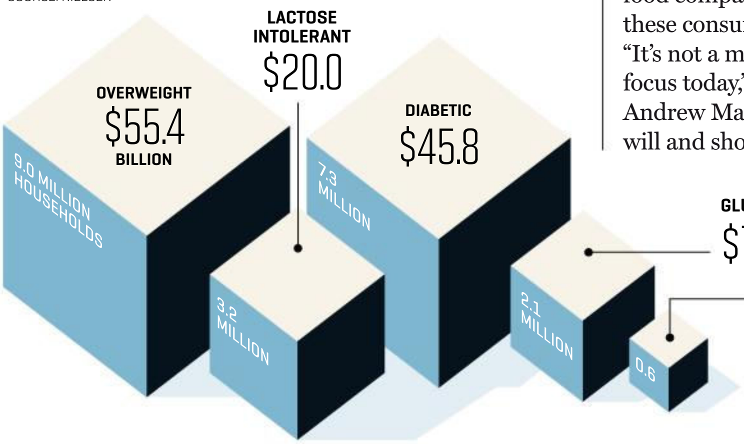
For many of these shoppers, Nielsen says, food is one way they seek to mitigate their symptoms. People reporting gluten intolerance, as we know, have in part fueled a surging demand for gluten-free food. Consumers with obesity disproportionately buy products that are low in sugar and fat compared with the general population. And, notably, the 7.3 million of those households with at least one diabetic who say some of their supermarket purchases are motivated by specific sugar requirements, spend a whopping $27 billion on food every year.

These "ailment shoppers," in industry parlance, using food as treatment, represent about 20 million households and more than $120 billion in annual grocery spending. The total is likely to rise too, particularly as the cost of traditional health care climbs.

Expect the number of food companies targeting these consumers to grow. "It's not a mainstream focus today," says Nielsen's Andrew Mandzy, "but it will and should be."

MONEY SPENT AT FOOD RETAILERS BY SHOPPERS TREATING ILLNESS THROUGH WHAT THEY EAT

SOURCE: NIELSEN



CRIME

A STOCK TRADER LOSES IN COURT. IT'S NO REASON TO CELEBRATE

WALL STREET CRITICS often complain that market manipulators never go to jail. Tell that to Navinder Singh Sarao, who lost his fight against extradition from the U.K. to the U.S. in mid-October. Sarao, who has said he did nothing wrong, is accused of causing the May 2010 stock market "flash crash." Some question whether a lone thirtysomething in London could have been responsible for the mayhem. Even if he was, the maximum sentence he faces—350 years—seems extreme. Bernie Madoff only got 150. A lack of financial prosecutions has left populists looking for sacrificial lambs; Sarao may wind up wearing wool.
—**STEPHEN GANDEL**

CARL COURT—GETTY IMAGES; ILLUSTRATION BY ANNA PANINI


essilor
DINNER MENU
ANTIPASTI
BRUSCHETTA
FRIED CALAMARI
SOUPS
MINESTRONE
ZUPPE DI POMODORO
STRACCIATELLA
SPECIALTY PASTA
ordinary
progressive lens
Dramatization
DINNER MENU
ANTIPASTI
BRUSCHETTA
FRIED CALAMARI
SOUPS
MINESTRONE
ZUPPE DI POMODORO
STRACCIATELLA
SPECIALTY PASTA
VARILUX®
progressive lens

Wind Is Getting Really, Really Cheap

The first offshore wind farm in the U.S. marks a turning point for the industry.

BY KATIE FEHRENBACHER

One of Block Island's turbines spins off the coast of Rhode Island.

ENERGY

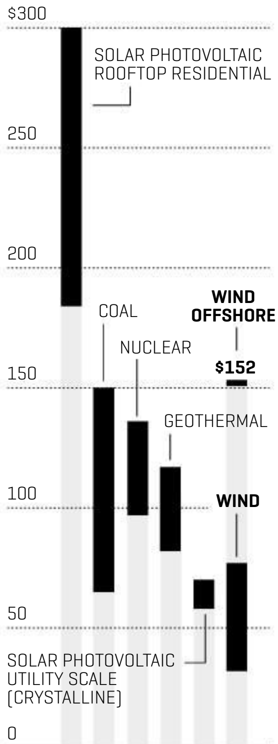
WHEN FIFTEEN 240-foot-long spinning fiberglass blades off the coast of Rhode Island finally start converting wind into power before the end of this year, history will be made. The Block Island wind project—five 560-foot-tall wind turbines attached to the seafloor via steel—will be the first offshore wind farm operating in U.S. waters.

Previous efforts to build wind farms off the East Coast have famously failed (Ted Kennedy helped torpedo one to protect the view from his Cape Cod estate), but there are now almost a dozen planned for the region.

What changed? Over the past six years the price of wind energy has plummeted, finally becoming cost-competitive with traditional power. And while offshore farms are still significantly more expensive, they have become increasingly appealing for coastal states with little open space, large urban populations, and soon-to-be-retired nuclear plants.

In Europe, offshore wind already powers over a million homes. Denmark's DONG Energy went public this summer in one of Europe's largest IPOs of 2016. But to get to that level, the U.S. industry will still need government incentives, like the game-changing law Massachusetts passed this past summer that requires the state's utilities to buy 1.6 gigawatts of energy from offshore wind farms over the next decade. Expect plenty more ocean views to feature turbines.

COST OF ENERGY (RANGE)
$/mwh, UNSUBSIDIZED



SOURCE: LAZARD

BEST OF OUR IN-BOX

EMAIL

"The slower add process and stirring causes the rice to give up its starch which gives the risotto its creamy consistency."

—Hillary Clinton campaign chairman John Podesta, in one of the lighter emails released by WikiLeaks after the Clinton campaign was allegedly hacked.

TWEET

"If @WellsFargo's John Stumpf is leaving with all of his ill-gotten millions, that's still not real accountability."

—Sen. Elizabeth Warren, saying the Wells Fargo CEO's resignation didn't mean the bank had fully answered for its phony-account scandal.

PRESS RELEASE

"Consumers with either an original Galaxy Note 7 or replacement Galaxy Note 7 device should power down and stop using the device."

—Samsung, on retiring its smartphone that kept catching fire.

WIND TURBINE: ERIC THAYER—BLOOMBERG/GETTY IMAGES; PODESTA: PATRICK T. FALLON—BLOOMBERG/GETTY IMAGES; WARREN: SAUL LOEB—AFP/GETTY IMAGES; SAMSUNG: KIM HONG-JI—REUTERS

You're Already Good. Here's How to Step It Up

Fortune reviews three major releases this season that promise to help you elevate your thinking, motivation, and creativity in work and in life.

EXECUTIVE READ

THANK YOU FOR BEING LATE: AN OPTIMIST'S GUIDE TO THRIVING IN THE AGE OF ACCELERATIONS by Thomas L. Friedman

The globe-trotting *New York Times* columnist's most famous book was about the world being flat. This one is all about the world being fast. Globalization, along with breakneck technological and environmental shifts, is driving change at a faster pace than most people, companies, and governments can manage, Friedman writes. The book is a sprawling exploration of the state of the world—awesome, but kind of scary by Friedman's rendering. His main piece of advice for individuals, corporations, and countries is clear: Take a deep breath and adapt. This world isn't going to wait for you.

PRO TIP: Make time to connect with people: In a digital era, face-to-face contact becomes increasingly important. —ERIKA FRY

PAYOFF: THE HIDDEN LOGIC THAT SHAPES OUR MOTIVATIONS by Dan Ariely

A surprisingly empathetic and practical volume, behavioral economist Dan Ariely's slim, 100-page primer on motivation will be the book you wish your boss had read. Positive feedback, mutual respect, and a sense of connection to a larger purpose, he finds, are crucial to happiness and productivity at the office and beyond.

Ariely is a working academic and illustrates his thesis through a series of experiments: In one, he gives two groups of people word puzzles. For the first group, researchers check participants' work; for another group, they shred it without looking at it. The people whose efforts were acknowledged did significantly more work for less pay.

PRO TIP: Bored with your job? Try to change your mental framing. Ariely gives the example of a man tired of his duties cleaning hospital instruments—but once he internalized that his job was crucial for patient safety, he found renewed energy and got a promotion. —ANNE VANDERMEY

MESSY: THE POWER OF DISORDER TO TRANSFORM OUR LIVES by Tim Harford

Embrace chaos to tap into your true creative potential. That's the premise of the latest book from Tim Harford, of *Undercover Economist* fame. The British author argues in favor of welcoming messiness into our lives as a gateway to innovation—and ultimately success—even as he explores the psychology behind why we cling to tidiness for the order and safety it promises.

Harford deftly weaves together real-life examples of notable figures who cozied up to disorder to varying degrees on the road to success, from Steve Jobs' fascination with serendipity to the bedlam of Donald Trump's shocking rise to the top of the Republican Party.

PRO TIP: Prioritize three tasks for the day and alternate work on each based on when inspiration strikes. —TOM HUDDLESTON JR.

BOOK COVERS: COURTESY OF COMPANIES

ILLUSTRATION BY JAVIER JAÉN

#haveKINDLEwillTRAVEL
GOZO, MALTA
JAMES FREY, BRIGHT SHINY MORNING
@ AMAZONKINDLE
amazon

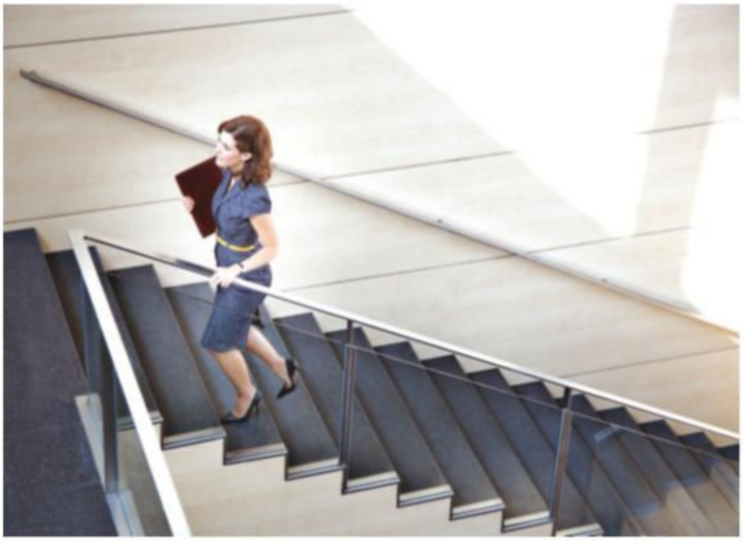
THE SLIPPERY SLOPE OF **WORKPLACE FALLS**

WORKPLACE FALLS ACCOUNT FOR MORE THAN $15 BILLION OF THE $62 BILLION EMPLOYERS PAY EACH YEAR IN DIRECT WORKERS' COMPENSATION COSTS.

GREAT STRIDES HAVE BEEN MADE in making workplaces safer, but the risk for injuries still persists. Even a minor elevation change between rooms or a dimly lit stairwell can result in fall-related injuries and a hit to a company's bottom line.

Falls are a top cause of serious workplace injuries and account for more than $15 billion of the $62 billion employers pay each year in direct workers' compensation costs, according to the latest Liberty Mutual Workplace Safety Index. Add the indirect costs of workers' compensation and general liability claims arising from falls and safety clearly becomes a key concern for businesses.

What makes preventing falls so important is that everyone is susceptible to them. In fact, 12% of U.S. adults report falling each year, with the number almost evenly split between young, middle-age, and older adults, according to a peer-reviewed study by Liberty Mutual published in the March issue of PLOS ONE, a leading open access scientific journal. This adds up to roughly 80 million falls, almost 10 million injuries, and $111 billion in total costs for fall-related injuries that resulted in death, hospitalization, or an emergency room visit.



WHAT BUSINESSES CAN DO

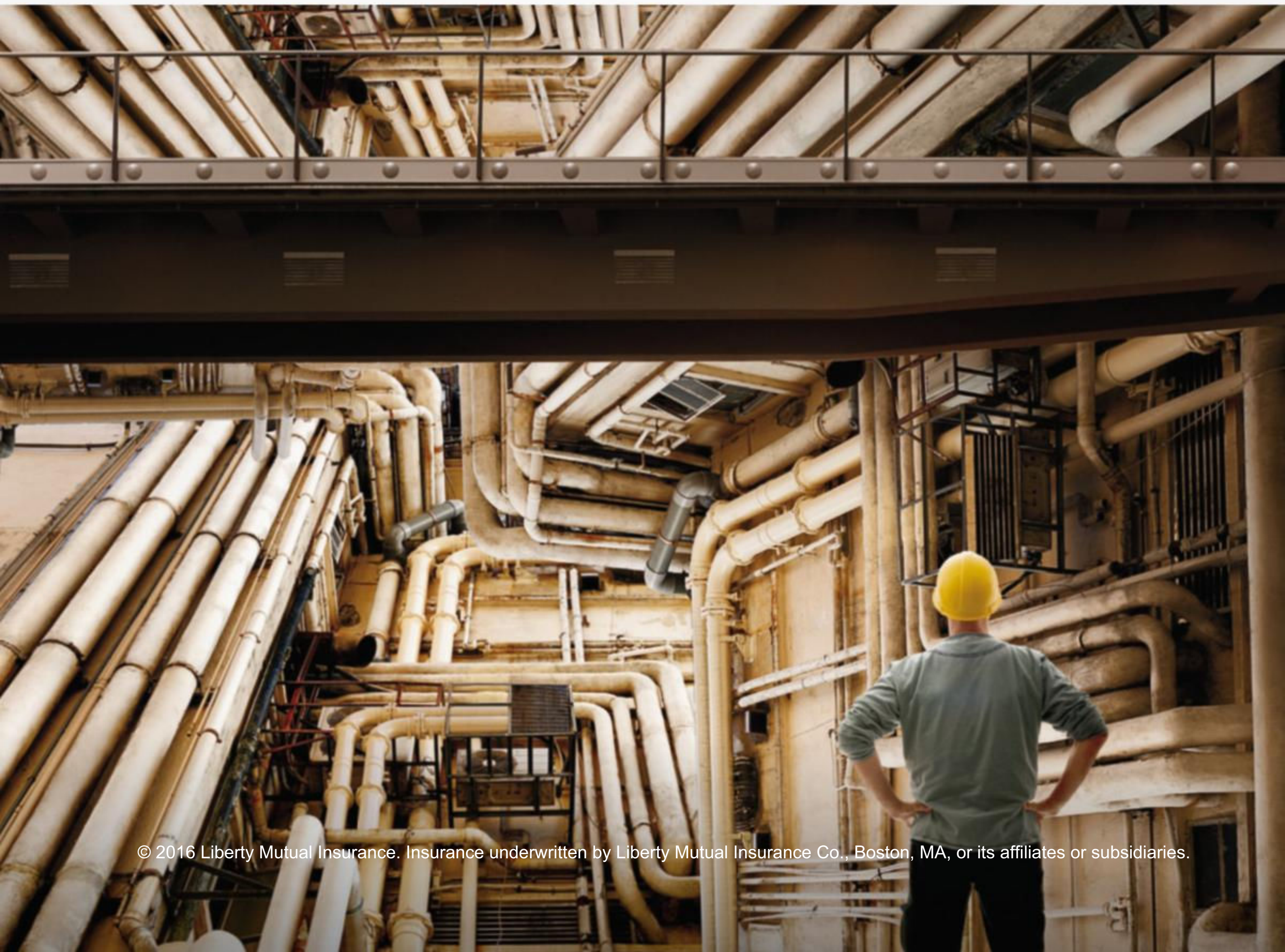
To stem this tide, companies can take proactive steps to create a culture of workplace safety. "You don't want to become aware of a safety problem after an accident occurs," explained Jamie Merendino, Vice President and General Manager for Risk Control Services at Liberty Mutual Insurance. "To be in front of such risks, you need to establish safety as a strategic workforce priority."

On top of this commitment, companies can consider the following practices to reduce the risk of falls and related injuries:

- **ALTER FLOORING SURFACES** to reduce slipperiness in wet or oily conditions.
- **CLEARLY MARK AND QUICKLY CLEAN UP** spills and wet areas.
- **TRAIN EMPLOYEES** on how to use different floor cleaners: some cleaners, for example, have enzymes that are neutralized when mixed with hot water, rendering them ineffective at removing oil and grease.
- **ADD MIRROR SYSTEMS** in locations with blind corners; add better lighting in unusually dark areas.
- **REMOVE WORKPLACE CLUTTER**, like equipment and tools, or secure it in an area with adequate warning of the hazard.
- **MANDATE THE USE** of certain footwear for specific operations.

THE UPSHOT: Take workplace falls very seriously. Companies can play a key role in addressing this public health issue, which affects not only society, but also companies' brands, employee engagement, and bottom lines.

— *RUSS BANHAM*



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Kevin Wagley | Head of National Healthcare, Managing Director
Kevin.Wagley@53.com

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FOCUS

PRACTICAL EXPERTISE

TECH

TONI REID

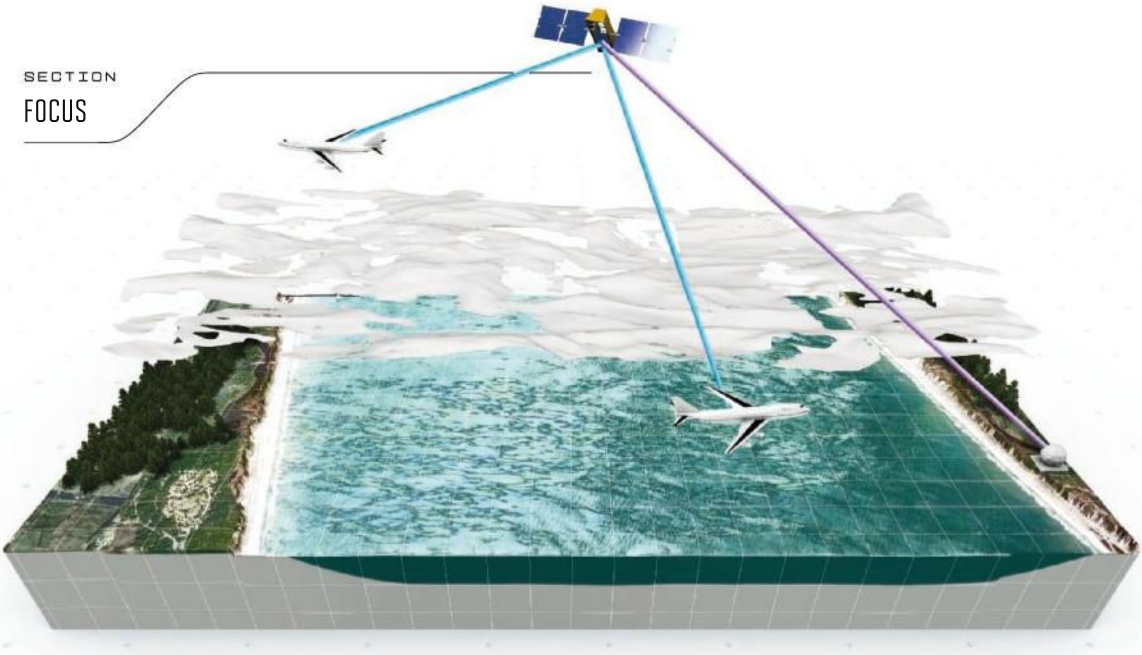
DIRECTOR OF PRODUCT, AMAZON

AGE: 44
FROM: Seattle
VETERAN AFFAIR: Reid has spent almost her entire career at Amazon, where she is now director of product for its Amazon Echo devices and Alexa unit. She carries a purple badge that designates employees who have been at the company for 15 years or more. With each new Amazon role, "I feel like I've taken a job at a new startup," she says.
FAST FRIEND: Reid leads the team behind Alexa, Amazon's artificial-intelligence-powered, voice-activated assistant, which controls Echo, its popular home automation device. A recent development: training Alexa to turn down music playback when a person asks her a question. "We tried to emulate what a real person would do," Reid says.
FAIR WARNING: Reid set up her own Echo device to tell her if it is raining in Seattle so that she grabs her umbrella.
LIFT TICKET: When Reid isn't driving her daughters (ages 10 and 13) to soccer games, she loves to snowboard and ski. Says Reid: "The weekends are for time with my kids." —LEENA RAO

PERSON OF INTEREST

HAIR AND MAKEUP: KRISTIE GAMER

PHOTOGRAPH BY **BRIAN SMALE**



FLEET TALK

How ADS–B tracks aircraft anywhere in the world.

1
An aircraft's ADS–B unit gathers flight data (such as altitude, speed, and GPS location) from the cockpit's flight computers and broadcasts it twice a second.

2
Satellites in low earth orbit receive aircraft flight data, relaying it between them until it can be downloaded to a ground station.

3
Flight data is integrated into air traffic control infrastructure, enabling controllers to see the position, trajectory, and other flight characteristics of every aircraft within their airspace. The detailed real-time information lets them shorten flight times through some of the world's busiest air corridors.

AEROSPACE

SAFETY NET IN THE SKY

Technology that tracks aircraft anywhere in the world could boost airlines' efficiency and make missing planes a thing of the past. **BY CLAY DILLOW**

TECH **OF THE MANY QUESTIONS** raised by the vanishing of Malaysia Airlines Flight 370 in 2014, the most vexing was also the most fundamental: How could aviation authorities lose track of an entire Boeing 777 and the 239 people on board? Many were surprised to learn that across vast swaths of the planet—particularly over oceans—air traffic controllers have only a vague idea of the location of many of the world's airliners at any given moment.

"Air traffic controllers aren't tracking you in real time," says Don Thoma, CEO of Aireon, a partnership between global communications satellite operator Iridium and a handful of air traffic control providers. By early 2018 Aireon intends to change that. Instead of conventional radar, it plans to launch a satellite-based communications network that can precisely track passenger aircraft—and in doing so, trim fuel consumption, shorten flight times, and save airlines hundreds of millions of dollars a year.

Seventy percent of the globe lacks conventional radar coverage. In those areas, air traffic controllers largely rely on pilots to relay their locations over the radio every 15 to 20 minutes. In some cases aircraft beam data to the ground via satellite—the "satellite pings" referenced regularly during the Flight 370 investigation—but such transmissions are infrequent enough that aircraft can travel more than 100 miles between them.

Key to Aireon's system is technology called automatic dependent surveillance–broadcast, or ADS–B for short. It communicates position, speed, altitude, and other information from the aircraft's flight computer to satellites and ground stations twice a second. U.S. and European civil aviation authorities have mandated that all airliners entering their airspace use ADS–B by the early 2020s.

More precise tracking technology has surprising benefits. ADS–B will enable air traffic controllers in busy air corridors like the North Atlantic, which hosts more than 1,400 flights per day, to safely reduce the separation between aircraft from about 100 miles to just 15 miles. Shorter flight plans translate to less fuel spent (on transatlantic routes, 2% to 4%, for some $200 million in annual savings) and the rare possibility of happier passengers. And what's not to love about that? ■

▲ ILLUSTRATION BY **SINELAB**

GOVERNMENT
By working with 31 states on everything from infrastructure to policy, Optum helps government entities more effectively get people the care, services and benefits they need.

HEALTH PLANS
Optum supports 300 health plans so they can better serve their members.

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HEALTHIER IS HERE

At Optum, Healthier goes way beyond a feeling. Quite simply, it's our passion and our purpose. As a health services and innovation company, we power modern health care by combining data and analytics with technology and expertise. Our insights quickly lead to better outcomes for hospitals, doctors, pharmacies, health plans, governments, employers and the millions of lives they touch. Which, come to think of it, is a pretty good feeling as well.

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COME ON AND SHINE

Consumer packaged-goods startups are styling themselves like tech companies to fuel growth. They don't need to.

BY ERIN GRIFFITH

TECH

SELLING RAZORS, cleaning products, or any consumable good is a perfectly fine line of business to pursue. The margins aren't bad, the universe of vendors and distributors is consolidating, and a young upstart can grab attention with a fresh brand and a snazzy marketing campaign. Often those upstarts take a small investment from a private equity firm and later sell to a consumer packaged-goods giant like Unilever.

But lately budding entrepreneurs in the consumer packaged-goods—CPG, as it's known—business have discovered an even better one to be in: technology. Positioning your toothbrush company as a hot, new, high-growth tech startup means more investment (from venture capital firms), a higher valuation, and—most important—all the tech hype and glory that come with the sweet startup life. Private equity firms usually want to double their money for a nice, solid return. But venture firms want to centuple theirs to become filthy, stinking rich. (Bonus points if you "make the world a better place" in the process.)

FOR MORE
Follow Erin Griffith on Twitter (@eringriffith) or at fortune.com/boom.

Who cares if a company's product has no technological component? Plenty of startups peddle the line that selling their goods over the Internet—basic e-commerce, in other words—means they are "tech-enabled." Others, like Josh Tetrick, cofounder of eggless-mayonnaise company Hampton Creek, take it a step further. He pushed his mayo company to position itself as a tech platform in order to land a "tech company valuation," Bloomberg reported.

Disingenuous, maybe. But it's a winning strategy: Hampton Creek and its peers only need potential acquirers like Unilever to buy into their story of tech-enabled disruption. If a giant (or, more important, its investors) feels threatened enough, the company will pay an obscene price to avoid the appearance of missing the Next Big Thing.

There's an obvious danger in consumer packaged-goods companies acting like they're high-growth technology startups: Software is scalable; physical stuff is often not. The pressures of achieving software-style hypergrowth with a traditional business can create dangerous incentives. Hampton Creek, for example, reportedly bought scores of its own products from stores to create the appearance of momentum for investors and partners. (The company claims the buybacks were for testing.)

Shenanigans like these make it easy to dismiss CPG companies as tech-startup wannabes. But investors see value in the category. Chobani and Crocs shot up to $1 billion in sales faster than Twitter and Salesforce, respectively. And Dunkin' Brands has better gross margins than eBay, Amazon, and Google parent Alphabet.

Earlier this year Unilever shelled out $1 billion for Dollar Shave Club, a razor startup with just $140 million in revenue last year, giving it an entry into a market dominated by Procter & Gamble. Unilever is also rumored to be interested in the Honest Co., a household goods startup.

In other words, the CPG-as-tech strategy is working. Prepare for a supermarket stuffed with "tech" startups. ■

▲ ILLUSTRATION BY **SINELAB**

THE INTERVIEW

TECH **DAVID KENNY** took the helm of IBM's Watson Group in February, after Big Blue acquired the Weather Co., where Kenny had served as CEO. In the months since then, the Watson business has grown dramatically, with well over 100,000 developers worldwide now working with more than three dozen Watson application program interfaces (APIs). Fortune deputy editor Clifton Leaf caught up with Kenny in mid-October, when IBM Watson's general manager was in San Francisco getting ready to open Watson West—the AI system's newest business outpost—and to launch the company's second World of Watson conference, a gathering of its burgeoning ecosystem of partners and users, in Las Vegas on Oct. 24. Below, an edited Q&A. For the full interview, see fortune.com/davidkenny.

DAVID KENNY

GENERAL MANAGER, IBM WATSON

WATSON: NOT SO ELEMENTARY

Five years after its *Jeopardy!* victory, IBM's cognitive computing system is through playing games. It's now a hired gun for thousands of companies in at least 20 industries. A Q&A with the Watson boss.

BY CLIFTON LEAF

FORTUNE: **We hear a lot of terms on the AI front these days—"artificial intelligence," "machine learning," "deep learning," "unsupervised learning," and the one IBM uses to describe Watson: "cognitive computing." What are the distinctions?**

KENNY: Deep learning is a subset of machine learning, which essentially is a set of algorithms. Deep learning uses more advanced things, like convolutional neural networks, which basically means you can look at things more deeply into more layers. Machine learning could work, for example, when it came to reading text. Deep learning was needed when we wanted to read an X-ray. And all of that has ▷▷

▲ PHOTOGRAPH BY **WINNI WINTERMEYER**

▷▷ to this concept of artificial intelligence—though at IBM we tend to say, in many cases, that it's not artificial as much as it's augmented. So it's a system between machine computing and humans interpreting, and we call those machine-human interactions cognitive systems. That's kind of how it layers up.

As for what we would call unsupervised learning—which is to say, we're not training it to process, but it's beginning to learn on its own—that is moving more in the direction of what some consider true artificial intelligence, or even AGI: artificial general intelligence. I would say we're at the early stages of that. Some parts of Watson do that.

***FORTUNE:* And it takes a lot of computing power to accomplish that.**
KENNY: It takes enormous, enormous amounts of computing power to do that because you've got to leave Watson running at all times, just like the human brain, and that's why I believe cloud computing has been such an important enabler here, because prior to cloud computing—where you can access many machines at the same time—you were limited by a mainframe. Of course, IBM made the biggest ones, which is why Watson was able to do *Jeopardy!* five years ago. But cloud is part of why I think we're seeing a real acceleration in AI right now.

***FORTUNE:* Nor is it just in the cloud, right? Watson is increasingly "embedded" in the real world—in the Internet of things. You have some 4,000 clients and 1,400 partners in Watson's IoT business alone, right?**
KENNY: Yes, and this is related to how I came to IBM through the Weather Co. We have sensors everywhere: We have sensors in cars; we have sensors on things that are moving through logistics—boxes that are being shipped, for instance. We have sensors in factories and in traffic systems. And I think we're all wearing some these days. These sensors—and our mobile devices—can compute something to give us knowledge or give us insights, right at the point we need them. And those sensors can interact—by way of Bluetooth or some other communication device—with the cloud, where a computation can happen, and the answer can come back to you. So it all feels as if these things are thinking for us, and in fact, they're accessing a brain that is the nearest data center.

So, these same sorts of interactions get embedded in applications all over the place. Take the case of cancer treatment. Using Watson for oncology, a cancer doctor can ingest a patient's records in real time. And then Watson can find clinical trials that have started (or are about to start) that best match that particular patient. [To date, Watson has digested more than 26 million medical and scientific articles and boned up on nearly 3,000 clinical trials from clinicaltrials.gov, the federal government's public database. And at press time, the company announced it's partnering with lab-testing company Quest Diagnostics, Memorial Sloan Kettering Cancer Center, and the Broad Institute to make genomic analyses by Watson available to cancer patients and physicians nationwide.]

WATSON IS ONLY AS SMART AS THE HUMANS TRAINING IT. "YOU LITERALLY HAVE TO TELL WATSON, 'YES, THAT MEANT THIS. YES, THOSE GO TOGETHER.'"

***FORTUNE:* So how did you train Watson to read something as dense as a medical paper?**
KENNY: Of course, I wasn't here at the time that was done, but it starts with knowledge extraction: reading documents, finding common phrases, associating those together. It does the same with paragraphs. Then it gets corrected. The human annotation is critical here: Out of the gate there's no way that I would trust the system to do unsupervised learning and just find the patterns on its own. You literally have to tell Watson, "Yes, that meant this. Yes, those go together. Yes, you have that right, or, no, you don't."

And each time you tell it no, the system reweights its algorithms until it gets to a point where it would have produced the correct answer. And it gets better over time.

***FORTUNE:* You're training the system with human expertise ... and tons of data, too.**
KENNY: Yes—and the next qualification I should make is right now there isn't a single Watson. There's Watson for oncology. There's Watson for radiology. There's Watson for endocrinology, for law, for tax code, for customer service. The reason for that is we can then train the systems more precisely with the *right* data. And we can partner with experts—so Memorial Sloan-Kettering in the case of oncology, or the American Heart Association with cardiology.

These systems do perform better because they're more focused on a specific domain. It's the same way people work. We don't tend to ask a journalist for cancer advice, and we don't generally ask an oncologist for real estate advice. People tend to specialize in things and know them well. It's the same thing with AI. ■

For more of our conversation, see fortune.com/davidkenny.

DISRUPTED

LOOK BEFORE YOU LEAP

Thinking of ditching the suit and tie for the startup life? Here's how to do it right. **BY DAN LYONS**

TECH

IT'S THE CORPORATE equivalent of a midlife crisis, and here's how it happens. You're in your forties, a senior vice president at a big company, where you manage scores of people and collect a huge paycheck. But every time your company acquires a startup you see a bunch of utterly ordinary people become ridiculously rich.

Why shouldn't you cash in too? Get the Botox, color your hair, and soon your preternaturally youthful face might adorn the leadership page of some 100-employee outfit that nobody has ever heard of—where you'll await your life-changing jackpot.

It's a scary leap—or should be. Most startups flame out, or just muddle along. Your chances of spotting a unicorn, prehorn, are incalculably small. But if, knowing that, you still want to toss aside your cushy job, at least listen to corporate vets who have made the transition. Here's their advice on how to do it right.

DAN LYONS
Our brand-new columnist is the bestselling author of *Disrupted: My Misadventure in the Start-Up Bubble.*

THINK LIKE A VC.
Would you invest in this company? A startup job is an investment, after all: Venture capitalists may wager money, but you're staking something more precious—your time. And unlike VCs, you can't spread your risk by betting on a bunch of companies at once. Start with TAM. That's "total addressable market," and if it's not big enough, there's no point in talking. It's the first number you'll get from the VCs backing the company.

DON'T JOIN LATE.
If the startup is past Series C, you might not have enough upside to make it worth your time, says a friend of mine. (It's sometimes possible to join late and strike it big—for example, if you're a CFO joining a company that needs your expertise to float an IPO. But for most people, joining late means less risk but also less reward.)

TEAM, TRACK RECORD, AND TECH.
Have the CEO and head of engineering done this before and produced a successful exit? Is the technology really special, or just a me-too product?

WORK WITH PEOPLE YOU'VE WORKED WITH BEFORE.
You'll do better with people you trust. If that's not the case, then ...

... NEGOTIATE A STRONG SEVERANCE PACKAGE BEFORE YOU JOIN.
There are too many ways that a startup gig can go sideways. If the startup won't agree to hefty severance, pass.

MEET THE BOARD.
Do the board members support the CEO and the rest of the team? What's the company's biggest challenge? The directors (typically the VCs who have backed the company) might have a better perspective than management.

BEWARE THE QUICK OFFER.
It's flattering, but also a red flag. Talk to at least 10 people, especially those who will be your peers. Figure out the culture and whether you will fit in.

KNOW YOUR PRICE.
For every role in a startup there is a going rate—meaning how much equity and salary you should get, based on your title, the stage at which you're joining, and location. You're a vice president of engineering coming in at Series B and the job is in San Francisco? There's a number for that. VCs track data from portfolio companies and share it with one another. Arm yourself with this information, or you might leave money on the table.

FINALLY, LOOK INSIDE.
Be honest. You might not be cut out for startup life. It's better to admit that now than to make a huge mistake. If you do stay, still consider getting the Botox and the hair color. You'll enjoy all the big-company perks—including the assistants, the first-class flights, and the five-star hotels—while shaving a decade off your appearance. Best of both worlds. Savor that.

LYONS: GRETCHEN ERTL

ILLUSTRATION BY **SELMAN DESIGN**

WELLNESS DONE WELL

COMPANIES ARE REALIZING THE BENEFITS OF A HOLISTIC APPROACH TO WELL-BEING.

TEVA PHARMACEUTICAL INDUSTRIES' corporate mission is keeping people healthy. And when it comes to the health of its 10,200 U.S. employees, the multinational drug company walks the talk. Teva, which is headquartered in Israel, offers its employees no-cost amenities such as on-site fitness centers, medical teleconferencing, financial planners, yoga classes, personal training sessions, weight-loss and smoking-cessation programs, and, in many instances, free medications.

By the end of the year, the company's trove of employee health care resources will expand even further. Each Teva employee in the United States will be matched with a personal health care coordinator to help arrange doctor appointments, follow up with providers, and navigate the health care system.

"Our overall well-being strategy is rooted in our corporate purpose: 'Improving health and making people feel better,'" says Teva's Lesley Billow, Senior Vice President of Human Resources, Americas. "Our holistic approach to well-being is based on the abiding belief that when our employees feel more energized, appreciated, focused, and purposeful, they perform better."

National Business Group on Health®

Teva was among 55 companies from across the country to be recognized for outstanding employee wellness programs by the National Business Group on Health (NBGH), a nonprofit based in Washington, D.C., that represents large employers on health care issues. The 55 companies, which include Aetna, Delta Air Lines, and J.P. Morgan Chase, received NBGH's Best Employers for Healthy Lifestyles award for 2016.

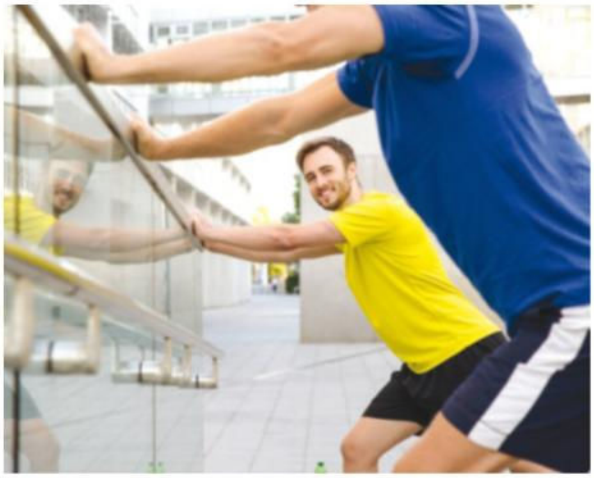
NBGH's awards recognize employers who are part of a growing trend in corporate America to create holistic wellness programs that go beyond providing for employees' physical needs. Increasingly, businesses are adding programs that foster social connectedness, emotional health, and community involvement, as well as address issues such as sleep, healthy eating, the student loan crisis, and financial literacy.

"If your primary concern is putting food on the table or managing debt, you're not going to be very interested in your blood pressure," says Brian Marcotte, NBGH's president and CEO. "Employers are realizing that if you want to improve someone's health, there are a number of other social determinants you have to address as well."

JGI/JAMIE GRILL/GETTY IMAGES

CREATING A CULTURE OF WELL-BEING

An annual survey by the polling organization Gallup Inc., in partnership with the Nashville-based wellness program provider Healthways, corroborates this line of thinking. Gallup's research has repeatedly shown that in addition to physical good health, elements such as a sense of purpose, social supports, financial security, and a connection with a community are important for creating a culture of well-being within a company.



To that end, companies on NBGH's 2016 Best Employers for Healthy Lifestyles list have taken a number of expansive and creative approaches to wellness promotion.

Delta Air Lines, for one, opens its wellness offerings not just to employees but to their spouses and other dependents as well. It's a feature that proved life-altering for the family of Judy Ahlberg, customer experience lead at Delta's reservations customer engagement center in Minneapolis–St. Paul. Three years ago, she encouraged her husband, Richard, to schedule a physical as part of Delta's Health Rewards program, which encourages preventive care. The physical saved his life, revealing an artery blockage that required immediate heart surgery. Richard went into surgery the next day and was able to meet his first grandchild shortly after the surgery.

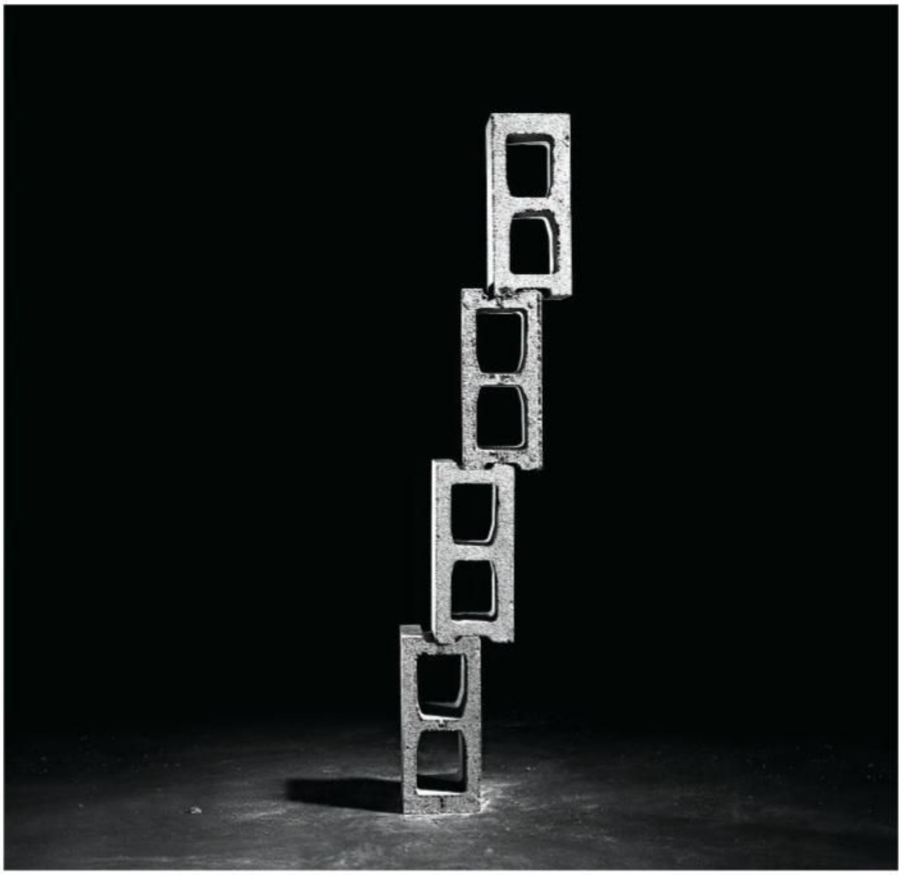
Financial services programs are also helping employees improve their lives. Delta's program encourages financial planning and helps employees examine how their spending habits align with their personal values. "We encourage them to think about their own values and how those fit with where their money is actually going," says Rob Kight, Delta's senior vice president of human resources.

How effective are the new wave of wellness programs at keeping employees healthy? Teva executives say that since the company beefed up its wellness programs three years ago, it has seen a significant decline in medical claims and overall healthcare costs, as well as an increase in employee engagement.

Delta's leaders say the outcomes of its wellness program have attributed to a 37% slower disease progression compared with the general population. This slower disease onset rate accounts for nearly 1,000 trained professionals who are at work and able to serve Delta's customers more often.

But the best endorsements for corporate wellness programs tend to come from employees. Judy Ahlberg says she will always be grateful for her husband's preventive care through Delta Health Rewards that came just in time: "An annual trip to Dallas for our granddaughter's birthday is always a great reminder of how thankful we are for the program."

GETTY IMAGES



REAL ESTATE STOCKS

STOCKS WITH A SHAKY FOUNDATION

Recent changes in the markets have made it even easier to buy real estate investment trusts. But this may not be the best time to move your money in.

BY RYAN DEROUSSEAU

INVEST **WITHOUT MUCH** fanfare, real estate investment trusts, or REITs, have become one of the past decade's fastest-growing investments. These securities let small investors buy shares in some of the world's biggest property empires—and thanks to recent rule changes, their reach is only going to grow.

REITs are companies that own (and often operate) income-producing real estate. They get favorable tax treatment by passing a high percentage of earnings through as dividends. And with interest rates low, investors have been piling into REITs in search of income: The total market capitalization of U.S. REITs nearly tripled over the past decade, to just over $1 trillion.

In September that growth helped real estate earn a very exclusive listing. The Global Industry Classification Standard, rules set by a consortium of financial institutions, now recognize real estate as its own economic sector. (Real estate used to belong to the financial sector; mortgage REITs will stay there.) With the change, the number of funds and other vehicles that specialize in REITs will multiply. And while most retail investors have owned REITs only indirectly—through, say, financial-sector exchange-traded funds—that's likely to change.

The reclassification is already driving money to the sector, as managers respond to real estate's new status—it's analogous to what happens when a stock joins the S&P 500 and becomes an automatic buy for many funds. Brokerage Edward Jones estimates that money flowing into REITs more than quadrupled from the first quarter to the second, as investors prepared for the breakout. But this new traffic confronts shareholders with an urgent question: Could market trends shut down the REIT house party just as more guests arrive?

THE CORE SELLING POINT for REITs—their juicy dividends—still seems solid. The average REIT yield in mid-October was 3.9%, ▷▷

CRAIG CUTLER—TRUNK ARCHIVE

▷▷ compared with 1.8% for 10-year Treasuries and 2.7% for the S&P Investment Grade Corporate Bond index.

But REITs face a fixer-upper's worth of near-term challenges. REITs are essentially landlords, and while a stalling economy wouldn't be a disaster—REITs tend to be "less volatile than banks," says Neena Mishra, director of ETF research at Zacks—it would hurt their ability to raise rents. On the other hand, if a stronger-than-expected economy prompts the Federal Reserve to raise interest rates, REITs will look less attractive compared with bonds. And some skeptics argue that REITs are already overpriced: The S&P U.S. REIT index has risen 59% over the past five years.

With this in mind, many pros view REITs as a relatively speculative play—the kind on which to bet only a small part of your portfolio. Real estate accounts for just 3% of the market cap of the S&P 500, notes Laszlo Birinyi, founder of research firm Birinyi Associates, who adds, "It would need to double before it shows up on your screen" as a must-have investment. For those who do buy, a closer look at the sector's biggest brand names suggests that for now it will pay to be selective.

Shares of **Public Storage,** which owns self-storage properties, have fallen 24% since April. Storage space is easy to build, and the company faces intense competition. Its average rental rate has dropped from 2015 levels, as the company offers more discounts. Its dividend, at 3.3%, is still attractive, but analysts see little room for price growth.

More promising is **Kimco,** which owns and operates strip malls. In 2015 the company exited its last property in South America and reduced its exposure to Canada by unloading 23 shopping centers there. Kimco is focusing on its higher-valued U.S. malls, anchored by stable customers like Home Depot and Walmart, where it has been able to charge higher rents on new leases. Deutsche Bank analyst Vincent Chao applauds Kimco's moves but says the stock is expensive; if a Fed rate hike drives the share price down, that could change.

Simon Property Group, the largest REIT by market cap, is also a mall play. While department stores and malls in general have struggled, Simon has thrived by focusing on the higher end of the market, converting mainstream malls into luxury destinations through upgrades. There's still a "strong demand for retailers to be located in the best malls," says Paul Curbo, a portfolio manager for Invesco's Global Real Estate Income Fund, and that demand should give Simon more room to grow.

Royal Shepard, an analyst at Edward Jones, is bullish on a different trend: The aging of America. He likes **Ventas,** which owns health care properties and has big stakes in senior housing. The stock is up 18% year to date, but at a price of 15.5 times expected 2017 funds from operations (a cash-flow metric commonly used by REITs), it trades in line with its peers.

Of course, investors can also own REITs without picking a winner within the industry. The **Vanguard REIT ETF** has an expense ratio of just 0.12%. If a bidding war breaks out anywhere in the sector, its shareholders will have a small piece of the action. ■

COOLING OFF

New money flooded into REITs this summer, but high prices have led some investors to have second thoughts.

SOURCE: BLOOMBERG

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You've earned your money, but are you owning it?
In life, you question everything. The same should be true when it comes to managing your wealth. Do you know what your investment recommendations are based on? Does your financial professional stand by their word? Do you know how much you're paying in fees? And how those fees affect your returns? Ask your financial professional, and if you don't like their answers, ask again at Schwab. We think you'll like what we have to say. Talk to us or one of the thousands of independent registered investment advisors that do business with Schwab. Ask questions. Be engaged. Own your tomorrow.™
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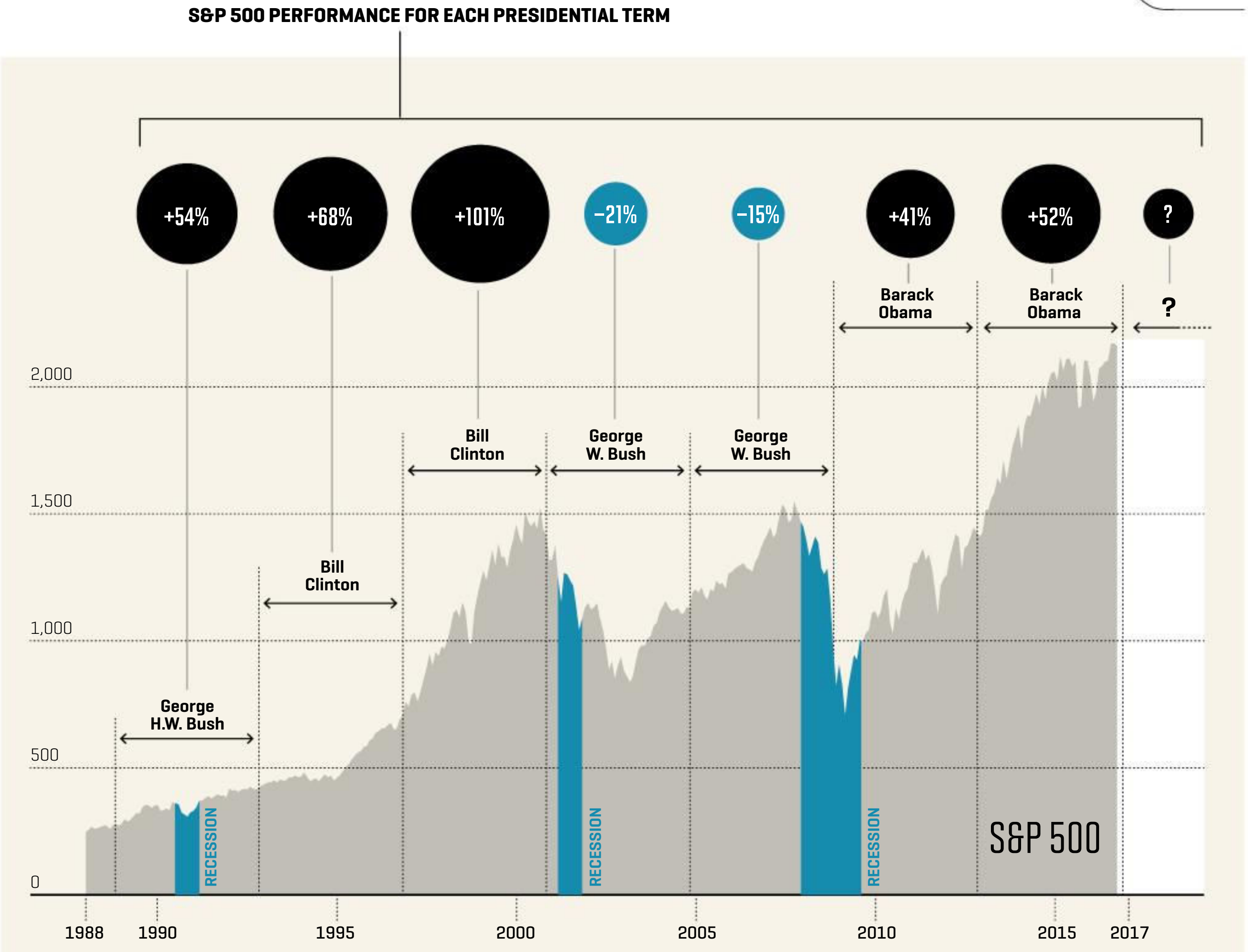

SOURCE: S&P GLOBAL MARKET INTELLIGENCE, AS OF OCT. 3, 2016

POLITICS AND THE STOCK MARKET

HOW TO INVEST, WHOEVER WINS

No matter how much you dislike him or her, the next President isn't likely to hurt the stock market. But 2017 could still be rocky for the economy. Here's what you'll need in your postelection portfolio. BY TAYLOR TEPPER

INVEST **EMOTIONS HAVE RUN** exceptionally high in this campaign—so high that hyperbolic statements about the likelihood of one candidate or the other torpedoing stocks, capsizing the bond market, or crippling the economy have the ring of truth for many voters. So it's understandable for investors to worry that the outcome of the election could upend their portfolios. After votes are tallied on Nov. 8, about half the country will be elated, and nearly half will be scared. And research suggests that both groups are likely to rearrange their investments accordingly.

Neither euphoria nor depression is great for ▷▷

decision-making. "People's positive sentiment when their party is in power leads them to think the world will deliver higher returns with lower risk," says Santa Clara University professor Meir Statman, an expert in behavioral finance. One study looked at the behavior of about 60,000 investors from 1991 to 2002 and found that people took greater market risks when their party controlled Washington. Investors affiliated with the party out of power, on the other hand, tended to grow restless and trade more frequently, hurting their performance.

But while the inhabitant of 1600 Pennsylvania Avenue can alter our lives, history suggests that presidential politics have a surprisingly modest impact on stock markets. In the long run, broader economic cycles and the push-and-pull decisions of millions of businesses and shareholders do far more to move stock prices than any one leader. That's why the investors who fare best after an election are the ones who keep their emotions in check—and avoid politicizing their portfolios.

PREDICTING WHICH INDUSTRIES will benefit most from which candidate is a favorite parlor game of market seers. Right now, some pundits are advising audiences to invest in clean-energy companies, defense contractors, and multinationals in the event of a Hillary Clinton victory—which looked increasingly likely according to polling and prediction markets as of press time. A Donald Trump presidency, others say, should be a windfall for coal miners, small-cap U.S. companies (because their sales are mostly in the U.S.), and, of course, construction companies that might benefit from a massive government wall-building contract.

It all seems so logical—but history seldom supports such reasoning. In 2008, for example, the assumption based on his campaign platform was that President Obama would put gunmakers out of business, turn health care providers into wards of the state, and usher in a golden era for alternative energy. Tell that to Smith & Wesson, whose stock price is almost nine times as high as it was five years ago. Or to the health care sector, which has outpaced the market throughout this administration. (Or to clean-energy stocks, down 49% under Obama.)

"The President isn't a dictator," says Brian Jacobsen, chief portfolio strategist at Wells Fargo Funds Management. "Just because he or she runs on a platform,

"THE PRESIDENT ISN'T A DICTATOR. JUST BECAUSE HE OR SHE RUNS ON A PLATFORM, IT DOESN'T MEAN THAT AGENDA WILL BE PUT IN PLACE."

it doesn't mean that agenda will be put in place." And even if the President gets what he or she wants, the real economy may not cooperate.

Rather than hitch your strategy to a candidate, it may be wisest to observe the informal motto of the 1992 Bill Clinton campaign: "It's the economy, stupid." Over the past 150 years, the average economic expansion has lasted about 39 months. The current upturn, which began in June 2009, shortly after Obama took office, is in its 89th month, making it the fourth-longest since the Civil War. This means, if history is any indication, that either of today's candidates is relatively likely to confront a recession early in his or her administration.

With that in mind, investors should focus on sectors that can withstand a downturn, such as health care. Like demand for toothpaste and other necessities, demand for health services isn't dependent on a strong economy. Health care revenues are already growing more than eight times as fast as the overall economy, according to S&P Global Market Intelligence. For broad, cheap exposure, go with the **Vanguard Health Care Fund.** The actively managed fund, whose top holdings include drug giants Merck and Allergan and insurer UnitedHealth, has beaten nearly 75% of its peers over the past 15 years.

Bull markets, likewise, have a finite life—about 4½ years on average. This one is already more than 7½ years old. Assuming it's near its expiration date, investors should favor the large, dividend-paying stocks that tend to outperform in this stage of a market cycle. Income-seeking investors have loaded up on dividend stocks lately, leading some pros to worry that they have become too pricey (see our previous story). To focus on dividend payers that are better positioned to weather a downturn, go with **SPDR S&P Dividend:** It's an exchange-traded fund that invests only in large companies healthy enough to have boosted payouts for at least 20 consecutive years, including warhorses like AT&T and Chevron.

Portfolio tweaks like these may seem minor compared with the splashy tax and policy proposals of a new President. But whoever is elected will last, at most, eight years. You, on the other hand, are investing for the rest of your life—and there's no need to do anything rash.

Taylor Tepper is a staff writer at MONEY.

AMERICAN VOICES

THE VALLEY'S FAVORITE BRITISH IMPORT

Raised in a sheltered northern English community, Ruzwana Bashir traveled a long and unlikely path from Oxford debate star to Silicon Valley wunderkind. **BY LEENA RAO**

RUZWANA BASHIR COFOUNDER AND CEO, PEEK

Résumé fodder
Bashir earned a Harvard MBA on a Fulbright scholarship, and her early jobs include stints at Gilt Groupe, Goldman Sachs, and Blackstone.

A working vacation
Bashir had the idea for Peek after spending upwards of 20 aggravating hours trying to plan a weekend trip to Turkey with friends.

Equal rights campaigner
Bashir wrote a groundbreaking essay in 2014 that drew attention to abuse of women in the U.K.'s Asian communities.

VENTURE

THE FIRST TIME Ruzwana Bashir wore Western clothes was when she started as a student at Oxford University. Until then Bashir, who grew up in a tight-knit Pakistani community in northern England, wore a long *shalwar kameez* and a traditional Muslim head scarf every day.

"I was very different from others around me when it came to my race, gender, and class," Bashir says. She went on to become the second-ever Asian female president of the prestigious Oxford Union debating society (future Pakistani President Benazir Bhutto was the first). And now, as CEO of travel technology startup Peek, Bashir adds another minority group to her identity: women founders in technology.

Peek is an online marketplace where travelers can book activities ranging from parasailing in Mexico to touring taverns in London. The company, which has raised $18 million from investors, including Twitter CEO Jack Dorsey and Alphabet chairman Eric Schmidt, also provides software for tour operators—tackling a $100 billion global market for booking travel activities.

Having a different background than the average founder has helped her as an entrepreneur, Bashir says. "Growing up the way I did gave me empathy and understanding for different walks of life," she says. "I had to fight for a lot of things, and I developed a grit that has really paid off." ■

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"MY WISH IS TO RACE MY BROTHER IN MONACO."
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TOYOTA
Let's Go Places

LEADERSHIP

MILLENNIALS ARE NOT MONOLITHIC

Good leaders need to know how to motivate their youngest employees. But if you're seeking a one-size-fits-all solution, you're already on the wrong track. BY GEOFF COLVIN

VENTURE **MILLENNIALS HAVE** become the largest demographic in the workplace. But managers of all ages have struggled to find the best way to connect with a wave of twenty- and thirtysomethings who do most of their typing with their thumbs, work wearing earbuds, and claim they can hold meaningful conversations while monitoring five open browser windows. Many leaders have fallen back on stereotypes about the generation (see the previous sentence), only to find that they're neither true nor useful in managing.

So now what?

It's time for Managing Millennials 2.0, based on finer distinctions derived from years of experience and current data. Three helpful insights stand out:

▶ **DIFFERENT GENERATIONS AREN'T DIFFERENT SPECIES.** On many important dimensions, millennials are remarkably like Gen Xers and baby boomers. Contrary to stereotype, in a recent IBM survey only 18% of millennials said "managing my work/life balance" is one of their top two career goals, vs. 22% of Gen Xers and 21% of baby boomers. Millennial employees are less likely than Gen Xers to use personal social media accounts for work purposes, says the same research. And millennials' preferred method of learning new work skills is—brace yourself—face-to-face contact.

▶ **CULTURAL DIFFERENCES SWAMP GENERATIONAL ONES.** By reputation, millennials are notorious for having one foot out the door, scanning other potential employers for a better offer. But that doesn't hold true everywhere. In Peru, 82% of them expect to leave their employer in the next five years, while in Belgium only 51% do, finds new research from Deloitte. In another gauge of identification with an employer, the share of millennials who have refused a work task because it conflicts with their values or ethics is generally high in Latin America—71% in Colombia—but only 20% in Japan.

▶ **WITHIN ANY CULTURE, MILLENNIALS DIFFER WIDELY BY AGE AND GENDER.** The generation's oldest members were born in 1982, when *Time*'s Man of the Year was "The Computer," while the youngest were born in 2000, when the Internet boom busted. Older and female millennials expect to stay in their jobs longer than younger and male millennials do, say Bentley University researchers. Men of the generation are more likely than women (17% vs. 9%) to aspire to be a CEO or company president, says the same study. PwC research finds that women are more likely than men to say they'd take a pay cut and fewer promotions in order to work fewer hours.

Managing Millennials 1.0 goes wrong in two critical ways: overstating differences between this generation and others, and overstating similarities within it. The takeaway, for leaders of any generation: Accept the reality that millennials are as varied as any group you've encountered—and that you'll need a diverse range of incentives to get them to perform at their best.

▲ ILLUSTRATION BY **SAM ISLAND**


PEACE OF MIND

GREAT WORKPLACES

THE BEST SMALL AND MEDIUM-SIZE COMPANIES TO WORK FOR

These companies prove the truth of the adage "Culture eats strategy for breakfast"—and show that trust may just be the single most important quality in a manager.

IT'S NOT ABOUT THE PERKS. Sure, it's nice to have a gym in your offices or, say, free ice cream. But what makes a job meaningful depends on a few key qualities: a sense of mission; trust (from managers) and autonomy (for workers); and a culture of teamwork and communication. That's what emerges from 52,000 survey responses of employees at small and medium-size companies, conducted by our partner, Great Place to Work. Read these rankings for insights on managing and consider this: The revenue growth at the companies on the list averaged three times that of those that were surveyed but didn't make the cut.

▲ ILLUSTRATIONS BY **MICHAEL BRANDON MYERS**

VENTURE

SMALL COMPANIES

(10–99 U.S. EMPLOYEES)

ALL QUOTES COME FROM EMPLOYEE SURVEYS.

1. AGILECRAFT

HQ: Georgetown, Texas
EMPLOYEES: 29
REVENUE: Not available

Staffers at this "innovating" provider of software that helps big companies manage software view their mission as "hugely challenging and important."

2. FRAMEWORK

HQ: Stamford, Conn.
EMPLOYEES: 12*
REVENUE: Not available

A belief in the company's purpose, to advise on sustainable business practices, drives satisfaction, as does a culture that "focuses on maximizing strengths."

3. ACADEMICWORKS

HQ: Austin
EMPLOYEES: 46
REVENUE: $5.2 million**

Staffers at this provider of scholarship-management software say it's devoted to core values: "obsessed with customer experience" and being "kind and respectful."

*HEADCOUNT FIGURES ARE AS OF JUNE 2016 AND REPRESENT FULL-TIME AND PART-TIME U.S. EMPLOYEES.

**ANNUAL REVENUE REPORTED BY THE COMPANY FOR THE LATEST FISCAL YEAR.

4. KEEPING CURRENT MATTERS

HQ: Ronkonkoma, N.Y.
EMPLOYEES: 17
REVENUE: $1.8 million

Provider of real estate education tools boasts "awesome" work/life balance and helps staffers' "progress not only at work but also as a person."

5. DISHER

HQ: Zeeland, Mich.
EMPLOYEES: 95[1]
REVENUE: Not available

Team spirit abounds among these product development consultants, with ownership and profit shares. Workers are given checks to direct to charities.

6. ALKU

HQ: Andover, Mass.
EMPLOYEES: 89
REVENUE: $84.4 million

Staffers at this consultancy see colleagues as cheerleaders and say management cares about "the thoughts, ideas, and feelings of all of its employees."

7. HUGHES MARINO

HQ: San Diego
EMPLOYEES: 61
REVENUE: Not available

Employees gush about the beautiful offices, accessible execs, and team approach at this real estate firm.

8. BP3 GLOBAL

HQ: Austin
EMPLOYEES: 86
REVENUE: $19.5 million

A willingness to make "sacrifices for our customers to ensure they have success" stands out at this software and services provider.

GREAT WORKPLACES
NO. 9

ROSANO PARTNERS
LOS ANGELES
EMPLOYEES: 55
REVENUE: $6 MILLION

AT ROSANO PARTNERS, "diversity" isn't an obligation. It's an identity—and a business opportunity. The firm was founded in 2006 by an Israeli immigrant, Sagiv Rosano, to sell, lease, and manage commercial real estate in underserved ethnic Los Angeles neighborhoods. Today 76% of its employees are minorities, with a rainbow of ethnicities: Latinos, blacks, Persians, Koreans, Chinese, and more. Combined, they speak 13 languages. "We believe that different is stronger," says chief strategy and operations officer Ian Whitman, who is openly gay.

Whitman devours books and podcasts on culture. He seeks to cultivate a tribe, a safe one where people can be open, understood, and supported. Most real estate firms have commission-only agents duke it out for contracts, but Rosano encourages collaboration by establishing separate territories for agents. "It promotes people to take risks and grow," Whitman says.

The result is a "warm vibe," says Bo Kim, an agent at Rosano. Expectations are high, he says, but the firm has mentored and supported him. Rosano gives people a hand up. The company has hired formerly homeless people and paid for a Filipina accounting intern to go to college, then promoted her.

Rosano's culture is fostered in small ways. A table in the entryway encourages staffers to share meals every day. A companywide breakfast each week also provides everyone, from interns to vice presidents, updates on the company's financial health and upcoming deals. Instead of keeping transactions close to the vest, staffers join forces, tapping their connections and knowledge, says Kim. That teamwork yielded 37% revenue growth last year.

Rosano has established itself as a firm that represents the diversity of downtown Los Angeles, says Deborah Villar, CEO of ViaCare, a health clinic that serves the poor in East L.A. Villar says two Rosano realtors, who were, respectively, Latino and gay, got to know the clinic and its goals and presented ViaCare's business plan to a Ukrainian landlord with strong ties to the community. He ultimately put $500,000 in improvements into the building before ViaCare signed the lease. "We're small, but they took the time to get to know us and treated us like royalty," says Villar. "They want to be the face of L.A." In a community with many different types of faces, Rosano fits right in.

—JENNIFER ALSEVER

[1]AFTER THE SURVEY WAS CONDUCTED, THIS COMPANY HIRED ENOUGH NEW EMPLOYEES TO BE DEEMED A MEDIUM-SIZE COMPANY.

10. VISIONIST

HQ: Columbia, Md.
EMPLOYEES: 92
REVENUE: $18.4 million

In addition to providing perks (such as $500 given to new parents for takeout food), the engineering and software development firm cultivates an idea-generating culture.

11. TALON PROFESSIONAL SERVICES

HQ: Princeton, N.J.
EMPLOYEES: 32
REVENUE: Not available

Search firm stresses "C4" (care, communicate, challenge, celebrate) and is "very transparent" about "goals, which allows everyone to have a clear vision of what's expected."

12. MAVENS CONSULTING

HQ: Chicago
EMPLOYEES: 41
REVENUE: Not available

Mavens, which helps implement software, has no formal management and emphasizes autonomy. Staffers laud a philosophy of "making our customers the hero."

18

"WE HAVE AN AMAZING CULTURE OF ENTHUSIASM AND MISSION-DRIVEN VALUES," SAYS ONE EMPLOYEE AT AXCELLA HEALTH. "I HAVE BEEN GIVEN A LOT OF OPPORTUNITY TO DEVELOP PROFESSIONALLY IN THE CONTEXT OF A RAPIDLY GROWING BUSINESS."

13. SUMMERHAVEN INVESTMENT MGMT.

HQ: Stamford, Conn.
EMPLOYEES: 11
REVENUE: Not available

Commodity futures specialists shine with a long-term focus and "giving everyone a high degree of independence [faith in each employee's decisions and self-direction]."

14. FLUENT

HQ: New York City
EMPLOYEES: 96
REVENUE: $144 million

Regular town halls at this digital marketer keep employees in the loop. Adds one: "Ownership shared in the fruits of [Fluent's sales] across the entire company."

15. HRMS SOLUTIONS

HQ: Boulder
EMPLOYEES: 17
REVENUE: Not available

Software services outfit is flexible and understanding. Honest mistakes aren't punished, an employee says, adding, "I am provided the tools, training, and coaching to improve."

16. SQUARE ROOT

HQ: Austin
EMPLOYEES: 49
REVENUE: Not available

"We hire people with high personal integrity, which means we have a high level of trust," says one respondent. The software firm has "lots of smart people, but no egos."

17. RETROFIT

HQ: Chicago
EMPLOYEES: 49
REVENUE: Not available

"We are a health and wellness company" and "have the opportunity to use our own services. This allows employees to 'walk the talk' and pursue optimal health, happiness, and life balance."

18. AXCELLA HEALTH

HQ: Cambridge, Mass.
EMPLOYEES: 60
REVENUE: Not available

Food helps unite staffers at this biopharma. A full kitchen and outdoor grill let them cook for one another: "Burmese, Syrian, and Thai are some lunches in recent memory."

19. CLOUD FOR GOOD

HQ: Asheville, N.C.
EMPLOYEES: 47
REVENUE: $4.6 million

CFG helps nonprofits with cloud computing. Workers there find it fulfilling, as one puts it, to "do well while doing good."

20. DAYBLINK CONSULTING

HQ: McLean, Va.
EMPLOYEES: 46
REVENUE: $4.9 million

Employees salute the strategy consultancy for caring about their development: "One thing they constantly tell us is that they will help us get where we want to go."

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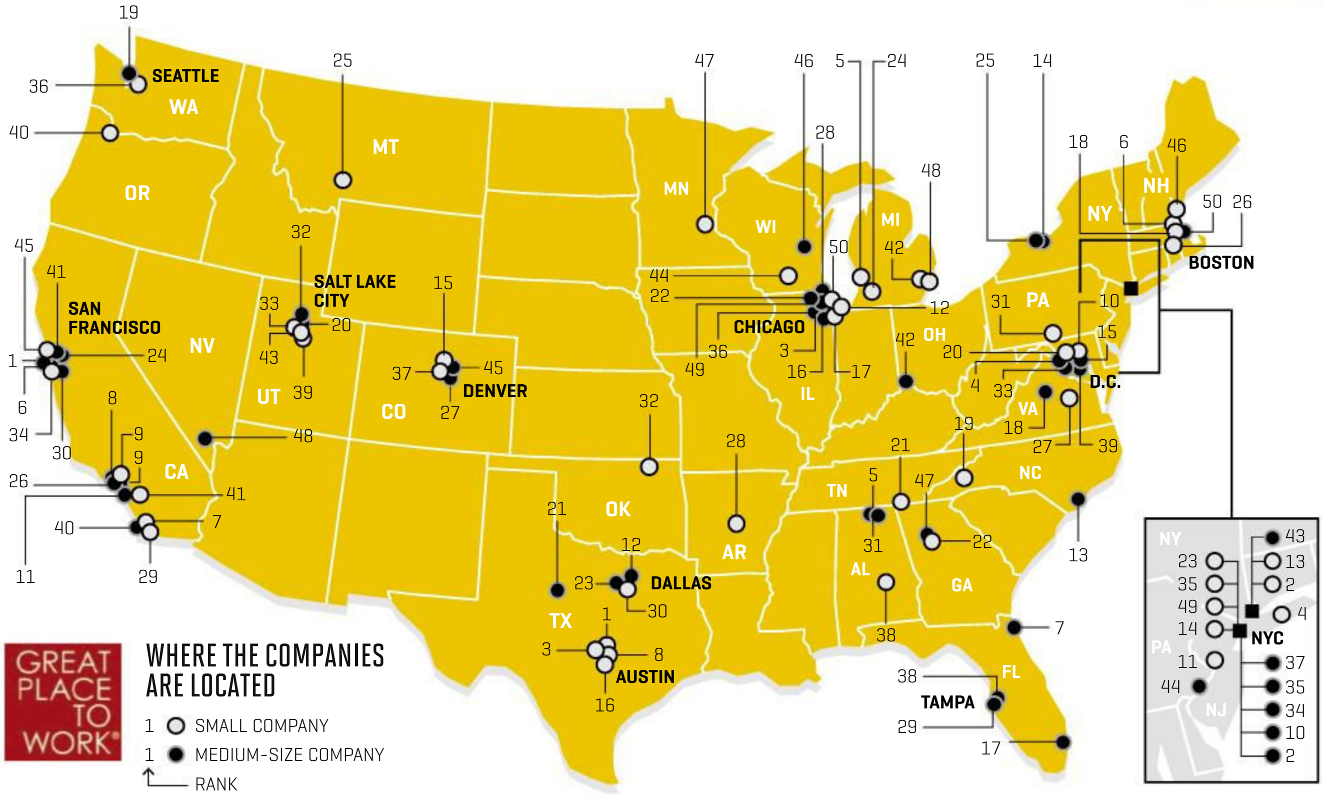

21. RELIANCE PARTNERS

HQ: Chattanooga
EMPLOYEES: 38
REVENUE: $2.1 million

"Casual," "upbeat" insurance agency conveys "the sense that your work matters," say employees. There "aren't layers or a bunch of red tape."

22. TRUEWEALTH

HQ: Atlanta
EMPLOYEES: 29
REVENUE: $6.6 million

"Management really makes an effort to keep its promises," says one worker at the wealth advisory, where colleagues pride themselves on pitching in to help one another.

23. PEPPERCOMM

HQ: New York City
EMPLOYEES: 85
REVENUE: $20.6 million

Ad agency "challenges the status quo" with such offbeat perks as stand-up comedy and improv training to foster team building.

24. GREENLEAF TRUST

HQ: Kalamazoo
EMPLOYEES: 99[1]
REVENUE: Not available

One worker marvels that even a part-time worker got two full days of "onboarding," showing the bank's commitment that newbies "fully understand the organization and its culture."

25. WISETAIL

HQ: Bozeman, Mont.
EMPLOYEES: 30
REVENUE: $2.2 million

Outdoor wellness offerings entice staffers at this provider of learning software. A program allows workers to translate praise from peers into gift certificates.

NOS. 26–50

26. ACCELERATION PARTNERS
Needham, Mass.

27. SINGLE STONE
Glen Allen, Va.

28. FIRST ORION
Little Rock

29. COASTAL PAYROLL
San Diego

30. 5
Irving, Texas

31. TAPESTRY TECH.
Chambersburg, Pa.

32. TRI COUNTY TECH
Bartlesville, Okla.

33. JANE.COM
Lehi, Utah

34. MINDFLASH TECH.
Palo Alto

35. CEROS
New York City

36. L4 DIGITAL
Seattle

37. COMMUNICATIONS STRATEGY GROUP
Denver

38. INSPIRIEN
Montgomery

39. BRAINSTORM
American Fork, Utah

40. MAMMOTH HR
Portland, Ore.

41. CROWN PAPER CONVERTING
Ontario, Calif.

42. RUBY+ASSOCIATES
Bingham Farms, Mich.

43. 97TH FLOOR
Lehi, Utah

44. HAUSMANN-JOHNSON INSURANCE
Madison

45. CAMPAIGN MONITOR
San Francisco

46. DIGITAL PROSPECTORS
Exeter, N.H.

47. THE MCKNIGHT FOUNDATION
Minneapolis

48. CLARITY COMMUNICATION ADVISORS
Southfield, Mich.

49. ECCELLA
New York City

50. ULTRA
Chicago

[1] AFTER THE SURVEY WAS CONDUCTED, THIS COMPANY HIRED ENOUGH NEW EMPLOYEES TO BE DEEMED A MEDIUM-SIZE COMPANY.


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MEDIUM-SIZE COMPANIES

(100–999 U.S. EMPLOYEES)

1

"WHAT WE DO IS NOT JUST IMPORTANT, BUT IMPERATIVE," SAYS ONE EMPLOYEE OF FUNDRAISING PLATFORM GOFUNDME.

1. GOFUNDME

HQ: Redwood City, Calif.
EMPLOYEES: 143
REVENUE: Not available

Workers at this online fundraising platform take pride that "what we do is not just important, but imperative" and that GoFundMe pitches in on "campaigns nominated by employees."

2. GROVO

HQ: New York City
EMPLOYEES: 168
REVENUE: Not available

Staffers at this provider of workplace video education cite Grovo's "energy," and one raves, "I've never worked anywhere with this blend of hard work and fun."

3. NEIGHBORHOOD LOANS

HQ: Lombard, Ill.
EMPLOYEES: 103
REVENUE: Not available

The mortgage lender draws praise for its camaraderie, which is abetted by weekly free lunches, regular employee appreciation parties, and more.

4. TCG

HQ: Washington, D.C.
EMPLOYEES: 115
REVENUE: $21.8 million

IT and management consultancy showers staffers with so many benefits (including walking-shoe reimbursement) that "HR now has a 'Benefits Tuesday'" to explain them all.

5. INTUITIVE RESEARCH & TECHNOLOGY

HQ: Huntsville, Ala.
EMPLOYEES: 318
REVENUE: $274.4 million

Programs at this aerospace-engineering company, including boot camps for certification tests, leadership training, and much more, make workers feel valued.

6. STELLAR SOLUTIONS

HQ: Palo Alto
EMPLOYEES: 177
REVENUE: $43.7 million

Workers at this provider of aerospace-engineering services love the financial perks and the fact that supervisors' bonuses are tied to their ability to get employees into their dream jobs.

7. PPR TALENT MANAGEMENT

HQ: Jacksonville
EMPLOYEES: 165
REVENUE: $69 million

Recruiters hail the "great work/life balance" and unlimited paid time off and say PPR "fiercely protects" a supportive culture through astute hiring.

8. TOTAL MERCHANT SERVICES

HQ: Woodland, Calif.
EMPLOYEES: 279
REVENUE: Not available

Myriad social benefits and programs at the credit card processor include the Miracle Squad, a group of staffers who volunteer with a different charity each month.

9. ZESTFINANCE

HQ: Los Angeles
EMPLOYEES: 100
REVENUE: Not available

Primo benefits (including paid Lyft rides for some commuters), unlimited vacation, and a diversity push resound at this provider of big-data services to help lenders gauge credit quality.

10. YEXT

HQ: New York City
EMPLOYEES: 583
REVENUE: $89 million

A passionate CEO and freebies such as lunch ordered via Seamless win accolades at Yext, which helps companies manage location data online.

11. ROTH STAFFING

HQ: Orange, Calif.
EMPLOYEES: 699
REVENUE: Not available

Employees hail the staffing company's community commitment, including volunteering on the corporate dime and Roth's donations to causes selected by employees.

12. GRANITE PROPERTIES

HQ: Plano, Texas
EMPLOYEES: 166
REVENUE: $180 million

"The level of transparency and honesty" at this commercial real estate outfit is "really quite remarkable." Granite also gets kudos for personal attention, particularly to new employees.

13. N2 PUBLISHING

HQ: Wilmington, N.C.
EMPLOYEES: 193
REVENUE: $100 million

"Cultural fit is a competency, not an extra" according to custom publisher N2, citing an aversion to "brilliant jerks." Workers say the company lives up to that standard.

14. FIRST AMERICAN EQUIPMENT FINANCE

HQ: Fairport, N.Y.
EMPLOYEES: 160
REVENUE: $52.9 million

Work is built around small teams, and, one staffer notes, "They allow everyone to voice their opinion and actually encourage ideas that challenge the status quo."

15. CHILD TRENDS

HQ: Bethesda, Md.
EMPLOYEES: 172
REVENUE: $15.4 million

This nonprofit provides information and analysis to help children, a rewarding vocation. Professional development programs include ones that cultivate employees as thought leaders.

1: COURTESY OF GOFUNDME.COM


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IT COST
SAVINGS
Save up to 30% on infrastructure costs and invest in innovative solutions
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MEDIUM-SIZE COMPANIES (100–999 U.S. EMPLOYEES)

16. WEST MONROE PARTNERS

HQ: Chicago
EMPLOYEES: 850
REVENUE: $127 million

One respondent praises the openness across "all levels" at this tech consultancy, which offers extra cash to those who spend large amounts of time on the road helping clients.

17. BANKERS HEALTHCARE GROUP

HQ: Davie, Fla.
EMPLOYEES: 299
REVENUE: $143.4 million

This lender to medical professionals sends daily inspirational videos to staffers to foster a "positive mental attitude" and adds a healthy dose of perks.

18. WILLOWTREE

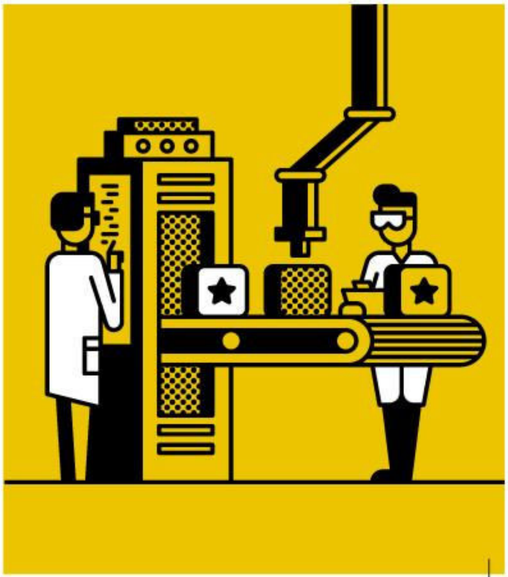
HQ: Charlottesville, Va.
EMPLOYEES: 170
REVENUE: $13 million

This app builder trusts its workers, pairs newbies with mentors, and pays for staffers to attend a conference each year—as long as they share what they learn with colleagues.

19. EVERGREEN HOME LOANS

HQ: Bellevue, Wash.
EMPLOYEES: 669
REVENUE: Not available

Esprit de corps shines at this mortgage lender, with its president and executives viewed as particularly attentive to making staff feel "important and part of a great team."



18

"WILLOWTREE PUTS A LOT OF EMPHASIS ON COLLABORATION AND TEAMS, AS WELL AS KNOWLEDGE-SHARING," SAYS ONE EMPLOYEE.

20. ZURIXX

HQ: Cottonwood Heights, Utah
EMPLOYEES: 107
REVENUE: $130 million

Managers and owners are "not afraid to get their hands dirty and do jobs or projects that many would consider below them" at this developer of financial education programs.

21. FUNERAL DIRECTORS LIFE

HQ: Abilene, Texas
EMPLOYEES: 168
REVENUE: $276.6 million

This provider of prepaid funeral insurance earns plaudits for "always looking into ways to feed our mind, body, and souls" with an array of perks, including a "prayer team."

22. HORIZON PHARMA

HQ: Dublin, Ireland
EMPLOYEES: 892
REVENUE: $757 million

The biopharma nurtures workers' sense of their calling's importance by connecting them to patients via video. "I feel that I am making a difference," says one staffer. It's "a real motivator."

23. TEXAS REHAB. HOSPITAL OF FORT WORTH

HQ: Fort Worth
EMPLOYEES: 150
REVENUE: $26 million

Egalitarianism pays off: Senior executives have "personally cleaned the facility at times. Every employee is considered an integral part of the success of the organization."

24. ENGEO

HQ: San Ramon, Calif.
EMPLOYEES: 183
REVENUE: Not available

Collaboration and communication get high marks at this engineering and consulting operation, which encourages staffers to be their own boss.

25. ESL FEDERAL CREDIT UNION

HQ: Rochester, N.Y.
EMPLOYEES: 717
REVENUE: $184.5 million

Good relations with customers boost morale at this credit union. Employee development programs and widely available financial incentives help too.

NOS. 26–50

26. EDMUNDS.COM
Santa Monica

27. FAST ENTERPRISES
Centennial, Colo.

28. BURWOOD GROUP
Chicago

29. AGILETHOUGHT
Tampa

30. BLACH CONSTRUCTION
San Jose

31. TORCH TECH.
Huntsville, Ala.

32. HEALTH CATALYST
Salt Lake City

33. WALKER & DUNLOP
Bethesda, Md.

34. VTS
New York City

35. NEWSCRED
New York City

36. FONA INTERNATIONAL
Geneva, Ill.

37. ON DECK CAPITAL
New York City

38. POWER DESIGN
St. Petersburg

39. COLLABORATIVE SOLUTIONS
Reston, Va.

40. RENOVATE AMERICA
San Diego

41. NATIONAL MI
Emeryville, Calif.

42. HORAN
Cincinnati

43. KAYAK SOFTWARE
Stamford, Conn.

44. REVZILLA.COM
Philadelphia

45. EKS&H
Denver

46. 4IMPRINT
Oshkosh, Wis.

47. INTELLINET
Atlanta

48. PATRÓN SPIRITS
Las Vegas

49. INTEGRATED PROJECT MANAGEMENT
Burr Ridge, Ill.

50. SHAWMUT DESIGN AND CONSTRUCTION
Boston

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MANAGING COMPLEXITY IN THE CLOUD

Hybrid cloud and **multicloud implementations** are giving IT organizations the functionality and features they need. But experts say they're also causing worry.

RESEARCH TELLS US THAT CLOUD technology has crossed over into the mainstream. Companies of all types are using the cloud for applications, infrastructure, and storage, among other things. A recent 451 Research study notes that 41% of workloads are in the cloud today, and adoption is expected to top 60% in only two years. Another study, by Accenture, finds that 95% of C-level executives surveyed have a five-year cloud strategy in place. Oracle CEO Mark Hurd even went so far as to say that by 2025, 80% of IT budgets will go directly to the cloud.

Many CIOs are pursuing either a multicloud strategy, tapping multiple cloud vendors for their needs, or a hybrid cloud model, using a combination of on-premise, private, and public cloud offerings. A multicloud strategy allows organizations to use best-of-breed IT resources, whereas a hybrid cloud keeps sensitive data isolated while benefiting from the public cloud. But there's a learning curve. CIOs may have entered the cloud for agility and ease of use, but they're finding it takes work to get the most out of advanced cloud implementations.

ALL TOGETHER NOW

One of the biggest challenges is integration—both between disparate cloud services and when marrying on-premise data, applications, and resources with cloud-based assets. It's something that takes a lot of work and time, says Ettienne Reinecke, group chief technology officer at Dimension Data, a global IT solutions and full-service cloud provider that offers public, private, and hybrid cloud.

"Getting basic integration between clouds—there are so many subtleties," he says. First, IT must understand the integration architecture for every IT resource they want to access with or via the cloud. When you run a workload in the cloud, Reinecke says, some parts can be run in the cloud


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and some can't. This creates a hybrid implementation, and IT is faced with a tough question, he says: "How do you [support a hybrid IT situation] at a good price point and without compromising your compliance and security—while still allowing the full ability to access the data by the end user?"

There are other considerations, too. Data must be shareable, so mapping data flows and architecting systems connections must be part of the overall cloud agenda. "Companies often have applications and business processes running on different clouds—the company's data is spread out, creating a monumental challenge for the IT storage manager and chief data officer," agrees Eileen Sweeney, senior vice president and general manager, data management, at Iron Mountain, a firm that protects and preserves data in physical and digital media. "IT needs to have skilled resources focused on all that data wherever it is. The challenge is not just storing the data but ensuring that data sovereignty, compliance with regulatory requirements and that the policies governing the data are enforced."

> "There's an assumption that the cloud provider is scanning all of the files and applications you put out there, but they don't. If you build a vulnerable app and put it in the cloud, it's still vulnerable."
>
> —**LORI MACVITTIE,** member, CloudNOW advisory board

The answer, she says, is to create a cloud-based centralized repository where all secondary data is stored, minimizing management, controlling costs, and ensuring that policies for compliance are being followed. "This is very difficult to do when your data is in 19 places," Sweeney says.

Companies that can't set up a repository right away can still benefit from cloud-based data by thinking about what they want to achieve, says Eric Hanselman, chief analyst at 451 Research. "Businesses ought to be working with an ecosystem of partners. Everyone has cloud-based tools that they are lashing together [in] an ad-hoc fashion. It might be worth it to take a step back [from the cloud] in some cases."

SAFE AND SOUND

While most security concerns have been put to rest for public cloud, complex multi-cloud/hybrid cloud models introduce potential security pitfalls. Data in the cloud is probably more secure than data on premise, but moving data between resources and providing users with cloud access to that data can put it at risk.

"For companies choosing cloud storage, the security angle is a little different. Not only do they want to make sure the data is protected—as in, it cannot be manipulated by anyone and that they can control access and authorization to that data—but more important for the purposes of compliance and regulatory requirements, they must have confidence that the data will be exactly as it was when they moved it to the cloud," says Iron Mountain's Sweeney. "There aren't a lot of providers that have that discipline and expertise."

Applications in the cloud are not immune to security threats, either, says Lori MacVittie, a member of the CloudNOW advisory board, a non-profit consortium of the leading women in cloud computing.

"In the enterprise, we secure the front door, but with the cloud we let people in," she says. "There's an assumption that the cloud provider is scanning all of the files and applications you put out there, but they don't. If you build a vulnerable app and put it in the cloud, it's still vulnerable. It's not so much a concern where people should say, 'Should I go cloud or not?' They just need to plan and protect better." That planning should include the creation of strict policies and controls as well as vetting cloud providers carefully.

IT organizations should also realize that their cloud providers are not necessarily the ones responsible for backup and recovery of their data. "Today, backup and recovery is crucial to ensure that organizations minimize business disruption and productivity loss," says Dimension Data's Reinecke. "Understanding what is provided as standard within the cloud service, as well as what the requirements and costs are to implement backup and restore services, should be one of the criteria in selecting cloud providers. A word to the wise: Ask the right questions of a cloud service provider regarding backup and recovery, and also ensure that your organization has an up-to-date, executable disaster recovery plan."

If these issues can't be mitigated, end-user experience can suffer, affecting productivity and possibly revenue. Businesses that succeed in creating a multicloud/hybrid cloud implementation, however, may reap more innovation, better customer satisfaction, and a competitive advantage. "It's not even about cost efficiencies anymore," explains David Linthicum, senior vice president of Cloud Technology Partners. "It's about the strategic value of agility and speed to market."


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FROM THE GYM TO THE RUNWAY

Athleisure isn't going away—it's moving into high fashion. Think comfort crossed with style. BY JOHN KELL

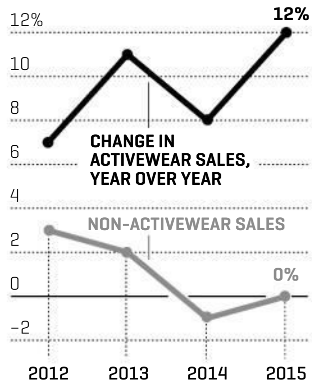
IF THE TERM "ATHLEISURE" still has you thinking of Tony Soprano in his velour tracksuits, you need to catch up. For a while now the creative class has embraced athleisure, even wearing high-end yoga pants and colorful sneakers to work, but in 2016 athleisure has officially become high fashion.

At this year's New York Fashion Week, athletic brands like Adidas and Under Armour, best known for soccer cleats and basketball shoes, unveiled their high-end designs. Adidas, with rapper Kanye West, showed a $555 cream-colored sweater, as well as camouflage jackets and baggy sweatpants, while designer Tim Coppens steered Under Armour's debut of equestrian pants, down vests, and a $1,500 wool trench coat. Two weeks later in Paris, Puma and pop star Rihanna unveiled fashions inspired by 18th-century France that added a pop of color, ruffles, and bows ▷▷

Designer Tim Coppens says his Under Armour collection (above) adds functionality without "looking too technical."

COURTESY OF UNDER ARMOUR

RETAIL



SOURCE: THE NPD GROUP

▷▷ to transform traditional tracksuits and tennis dresses.

Athletic-gear makers are betting that their brands can compete in a world that relies less on sport but craves comfort. “We took references from the field and translated them into what you would wear in an everyday setting,” Coppens says. He points to a $129 cotton-synthetic fiber oxford shirt in the collection. An everyday, ready-to-wear piece, it also incorporates water repellency.

While Lululemon had early success getting women out of jeans and into yoga pants, increasingly both men and women are donning athletic gear for a coffee run, a meet-up with friends, or even, in some cases, work. The result: slam-dunk sales for activewear apparel, which grew by 12% last year, to $39.9 billion.

Since 2010, athletic-gear sales have more than doubled at Lululemon, tripled for Under Armour, and increased by double-digit rates at rivals Nike, Adidas, and Puma, annual reports show.

Designers and executives predict that the movement toward comfort will only continue to spread. “Athleisure is not a trend that is a moment in time,” says Ben Pruess, senior vice president of sportswear at Under Armour. “It will evolve to modern sportswear.”

Under Armour and Lululemon designers say their fashion-focused clothes support “transition” moments: jumping into an air-conditioned subway car on a hot summer day or riding a bike to work and working up a sweat—but needing to look cool for your day in the office. “We think of how people are commuting and how you outfit in a functional way,” says Lululemon designer Pascale Guéraçague.

The stylish wares cost more than the core lines and are sold in limited quantities. For example, Under Armour’s Coppens-designed fleece sweatpants are priced at $139, vs. $55 for best-sellers in the traditional athletic-wear line. There is also a lot of competition. H&M and Urban Outfitters are at the lower end; designers like Tory Burch and Versace are adding couture; and Beyoncé, Carrie Underwood, and other celebrities are piling in.

Even if Under Armour’s and Puma’s latest ventures into athleisure do not sell big, these experiments will probably serve them well. They can broaden their brand appeal to new consumers and incorporate cutting-edge elements of design into their more mass-produced styles.

And, of course, it serves customers too, says NPD Group sports industry analyst Matt Powell. “If it weren’t for fashion,” he says, “we would all be wearing black shoes.”

Kanye West’s Yeezy Season 4 collection for Adidas features baggy sweats. It debuted at New York Fashion Week.

Lululemon’s designs from the company’s Lab Space focus on what it calls transitional wear, pieces that can be layered.

Rihanna’s Fenty Puma collection reinterprets tracksuits, boxing robes, and polos with oversize shapes.

FROM LEFT: COURTESY OF ADIDAS; COURTESY OF LULULEMON; THOMAS CONCORDIA—WIREIMAGE/GETTY IMAGES

The aurora borealis over a road near Vík in southern Iceland, a common sight during the country's long winter nights. Below: The author (right) and her Icelandair stopover buddy pause for a snack.

10-HOUR LAYOVER? LUCKY YOU

How Icelandair made waiting for connecting flights a thing of beauty. **BY ANNE VANDERMEY**

TRAVEL

ICELANDAIR IS THE LARGEST public company in Iceland—and one of the country's biggest boosters. The airline has differentiated itself by making the layover, a scourge of international travelers everywhere, into a perk. The pitch: You're flying from New York to London and you have to stop somewhere, so why not spend some time in the land of primordial hot springs, rushing waterfalls, and otherworldly blue glaciers?

Starting this year, Icelandair has sweetened the deal, offering travelers a "stopover buddy," an airline employee to accompany you around the country during your layover.

On a recent visit, Icelandair set me up with Margrét Halldórsdóttir, a veteran flight attendant with Viking-white blond hair and a lilting Icelandic accent, as a buddy. Behind the wheel of a manual-drive SUV, she ably sped through Reykjavík, past Björk's house, and out along Iceland's Ring Road, with the country's windswept hillsides rolling off in every direction toward the freezing ocean. We stopped at Geysir, where hot springs fling steaming water 100 feet in the air; Gullfoss, a gigantic waterfall less than two hours from Reykjavík; and the front door of the President's house (in Iceland, there is no

fence). Halldórsdóttir, a consummate guide, conducted the tour with humor and charm, even bringing along a bag of *kleiner*, Icelandic pastries, as a grace note.

The buddy program, available from October through March, is part of Icelandair's efforts to make summer-heavy Icelandic tourism a year-round affair. This season the program is focusing on the country's winter festivals and lesser-known attractions. Space is limited: The company had around 800 requests when it ran the program earlier this year, and just 150 spots.

That's no surprise. Visitors to the country have increased threefold since 2010. Part of the credit goes to Icelandair itself, whose deft marketing helped drive the boom. Like a good prospector, the company discovered that Iceland's most valuable natural resource was its scenery. Wherever the airline is taking you, expect the layover to be the highlight of the trip.

10 HOURS IN ICELAND

Start at Blue Lagoon, a short drive from the airport, and sip a green juice (or beer) as you float in milky blue water and apply natural-mineral skin masks.

Taste the perfect cinnamon buns from Brauð & Co. and bring them to Reykjavík Roasters for excellent coffee in a java-obsessed country.

Shop along the Laugavegur, the main shopping street, which is closed to cars (just don't try to pronounce it).

Get out of town. Drive to Gullfoss waterfall by way of Thingvellir National Park, which some scholars believe to be the birthplace of modern democracy.

Take in the surreal landscape and moss-covered rocks near Thorsmork. ATV rentals (summer) and northern lights tours (winter) are also available.

Grab dinner in Reykjavík. Saeta Svinid Gastropub is Iceland's answer to Manhattan's trendy Spotted Pig restaurant. Or just pick up one of the city's famed street hot dogs.

FROM TOP: LOOP IMAGES—UIG VIA GETTY IMAGES; COURTESY OF WALLY NOWINSKI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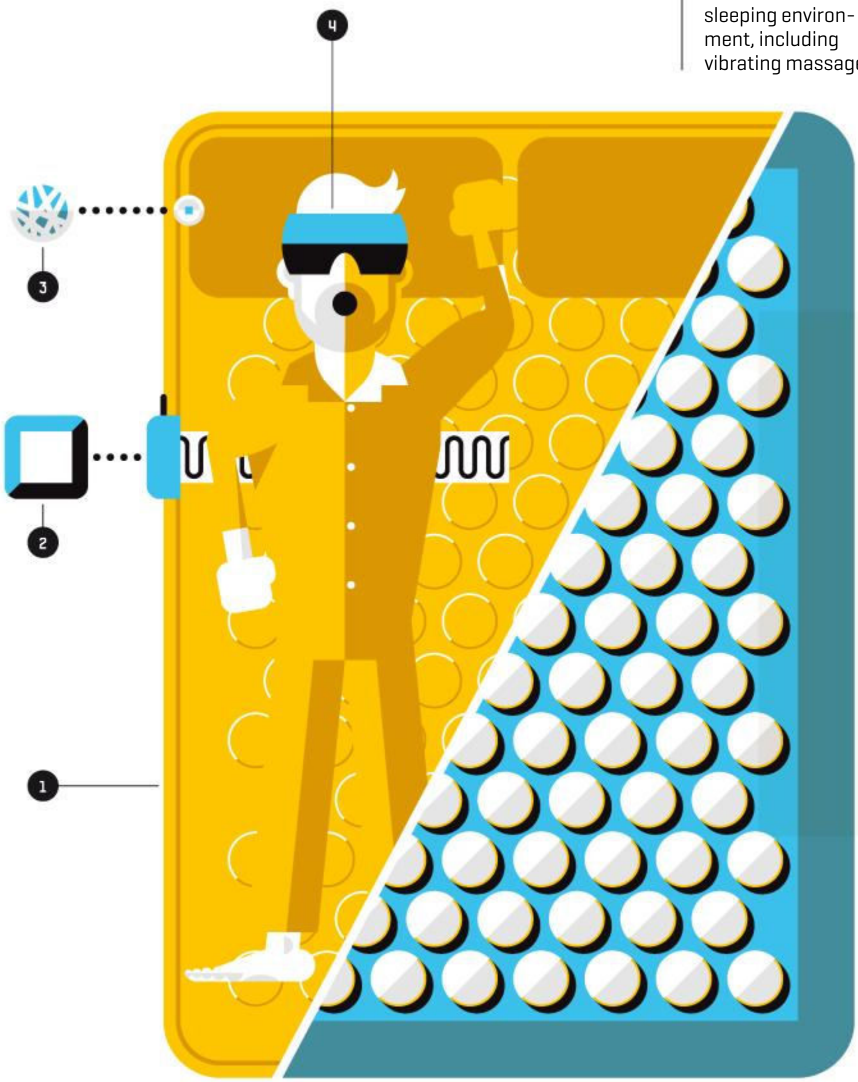
THE INTERNET OF THINGS ... IN BED

HOME TECH

One in three people aren't getting enough sleep, according to the Centers for Disease Control and Prevention. So a cavalcade of products are aiming to address sleep issues—the global market for sleep aids is projected by BCC Research to reach $76.7 billion by 2019—and many of them are connected. Here are some of the latest.

BY COLLEEN KANE



1. BALLUGA

Cost: $1,629 for a twin mattress; up to $5,000 for a customized bed (balluga.com).
What it does: A smart bed ordered via the Indiegogo marketplace, it offers a customizable sleeping environment, including vibrating massage, climate control, and an antisnoring system that works by automatically elevating the snorer's head. An active-suspension system monitors the bodies on the bed, adjusting pressure as people move so that each sleeper's spine is properly supported.
Caveat: It's unknown what percentage of snorers the Balluga's head-raising tactic will actually work for.

2. JUVO

Cost: $199 (juvolabs.com)
What it does: It turns an existing bed smart. Using a flat sensor mat, Juvo tracks your heart rate, movement, and breathing. It determines if sounds or light are disturbing sleep; the smart alarm chooses the lightest point in your sleep cycle to wake you up. It pairs with other smart home components so it can turn on smart lights or adjust a thermostat.
Caveat: Juvo combines features already available in sleep apps, paired with the connectivity to smart devices, so it may not seem necessary if you already are happy using sleep apps.

3. SENSE WITH SLEEP PILL

Cost: $129 (hello.is)
What it does: It is a futuristic bedside orb, packing smart alarm and sound-machine functions, as well as sleep-monitoring capabilities, through a Sleep Pill unit (about the size of a quarter) that clips onto the pillow. It offers comforting soundtracks like a fireplace or white noise.
Caveat: It may be better for those interested in improving sleeping conditions than for its sleep-tracking technology.

4. LUMOSTECH SMART SLEEP MASK

Cost: $199 (lumostech.co)
What it does: Billed as an anti-jet-lag sleep mask, it delivers personalized light therapy, including a dawn simulator to sync your body clock for your destination. Whether you're an astronaut, a night-owl teen, or just new to the late shift, LumosTech claims its mask can tailor a sleep schedule to your need. Powered by a rechargeable lithium-ion battery, the mask also tracks the wearer's sleep history and sleep quality.
Caveat: While flashing-light therapy technology is promising, it's still being studied and no guarantees can be made to its effectiveness. The mask is due out in early 2017.

ILLUSTRATION BY L DOPA

A DIVERSIFIED PORTFOLIO

This season showcased the depth and variety of the **PGA TOUR's** talent pool.

PGA TOUR SEASONS CAN PROVE TO be star vehicles or ensemble pieces. If the 2014–2015 season centered on the emergence of Jordan Spieth as a global phenomenon, the 2015–2016 season that just concluded underscored the tremendous scope of talent in this winning cast. Champions, heralded and unheralded, were young or graying and everything in between, producing Hollywood-worthy storylines and drama straight through to the rousing climax of the 10th FedExCup Playoffs in late September, won in remarkable fashion by Rory McIlroy at the TOUR Championship in Atlanta.

The season's autumn opening began with five first-time winners, all 30 years of age or younger: eventual Rookie of the Year Emiliano Grillo and Smylie Kaufman (both 23); 22-year-old Justin Thomas, in his sophomore year on TOUR; relative newcomer Peter Malnati, 28; and Russell Knox, just out of his 20s. For a time, it looked as though the PGA TOUR might have to rebrand its familiar marketing campaign as "These Kids Are Good."

RORY MCILROY shows off his FedExCup and TOUR Championship trophies after his victory over Ryan Moore and Kevin Chappell.

In January, however, plot twists emerged. Many were surprises; all were pleasant. Underdog champions popped up frequently, starting with Fabian Gomez winning over Brandt Snedeker in a January playoff at the Sony Open in Hawaii, the first full-field event of 2016. Vaughn Taylor squeaked past Phil Mickelson at the AT&T Pebble Beach Pro-Am in February for his first TOUR win in 11 years. And in early April, veteran player Jim Herman captured the Shell Houston Open over Henrik Stenson and Dustin Johnson, punching his ticket to the Masters the following week.

Brian Stuard and William McGirt also notched their first TOUR triumphs, at the Zurich Classic of New Orleans and the Memorial Tournament presented by Nationwide, respectively, both after more than a decade as professionals. Then there was the storybook victory by former Naval officer Billy Hurley III, ranked 607th in the world when he took the Quicken Loans National near his hometown of Annapolis, Md., on a sponsor's exemption from host Tiger Woods, who pays special tribute to the military throughout the week.

Jason Day, meanwhile, after winning the Arnold Palmer Invitational presented by MasterCard, ascended to the No. 1 spot in the FedExCup and world rankings by winning the World Golf Championships-Dell Match Play the following week in the tournament's new home of Austin, Texas. The Aussie then solidified his hold with a

KEVIN C. COX/GETTY IMAGES SPORTS

DUSTIN JOHNSON, whose three wins included the U.S. Open (pictured), was voted Player of the Year by his peers.

DAVID CANNON/GETTY IMAGES SPORTS

dominant four-stroke, wire-to-wire victory at THE PLAYERS Championship. In addressing the significance of the win, Day called THE PLAYERS "such a huge event. This is one of those tournaments where, if you're on the border of getting into the Hall of Fame, this could kick it over and get you into the Hall of Fame."

The prevalence of first-time major championship winners was also a storyline, albeit with more familiar names. England's Danny Willett, 28, well known to European Tour fans, played a nerveless back nine to overtake Spieth and capture the Masters. Johnson shed the "best player without a major" tag at historic Oakmont (Pa.) Country Club with a dramatic triumph at the U.S. Open, earning the first of his three titles for the season, which ultimately would lead to his being voted Player of the Year by his peers. Johnson also extended his TOUR-best active streak to nine consecutive seasons with at least one victory, joining Arnold Palmer, Jack Nicklaus, and Tiger Woods as the only players to do so from the outset of their PGA TOUR career. At The Open Championship at Royal Troon in Scotland, Stenson became Sweden's first-ever male major champion in grand style, outlasting Phil Mickelson in one of the greatest Sunday duels ever staged, with his record-tying 63 to Mickelson's 65 concluding in a three-stroke triumph. Jimmy Walker cemented the theme two weeks later with his breakthrough major, triumphing over Day and capturing the PGA Championship by a shot at the Baltusrol (N.J.) Golf Club.

While some may have had doubts about golf's return to the Olympic Games, it proved to be a triumph. Great Britain's Justin Rose edged out Stenson for the gold medal in front of a huge crowd on the majestic new Gil Hanse–designed golf course. Team USA's Matt Kuchar shot one of the clutch rounds of the year, a closing 63, to take home the bronze. "I've never been so happy with a third-place finish in my life!" Kuchar exclaimed afterward.

As for the trio that began the season as golf's new "Big Three," Spieth and McIlroy joined Day in adding multiple trophies to their mantle. Spieth won 2016's first event, the Tournament of Champions, in Maui, and later added the DEAN & DELUCA Invitational in Fort Worth, essentially a hometown victory for the Dallas native.

In early September, a late-charging McIlroy showed that he had returned to top form during the FedExCup Playoffs. His first victory of the PGA TOUR season came at the Deutsche Bank Championship in Boston, the second Playoffs event, and then, for his encore, he staged a brilliant late rally at the TOUR Championship, including perhaps the shot of the year with his hole-out wedge for eagle on the 70th hole. That forced a playoff that McIlroy would capture over Ryan Moore and Kevin Chappell—and in doing so edged out Johnson to become the 10th FedExCup Champion.

"I'VE NEVER BEEN SO HAPPY WITH A THIRD-PLACE FINISH IN MY LIFE!"

**– MATT KUCHAR
TEAM USA**

Such end-of-season fireworks are why the TOUR's Web.com Tour and over-50 PGA TOUR Champions both launched their own playoff tournament series, the Web.com Tour in 2013 and PGA TOUR Champions in 2016. The stage is beautifully set for a successful sequel next season.●

— EVAN ROTHMAN

PHOTOGRAPH BY BRIAN HENN

THE RED TAPE CONUNDRUM: HOW THE WRONG KIND OF REGULATION IS STRANGLING BUSINESS— AND WHAT TO DO ABOUT IT

BY BRIAN O'KEEFE

▲ ILLUSTRATION BY **TIMOTHY GOODMAN**

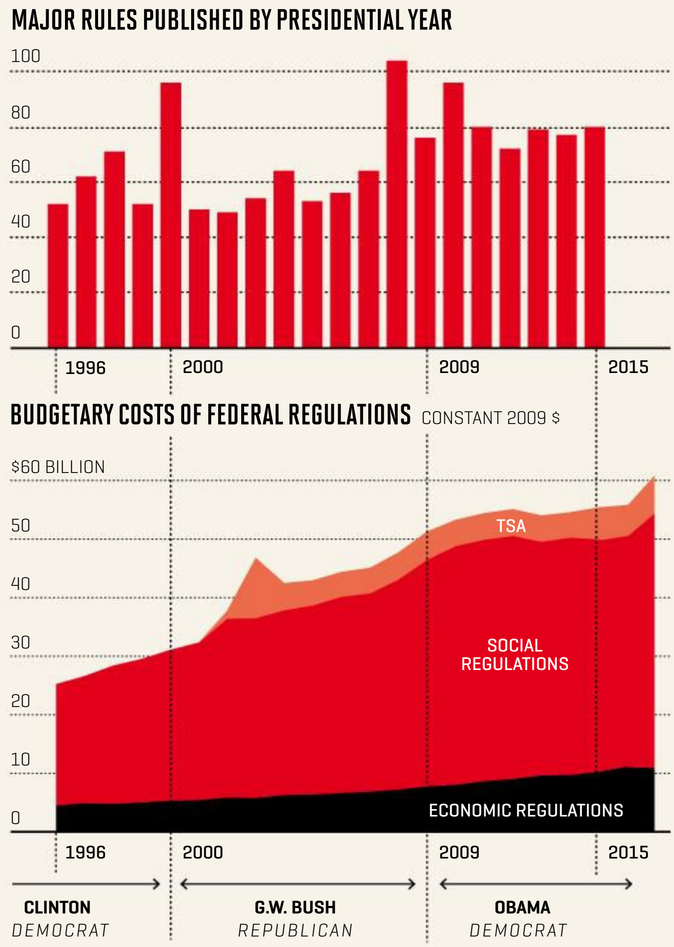
I T MAY WELL BE the biggest bogeyman in business—bigger, perhaps, than even taxes: We're talking, of course, about red tape. The idea that burdensome and overly complicated government regulation is strangling growth is almost as old as commerce itself. But right now the hue and cry from the business community is louder than at just about any time in recent memory.

THE RED TAPE CONUNDRUM

Concern about regulation is soaring among executives. In a recent survey by Deloitte, North American chief financial officers named new, burdensome regulation as the No. 2 threat to their business, behind only the possibility of a recession. When the National Federation of Independent Business, which represents 325,000 small U.S. companies, conducted its quadrennial survey earlier this year, its members identified "unreasonable government regulations" as the second-biggest threat, after rising health care costs. And for a fourth year in a row, the CEOs surveyed by the Business Roundtable for its annual economic outlook cited regulation as the top cost pressure facing their companies.

Red tape has emerged as a major talking point in the presidential campaign—with each candidate approaching the topic in characteristic fashion. Hillary Clinton has promised to be the "small-business President" and has wonkishly outlined plans to cut red tape by streamlining the startup process for entrepreneurs and expanding access to credit through community banks and credit unions.

Donald Trump, meanwhile, has taken a more shoot-from-the-hip approach. The Republican nominee has vowed to roll back many of the new regulations enacted under President Obama, including environmental standards designed to address climate change. Trump's campaign has proposed a 10% overall reduction in regulations. But the candidate himself has at times suggested a more sweeping overhaul. On the same day that a videotape from 2005 surfaced showing Trump bragging about his aggressive sexual behavior—a revelation that sent his poll numbers crashing—the nominee cavalierly told a



SOURCE: REGULATORY STUDIES CENTER, WASHINGTON UNIVERSITY crowd at a town hall in New Hampshire that he would eliminate the majority of federal agency regulations if elected. "I would say 70% of regulations can go," Trump said. "It's just stopping businesses from growing."

Red tape is clearly a major source of friction—but is it really strangling business? The answer is less obvious than it may seem. For a phenomenon that's seemingly ever present, red tape can be harder to pinpoint than you might think. Weighing the costs of regulations against their benefits is not always a straightforward task. How do you tweak your model, for example, to account for slowing down a global-warming Armageddon? Or fully account for the stability—and transparency—that keep your financial markets healthy?

Even economists who believe that the system is flawed have a hard time quantifying the issue. "I do think that our economy loses resilience and adaptability because the regulatory structure is so rigid," says Michael Mandel, chief economic strategist at the center-left Progressive Policy Institute and one of Washington's top thinkers on regulatory reform. "I would say that our sluggish growth is partly connected with regulation. But it's hard for me to put a number on it. And God knows I've tried."

We can certainly intuit the drag of bureaucracy—in the increasingly long and expensive process of developing new medications, for instance. And there are endless examples of how, in isolation, red tape appears to cost us plenty. Infrastructure projects that get delayed for years—with tens of thousands of pages of environmental reviews and permits—resulting in millions in extra costs.

The U.S. remains a friendly market relative to most countries, but there are signs of slippage. In its "Doing Business 2016" report, which assesses economies around the globe by regulatory efficiency, the World Bank ranked the U.S. at No. 7, down from No. 4 five years ago. America came in below China (No. 5) but ahead of Germany (No. 15).

In a bigger sense, a growing number of observers worry that our 20th-century regulatory system may be unfit for an increasingly complex and fast-changing world. How can we be sure that our regulatory framework promotes innovation and fosters growth while at the same time protecting workers and consumers? Can we fix the current system or do we need to start over? And how much is business at fault for the very excesses that companies themselves bemoan? Heck, where does red tape even come from, and how is it gumming up the works? And, finally, is there anything anybody can do to stop it?

Fortune set out to explore those questions and more in recent weeks—through dozens of interviews with CEOs, investors, researchers, academ-

TALE OF THE TAPE: CLINTON VS. TRUMP

For the most part, Hillary Clinton and Donald Trump have directly diverging views of regulation. Clinton favors a heavier hand to bring Wall Street and other industries to heel, while easing rules for small businesses. Trump by contrast has called federal rules a "stealth tax" and wants to roll them back across the board. But here are three places each of the candidates would seek to trim red tape if elected.

HILLARY CLINTON

Streamline the licensing process to make it cheaper and faster, and standardize licensing rules across states to make it easier for small-business owners to operate in different states.

Ease the way for credit unions and small banks to lend to small businesses, in part by incentivizing state and local governments to cut red tape—and making the feds more responsive to questions about regulations.

Simplify the eligibility requirements for small businesses seeking a tax credit through the Affordable Care Act to offer coverage to employees.

DONALD TRUMP

Repeal both the Affordable Care Act and the Dodd-Frank package of regulations approved as a response to the financial crisis.

Dramatically scale back rules on the energy industry to open federal lands and offshore areas to oil and gas exploration, issue new coal-mining leases on federal land, remove rules protecting waterways and wetlands from industry, and scotch the Obama administration's plan to curb greenhouse-gas emissions from power plants.

Delay all new regulations in order to conduct a review of those already on the books. —TORY NEWMYER

▲ ILLUSTRATIONS BY **JASON SCHNEIDER**

BUSINESS RULEMAKING IN THE U.S.: A BRIEF HISTORY

By ERIKA FRY and MARTY JONES

01 **1787** The U.S. Constitution establishes a new government structure and the nation's first set of rules. The Commerce Clause empowers the government to regulate business with foreign nations and among states.

02 **1838** The explosion of the riverboat *Moselle*, a tragedy that killed 100-some passengers on the Ohio River—just one of many such deadly incidents—leads to the Steamboat Act, the first federal regulation of private industry.

03 **1887** The Interstate Commerce Commission becomes America's first independent regulatory agency, formed to curb the monopolistic practices of railroads.

04 **1906** Muckraking journalism and Upton Sinclair's exposé *The Jungle* help push Congress to pass the Pure Food and Drug Act and the Federal Meat Inspection Act of 1906 to end adulteration.

THE RED TAPE CONUNDRUM

NEW RULES FOR NEW FRONTIERS

As attitudes shift and technology advances, regulators ploddingly follow. The process can be messy, incremental, and sometimes painfully slow—but new policies are emerging.

Gene editing. A mosquito engineered to resist malaria could save lives. But how would it be regulated? As tools such as Crispr—which can modify everything from crops to human embryos—are refined, the technology will become an international regulatory issue. Mosquitoes, after all, have a way of not staying put.

Self-driving cars. Experts predict that within three to seven years autonomous cars will take to the open road. In anticipation, federal regulators released guidelines that outline safety, privacy, and design expectations. One unresolved issue: how to assign liability. According to Karl Brauer, executive publisher of Autotrader and Kelley Blue Book, accidents will rarely be the car's fault: "94% are caused by human error."

Drones. The FAA released new commercial rules that loosen restrictions on tasks from aerial photography to search and rescue. Per the guidelines, a drone must be in an operator's line of sight and not fly over unaware people. But companies (ahem, Amazon) may apply for waivers, which means delivery by drone is not entirely out of the question.

Augmented reality. The technology, which enhances one's real-world surroundings by adding a layer of digital information, doesn't require regs. But it could lead to protections for privacy in public (a point also raised by Google Glass, which made it easy to record video). "Eventually," predicts law professor Ryan Calo, "we will abandon the idea that you have no reasonable expectation of privacy in public spaces."

—LAURA ENTIS

ics, economists, and policy experts—and tried not to get knotted up in the process.

FIRST, WE OFFER precisely six lines of history: The phrase "red tape" in English goes back hundreds of years. It originally referred to the red ribbons that were used to bind up important legal documents. By the time of Dickens, the term had become synonymous with the idea of bureaucratic waste and inertia. (Lesson over.)

How exactly do we define red tape today? The idiom is ubiquitous, but the meaning is mushy for most people. Not so for Barry Bozeman, the director of the Center for Organization Design and Research at Arizona State University and one of the academic world's leading experts on the topic. He offers this definition: "rules, regulations, and procedures that have a compliance burden but do not achieve the functional objective of the rule."

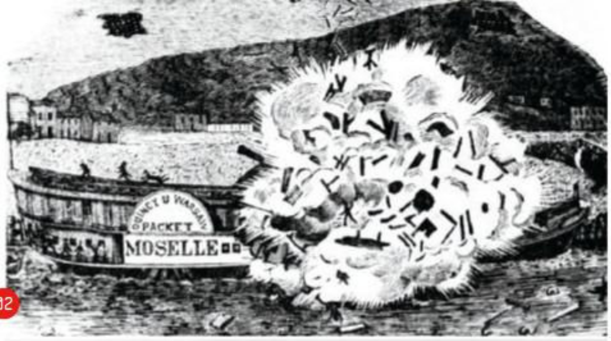
In Bozeman's mind this leads to a crucial distinction. "The first problem that people usually run into when they're asking about red tape is that they're asking about the wrong thing," says Bozeman, coauthor of an influential 2011 academic treatise called *Rules and Red Tape*. "Because red tape and rules are not the same thing. You can have one rule and it can be nothing but terrible red tape if it doesn't accomplish a goal. Or you can have a bunch of rules that are incredibly effective, and none of them would be red tape."

Companies are certainly more than capable of creating their own bureaucracies, and do. But when business leaders complain about red tape, they're almost always griping about government regulations.

Lately, much of that grumbling has been directed toward President Obama. There is growing frustration in the business community about the amount and ambitious scope of new federal regulations being produced by his administration. In the first installment of a six-part look back at his presidency, the *New York Times*, hardly a stalwart of conservatism, called Obama "the Regulator in Chief" and asserted that he will leave office as

05 1919
Congress passes the Volstead Act, empowering the IRS to enforce Prohibition. Doctors can prescribe alcohol, though the practice is highly regulated.

06 1933
The stock market crash and bank failures of the Great Depression inspire stricter financial regulation: The Glass-Steagall Act effectively separates commercial and investment banking, the FDIC is formed, and then the SEC follows (first led by Joseph Kennedy) in 1934.



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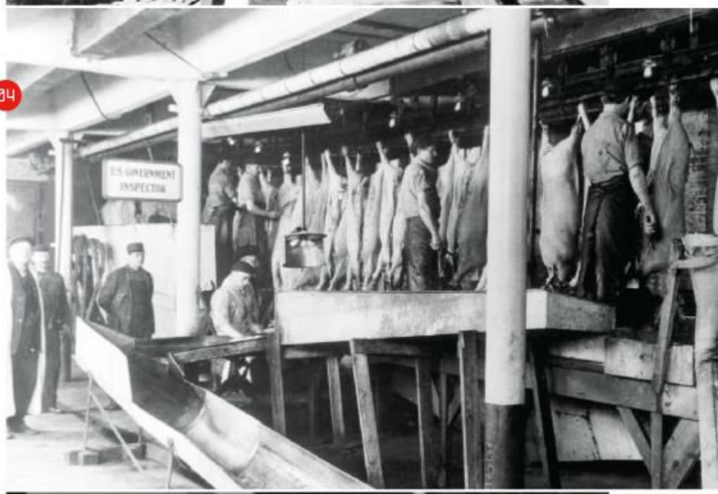

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"one of the most prolific authors of major regulations in presidential history."

The numbers bear that out. A total of 560 major regulations—those having an economic impact of $100 million or more—were published in the first seven years of the Obama administration, according the George Washington University Regulatory Studies Center, compared with 494 for his predecessor, George W. Bush. And the number of new rules passed typically spikes in a President's final year in office.

Two major new sources of regulations under Obama were the landmark laws enacted in 2010: the Dodd-Frank bill, a massive response to the financial crisis of 2008, and Obama's signature Affordable Care Act, the contentious law that brought health care to millions of uninsured Americans. (The law firm Davis Polk calculated last year that the more than 22,000 pages of rule releases related to Dodd-Frank added up to more than 34 copies of *Moby-Dick*.) But with Congress unable to pass much of anything in recent years, the President has empowered his executive branch to pursue policy goals ranging from the battle against climate change to improving workplace safety.

Ask Big Business whether these are rules or red tape and you'll get a full-throated answer: "The CEOs of the Roundtable absolutely would say that one of the reasons that GDP is limping along where it is, in the 1% or 2% range, is the oppressive regulations that have been unrelenting in the past several years," says John Engler, a former Republican governor of Michigan and the president of the Business Roundtable. "I just think that people have almost thrown up their hands. What we have is an equal opportunity offender here, because in pretty much every agency something is going on."

To others, that kind of complaining is par for the course from the business community. "You can go back to really 100 years now of Chicken Little claims from business about regulation," says Robert Weissman, president of Public Citizen, 07 **1933–36** Federal regulation explodes under FDR's New Deal. The 100-plus agencies he creates—including the FCC, NLRB, and WPA—are known as the alphabet agencies.

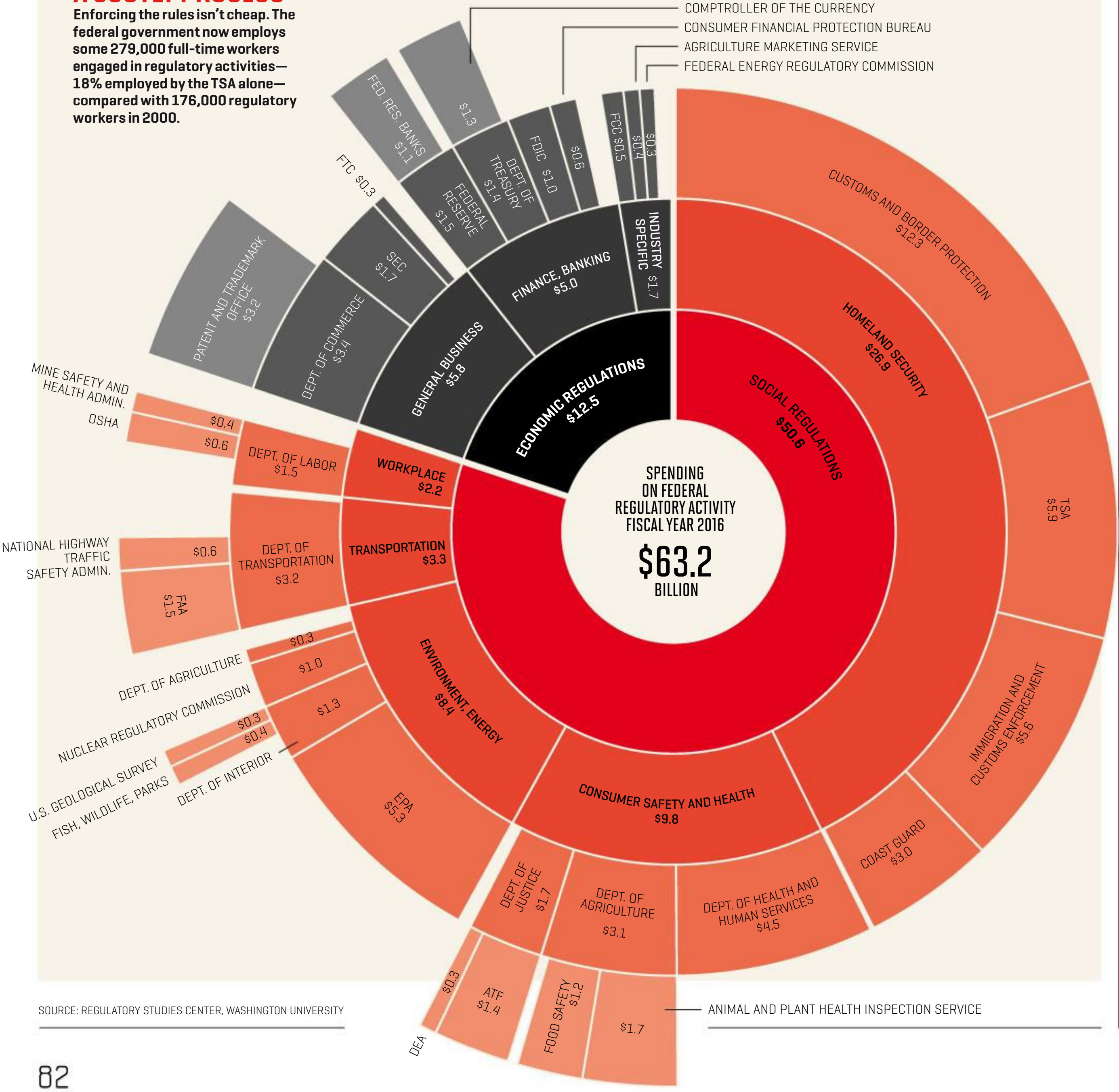
08 **1959** Rising concern about carcinogens leads to the Great Cranberry Scare. Weeks before Thanksgiving, the government warns Americans about cranberries: Some are found to contain aminotriazole, a herbicide believed to cause abnormal growths in mice.

09 **1962** FDA reviewer Frances Oldham Kelsey blocks approval of thalidomide, which was found to cause birth defects. Congress then moves to strengthen regulation of pharmaceuticals, requiring companies to prove drug efficacy and safety.

10 **1962** Rachel Carson publishes *Silent Spring*, which examines the health effects of the pesticide DDT; the book is credited with launching the American environmental movement.

A COSTLY PROCESS

Enforcing the rules isn't cheap. The federal government now employs some 279,000 full-time workers engaged in regulatory activities—18% employed by the TSA alone—compared with 176,000 regulatory workers in 2000.



SOURCE: REGULATORY STUDIES CENTER, WASHINGTON UNIVERSITY

GRAPHIC BY **NICOLAS RAPP**

11 **1966**
Ralph Nader's bestseller *Unsafe at Any Speed: The Designed-In Dangers of the American Automobile* helps spur the nation's first significant car-safety legislation, the National Traffic and Motor Vehicle Safety Act, and seat-belt laws across the country.

12 **1970**
Environmental regulation is bolstered with the creation of the Environmental Protection Agency under President Richard Nixon and a more robust Clean Air Act. The expansion of the Clean Water Act follows in 1972.

the nonprofit consumer-rights advocacy group founded by Ralph Nader in the early 1970s. "Every time business has said, 'The sky is going to fall,' and amazingly it never does." He cites a litany of examples—from the first rules to eliminate child labor through the New Deal to the beginning of modern environmental regulation in the 1970s and up to the adoption of smoke-free restaurants and bars.

Obama took office vowing to cut red tape rather than add to it. He installed his friend Cass Sunstein, a law professor and an author, as the administrator of the Office of Information and Regulatory Affairs (OIRA), a division of the Office of Management and Budget tasked with assessing the validity of new regulations issued by cabinet agencies. During his tenure from 2009 through 2012, Sunstein instituted a program of "retrospective review" to examine existing regulations for effectiveness. But despite much fanfare, a relatively small portion of rules have faced scrutiny under the process. Meanwhile, the rulemaking machine has continued apace.

In that way, Obama continued a long tradition of Presidents attempting—and largely failing—to control proliferation of regulations. Jimmy Carter, for instance, signed the Paperwork Reduction Act into law in 1980, creating OIRA. A year later, Ronald Reagan signed an executive order compelling cost-benefit analysis of all major regulations. Bill Clinton built on that in 1993 when he issued executive order 12866, which required every "significant regulatory action" be submitted to OIRA for review. George W. Bush then added new requirements for review with his own executive order in 2007. And still, inevitably, the total volume of rules has continued to increase.

D**R. CYNTHIA DEYLING** believes in regulation. As the chief quality officer for the Cleveland Clinic, a world-renowned nonprofit hospital system, it's her job to keep the medical organization's facilities—including its outposts in Florida, Nevada, Canada, and the United Arab

13 **1972**
Congress passes the Noise Control Act to respond to the "growing danger" noise presents to the health and welfare of citizens.

14 **1972**
After the explosion in environmental and safety regulation under Nixon—OSHA and the Consumer Product Safety Commission were also new agencies—lobbying takes off: The Business Roundtable is formed in 1972.

15 **1978**
Despite industry opposition, airlines are deregulated, lifting restrictions on fares and access to routes.

16 **1996**
During Bill Clinton's administration, the Telecommunications Act, the first law to be signed electronically, deregulates the industry and empowers the FCC to make and implement Internet policy.

17 **2010**
In the wake of the 2008 financial crisis, Congress passes the Dodd-Frank Wall Street Reform and Consumer Protection Act, the most significant regulation of the banking industry—which was deregulated in the '80s and '90s—since the Depression.

Emirates—in compliance with the dozens of regulators that monitor its operations. Regulation, she says, "makes our organization better." That said, she has to deal with an enormous amount of red tape—and it's growing all the time.

The past 10 years have seen a very significant increase in regulations for hospitals, says Deyling, and in the same period the rules have become much more prescriptive and survey-based. For a hospital to receive payment from Medicare or Medicaid, it must, among other things, be compliant with a range of conditions set forth by the Centers for Medicare and Medicaid Services, or CMS. Previously staff members had more discretion in exercising professional judgment. That's been replaced, she says, with checklists and audits.

This approach has contributed to rising costs. Whereas most hospitals used to have one professional to look at risk management, the Cleveland Clinic now has 90 full-time employees at its different facilities who oversee "regulatory survey readiness." Last year the Cleveland Clinic was subjected to 320 survey days. The hospital pays $15.5 million annually in labor and consultants to help its workers drill for the inspections. The hospital is subject to regulators including OSHA, the EPA, the Nuclear Regulatory Commission, the National Institutes of Health, and the Cuyahoga County food inspector. It's not uncommon, says Deyling, for a nongovernmental agency to do a survey on behalf of CMS, and then for the Medicare and Medicaid agency to conduct a validation survey, only to get a different result.

Better alignment between state agencies and the federal government would save the hospital time, money, and effort. "Regulation is important and benefits patients," says Dr. Anthony Warmuth, the Cleveland Clinic's enterprise quality administrator. "It's just when it goes outside the norms that seem constructive—or when it's contradictory to other rules out there—that it creates a lot of tail chasing and it gets very confusing for us to do the right thing and comply."

Most of the time, regulation begins with a noble goal. Laws are typically passed with the intention of addressing or preventing some wrong, and rules are developed to implement those laws. In that way, as Herbert Kaufman noted in his seminal 1977 book, *Red Tape: Its Origins, Uses & Abuses*, "one person's red tape may be another's treasured procedural safeguard." It's when you add up all those rules that you get into trouble at times.

Mandel of the Progressive Policy Institute has introduced a metaphor—one that was often repeated to me by others—to describe the effects of regulatory accumulation. It's like throwing

SMALL BUSINESS TAKES A BIG HIT

FOR AARON HAGEMAN, chief executive of Delivery Drivers of Orange County, Calif., the welter of federal and state regulations concerning who qualifies as an independent contractor has become an expensive sticking point. Consider this example: A driver crossing over the bridge from Vancouver, Wash., to Portland, Ore., could be classified as full-time by one state's standards and as a contractor by the other.

The number of regulations determining worker status has increased to more than 100 from about six in the past 20 years, Hageman says. That's important to his 23-person company because he provides delivery drivers on a contract basis to courier services and restaurants in 42 states.

Balancing these regulations in dozens of states eats up about one-third of Hageman's operating cash and has shaved about 10% from his bottom line over the years. Delivery Drivers now devotes five people full-time to managing compliance, up from one person at the company's founding. "Our legal costs to manage audits and inquiries have really gone up, and our net profit margin has gone down," Hageman says.

Does his experience mean that regulations have made it harder for small businesses to get started these days? Small-business groups, such as the National Federation of Independent Business, say 45% of business owners consider regulations a very serious business problem today. That is up from 27% in 2001. For its part, the Office of Management and Budget concluded in a 2015 report that the impact on small business remains inconclusive.

To Hageman, there's nothing inconclusive about it. "It would be a lot harder to start my business today," he says. "There is more red tape than ever."

—JEREMY QUITTNER

18 **2010**
With then Speaker of the House Nancy Pelosi taking a lead role, Congress passes the Patient Protection and Affordable Care Act (a.k.a. Obamacare) to provide health insurance to millions who don't have it.

19 **2015**
President Obama's Clean Power Plan, aimed at fighting climate change, creates the nation's first-ever standards to regulate carbon pollution from power plants. In 2016 the Supreme Court stayed the plan's implementation while it is challenged.

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pebbles in a stream, the economist says. Toss one in, or even two or three, and there's no obvious effect. But once you throw in a hundred you may start to block the flow of water. "It's really about taking degrees of freedom away from businesses," he says.

This is compounded by the fact that the rule-making machinery—just like the law-making system—is geared toward pushing out new regulations, not removing them. And once new rules are on the books, they usually just stay there. Mandel points out that there is no central place in the federal government where you can report problems with regulations. And because there's no database of complaints, there's no way to analyze the patterns and identify overlaps that need addressing.

"I kind of think of the regulatory issue as people basically saying in their own varying ways, 'Who's in charge here?'" says Mandel. "Is there anybody who's really steering the ship? If you point out to somebody that there's a problem, is there anybody that can respond?"

Business leaders complain about the specter of new, onerous regulations. But when pressed, executives often have a hard time coming up with existing rules they would like to have repealed. In part, that's because big companies are quick to adjust, and regulations that are in place become a barrier to entry for competitors.

Indeed, government intervention can be a welcome protection at times. Sprint CEO Marcelo Claure praises the Obama administration for helping his company negotiate reasonable roaming rates with Verizon and AT&T in areas where Sprint doesn't have cell towers, and says that consumers have been the winners. "In this case we welcome regulation that doesn't allow Verizon and AT&T to use their market power to basically drive us out of business," Claure told *Fortune* in September.

LARGE INCREASES in federal regulation often come in response to upheaval. The Securities and Exchange Commission, as well as much of the modern framework for modern financial

1972: MARTHA COOPER—NEW YORK POST ARCHIVES/NYP HOLDINGS INC. VIA GETTY IMAGES; 1972: BETTMANN; 1996: PAUL J. RICHARDS—AFP/GETTY IMAGES; 2010: SCOTT J. FERRELL—CONGRESSIONAL QUARTERLY/GETTY IMAGES regulation, was created in response to the Crash of 1929. The social and environmental awakening of the 1960s led to a desire to protect our planet, consumers, and workers, and to a great expansion of the regulatory state in the 1970s. (And that expansion, in turn, begat the Washington lobbying mega-complex.)

The attacks of Sept. 11, 2001, then prompted the creation of the Department of Homeland Security, which, with a fiscal 2016 budget of $27 billion, now accounts for 43% of the government's spending on regulations.

Likewise, the passage of Dodd-Frank—which created a powerful new agency called the Consumer Federal Protection Bureau—was a direct response to the Great Recession. At 849 pages, it was a mammoth and ambitious statute, designed to rein in big banks and compel them to maintain higher levels of capital. Core to the legislation was the Volcker Rule, which sought to rebuild the wall

HOW A TACO TRUCK GETS STALLED

It may seem as if everyone is opening hip food trucks in cities these days. But it's more complicated than it looks. Before you warm your first tortilla, if you're in New York, for example, you'll have to get through 68 pages of regulations on mobile-food vending. Many of them sensibly protect cleanliness and food safety, but others are more draconian. Some highlights (and lowlights) of the Big Apple regs:

Getting started: You'll need a license to run a food truck. Any operator without a permit "shall be deemed an imminent health hazard," and fines are stiff. But that's only your first city license. Second, you'll need to obtain a permit and pass an inspection by the New York City Department of Health and Mental Hygiene confirming the city deems the truck sanitary. That takes care of the vehicle. As for you, you'll need to take a 15-hour food-protection course and submit proof of completion. Did you make it through those steps? Congrats, you'll be issued a permit and a sticker. But be careful: You have to display the decal properly on the truck, making sure that a "six (6) inch space shall be left clear on all sides of the decal." If you don't—you guessed it—you face fines (and even revocation of your permit).

Finding your spot: No food seller can "vend within any bus stop, taxi stand, within the portion of the sidewalk abutting any no-standing zone adjacent to a hospital as defined in subdivision one of section 2801 of the New York state public health law, within 10 feet of any driveway, any subway entrance or exit, or any crosswalk at any intersection." Certain police precincts are banned. On the plus side, the city helpfully provides this information in "English, Spanish, traditional Chinese, Arabic, Urdu, Bengali, Russian, Gree, Farsi, and Hindi."

Cooking and serving: No meat can be "de-boned or cut into portion size in or on a mobile food vending unit." You may not have been expecting rules on thermometers or ice, but the former will need to be "metal stem-type, numerically scaled, indicating thermometers, thermocouples, or thermistors," and ice must be "in chipped, crushed, or cubed form" and "in single-use or wet-strength paper bags." In fairness, section 89.19 (h) on condiment presentation is a model of simplicity.

Waste and cleanliness: It's crucial that the truck be clean, but it can be cleaned only while in certain locations. Waste water tanks "shall have a minimum capacity that is at least 15% greater than the potable water supply capacity and be clearly and permanently labeled 'waste water.'" The truck must have a sink used only for hand washing. Operators must not wear sleeveless shirts or show bare midriffs. If you violate "personal hygiene" in that manner, yes, there will be a fine.

—POLINA MARINOVA

between traditional and investment banks that had been erected in 1933 with the passage of the Glass-Steagall Act and torn down with its repeal in 1999.

The financial industry has bristled at the regulatory burden of Dodd-Frank since its passage. There's no doubt it has added significant costs to the operations of big banks. In his annual letter to shareholders earlier this year, for instance, JPMorgan Chase CEO Jamie Dimon reported that since 2011 the number of employees dedicated to regulatory "controls" at the bank had risen from 24,000 to 43,000 and the yearly cost associated with that compliance effort had jumped from $6 billion to $9 billion. Of course, any compliance expenses pale in comparison to the cost of the financial crisis, which economists at the Dallas Fed calculated conservatively a few years ago to have been anywhere from $6 trillion to $14 trillion.

But whether all the added regulatory burden of Dodd-Frank really keeps us safer from the next financial meltdown is open to debate.

The law isn't just an exemplar of regulatory kudzu, however. It's also a case study in how Big Business—and big lobbying—plays a role in creating its own red tape. Consider the Volcker Rule, which was instituted to prevent banks from using customers' money for proprietary trading. The original draft of the rule was very short, points out Dennis Kelleher, the CEO of the nonprofit advocacy group Better Markets. The final regulation ended up being 950 pages.

"Now, why is that?" asks Kelleher, a former Skadden Arps attorney who was chief counsel for Sen. Byron Dorgan (D-N.D.) during the financial crisis. "Primarily because of the financial industry. The industry lobbied over and over and over again for this exception, that exception, this clarification, this interpretation, this permitted activity. Almost all of the length in these rules are demanded by the industry—and then they complain about the length and complexity of the rule."

It's a phenomenon that Lee Drutman has seen again and again. A senior fellow at the nonpartisan think tank New America and the author of *The Business of America Is Lobbying*, Drutman says that complicated regulations provide cover for the powers that be. "Once you get a benefit, you pay a lobbyist to keep that benefit," says Drutman. "That's why it's so hard to simplify anything."

Even the process of churning out the rules themselves is becoming more challenging. In June, Public Citizen published a report called *Unsafe Delays* that found the time it takes to complete a rule has risen sharply over the past few years. Economically significant rules completed in the first half of 2016, the nonprofit's research found, took an average of 3.8 years, or 58% longer than the historical average. In other words, there's a record amount of red tape in *making* the red tape. "You're basically talking about an entire presidential term to get a rule through," says Public Citizen CEO Weissman, "which makes it pretty hard to administer these things."

The friction in the system only adds to the left-right divide on solutions. Where conservatives see a bloated regulatory state that has run amok, progressives perceive a broken system that has been hijacked by corporate interests who shape and delay regulations as much as possible.

"It's sort of weird," says Sam Batkins, the director of regulator policy at the center-right nonprofit American Action Forum. "You'll go to a meeting on regulation from the right and you'll hear about a broken process. And you go to a regulatory meeting on the left and you also hear about a problematic process. So in that sense there is some unanimity."

"I THINK OF THE REGULATORY ISSUE AS PEOPLE BASICALLY SAYING, 'WHO'S IN CHARGE HERE? IS THERE ANYBODY WHO'S REALLY STEERING THE SHIP?'"

PHILIP K. HOWARD has spent more than two decades waging a campaign against red tape. But despite a marked lack of progress, it doesn't occur to Howard, 68, to abandon his crusade. "I was talking to somebody about this the other day. People ask me, 'Why are you beating your head against the wall?'" he says, and pauses. "It's a good question."

A prosperous New York City attorney who today is senior counsel at the white-shoe firm of Covington and Burling, Howard became alerted to the dysfunction of modern government in the early 1990s through his volunteer work in civic affairs. Since then he has written four books assailing over-legalization and founded a nonprofit,


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Investing in startups can mean great potential but also huge risk. As the first insurer to protect crowdfunding investors against issuer fraud, we help minimize loss while boosting confidence.
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AIG
Insurance, products and services are written or provided by subsidiaries or affiliates of American International Group, Inc. Insurance and services may not be available in all jurisdictions, and coverage is subject to actual policy language. For additional information, please visit our website at www.AIG.com.

nonpartisan organization called Common Good to advocate reform—enlisting in his projects retired politicians from both the left and the right, including former senators Bill Bradley and Alan Simpson and former Indiana Gov. Mitch Daniels. Howard has appeared on *The Daily Show*, given a TED talk that has gotten more than half-a-million views, been a special adviser to the SEC on regulatory reform, and worked with Al Gore on his "reinventing government" project.

Howard's belief is that our laws have gotten too precise for such a complex world and that our attempts to dictate every aspect of human behavior through rulemaking are only bogging us down. The system, he argues, is unadaptable. Similar to Mandel, Howard believes that too many different authorities means that nobody is in charge.

In recent years Howard has focused much of his energy on proposing ways to speed up the process of rebuilding America's decrepit infrastructure. To do so, he believes, we need to radically rethink our permitting system. One of Howard's favorite case studies is the ongoing project to raise the Bayonne Bridge to allow today's bigger container ships into Newark Harbor in New Jersey. The plan had minimal environmental impact because it used the same right of way as the old structure and the existing foundations. Yet the approval process took more than four years and generated thousands of pages of reports, including a survey of all nearby historical buildings, adding hugely to the bill for taxpayers.

Howard has floated a three-page legislative proposal that he believes could cut the average permit time for major projects down from a decade or more to one or two years. His big idea is to empower the chair of the Council on Environmental Quality. That official, who reports to the President, would be able to decide when a project has had enough sufficient review and give it the green light. "Right now, no one has that responsibility," says Howard, "so reviews become 20,000 pages when they should probably be 50."

Washington has already addressed the issue of infrastructure delays—in a very Washington way. In December 2015, President Obama signed into law the Fixing America's Surface Transportation Act, or FAST Act, which will create a new federal agency, a unit of the Transportation Department called the National Surface Transportation and Innovative Finance Bureau. The DOT's recent "mile markers" report on the FAST Act doesn't show that any funding projects have been accomplished yet, but it does list 69 new regulations, memoranda, and guidelines documents that have been issued. "It's like something out of Gilbert and Sullivan," says Howard.

In Howard's mind, it's time to go to a clean sheet of paper and rethink our entire approach. He looks to the examples of the Byzantine emperor Justinian and Napoleon, who rewrote the laws when they became too convoluted. "You can't reform this system," says Howard. "You have to rewrite it. That's the lesson of history."

INDEED, IN MANY WAYS the challenge of red tape seems more urgent than ever. It is not just the sheer mass of it or the cost of it—it's because of the transformative era in which we live. The pace of technological change is more rapid than ever, it seems, as new business models, platforms, and applications flood the marketplace.

We are in the midst of a new Industrial Revolution that will be driven by technologies such as genetic engineering and drones—and that will drive us around in autonomous vehicles. The fear is that lawmakers and regulators, in trying to keep up with these fast-moving changes, will do something to slow them down (see the box "New Rules for New Frontiers").

The Progressive Policy Institute's Mandel worries about red tape stifling innovation in ways that we don't even see. As an example, he offers arguably the biggest consumer technology breakthrough of the past decade—the smartphone. Mandel points out that when Apple partnered with AT&T to bring out the first iPhone in 2007, the companies were able to negotiate their original deal for the uniquely data-heavy iPhone, including an unlimited data plan, without regulators looking

"ONCE YOU GET A BENEFIT, YOU PAY A LOBBYIST TO KEEP THAT BENEFIT. THAT'S WHY IT'S SO HARD TO SIMPLIFY ANYTHING."


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over their shoulders. “Suppose that you’d had to have hearings? And how long it would have taken, and how many objections would there have been?” asks Mandel, exploring the hypothetical. “How much growth would have been lost by that?”

Companies at the leading edge of this revolution have struggled at times to adapt to the entrenched regulatory state. Ride-hailing giant Uber raced ahead and built a global brand while alternately ignoring and battling regulators in many markets, with combative CEO Travis Kalanick leading the fight. Earlier this year the startup signaled that it was ready to take a different tack, forming a policy board that includes Ray LaHood, a former head of the Department of Transportation, to work with authorities on its regulatory challenges.

The fact that Uber has already secured a valuation of more than $60 billion from its venture capital investors may prove that an improvised approach can work in the right circumstances. But it’s too haphazard to build a strategy around. What companies really need is a way out of this morass.

Matt Harris is a managing director at Bain Capital Ventures who invests primarily in fintech, the emerging sector of startups that are using technology to disrupt the financial industry. “If I could change one thing, it would just be, give me one regulator,” says Harris. He points out that a payments company today needs to deal with 50 states, different parts of the Treasury Department, the FDIC, the Fed, and the Department of Justice if it plans to do anything international. In all, says Harris, there might be close to 80 different regulators watching over your business.

He acknowledges that the activity of moving money around needs to be carefully scrutinized. “But the notion that you should have 75 constituencies, all of whom on any given day can shut you down—it’s just hugely inefficient,” he says.

Having a single regulator with such sweeping authority may not be quite realistic in an economy as varied and complex as ours, however. What we really need is a new framework for thinking about regulation itself, not the regulators.

Mandel says the current system of retrospective review hasn’t made an impact. Along with Diana Carew, a colleague of his at PPI, he has proposed the formation of a Regulatory Improvement Commission that would be authorized by Congress for a fixed period to identify regulations that should be eliminated or changed to encourage innovation. A version of the proposal has been introduced in the Senate and House in the past couple of years, but has yet to gain traction.

“YOU CAN’T REFORM THIS SYSTEM. YOU HAVE TO REWRITE IT. THAT’S THE LESSON OF HISTORY.”

Harris echoes Philip K. Howard in suggesting that we may need a more radical approach. The best way to respond to our increasingly complex world is to make our rules simpler, he suggests, not more detailed. Regulations are now written in an attempt to legislate every imaginable action by individuals on every imaginable subject—an impossible task. “I think the whole thing needs to be rethought and boiled back to more of a principles-based set of detailed prescriptions on how everything can work,” says Harris. “Things may fall through the cracks at times, but the approach we have now is getting creakier and creakier.”

Ironically, the very idea of red tape might be on a collision course with the forces of disruption. The technology industry has set its sights on bureaucracy, just as it has so many other hidebound, change-resistant industries before it.

As a case in point, IBM agreed in late September to buy consulting firm Promontory Financial Group, which specializes in financial regulation. The idea is to marry Promontory’s expertise with the AI power of IBM’s Watson and develop smarter compliance systems. (For more on Watson, see “Watson: Not So Elementary” in this issue.)

David Kenny, who runs IBM’s Watson business, sees opportunities for similar investments in everything from FDA compliance to traffic rules for autonomous vehicles. “There is such a regulatory burden on companies today,” says Kenny. “All this well-meaning red tape can get in the way of progress. So if we can automate the red tape, make it clear, and help the policymaker and the folks that have to implement it better understand each other, boy, that really frees up a lot of capacity.”

After all, humans haven’t been able to eliminate red tape. We might as well let the computers have a try.

COMPANY SPOTLIGHT

POWER DESIGN

Attracting and Retaining Top Talent with a Work Hard, Play Hard Environment

With $380 million in revenue this year and six consecutive years of double-digit growth, **Power Design Inc.** is one of the nation's premier electrical contractors of large-scale multifamily construction projects. But this continued success isn't anything the company takes for granted.

INSTEAD, THE FIRM REMAINS FOCUSED on its number one priority: their employees. By equipping them to advance swiftly in their careers while leading healthy, balanced lives, the firm aims to keep them until they retire. It's just good business, according to Vice President of Human Resources Marlene Velez, to minimize turnover in an industry where it typically takes five to 12 years to become a project manager or superintendent.

"The company is making a significant investment in attracting, developing and retaining top talent," said Velez.

Equipping employees begins on the 10-acre campus of Power Design's headquarters in St. Petersburg, Fla. It includes a 16,000-square-foot state-of-the-art training facility focused on professional growth. Employees attend courses that include everything from specialized operations training to leadership development and more.

The center's 11 hands-on Best Practices exhibits provide comprehensive training through experiential learning. With simulation labs and mock construction units, field employees are able to come and train in a safe environment to learn and accelerate their careers.

And the safety initiatives don't stop there. All field supervisors are OSHA certified, and a special team of quality control and safety specialists visits every job site to test safety procedures and train personnel.

Employees also have the flexibility to utilize the 10,000-square-foot fitness center, at no cost, 24/7. "From free group fitness classes five days a week to personal training sessions and a full-size sport court, employees are encouraged to find their balance," says Velez.

Work/life balance is a top priority. Employees are able to socialize and celebrate with their teammates with events on campus and on the construction job sites, and at this year's annual family fun day, the company took over Tropicana Field, home of MLB's Tampa Bay Rays, filling it with games and activities.

"Everything we do is about long-term relationships," says Velez. "That's why achieving this distinction as a *Fortune* Best Workplace means so much."

POWER DESIGN INCORPORATED

Steve and Alex Cohen in front of their home in Greenwich, Conn. The couple are worth about $13 billion, a fortune largely undented by legal troubles at Cohen's former hedge fund firm.

STEVE COHEN HAS NOTHING TO PROVE

(BUT HE'S GOING TO PROVE IT ANYWAY)

In 2013 an insider-trading scandal ended Cohen's reign as one of Wall Street's most successful hedge fund managers. Three years later, to the dismay of his critics, he's unapologetic, financially unscathed, and on the verge of returning to the industry. In his first interview about the firm since the scandal, Cohen explains how he plans to beat the market again—and why he needs to.

BY **JEN WIECZNER** PHOTOGRAPHS BY **GILLIAN LAUB**

ON THE NIGHT OF JAN. 8, 2016,

STEVEN A. COHEN WALKED INTO A STEAK HOUSE JUST EAST OF TIMES SQUARE. IT WAS FRIDAY, AND THE STOCK MARKET HAD JUST CLOSED OUT A BRUTALLY BLOODY FIRST WEEK OF THE YEAR. BUT NO MATTER: THIS WAS EXONERATION DAY, ACCORDING TO COHEN'S FRIEND AND FORMER INVESTOR ANTHONY SCARAMUCCI, AND THEY WERE CELEBRATING.

That afternoon, Cohen had won the battle of his career. Just 26 months after his astoundingly successful hedge fund pleaded guilty in the biggest insider-trading scandal in history, paid a record $1.8 billion fine, and effectively shut down, Cohen had gotten the word: His path was clear for a comeback.

Seated at the corner table at Hunt & Fish Club, where Scaramucci is an owner, for a moment they were just two boys from Long Island again, out in the city for the night with their wives. As they popped champagne and ordered red wine, the conversation turned to perseverance and friendship. That's when Scaramucci, founder of SkyBridge Capital, one of the largest funds of hedge funds, pressed his billionaire buddy about his next step: "Are you going to come back and run money?"

Cohen, whose personal net worth is around $13 billion, demurred. "I've got to think about it," he said. "I don't really need to." Scaramucci wasn't buying it. "My money is on you reopening," he wagered. That, Scaramucci explains later, would be true vindication for a man who has a way of winning when he wants to. "You want to short Steve Cohen?" Scaramucci says. "You're going to get your face ripped off."

The fact that Cohen can even consider returning to the hedge fund business is a startling victory. Eight people were convicted of having committed insider trading while they worked for him at SAC Capital (though two of those convictions were later overturned), and in July 2013, the Securities and Exchange Commission charged Cohen with failing to supervise them. Damned by the accusations, Cohen retreated as his clients withdrew their money. Though Cohen was never charged criminally, many assumed that his days as a hedge fund manager were over. He had delivered astonishing annual returns of 29% over nearly 21 years running SAC, managing $16 billion at his peak. The government's investigation tainted those achievements and threatened to ban him from the industry for life.

But in January, the SEC suddenly settled with Cohen, who neither admitted nor denied wrongdoing. The settlement barred him from managing outside investors' money, but only until 2018—and it didn't keep him from playing the market with his own money, or preparing for a day when he might have customers again. As confident as they were that Cohen had to have known that his traders were getting inside information by crooked means, the government could never amass enough evidence to prove it. Out for blood, the SEC settled for a fingernail. "Everybody was fairly shocked," says a former SEC attorney. "It does seem like Steve Cohen beat the SEC."

Today Cohen is reveling in his survival and staging his next chapter. He turned 60 in June, but he's been celebrating his birthday all year, taking friends on multiple weekend golfing trips. He hasn't said yet whether he'll manage outside money again, but almost everyone who has ever worked or invested with him is sure he will. In one clear sign that Cohen feels secure in his salvation, he agreed to an interview with *Fortune*—only the third time that the publicity-shy trader has spoken with the press about his work, and the first since SAC was charged with insider trading. At breakfast at his Westchester country club on a high-foliage fall Saturday, he's wearing what he almost always wears: a half-zip blue sweater with a blue-and-white striped button-down peeking out. "You know something," says Cohen. "I feel I'm a very blessed person, a very happy guy, and when I look at my career in totality, I wouldn't trade it for anything in the world."

Graze the memory of 2013, though, and Cohen's merry expression morphs to stone. It's a period he doesn't like to talk about, a year that in recollection remains dark, painful, and full of shame, one that his friends and associates think he would do better to forget. To truly redeem himself, he'll have to demonstrate unwavering adherence to the law—and show that he can still post industry-topping returns while under that microscope. That's the only way people will believe that he earned his billions honestly and trust him with their money again. "I think he wants to correct the record," says a former portfolio manager at SAC. While many of his associates believe that theory, Cohen rejects it. "I'm not trying to prove anything, okay?" he says, his face grave as a cement slab. "I just don't want to ever go through, nor do I want my employees to go through, what we went through a few years ago." That's all he'll say on the topic—in an interview during which Cohen, though cordial, is flanked by his general counsel and two in-house flacks.

Before he can reenter the hedge fund world, Cohen will need government approval, and plenty of his onetime accusers and critics aren't prepared to see him succeed. "He wants to win," says a former federal prosecutor who worked on the government's insider-trading crackdown. "How can he win now? By proving to the world ... that maybe there never was a cheater."

SAME OFFICE, DIFFERENT RULES
After SAC's guilty plea, the firm was reorganized as Point72, a "family office" that managed Cohen's personal fortune from the same trading floor in Stamford, Conn. Point72 has made huge investments in compliance technology and big-data analytical tools.

FOR COHEN, THE REALITY OF BEING under investigation began to sink in on the cool morning of May 3, 2012, when he was called to testify before the SEC in downtown Manhattan. In records of the daylong exchange, the mutual disdain is palpable. His lawyers insistently object (even though their objections don't apply in such proceedings); in the 18 pages of the transcript made public, Cohen says some version of "I don't remember" or "I can't recall" no less than 95 times. It's clear he'd rather be working.

By that point, SAC had been soundly thrashing the broader market and other hedge funds for years, becoming famous for rapid-fire trading of massive amounts of stock and for having dibs on useful information. But the government had heard enough about Cohen's reputation to believe that some of his supposed "edge" was obtained illicitly. Their tip lines rang with complaints from rival managers. On Wall Street, brokers told of having to kowtow to Cohen and ply him with intel; if they snubbed him, he would put them in the "penalty box"—refusing to trade with them or let his friends trade with them for a month or more, depriving them of commissions. "Cohen bullied the Street to the point that everyone wanted to see him go down," says Brad Balter, CEO of Balter Liquid Alternatives, which invests in hedge funds.

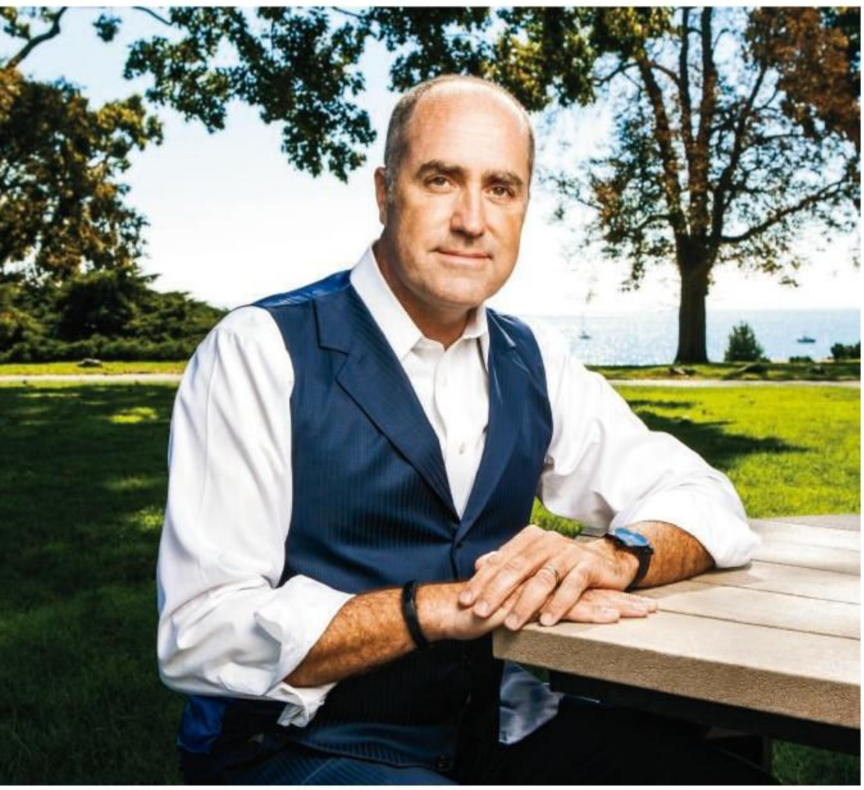
From the confines of SAC's Stamford, Conn., offices rumors also emanated of the boss's brutally caustic management style. Cohen tolerated and rewarded more risk than rival managers, but the consequences of failure—in some cases immediate dismissal—made the air on the trading floor heavy with pressure. There were more than 100 ultracompetitive portfolio managers at SAC, all reporting to one manager. It wasn't hard to imagine that traders could go rogue.

By July 25, 2013, Preet Bharara thought Cohen's reckoning day had come. Bharara, the U.S. Attorney for the Southern District of New York, held a press conference that day to announce its indictment of SAC, the only time an entire hedge fund has been charged with insider trading. The allegations against SAC's employees included a 2008 trade that yielded a $275 million profit, based on an illegal tip from a doctor with nonpublic information about an Alzheimer's drug trial. It remains the largest insider-trading profit in history.

Particularly suspicious in prosecutors' minds was a 20-minute phone call between Cohen and a portfolio manager named Mathew Martoma, currently in prison for trading on that tip. The next morning, Cohen ordered the trade. Prosecutors harbor a hunch that Martoma had told Cohen the source of his information over the phone. Still, without Cohen or Martoma confessing as much, the government could never corroborate that theory. After 10 years of investigation, prosecutors didn't have enough evidence to charge Cohen with a crime, so they went after his business instead. "SAC became over time a veritable magnet for market cheaters," Bharara said at his press conference.

Inside SAC, Bharara's words cracked like thunder. "It was surreal," recalls Rachel D'Antonio, a former SAC executive who's now treasurer at Cohen's firm. A portfolio manager was stunned when fellow parents at the school drop-off prohibited their children from talking to the kids of someone who worked at "that bad company." Employees were greeted at kids' baseball games as though they had been through a Bernie Madoff–style collapse. Portfolio managers demanded to know if they could expect to be paid; Cohen responded by upping bonuses for those who stayed. "It was a very difficult time to go through," says Sol Kumin, who left SAC to start the hedge fund Folger Hill in early 2014.

SAC's last Christmas party, in 2013, was a somber affair. It was held in the lobby of the Stamford headquarters; there wasn't even top-shelf Scotch. A few weeks earlier SAC had pleaded guilty to the trading charges and agreed to shutter its hedge funds, and now employees weren't sure what firm they worked for. Still, some remember that party as a turning point, the night when Cohen crystalized his resolve. Cohen took a microphone and proposed a toast, vowing, "We're going to be the only company that survives a criminal charge from the government."



FRESH BLOOD AT THE TOP
Point72 president Doug Haynes, Cohen's right hand and a veteran of McKinsey and the CIA. Most of SAC's executive team departed after the trading scandal.

FAST-FORWARD THREE YEARS, AND

Cohen has more than delivered on his promise. In 2014, as SAC wound down, he converted his operation to a "family office" under the name Point72—operating out of SAC's former headquarters. With 1,100 employees and 100 portfolio managers from New York to Tokyo, the firm now expects to reach SAC's peak headcount by the end of 2016. It manages $11 billion, all of it either Cohen's or his employees'. In the meantime, federal court rulings have raised the burden of proof for insider trading. That lifted some of the stain from Cohen's legacy and helped make his SEC settlement possible. In March, Cohen set up a hedge fund next door to Point72 called Stamford Harbor Capital, of which he owns 25%, though it won't manage anyone else's money until at least 2018.

Point72's executive team is almost entirely new, including its president, Doug Haynes, a longtime McKinsey executive who did a stint in the CIA. When Matthew Granade interviewed with Cohen after being called in by a recruiter, his first question was "[SAC] kind of got screwed up—what was your mistake?" Cohen didn't hesitate. "The biggest lesson I learned was, trust but verify," he told Granade, who is now Point72's chief market intelligence officer. "And I didn't do enough verifying."

At breakfast, Cohen doesn't admit to any mistakes. He seems agnostic about whether Point72

▲ PHOTOGRAPH BY PATRICK JAMES MILLER

ever manages anybody else's money but his. "I just want it to be a great asset management firm, where people can come and accomplish the things they want to accomplish in their career," he says. As for 2018, he says, "We'll figure it out when we get there." He has the nonchalance of a traveler who doesn't bother to reserve a hotel in advance.

Cohen's burst of activity has rankled financial watchdogs who feel Cohen is thumbing his nose at them. Democratic Sen. Elizabeth Warren (Mass.) upbraided regulators for allowing "a recidivist hedge fund manager" to "make a mockery of the SEC's core mission." And the dismay spans both sides of the political aisle. Letting Cohen associate with Stamford Harbor while banned from hedge funds, Republican Sen. Chuck Grassley of Iowa tells *Fortune*, "raise[s] questions about whether the SEC is as tough on enforcement as it should be."

Cohen's refusal to ramp down his lifestyle during his exile also struck critics as a poke in the eye. Even with an art collection worth an estimated $1 billion, he never stopped avidly buying—"purely from the gut," he says.

"A lesser guy would have just gone out to pasture and said, 'Look, I'll pick up my chips. I got plenty of money. I don't need this,'" says Larry Gagosian, Cohen's longtime art dealer and friend. "But he wants to show that he's still got it."

At home in Connecticut, Cohen is just "Steve" to most people. A native of Great Neck, Long Island, he still frequents local hot dog shops and pizza parlors with high school buddies. Sure, he lives in a Greenwich mansion filled with paintings by Picasso and Jasper Johns, has homes in the Hamptons and Los Angeles, and owns a stake in the Mets, but says Cohen, "I'm pretty much the same guy." His wife, Alex, likes to tell decorators, "We're butts-in-seats kind of people." The two met through a dating service and have seven children, including three from previous marriages. For a while, their daughter's pet pig, Romeo, roamed the house among the Picassos, occasionally nibbling their feet under the dinner table. (When Romeo reached 150 pounds, he retired to a farm.) Every Thursday, Cohen has a standing dinner date with Alex; colleagues report that the only time they've seen him in a suit is on their anniversary.

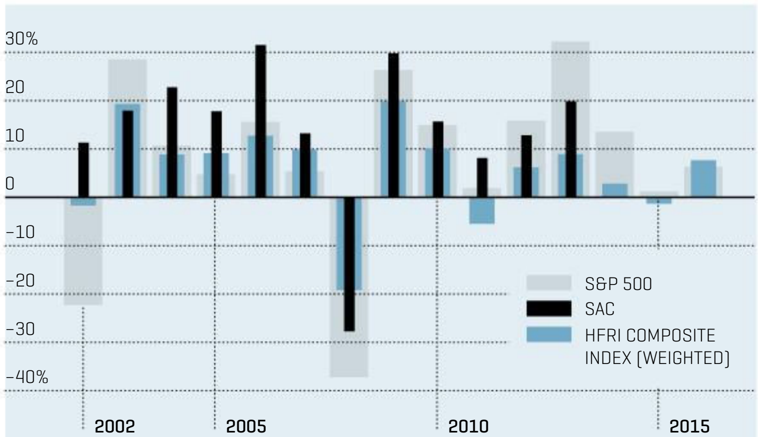
The couple have also recently initiated a flurry of philanthropy; while it would be easy to dismiss the push as a whitewash effort, the causes Cohen supports have personal significance. His $325 million initiative for veterans' mental-health care and research into post-traumatic stress disorder was inspired by his son Robert's time as a U.S. Marine in Afghanistan. The couple's foundation also contributed $40 million toward finding a cure for Lyme disease, which Alex has suffered from for the past seven years.

Not that Cohen's charitable efforts interfere with his trading regimen. At his inaugural Cohen Cares Summit for veterans in Washington, D.C., in September, Cohen gave a brief speech at 8:15 a.m. But by 9 a.m. he was gone, withdrawing to a suite down the hall to trade when the market opened. Some six hours later he was still there, with his two bodyguards sprawled in chairs outside the closed door, three empty cans of Red Bull between them, looking bored.

Everywhere he goes, Cohen brings his five-screen

STEVEN COHEN'S FALL AND RISE

The insider-trading probe into SAC Capital appeared to bring Cohen's long market-beating run to an end. But managing his enormous personal fortune has allowed him to stay in the game. And a watershed change in insider-trading law helped pave the way for him to manage outside clients' money again.



SOURCES: SAC INVESTOR DOCUMENTS; BLOOMBERG; HEDGE FUND RESEARCH INC.

Nov. 28, 2012
SAC tells investors it received a "Wells notice" from the SEC that it may file civil charges.

July 19, 2013
The SEC announces civil charges against Cohen for failing to supervise SAC's portfolio managers and prevent insider trading.

July 25, 2013
Preet Bharara announces criminal charges against SAC Capital but not Cohen.

Nov. 4, 2013
SAC agrees to plead guilty to all counts in criminal indictment, pay $1.8 billion, and terminate its investment advisory business.

April 7, 2014
SAC reorganizes itself as Point72, a "family office" managing Cohen's money and that of certain employees. (It currently manages $11 billion.)

Oct. 5, 2015
The Supreme Court declines to review a lower court's 2014 ruling in *Newman* v. *U.S.*, a case that raised the standard of proof in many insider-trading cases and led to dismissals of charges against two former SAC employees.

Jan. 8, 2016
The SEC settles with Cohen and temporarily bars him from managing outside money. Cohen neither admits nor denies wrongdoing.

March 11, 2016
Stamford Harbor Capital, a hedge fund 25% owned by Cohen, sets up shop.

Jan. 1, 2018
Date when the SEC settlement allows Cohen to return to the hedge fund business and manage investors' money again.

trading apparatus, the way Arnold Schwarzenegger used to travel with a portable gym. The screens go with him even on vacation. On his week off in the Mediterranean, he heads below deck on his boat when the markets open in New York, to trade until dinnertime. "That's how I know he couldn't have done anything wrong," says Tom DeMark, CEO of DeMark Analytics. "He's obsessed. He's got no life. He's got the markets at heart."

To believe fully in Cohen's innocence, you have to believe that he's just that good at what he does. DeMark can vouch for that: He talks to Cohen a couple of times a day and has a special phone that only Cohen can call, like Commissioner Gordon's line to Batman. DeMark advises Cohen on market timing, a trading technique that most other investors find patently impossible. Cohen has a knack for synthesizing data points—from investor sentiment to macroeconomic indicators to the word choice of a Fed official—to anticipate how the market will react and when to pull the trigger. He no longer manages the biggest portfolio at his firm, but he still generates as much as 5% of its profits, down from 15% a decade ago, as he spends more time mentoring his minions. "He learns from mistakes and never makes the same mistake twice," says Phil Villhauer, head of global trading for Point72, who has worked for Cohen for 15 years. And last year Point72 reportedly earned returns of 16%, while the S&P 500 was flat.

"SO THE QUESTION IS, WHAT THE hell is he doing this for?" asks SkyBridge Capital's Scaramucci. Cohen's answer hasn't changed even as he has piled more figures onto his net worth; trading is core to his identity. Without it, who would Steve Cohen even be? "This is what I do. This is my platform. This gives me the opportunity to meet incredible people," Cohen says. "I'm not going anywhere."

Ask Cohen about retirement and he brings up his father, Jack, who operated a garment factory in the Bronx. Jack retired young, and it pained Steve to watch as his dad appeared to squander some still-vital years with little activity or purpose. "I can't imagine myself retiring the way he did—not that I'm ever going to retire," says Cohen. In March 2014, Jack, by then a widower, died at 93. There's a portrait of Jack on Cohen's wall at home that he passes on his way to work every day. "And I always say, 'Good morning, Dad.'"

A few weeks after Cohen buried his father, Point72 was born. Running a family office instead of a hedge fund has made life easier for Cohen. Regulatory reporting duties went *poof!* along with

KEEPING CALM AND COLLECTING Cohen in his office at Point72, flanked by Peter Doig's painting *Gasthof*. Exile from the hedge fund industry hasn't stopped him from adding to his $1 billion collection of fine art.

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the investor-relations department. The firm was Cohen's clubhouse again—and he wanted to tear it down and start over. On a mission to produce the highest returns, he would not only have to evolve to stay ahead of competitors, but have to do so with the squeaky-cleanest standards—and a government-mandated monitor camped down the hall.

For the first time, Cohen hired former feds, including Vinny Tortorella, a former prosecutor, as chief compliance and surveillance officer, and Kevin O'Connor, once the U.S. Attorney for Connecticut, as general counsel. Cohen gave Tortorella veto power over all hires, as well as discretion to fire (which he's done more than once). Cohen poured $100 million into Tortorella's department, including buying spy software from Palantir—making Point72 the first asset management firm to use the technology for compliance. With machine-learning software, Point72 screens employees' emails for red-flag words and phrases, kept secret so traders can't game the system.

Point72 has also tried to lighten the pressure that might push traders to bend the law. Gone is the practice from the SAC days of "tagging" trades, by which portfolio managers would receive extra bonuses if Cohen used their ideas to make money in his "big book" account. Gone too is the "down and out" clause that served as an ejector seat for traders who lost too much money. Regulators would never admit to watching Steven Cohen any more closely than they would others, but Point72 fully expects them to. "It would be crazy to get too close to the line," says Eugene Ingoglia, a Morvillo attorney and former prosecutor who helped put Martoma in prison. "You don't want to put your head in the lion's mouth, even if you think you're real fast."

Big data, meanwhile, is helping Point72 hit two birds—performance and compliance—with one stone. Cohen has been making pilgrimages to Silicon Valley, talking to startups that generate data that Point72 might use: "I'm like a kid in a candy store," he says. The firm is already experimenting with credit card data from fast-food restaurants and satellite images to predict corporate earnings and more. A bonus? Nobody can argue that a camera in space illegally disclosed materially nonpublic information. "If you can show that your company relied on these data sets, then you can show you're in the clear," says Gene Ekster, a big-data consultant to hedge funds who once worked at SAC.

The consensus outside Cohen's offices is that the firm's hiring spree and technological expansion are all part of a plan to reopen to outside investors as soon as the sun rises on Jan. 1, 2018. For Cohen to say so out loud, though, could jeopardize the privilege entirely: If the SEC gets even a whiff that he's starting up early, the whole deal could be yanked off the table. That hasn't stopped potential investors from asking, "When?" To open at the beginning of 2018, Stamford Harbor could start the fundraising process as soon as May 2017. Investors endured long waiting lists to get their money into SAC Capital; for Stamford Harbor, many are ready to get in line right now. "There will be a sucking sound of money leaving other hedge funds and going in" to Cohen's, adds Brad Alford, founder of Alpha Capital Management, which invested with SAC.

"EVERYBODY WAS FAIRLY SHOCKED" BY THE JANUARY SETTLEMENT, SAYS ONE ATTORNEY. "IT DOES SEEM LIKE STEVE COHEN BEAT THE SEC."

Still, some former investors are wary of going back to Cohen. "There are enough folks out there who are just too afraid of getting involved again, and we may be one of them," says one former SAC investor. There's also the question of costs. SAC used to charge some of the highest fees in the industry—3% of assets plus 50% of all profits. Stamford Harbor may charge just as much, according to people who have reviewed its preliminary filings. "The fee is high by today's standards and high by yesteryear's standards," says Jacob Walthour Jr. of Blueprint Capital Advisors. Pensions and other institutions may balk if they were expecting a guilty-plea discount. Besides, the former investor says, "the real question is, Can they still deliver the returns?"

To Cohen, the insinuation is an affront. "If I'm going to be mediocre—if I'm going to be mediocre," he says, his voice rising in pitch, "I'm going to question whether I should stay in this business."

That said, business isn't as stressful as it used to be. Cohen makes sure to get his "beauty sleep," he says; the night of the Brexit vote in June he was in bed by 10:30, hours before votes were counted. "Fifteen years ago, I probably would have stayed up all night watching it," he reflects. "Now... I'm tenacious in other ways." (He has managed to see one or two episodes of Showtime's series *Billions*, which is said to be based on Cohen's battle with Bharara. "Hollywood," he says.) Remember the stock market correction of August 2015? Cohen golfed right through it. Committed to a two-day tournament, he wasn't even allowed to check his cell phone. "Ridiculous!" he recalls. But then he shrugs. "You say, 'All right, I'm going to lose some money today. That's the way it goes.'"

When I last see Cohen, he's slapping on a royal-blue baseball cap and riding away in a golf cart, off to hit some balls before his daughter's field hockey game. Luckily, the market is closed.

COMPANY SPOTLIGHT

FIRST ORION

FORTUNE 50 BEST SMALL WORKPLACES 2016

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98% of employees say they're proud of where they work

97 -PERCENT- of employees say the company provides great challenges

How many times a day does your mobile phone ring and you have no idea who it is or what the caller might want? The team at **First Orion,** based in Little Rock, Ark., is aiming to provide some answers.

THIS COMMUNICATIONS solutions provider offers both consumers and businesses phone call transparency services, using its world-class database. For consumers, that means knowing who's calling—a robocall or telemarketer, for instance—and why. Businesses use the company's robust data to ensure that they're properly contacting the right customers, and to validate their customer data with the right information.

While First Orion employs a good number of razor-sharp data scientists, software developers, business analysts, and marketing pros, all 81 of its workers share one common trait, no matter their title: They're passionate about helping others. "We get feedback from customers every single day telling us that before they started using our services, they were getting phone calls from aggressive telemarketers and other unwanted callers that were crippling their lives," says Jonathan Sasse, chief marketing officer at First Orion. "Our employees are all working toward the solutions to put an end to this."

The company delivers its solutions via four mobile apps—currently available for Android smartphones, and in development for Apple's iPhone—that give consumers a wide range of protections. For instance, the PrivacyStar app lets users see the name of an unknown caller and if the caller is trying to collect a debt or sell them something, and it will even send an alert if a caller has been known to harass others. The apps—most of which are free—also come with additional subscription features for a fee. Since the company was started in 2008, Sasse says more than 10 million users have downloaded its mobile apps.

The company has more than doubled its workforce over the past year and projects that it will end 2016 with about 100 employees. That kind of growth requires great technology and data, of course, but also the right team to deliver on the company's promises, says Sasse. "It's a really powerful thing when a problem you're trying to solve affects your parents, grandparents, and your friends," he says. "Our employees come to work every single day focused on coming up with the right solutions that can improve people's lives."

FIRST ORION

THE ROCKET

BY CLAY DILLOW
PHOTOGRAPHS BY SPENCER LOWELL

Atlas V and Delta IV rockets in final assembly at ULA's 1.6-million-square-foot plant in Decatur, Ala.

GREAT RACE

ELON MUSK'S SPACEX IS JOUSTING WITH A BOEING-LOCKHEED JOINT VENTURE FOR THE LUCRATIVE BUSINESS OF SENDING SATELLITES TO SPACE. THE INCUMBENT FACES A DAUNTING TWO-PRONGED CHALLENGE: **CAN IT SLASH PRICES WHILE OVERHAULING A KEY PART OF ITS TECHNOLOGY?**

IN RECENT YEARS Elon Musk's SpaceX and Jeff Bezos's Blue Origin have rekindled the popular excitement that once surrounded the space program. The billionaires' rocket startups have audacious aspirations—Musk talks of transporting passengers to Mars—and they've already chalked up some impressive accomplishments, including a series of missions to space. SpaceX even managed to land a spent rocket booster on a floating stage in the Atlantic Ocean. *Faster, cheaper, reusable*—theirs is the epitome of the disruptive vision.

Of course, if you're the disruptee, you might take a more jaundiced view of all this. Tory Bruno, though, betrays no hint of irritation. He is the CEO of an entity with a bland, instantly forgettable name: United Launch Alliance. You likely haven't heard of ULA, but you know its corporate parents, Boeing and Lockheed Martin. A decade ago the defense and aerospace titans spun their noncombat rocket operations into a fifty-fifty joint venture.

ULA builds rockets that propel all manner of commercial and military satellites into orbit. Since 2006 the company has lofted 111 such payloads into space without losing a single one to accident or mishap. That's a striking feat, one that Bruno repeatedly cites. He doesn't need to mention that his upstart rivals have not come close to achieving this sort of record.

SpaceX and Blue Origin pose a long-term threat to ULA. But Bruno has a much more pressing short-term problem. His company is running out of the engines it depends on to power its workhorse Atlas V rocket, which could strand the rockets—and ULA's revenues—on the ground.

Indeed, finding a new engine is crucial to an even more daunting second challenge for ULA: designing a new, drastically lower-cost reusable rocket that will suit an era of fiscal restraint in Washington, one that is being facilitated by the presence of SpaceX, in particular, as a competitor. "If I boil it down to its simplest terms," Bruno says, "we need to cut our prices in half while not losing the magic of our reliability. For an aerospace company, something like that usually takes about 10 years. We have to get it done in three years flat."

ULA's current troubles would have been difficult to envision just a few years ago. Until April of this year the company maintained a lucrative monopoly on the U.S. national security establishment's satellite launch business, contracts that generated hundreds of millions of dollars per launch. How that monopoly crumbled is an unexpected tale, one that involves not only the likes of Elon Musk and SpaceX—but also Russian President Vladimir Putin, U.S. Sen. John McCain, and events ranging from Washington, D.C., to Crimea.

Perhaps most surprising to the layperson is this twist: For more than two decades the rockets that carry countless U.S. government satellites—including those that spy on Russia—have contained engines made in ... Russia. That practice is coming to an end, leaving ULA in the (slightly less surprising) position of relying on upstart Blue Origin for a new—as yet undeveloped—engine.

Bruno, a 54-year-old mechanical engineer who has spent his entire career at Lockheed and ULA, is soft-spoken and analytical—so analytical, in fact, that he doesn't even blink when asked whether his company is facing extinction. He has publicly acknowledged that ULA "cannot survive" if it doesn't find a way to compete in the new environment.

His office at ULA's headquarters outside Denver is standard-issue CEO, apart, perhaps, from the scale models of ULA rockets and a statuette of the legendary St. George slaying the dragon. (Bruno has a fascination with the Crusades, as we'll see.) Even now, it's hard to view mighty Boeing and Lockheed as underdogs in this contest.

But that's the nature of the disruptee's plight, and it leaves the existential question, Can Bruno slay the dragon? Developing a radically cheaper rocket built with a new engine in three years, as

ROCKET RACE

ULA'S PLANNED REUSABLE, LOWER-COST CONTENDER

VULCAN

HEIGHT
215 feet

DIAMETER
18 feet

THRUST AT SEA LEVEL
1.1 million pounds

PAYLOAD TO ORBIT
21,400 pounds

PRICE
Less than $100 million

FIRST FLIGHT (EST.)
2019

A fuel tank for an Atlas V rocket at ULA's factory.

ROCKET RACE

noted, is a very tall order. "Based on what I've seen in the last quarter-century watching companies develop rockets, it's an extremely ambitious schedule," says Marco Caceres, director of space studies at aerospace consultancy Teal Group. "If I were to bet, I'd say they can't do it. But—and it's a big but—I think they realize that this is an extraordinary situation for them. If they don't do it, they may not be in the launch business much longer."

IT WOULD BE HARD TO OVERSTATE how deeply Boeing, Lockheed, and ULA have been tied to the U.S. space and missile programs. Boeing, for example, was one of three companies that built the Saturn V rocket, which took Apollo 11 into outer space on its way to the moon. Boeing eventually acquired the other two companies involved in the project. From the Mercury to the Minuteman, Boeing and Lockheed (and the countless companies that disappeared into their maw) encompass much of the history of U.S. space rocketry.

The role of private companies has intensified over the decades. In the old days Boeing or Lockheed would build a rocket, and the U.S. Air Force or NASA would handle most launch operations. In a series of evolutions that was capped, in 1995, by an Air Force program with the cumbersome name Evolved Expendable Launch Vehicle (EELV), the government handed even more responsibility to private operators. Now companies not only construct the rockets but also manage the launches and run the missions.

ULA (and Lockheed and Boeing before it) have long outsourced their large-rocket engines, only one part of the complex synthesis of engineering, materials, and design that allows a long tube filled most of all with huge quantities of fuel to shoot satellites into space. It costs roughly $1 billion to develop a large liquid-fuel rocket engine from scratch, and in the wake of decades of consolidation, very few companies can do it.

Cost is always an issue in aerospace and defense contracting. Indeed, another element of the 1995 EELV program was an initiative to cut rocket prices in half. That was meant to occur through competition, with the additional benefit that the Department of Defense would be guaranteed a minimum of two rocket lines to choose from, providing redundancy in case one line suffered a technical problem.

The move to save money partly explains how U.S. rockets came to be using Russian engines. In the early and mid-1990s, the Cold War had just ended; the Soviet government was gone. An era of good feeling, combined with the cost-savings plan and the Russians' need to find new customers now that its old one had ceased to exist, led to what previously would have been unthinkable: The U.S. Department of Defense authorized the purchase of RD-180 first-stage rocket engines, manufactured by Russia's NPO Energomash. Russian rocket-propulsion technology was proven, reliable, available, and priced to move. The RD-180 made its way first onto Lockheed's Atlas III and later into the Atlas V.

The 50% cost reduction never materialized (surprise, surprise), but the issue periodically popped up. A decade later, in 2005, Boeing and Lockheed proposed merging the businesses into one entity (which would maintain the separate Delta and Atlas rockets). A single builder would operate more efficiently, the reasoning went. ULA was officially born the following year.

"I DON'T WANT TO BE BURNED AT THE STAKE," SAYS CEO BRUNO, COMPARING ULA TO THE KNIGHTS TEMPLAR AFTER THE CRUSADES.

AS THAT WAS HAPPENING, two ultra-rich entrepreneurs had begun preparing rocket startups. Elon Musk, best known now for electric-car company Tesla, founded SpaceX in 2002. Jeff Bezos, of Amazon, stealthily incorporated Blue Origin two years prior, in 2000, but the company's existence wasn't made public until 2003.

The two projects were initially dismissed by many as the indulgences of billionaires, expensive hobbies or wealth-destroying follies, depending on one's point of view. But the two men weren't seeking the space equivalent of the mine-is-bigger-than-yours yacht. Musk has spoken about his ambition to ultimately make humankind a "multi-planet species" through the establishment of a human presence on Mars. Bezos, though less vocal, has a similarly lofty vision. "I want millions of people living and working in space," he told the Space Symposium in Colorado Springs in April. "I want us to be a space-faring civilization." (A SpaceX representative was interviewed for this article but declined to be quoted; a spokesperson for Blue Origin said the company couldn't provide anybody to speak in time for *Fortune*'s deadline.)

An Atlas V (top) launches with a NASA space probe; ULA CEO Tory Bruno in front of one of the company's Delta IV rockets.

BLUE ORIGIN'S PLANNED REUSABLE OPTION

NEW GLENN

HEIGHT
270 feet tall

DIAMETER
23 feet

THRUST AT SEA LEVEL
3.85 million pounds

PAYLOAD TO ORBIT
To be determined

COST
To be determined

FIRST FLIGHT (EST.)
2020

Both companies want to make space more accessible and profitable, and that involves getting people and hardware into space at a lower cost. For Blue Origin, that means building a space tourism business around its suborbital New Shepard spacecraft, which in theory will generate revenue while making human spaceflight far more routine. SpaceX aims to further its interplanetary ambitions by providing companies with low-cost access to orbital space and beyond aboard its Falcon rockets. Lowering the cost of launch is a core aspect of SpaceX's mission, Musk says, as doing so not only is good for SpaceX's business but also drives innovation in space-based technology and enables new business models. "We must bring in more money than we spend," he told reporters after a Falcon 9 flight last year, "but maximizing profitability is not really what it is about."

SpaceX's offering is dramatically more economical than ULA's. It advertises its Falcon 9 rocket at a launch price of $62 million, compared with ULA's "list prices" of anywhere from $164 million to $350 million for an Atlas V launch (the terms of any particular launch are typically not disclosed). Undercutting the existing players wasn't so much rocket science as smart business—SpaceX's offerings were designed and built using the most up-to-date technologies, and the company is completely vertically integrated. Unlike ULA, SpaceX makes all its critical components in-house, including its engines. Blue Origin also makes its own engines.

IN 2014, ULA'S FORTUNES began to turn. That March, amid a civil war in Ukraine, Russia seized and then annexed the Ukrainian territory of Crimea, causing a rift in Russo-American relations. In April, SpaceX sued the Air Force for the right to compete for military launch contracts.

In May 2014, deputy prime minister Dmitry Rogozin—the political overseer of Russia's defense and space industries and one of the first individuals targeted by U.S. sanctions following Crimea's annexation—threatened to cut off American imports of RD-180s for military satellite launches. That jeopardized the Pentagon's access to space and illustrated precisely why one wouldn't want crucial U.S. security technology to rely on Russian equipment.

Rogozin didn't follow through on the threat—but the Russian engine was now a political hot button. Congress got involved. By summer the U.S. government began seeking ways to wean itself from the Russian engine. Congress decided to limit ULA's import of RD-180s to five it had already ordered (though that number would later rise).

LAUNCH: AUBREY GEMIGNANI—NASA VIA GETTY IMAGES; BRUNO: COURTESY OF UNITED LAUNCH ALLIANCE

In January 2015 came a second blow to ULA: In response to SpaceX's lawsuit, the Air Force agreed to open some launches to competitive bidding. Meanwhile, SpaceX was seizing the public imagination, making headlines with its attempts to land a rocket booster on a floating platform—part of the company's long-term goal to reuse its costly first-stage engines, which would drive its prices lower still.

BY THIS POINT, ULA HAD BEGUN TO RESPOND. In August 2014, Boeing and Lockheed tapped Bruno—then a vice president overseeing Lockheed's strategic and missile defense systems unit—to take over as ULA's chief executive. The company needed someone to help it adapt to its new reality.

Bruno began cutting costs, thinning ULA's executive ranks by 30%. He also slashed 36% from supply chain costs (suggesting that fat abounded) and cut the time to build and deliver a rocket in half. Bruno set a new mission: to develop a new, less costly, partly reusable rocket to replace both the Atlas V and Delta IV. Dubbed Vulcan, it marks the first time ULA is developing a rocket from the ground up. Its decision to make it partly reusable suggests just how much SpaceX has set the pace within the launch industry.

Despite these changes, ULA's value proposition remains reliability. "I don't want to be the best price provider," Bruno says. "I want to be the best value provider." He doesn't mention—he doesn't have to—the SpaceX rocket that exploded in September with a $200 million satellite onboard (which Facebook planned to use to provide Internet access in Africa) or the SpaceX Falcon 9 that blew up en route to the International Space Station in June of last year.

Bruno acknowledges that ULA is still adjusting to a new environment. When the company formed a decade ago, he notes, the Iraq and Afghanistan conflicts were in full swing. The Air Force needed a lot of hardware put into orbit quickly, and the focus was performance. Now, though, cost is paramount, which puts ULA at a distinct disadvantage. "Everything we'd done up to that point didn't really apply anymore," Bruno contends.

To the outside world, ULA didn't look all that interested in entering a new world of competition. In 2015, when SpaceX was eligible to bid for the first time, ULA declined to vie for a Global Positioning System III satellite launch. ULA cited criteria that favored price over reliability and past performance as reasons for opting out, along with a lack of available RD-180 engines. SpaceX won the contract by default, ending ULA's defense sector monopoly.

ULA's decision to sit out the bidding alienated some key members of Congress. McCain—a vocal advocate for an RD-180 ban who has considerable sway, given that he chairs the Senate Armed Services Committee—wrote a letter to Defense Secretary Ashton Carter calling ULA's excuses "dubious" and "manufactured." McCain wrote, "ULA's use of these tactics is unacceptable. It artificially created a need for relief from legislative restrictions on its ability to continue using RD-180."

But ULA also wields power in Washington, and this year it scored its own victory: It persuaded Congress to allow it to use up to 18 more RD-180 engines for military launches—enough to keep ULA in business into the early 2020s but not much longer. (McCain won one concession: RD-180s will be prohibited from national security space launches starting in 2022.)

This episode supports a classic narrative about an incumbent government contractor. ULA, in this view, is a cash machine for two aerospace and defense behemoths that for decades have used their pull on Capitol Hill to maintain a monopoly on federal launch contracts while charging astronomical prices to American taxpayers. Ensconced in its monopoly, ULA never had an impetus to lower costs or develop a breakthrough product (such as a reusable rocket), and now the market has come along to sweep it into the dustbin of history.

Bruno doesn't flinch at the suggestion of this second narrative, though he certainly disagrees with it. Whether you view ULA as a lazy monopolist or simply a company facing new competition, it needs to transform itself or be left behind—a classic adapt-or-perish scenario that he illustrates through one of his favorite subjects. Bruno is something of a scholar on the Knights Templar, the medieval order of European knights most famous for their forays into the Holy Land during the Crusades. He has written two books about the group, (one of them called *Templar Incorporated*) that extrapolate modern management lessons from the 12th-century organization, whose vast banking, shipping, and security businesses constituted the West's first multinational conglomerate. "For 187 years they were at the top," he says. "They were the biggest company, if you will, for all that time. Then, within about seven years, they were extinct—the CEO was literally burned at the stake."

What changed? Not the Templars, Bruno says, but external forces around them. With European

ROCKET RACE

SPACEX'S NEXT-GENERATION OFFERING

FALCON HEAVY

HEIGHT
229.6 feet

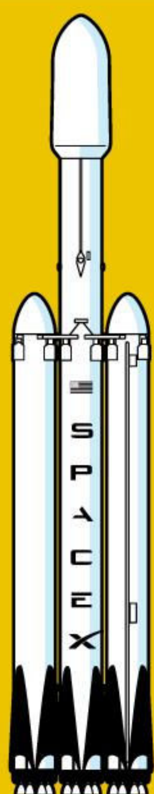
DIAMETER
First stage: 12 feet
Boosters: 39.9 feet

THRUST AT SEA LEVEL
5.13 million pounds

PAYLOAD TO ORBIT
119,930 pounds

COST
$95 million (est.)

FIRST FLIGHT (EST.)
First half of 2017



Christendom's last strongholds in the Holy Land lost toward the end of the 13th century, the order found itself without a real mission. It was a military enterprise built for holy wars with no holy wars to fight. "We're doing what the Templars should've done," he says. "We're changing." In three years, he says, ULA is going to have a new rocket, a new engine, and a significantly more competitive position. It's an immense job. As he puts it, deadpan before breaking into a grin, "I don't want to be burned at the stake."

ON A HAZY FRIDAY in September, an executive-level status meeting on ULA's planned Vulcan rocket convenes in Bruno's office. The topic is materials, specifically whether to construct its first stage from machined aluminum or a more exotic, lightweight stainless steel skin. Ultimately, the same kind of machined aluminum already used on Atlas Vs and Delta IVs gets the nod. Stainless steel would carry greater design risks and require changes to the engine, and right now the engine is just about everything to ULA.

The engine is the novel, liquid-natural-gas-burning BE-4 being developed by Blue Origin. ULA chose to partner with Blue Origin more or less by default; it's the only U.S.-made rocket engine that will likely be ready to fly by 2019, when ULA needs to start testing Vulcan. "Time to market is important to us," says Mark Peller, ULA's vice president of engineering and the lead on Vulcan's development. "The competition continues to move forward."

A SpaceX reusable rocket-stage approaches landing on an ocean platform (left); a Blue Origin reusable rocket booster.

Right now, he adds, "our entire focus is trying to improve our competitiveness." ULA will continue trimming its work force by a quarter—up to 875 people—through the end of next year. ULA will also scale back its portfolio, phasing out its Delta II rockets next year and its larger Delta IV in 2018. Three of five launchpads will close, leaving a single launch site on each coast.

These efforts are aimed at making Vulcan as cost-competitive as possible. "We're already bidding lower prices today, and by the end of 2017 we'll be offering sub-$100 million launch costs," Bruno says. "Vulcan is the last piece."

Both rocket and engine remain untested, raising huge question marks for a company whose strongest selling point is reliability. The BE-4 marks Blue Origin's first foray into a rocket engine of this size and type. A lot could go wrong—a full-scale static fire test of the engine, slated for later this year, has already reportedly slipped into 2017—and ULA's schedule leaves very little room for error. Bruno has saddled up, lance in hand—but the dragon still looms large. ■

SPACEX: NASA VIA GETTY IMAGES; BLUE ORIGIN: COURTESY BLUE ORIGIN


IBM Watson and Marchesa
present the first cognitive dress.
Fashion house Marchesa worked with Watson to create something no one had ever seen before. They applied Watson cognitive technology to help identify materials and colors. The unique dress debuted at the Met Gala, and throughout the night it changed colors in response to social posts from around the world. ibm.com/outthink
When everything thinks, you can outthink.
outthink ordinary
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THE SKY'S THE LIMIT

TAKING PRODUCTIVITY TO A HIGHER LEVEL

TODAY, BUSINESS AVIATION performance is measured in productivity, not simply by the increased airspeed, enhanced efficiency, and lower emissions seen in aircraft throughout the modern fleet. It's not just about getting where you're going faster, but getting more done on the way, and arriving ready for whatever's waiting.

Case in point: Embraer Executive Jets' Legacy 450 and 500 models, where productivity begins by "putting the passenger at the epicenter of the design," says Jay Beever, the Brazilian manufacturer's vice president of interior design. Extending the concept of productivity to the aircraft life cycle itself, Embraer has also made these cabins, what Beever calls "future-proof," by concealing all cabin technology beneath easily updateable interior structures. In these ergonomically centric interiors, productivity enhancements are even closer than your fingertips. New upper tech panels in the overhead valences on the Legacy 450 and 500 contain backlit touchscreens activated by hand motion, displaying flight information and cabin controls.

The "future-proof" interior of the Embraer Legacy 450 aircraft

Meanwhile, next-generation aircraft continue to advance onboard productivity. More than a dozen new models have recently entered, or are in the process of entering, service from Textron Aviation's turboprop Denali to new large-cabin offerings including Bombardier's Global 7000, Dassault's Falcon 5X, and Gulfstream's G500 and G600.

But business aviation's productivity gains aren't confined to the aircraft themselves. They're also seen in the evolving access options that bring these benefits to more business travelers than ever. For one-time or limited need, air charter's one-way rates and round-trip discounts represent outstanding value. Jet card programs provide guaranteed access to an aircraft or fleet that can meet almost every businessperson's needs, and fractional programs deliver the benefits of full ownership at a fraction of the price. Meanwhile, new membership access models like Surf Air and Wheels Up, and per seat "shuttle" flights aboard private jets through providers like JetSmarter, are introducing new ranks of flyers to the productivity benefits of business aviation.

Once on board, communication and environmental systems are transforming what can be accomplished en route. The SmartSky 4G network, scheduled to debut this year, and Gogo Biz 4G, slated for launch in the second quarter of 2017, will bring true broadband connectivity to business aircraft cabins. New pressurization systems on Gulfstreams, Boeing Business Jets, and other platforms lower cabin altitudes significantly, so passengers arrive more refreshed. Thanks to modern avionics and flight control systems, they'll also arrive more relaxed. Embraer's Legacy 450 and 500, for example, are the first mid-light and midsize jets with fly-by-wire control, enhancing the efficiency of flight operations, and ensuring "the smoothest possible flight" for passengers, says Beever.

In the cockpit, these Legacys also feature Embraer's Enhanced Vision System (E2VS) with a compact Head-Up Display (HUD), systems previously found only on much larger business jets. These avionics enable passengers to get where they need to be in almost any weather—perhaps the ultimate in taking productivity to a higher level. ●

THE PGA TOUR TAKES ON CHINA

—BY—SCOTT—CENDROWSKI—

CANCELED TOURNAMENTS, BAD LUCK, AND SO MUCH PROMISE: INSIDE THE GOLF INDUSTRY'S STAR-CROSSED STRUGGLE TO GET CHINESE CONSUMERS TO HIT THE LINKS.

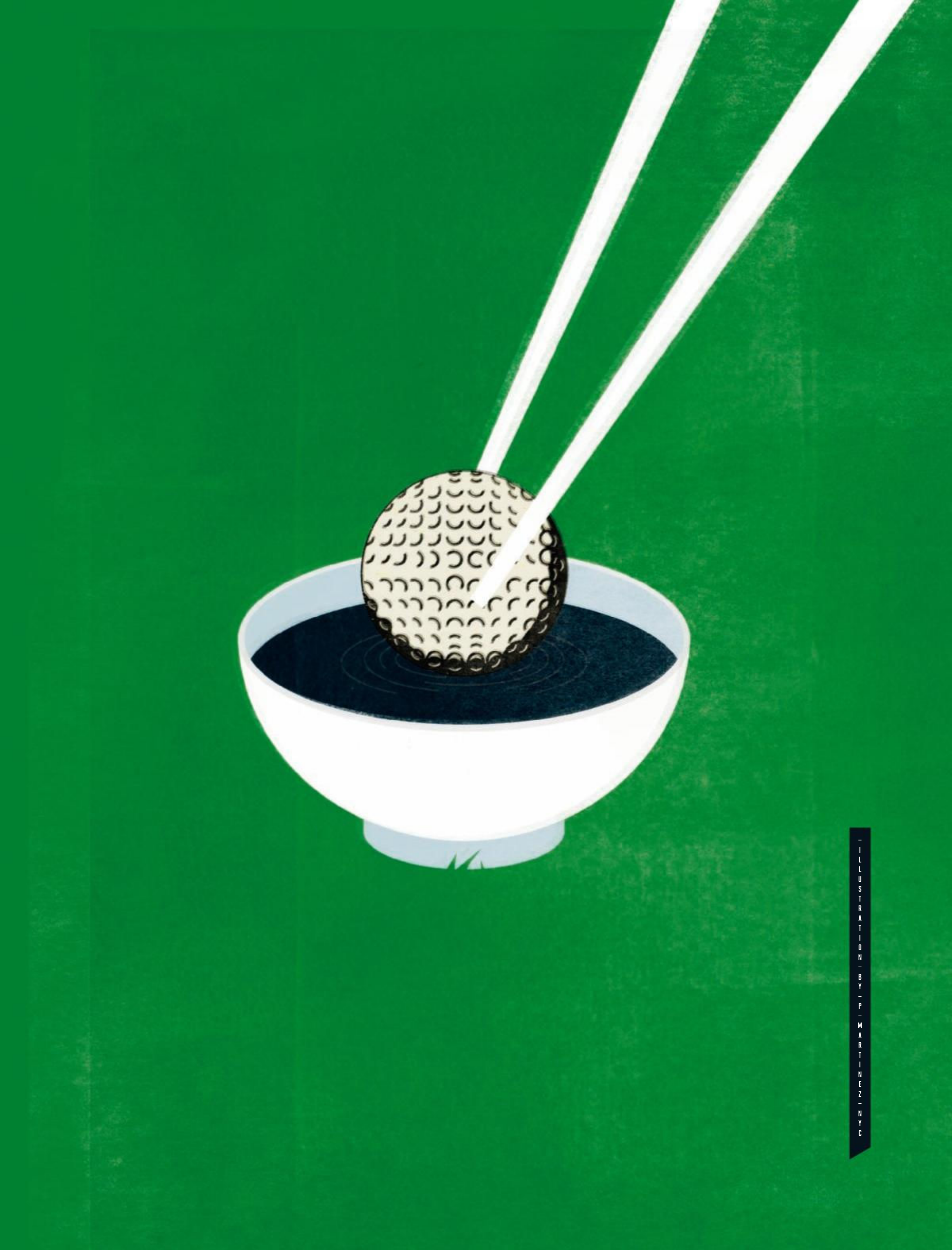

ILLUSTRATION BY P MARTINEZ NYC

MARTY DOU KNEW AT 17 YEARS OLD that he should turn professional. He had been skipping half his high school classes to play, with his parents' blessing, and by then his game was good enough to keep up with the pros. • At maybe 5-foot-9 and 150 pounds, Marty (his given name is Zecheng, but everybody calls him Marty) looks smaller than your typical pro golfer. But his size belies a swing so aggressive that even Bubba Watson, the PGA Tour's hardest swinger, took notice at a tournament in Shanghai last year where the two played together—and where Marty finished higher than stars Adam Scott and Hideki Matsuyama. • "He has no fear," Watson marveled. "We don't often see an Asian-born player swinging that hard."

Compliments from a two-time Masters winner aside, Marty, now 19, is currently the best golfer playing in China—and could soon become the first mainland Chinese golfer to compete at the top global level. He spent five years of his childhood in Canada, but he's skipping the tried-and-true route taken by other Asian golf stars to the pros of enrolling in a U.S. college before playing junior tours in America. Friends told him stories about American college nightlife, with its drinking and hookups. His dad, a day trader, thought he needed quiet practice in China. "I'd skip school," Marty says, laughing. "I'm too tempted by parties."

Luckily for him, he didn't have to leave China for a shot at golf's biggest stage. Since 2014, the PGA, the world's most prominent golf association, has run PGA Tour China Series, a professional league that gives promising young players a shot at graduating to higher competition in the U.S. It's analogous to Double A minor league baseball in America: Players can put in a couple of years in China and—if they perform well enough—earn an automatic berth into another league that's one rung below the PGA Tour. The China Tour, in turn, offers golf something it desperately needs: better access to the enormous and growing middle class that makes the country a huge growth opportunity for the sport.

Hard-swinging Marty has already won four of the nine tournaments played this season. He's guaranteed of moving to the next level in the U.S. next year, where he will get his shot to become the first golfer from the People's Republic of China to play full-time on the PGA Tour. Whether golf can rise as quickly in China as Marty has is a question with multibillion-dollar stakes.

★ **MAYBE YOU'VE HEARD** that golf is big in China. That's true up to a point, but "big" is relative.

In a country of 1.4 billion, the potential for the sport is certainly as vast as anyone's imagination. Estimates of the number of Chinese golfers fall around 1 million, a small fraction of the 24 million who play in the U.S. If just 2% of China's population played, up from less

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than 0.1% today, China could become a $2-billion-a-year market for golf products. That would be a godsend for an industry whose growth has sputtered in the U.S. and Europe, where manufacturers like Nike and Adidas are getting out of the golf-equipment business, and courses are closing.

China offers what no other place in the world can: a population that's growing rapidly more affluent and thinking about golf for the first time. Already, golf teachers have flocked here from Europe and the U.S., charging $600 a lesson, and driving ranges are crowded with first-time players.

But the political, economic, and cultural constraints holding golf back in China run deep. President Xi Jinping's antigraft campaign has targeted the sport for the past three years, in part because golf courses became a favorite rendezvous for corrupt officials. The heightened scrutiny led to dozens of courses being shut, a phenomenon that threatened to suffocate PGA Tour China in its infancy.

Even before the political winds shifted, golf had disadvantages in China. Land is scarce, and despite a building spree since 2000, the country has only about 600 courses (the U.S. has 15,000). Virtually none are the type of cheap, municipal links that cater to beginners. Almost every course is a private club located far outside the city center, behind closed gates manned by security guards. A round during the weekend pushes $200 or more, four or five times the norm in the U.S.—in a country where the typical urbanite has only about $5,000 a year in disposable income.

The result is that China's beginners are the richest 1% of society, not exactly the ideal base from which to expand a sport's popularity. Then again, you could have said the same about the sport's clientele in America during the gilded 1920s, just before the pastime caught fire. To Greg Gilligan, head of the China Tour, the PGA has to start somewhere. "The Chinese consumer is aspirational," he tells *Fortune* during an interview in the tour's small, new Beijing office, where today it's just the receptionist and him. "Think of someone moving up in disposable income. I think about the woman walking down the street, with the Prada purse, the Gucci shirt, the Starbucks in one hand and iPhone in the other. What's next?"

Gilligan hopes what's next is a shiny new driver. His responsibility extends beyond running the league: It's his job to convince millions of Chinese that golf is a hobby they should start watching, loving, and maybe even playing. He wears a calm demeanor and a closet's worth of rotating PGA Tour golf shirts. He spent almost 14 years in China for McDonald's and four years chairing the American Chamber of Commerce in China before joining the PGA. (His own game? "Not great. Everyone thinks we get on the course a lot. Not the case.")

Left: Marty Dou, 19, at the Shenzhen International tournament. Golf officials hope that Dou, the top-ranked player in China, will help the sport take off in his home country.

When Gilligan started running the PGA's China business in 2013, the outlook was bright. The number of Chinese golfers had tripled since 2000. Missions Hills, which hosted the first PGA-affiliated tournament in China in 1995, had expanded into the world's largest golf complex, with 12 courses outside Shenzhen.

China had even experimented with a small professional league, called the Omega Tour, named for the Swiss watch brand that sponsored it. That tour had a short run, lasting four years before folding in 2009. But the PGA—and the state-run China Golf Association (CGA), which requires any foreign golf investor to join it as a partner—had a chance to learn from that tour's mistakes. Most notably, the Omega had allowed only Chinese golfers to compete. That hurt it with audiences, but also with would-be competitors. China's golfers needed better competition, and in a closed league, they couldn't earn the world ranking points they needed to enter international tournaments.

As the PGA began negotiations with the CGA, there was a growing sense in China that a foreign-run league would crowd out Chinese golfers. The wolves are coming, Chinese critics said. So the state-run group insisted on three requirements, recalls Shao Hua, a golf promotion manager who helped negotiate on behalf of the CGA: a financial guarantee, world ranking points, and no less than half the tour players to be Chinese nationals.

The two sides met at the 2013 Masters in Augusta, Ga., and later that year in Ohio. The CGA ultimately got a PGA league in China that's the same as the league's other junior "mini-tours" in Latin America and Canada—an open meritocracy for the world's wannabe pros. The CGA didn't win on its insistence that half the players be Chinese, but it turned out it didn't need to. In competition so far, the Chinese have outrun the foreign wolves. In 2015, four of the top 10 players in the league's year-end money rankings were Chinese. "For the Chinese side," Shao says with a grin, "of course, 10 out of 10 would be good."

Gilligan, like many, predicts that China will be golf's next breakout country for pro golfers. Following the lead of Japan in the late 1980s and later Korea, which now has 14 players on the PGA Tour, China "will definitely have double digits" competing at the top level, he says. Marty Dou is part of the new generation of Chinese golfers who grew up with swing coaches, parents who bankrolled their tournaments, and teachers who didn't mind them skipping school. He was able to join the Shanghai tournament and compete with the likes of Watson and Scott because Chinese professionals got slots that an earlier generation could only wish for.

★ PGA TOUR CHINA is also benefiting from a key recent rule change that gave young U.S. and European talent an incentive to play in places like Chongqing and Nanjing. In 2012 the PGA Tour dropped its Qualifying School tournament; after that, the PGA's lower-level tours became a necessary stop for many up-and-comers. Today the Chinese tour has middle-age Chinese with homemade swings who started playing golf late in life, Koreans with picture-perfect swings, and big Americans fresh from college. Often there are players from five continents in the field.

Charlie Saxon traveled from Edmond, Okla., to China this year. Having put on 40 pounds since his freshman year in college so he could bomb his drives farther, the 23-year-old's back is as wide as a mixed martial arts fighter's. "For better or for worse—and for worse for me and other guys—you can't qualify directly for the PGA Tour anymore," says Saxon. Instead, players must first play on the second-highest level, the Web.com Tour, before they can reach the top level. Playing on affiliated junior tours like China's allows high finishers to earn spots on the Web.com Tour in the U.S. without undergoing all of that tour's rigorous qualifying tournaments.

Saxon, who ranks second on the China Tour's money rankings, is likely to qualify for the Web.com circuit next year. In the meantime, the China Tour isn't without hardship. Some struggle in a foreign land where the comforts of home are far. "No one wants to be here, but we got to be," says Callum Tarren, 25, from Darlington, England. His not-quite-high-enough ranking in China means that he will likely play in another junior tour next year, maybe in Europe. Lincoln Tighe, 26, a towering Australian, says he has grown exhausted from hopping from Chinese city to Chinese city, as the oily and fried feasts served at each tournament wore him down. "I just want a chicken breast," he says.

★ IN TERMS OF GOLF'S POTENTIAL, the PGA's timing in China couldn't have been better; in terms of the country's politics, it couldn't have been worse.

Not long after he became China's leader in 2013, Xi Jinping launched an anticorruption drive. Golf had become a locus of graft: In addition to being secluded and exclusive, many of China's country clubs didn't require members or guests to use their real names, so officials could accept the gift of a club membership without public notice.

In 2014, PGA Tour China's first year, local regulators stormed into clubs to check business licenses and membership logs. It didn't help that courses built since 2004 were technically illegal because of a construction moratorium that was mostly ignored. One hundred courses were eventually closed by the government, and in 2015 the China Tour had to cancel two of its tournaments. (Members at one course that had been slated to host an event, CTS Tycoon in Shenzhen, lost their initial $130,000 membership fee.) China Tour organizers were left scrambling, not knowing whether the government would wipe more courses off the tournament calendar. The PGA's schedule "coincided with uncertainty about which developers had the right paperwork in place," says Grant Slack, head of golf events for IMG Golf in Singa-

INTEL

GETTING NEOPHYTES TO THE GREEN

China, a nation of 1.4 billion people, has only about 1 million golfers, and sporting-goods companies think that figure could rise exponentially. As golfers multiply, annual spending on apparel and equipment in China should jump more than 40% over the next three years, to $650 million, says researcher Frost & Sullivan. These companies could cash in:

NIKE
Already a sports-apparel leader in China, its biggest growth market. The company sold $706 million worth of golf goods last year; it's getting out of the equipment business, but its golf apparel and shoes would benefit from a Chinese surge.

HONMA
A Japanese brand that forges the world's most expensive clubs, Honma got 19% of its $215 million in sales last year from China. It listed its stock in Hong Kong in October.

ACUSHNET
Based in Fairhaven, Mass., it makes the most popular premium ball in China, the Titleist Pro V1. It's a subsidiary of sportswear firm Fila Korea but recently filed for a U.S. IPO.

pore. "It was really bad in 2015, bad this spring," says Greg Carlson, the China Tour's executive director, who handles tournament logistics.

This year, continuing uncertainty forced PGA Tour China to announce its schedule just a couple of weeks in advance. Only 12 tournaments were scheduled; a 13th was added midseason. "It's tough to find courses to work with us," says Shao, the Chinese golf promoter. The head of a course in the lush southern province of Yunnan, who asked not to be named because he was nervous about local authorities' reactions, said his club was now marketing golf as a fitness movement, to keep the government at bay. "The tough time in the past one or two years has prompted everyone to reflect," he says.

Potential corporate backers are just as wary. In the U.S., global brands like BMW, Travelers, and John Deere build long-lasting "title sponsor" relationships with individual tournaments (the PGA Tour's Buick Open lasted 51 years before General Motors went bankrupt). But China's anticorruption campaign chilled such opportunities; for now, Chinese tournament title sponsors are usually the golf course and its real estate developer.

The PGA's Gilligan thinks the challenges will melt away with time. On the bad politics: "I've bumped into a lot of officials who say it's okay to be back on the course." On the lack of courses: "Landfills!" China has lots of old ones, and the methane gas underneath means you can't put buildings on them; golf courses would make the land useful. On wooing more Chinese to try golf: "They're waiting for their Tiger Woods. We can't set our clock to stardom, but it's going to happen."

China does have budding stars beyond Marty Dou. Li Haotong, who's 21, won the European Tour's Volvo China Open this year and plays full-time on the European tour. Shanshan Feng, 27, plays on the LPGA Tour in the U.S. and won the women's bronze medal in Rio. (About a third of Chinese golfers are women, and the China LPGA tour has run a league there since 2008.) And golf equipment makers fantasize that one or more of them could break out and trigger a boom. About 10% of the adult U.S. population golfs; if China gets anywhere near that level, it would represent spectacular growth. As recently as 2011 and 2012, Callaway, Titleist, and other foreign brands were growing sales in China by 30% a year. Those gains have slowed, but as HSBC once declared, golf is moving east.

The PGA's Carlson says a new legalization process for golf-course construction is close to being approved by the central government. Still, those rules are being shared only with local governments responsible for enforcing them—not the most enticing prospect for skittish developers. And while the government included golf among the recreational sports for the middle class that it's promoting as an economic engine, the sport doesn't rank very high among its priorities: In the five-year plan, it was listed between table tennis and billiards.

★ FOR NOW, GOLF IN CHINA remains a sport of elites and professionals. And the pros often face reminders that they aren't yet elite. On a September day after the second round of the Ping An Bank Beijing Open, eight players stare at their Chinese buffet lunches. Saxon, the Oklahoman, has a one-shot lead, but his head is elsewhere. "Today the food options are slim," he says, eyeing greasy noodles and vegetables soaked in soy sauce. The hotel restaurant's manager has taken the initiative of ordering Big Macs for anyone wanting a taste of home. An Australian grabs one.

Above: Shanshan Feng with the bronze medal she won in golf at this year's Olympics in Rio de Janeiro. About a third of China's golfers are women, a higher percentage than in the U.S.

Located amid mountains an hour outside Beijing, the Ping An Open course is typical of the China Tour—tight fairways, undulating greens—and produces typical frustrations. At lunch, Chris Brown, an Australian with a baby on the way, is recounting his bad day. He lost a ball on the 11th. "I went birdie, triple [bogey], double, par, triple!"

But the best player in the league, Marty Dou, is again near the top of the leaderboard. On the first hole today, Marty's approach shot rolled through the fringe and into the hole for eagle. "Man, the hole is like a vacuum for him. *Swooomp,*" says Ben Lein, an American who started his previous round hungover, played some of his best golf, and is thinking he should do it more often.

Someone asks what Marty's chances are at the next level. Does he drive it long enough to make it in the U.S.? "He'll be good," says Saxon. Everyone nods. "*Swooomp.*"

XINHUA—SIPA USA

HOW STEVE JOBS

STEVE JOBS' NAME IS FOREVER TIED TO APPLE: THE COMPANY HE FOUNDED, WAS FIRED FROM, AND LATER RETURNED TO AND MADE THE MOST VALUABLE IN THE WORLD. IT'S EASY TO FORGET THAT IT WAS ANOTHER COMPANY—PIXAR—THAT MADE HIM HIS FIRST BILLION.

▲ ILLUSTRATIONS BY **STEVEN WILSON**

BY
LAWRENCE LEVY

TO INFINITY AND BEYOND: WOODY'S COSTAR BUZZ LIGHTYEAR HELPED MAKE *TOY STORY* AND PIXAR A BIG-TIME SUCCESS.

BECAME A BILLIONAIRE

CENTRAL TO THAT STORY IS **LAWRENCE LEVY,** THE MAN WHOM JOBS REACHED OUT TO, UNKNOWN, IN NOVEMBER 1994 AND HIRED AS CFO. HIS MISSION? TO TAKE THE SCRAPPY COMPANY PUBLIC.

SKETCH OF WOODY FROM *TOY STORY.*

I ARRIVED AT PIXAR IN FEBRUARY 1995.

STEVE DIDN'T GIVE ME ANY SPECIFIC INSTRUCTIONS FOR WHAT TO DO FIRST. Ed Catmull, cofounder of Pixar, greeted me and, over the first couple of days, walked me around the company, introducing me to the key players and describing my role.

Everyone was friendly, welcoming, and greeted me with polite gestures like: "Glad you're here, let me know if I can help." Something was missing though. For as much as people were friendly and polite, I also felt they were a bit distant and aloof. There didn't seem to be a lot of excitement that Pixar had a new chief financial officer. I had the deep sense that Pixar's guard was up, and I didn't know why.

It didn't take me long to find out. It started with Pam Kerwin, a Pixar vice president who was general manager of various business operations within Pixar. She was a little older than me, in her early forties, with striking red hair and a sweet demeanor that quickly made others feel at ease around her. Her office was just down the hallway from mine, and she was one of the few people who invited me to say hello and give me the lay of the land.

"I don't envy you," Pam jumped in after some pleasantries, "I don't think you really get what you're up against."

"Up against?" I asked.

"You're Steve's guy."

I must have given Pam a terribly puzzled look, because I wasn't sure what she meant.

"Pixar and Steve have a long history," she went on. "Not a good one. You don't know it yet, but Pixar lives in fear of Steve."

"How so?"

"Steve doesn't get Pixar," Pam went on. "We're artsy and creative. We're like a family. We hug. And we're not a top-down organization; everyone here has a voice."

The strength of Pam's emotions about Steve caught my attention.

"Steve is the guy who owns us—but he's never been one of us," Pam explained. "We've long felt unvalued, unappreciated. People worry that if he gets too close, he'll ruin Pixar and destroy our culture. And now you're the guy he has sent to whip us into shape."

That much was true. My mission was to transform Pixar into a thriving enterprise. I was supposed to be an agent of change.

"Plus," Pam added, "he's broken promises. And people are angry about that."

"What promises?" I asked.

"Stock options," she said. "He promised them to us, and they've never materialized. Perhaps part of your job is to fix that, but every day that passes without a solution, people grow more cynical. Many here have been waiting for years to own a little piece of Pixar. All their friends at other companies have been rewarded, and now they're frustrated. They feel used."

This was a lot to take in. It certainly explained why my arrival hadn't been accompanied with much fanfare.

Pam's admonition was, if anything, understated. In my first days at Pixar I encountered animosity directed toward Steve throughout the company, especially from those who had been there since the early days. One person said to me point-blank, "Keep that man away from us."

It was an unwelcome surprise, to say the least. I began to fear that my concerns about Steve were coming true. I had accepted the job at Pixar with a considerable amount of skepticism. Although Steve and I were getting along great so far, his mercurial reputation had made most people I knew caution me against working with him. Even more problematic was the company itself. Pixar had been in business for 10 years and had made almost no impact, and even worse, not even Steve

HOT READ

EXCERPTED FROM ***TO PIXAR AND BEYOND: MY UNLIKELY JOURNEY WITH STEVE JOBS TO MAKE ENTERTAINMENT HISTORY,*** BY LAWRENCE LEVY, TO BE PUBLISHED BY HOUGHTON MIFFLIN HARCOURT ON NOV. 1, 2016. ©2016 BY LAWRENCE LEVY.

COMPANY SPOTLIGHT

FAST ENTERPRISES

Growing Through Innovation

Fostering a diverse and exciting company culture that cultivates innovation is a dream for many companies. It is a guiding principle at **Fast Enterprises** (FAST), a government software and consulting services provider. The Denver-based firm has expanded from a small partnership formed in 1997 to a full-service software development and integration company that employs over 1,000 professionals worldwide.

FOR FAST, THE QUALITY—rather than the number—of employees is more important to a company's culture and clients. FAST has invested in attracting, hiring, training, and retaining the best talent available, and these employees in turn have provided anonymous feedback that has resulted in FAST's being named one of the "best places to work" for the past three years by the online career-community site Glassdoor.

Innovation is central to FAST's culture and is integrated into all aspects of the company, from its commercial-off-the-shelf software development to employee engagement.

"We continually enhance our software to provide our clients with modern solutions for managing their government programs," says Martin Rankin, FAST's managing partner. "We take a similar approach to recruiting and retaining the highest-caliber employees by routinely introducing and adapting personnel programs that effectively engage, excite, and reward our employees."

99
- PERCENT -
of employees say FAST has a great atmosphere to work in.

FAST provides employees with a merit-based pay structure; a month-long sabbatical program for longer-term employees; an annual charitable-gift-matching program; retirement-account profit sharing; unique wellness programs and events; and health, dental, and vision insurance that is paid entirely by the company. The organization also gives employees opportunities to work with its many government clients in locations around the world, representing jurisdictions throughout the United States, Canada, Europe, Asia, Oceania, and the Caribbean. FAST's software is designed for the administration of government programs for tax and revenue, unemployment insurance, driver licensing and control, and vehicle titling and registration.

could clearly articulate what he wanted the company to be—only that he didn't want to keep underwriting the millions of dollars it lost each year.

These were the risks I had known. Now it seemed I had the extra burden of being "Steve's guy," suspected of possessing some sort of hidden agenda. That wasn't true. But that didn't matter. I was going to be more alone than I expected. After the initial shock wore off a bit, my instinct was to figure out how to try and use this to my advantage. If people were going to leave me alone, I'd have a window of opportunity during which no one would expect much of me. That gave me a chance to quietly explore planet Pixar.

Steve, however, didn't want me to waste time. He had invested close to $50 million in the company and was still covering Pixar's monthly cash shortfall, and he could not put an end to that soon enough.

"I'm focused on fixing that as soon as I can," I told him, "but I need some time to figure it out." Somewhat impatiently, Steve went along with my plan.

A GROUP OF PIXARIANS SHOT FOR A 1995 *FORTUNE* FEATURE, *STEVE JOBS' AMAZING MOVIE ADVENTURE.* LEVY, HIS LEG IN A BLACK CAST, IS IN THE SECOND ROW, BEHIND JOBS AND CHIEF CREATIVE OFFICER JOHN LASSETER.

LOUIE PSIHOYOS

PIXAR'S EMPLOYEES, ESPECIALLY THOSE WHO HAD BEEN THERE THE longest, felt trapped. They felt let down and misled by Steve for not giving them a right to share in Pixar's success. But they had little choice other than to wait and see what happened because they had invested so much time in the company. It would make little sense to leave now, especially when *Toy Story*'s release was imminent.

Making matters worse, promises had been made by Steve to a handful of Pixar's senior team, giving them a share of Pixar's film profits that might be converted into stock options. I was the most recent of those, having received a promise of stock options when I joined the company. Besides the top executives, everyone else was excluded. This was a disaster in the making. All it would take was one domino to fall, and an exodus of Pixar's talent could happen overnight—if not now, later. That would spell the end of Pixar's capacity to innovate.

On this issue I was caught squarely in the middle. On the one side, Pixar's longtime employees were angry and bitter. There were constant gripes as I made my rounds at Pixar:

"Will Steve take care of us?"

"We've waited a long time for this."

"I'll believe it when I see it."

On the other side was Steve, who had all the power to decide how many stock options to give Pixar's employees. Because Steve owned 100% of Pixar, every option that went into the stock option plan would reduce his personal stake in the company as those options were exercised by Pixar's employees.

Steve wanted to reduce his share as little as possible. He had in mind the kind of percentage that a new startup might use, as low as 15% or 20%. That might work for a company just starting out, one that might expect to hire 50 or so employees in its first couple of years. But Pixar already had close to 150 employees, and many of those were seasoned veterans who, by Silicon Valley standards, were entitled to significant stock option amounts.

He was also adamant about taking no risk that he would lose control of the company in the future. I didn't need to ask him why. He wanted to avoid any risk of being in a position like he had been in at Apple, where the board had effectively ousted him from the company against his will.

The more I waded into this issue, the more I felt like a punching bag for everyone: Pixar's employees thought I was protecting Steve. Steve thought I was asking for too much for Pixar's employees. It didn't matter that, inwardly, I sided with Pixar's employees. My job was not to take sides but to broker a solution that would work for Steve and the rest of the company. It was the first time I felt myself pitted against Steve. He began to get irritated whenever I brought up the subject.

"We've already discussed it," he would say. "Just show me the proposed plan." But I couldn't make an options plan without enough stock to put in it.

"When Steve digs in his heels it's very hard to move him," I complained to my wife, Hillary, one night. "Most of the time we're on the same page, but we're not on this one, and there's little I can do."

"Look, if you've tried everything," Hillary said, "what else can you do? It's his company."

And so, on my long commute between the Berkeley Hills and the San Francisco Bay, I worried. I

worried about how seriously we would be taken as an entertainment company. I worried about Disney claiming the space that Pixar was creating. I worried about the pressures a new strategic agenda would put on Pixar's culture.

But it was the stock options that bothered me the most. As mundane an issue as it might seem, I believed that Pixar's fate hung partially in the balance of how much stock we put in the stock option pool. Too little, and Pixar's key employees might be forever disgruntled, ruining the culture on which Pixar was built. I wasn't sure I had anything further I could squeeze out of Steve, but I needed to take one more final swing at it, even if it meant incurring Steve's legendary wrath. I picked up the phone one night and called him.

"We have to add more stock options," I said flatly. "We can't make it on the amount we have allocated right now. It's not enough. A few percent more and we can give it a shot, and still have a good chance you'll maintain control of the company even after we go public."

"I said I didn't want to revisit this." Steve griped. He was on the verge of dismissing it. I suggested a number. It was as far as I thought he might go.

"Will this be it?" Steve asked, totally exasperated. "Will this be enough options to last for a long while?"

I didn't think it would be. It would barely get us by now.

"Yes," I declared with unfounded confidence. "We'll make it work."

"Then I don't want to hear about it again." And with that, Steve ended the conversation.

I breathed a deep sigh of relief. I at last had my first real toehold. The option plan was pivotal to moving Pixar forward. But now the stakes were higher than ever. Those stock options needed to be worth a lot one day. A small win wouldn't cut it for anyone. Pixar was aiming for the big time.

ALL FUN AND GAMES: JOBS LAUGHS WITH LASSETER IN THE LATTER'S OFFICE AT PIXAR IN AUGUST 1997.

DIANA WALKER—SJ/CONTOUR BY GETTY IMAGES

STEVE ONCE TOLD ME THAT THE GESTATION of great products takes much longer than it appears. What seems to emerge from nowhere belies a long process of development, trials, and missteps. If anything proved that case, it was Pixar. The gestation of *Toy Story* could be traced back 16 years to when Pixar had been the computer-graphics division at Lucasfilm. It had been a long and arduous path since then, with no end of challenges. This made it especially ironic that, in one week in November of 1995, Pixar's entire future would depend on just two numbers: the opening weekend box office for *Toy Story*, and the price at which Pixar's shares sold in its IPO.

The first number, the opening weekend box office for *Toy Story*, would tell us how well *Toy Story* would perform overall. Scheduled for release on Nov. 22, 1995, the Wednesday before Thanksgiving, Disney told us it could make a good prediction of the opening weekend box office, and indeed the film's overall performance, solely on the basis of that week's Friday night box office.

This meant that after all those years of evolving the technology and then four more years of actually making *Toy Story*, Pixar would learn on a single Friday night in November what the world thought of its work. It reminded me of the 100-meter sprint in the Olympic Games. A lifetime of training to become the fastest runner in the world came down to a single 10-second performance. If the world fell in love with *Toy Story*, Pixar would have a chance to usher in a new era of animated entertainment. If it didn't, Pixar might be written off as another company that tried but never quite hit the mark.

"What opening weekend box office would make you feel really good?" Steve asked me as we were taking a walk in Palo Alto one Saturday afternoon.

"Anything above 10 million," I said. "Even If we hit 8 million we're on the board."

"My number's 15," Steve said. "If we hit 15 to 20, they'll project a total domestic box office of over a hundred million. Then no one will question Pixar's arrival."

This was the umpteenth time we'd had this same discussion. We loved to speculate about *Toy Story*'s box office potential and what it meant. A domestic box office run—meaning the total North American ticket sales for *Toy Story*—of a hundred million would be sweet indeed. It was a magic number in

the film business and very difficult to achieve, even more so in animation. In all of film history only four animated feature films had a domestic box office greater than a hundred million, and all of those had been made by Disney: *Beauty and the Beast*, *Aladdin*, *The Lion King*, and *Pocahontas*. If you excluded the four Disney blockbusters, of the 17 other animated feature films released by major studios or well-known independents over the past five years, the average domestic box office was a little under $14 million. That's total domestic box office, not the opening weekend. In animation, for all practical purposes, Disney had been the only game in town for over 50 years.

No matter how we measured it, we were reaching for the sky.

The second number that would define Pixar's future was the price Pixar's stock would first start trading at as a public company. Of all the issues in Pixar's public offering, there was none that occupied Steve's thinking more than what Pixar's stock would sell for when it first went public.

Given the total number of shares of Pixar stock that existed, if Pixar's stock traded at $10 per share, Pixar would be worth about $370 million, and Steve's 80% share around $300 million. If it traded at $20 per share, Pixar would be worth $740 million and Steve's portion around $600 million. In other words, Pixar's stock price at the end of its first day of trading would not just signify Steve's comeback, it would truly quantify it.

"We're worth more than Netscape," Steve asserted one evening when we were talking over the phone. "They've only been around about a year, and are losing money. If Pixar's films are hits, we'll make more than them. We should be worth more."

Netscape had been valued at a little over $1 billion when its stock began to trade on Aug. 9. By the end of that day it was worth over $2 billion. In my mind, no amount of number crunching could get Pixar to a value of $2 billion.

"It's a huge risk," I tried to push back. "If we model our IPO on Netscape, the biggest IPO frenzy in years, we might blow the whole thing. We're better off getting out the gate, keeping investors happy, and letting the stock build momentum."

Eventually our investment bankers came up with their own verdict. They thought Pixar's stock might quickly level out in the high teens, giving Pixar a value of around $700 million. They wanted the initial price to be $12 to $14 per share, meaning the proposed price would value Pixar around $500 million, an enormously respectable number. But Steve needed to be on board.

"If we start at $12 to $14 when we file with the SEC," I told him, "and if the road show goes well, we could double it, just like Netscape did. If we double it, Pixar will be valued at a billion dollars. We'll have a shot, but we take much less risk starting conservatively and letting the market be the judge. All the bankers are on board. Me too."

"Let me think about it," Steve said.

A couple of hours later he called me.

"We'll go with it," he said. "I think we'll have so much interest after our road show that we'll double the opening price."

I breathed a huge sigh of relief. We had our starting place.

ON THE MORNING OF SATURDAY, NOV. 25, ALL I COULD DO WAS PACE. We had arranged a chain of phone calls through which we would know how well *Toy Story* had performed Friday night. I would receive a phone call from Sarah Staff, who was plugged into Pixar's source of box office information.

"When will you hear?" Hillary asked.

"They said by around 10 a.m.," I replied.

It was now approaching 10:30. It would only be moments before we knew the first magic number, that of *Toy Story*'s opening weekend box office. I'd take $10 million I reminded myself, but something north of $15 million would be very sweet indeed.

"I'm nervous," Hillary said.

Twenty minutes later the phone rang. I rushed to answer it.

"Yes, yes. I see. I get it. Thank you. Yes, I'd love the details. You have my fax number. Thank you."

I hung up the phone, trying to absorb what I had just been told.

"So?" Hillary couldn't wait.

"It's massive," I said. "Massive. They didn't believe it was possible. Disney predicts a weekend box office close to $30 million! Friday night's box office alone was close to $11 and a half million."

"Wow!" Hillary exclaimed. We high-fived.

"$30 million!" I continued. "Even more, audience polling is off the charts. Disney thinks the film will have a huge run. It will sail past $100 million and probably past $150."

Five minutes later the phone rang again. It was Steve.

"It's amazing," Steve started excitedly. "I've talked to Disney marketing, I've talked to John [Lasseter]. I've talked to [Michael] Eisner. This is huge. They're thinking this could be the biggest film of the year."

The biggest film of the year had been *Batman Forever*, with a total domestic box office of $184 million. Second was *Apollo 13,* with $172 million. It had never really occurred to any of us that we might reach into that territory.

"Are you serious?" I said. That means it'll get close to $200 million."

"It's possible," Steve said. "We did it, Lawrence. We totally did it."

EPILOGUE

SOURCE: BLOOMBERG

ON NOV. 29, 1995, **PIXAR** SHARES WERE OFFERED TO THE PUBLIC AT $22 A SHARE. BY CLOSE OF MARKET, SHARES WERE TRADING AT $39, VALUING THE NEW COMPANY AT $1.5 BILLION. *TOY STORY,* MADE FOR AROUND $30 MILLION AND RELEASED A WEEK EARLIER, WENT ON TO GROSS $365 MILLION IN GLOBAL BOX OFFICE SALES.

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    To the best knowledge of Time Inc., the names and addresses of stockholders beneficially owning 1% or more of the common stock of Time Inc. as of June 30, 2016 (according to 13F filings with the U.S. Securities and Exchange Commission) are as follows:
    - Fairpointe Capital LLC, One N. Franklin, #3300, Chicago, IL 60606
    - BlackRock Fund Advisors, 400 Howard St., San Francisco, CA 94105-2228
    - The Vanguard Group Inc., 100 Vanguard Blvd., Malvern, PA 19355
    - JANA Partners LLC, 767 Fifth Avenue, Suite 800, New York, NY 10153
    - Westwood Management Corp. (Texas), 200 Crescent Ct., #1200, Dallas, TX 75201
    - J.P. Morgan Investment Management Inc., 270 Park Ave., 8th Floor, New York, NY 10017
    - State Street Global Advisors (SSgA), One Lincoln St., 27th Floor, Boston, MA 02111-2900
    - Dimensional Fund Advisors L.P. (U.S.), Palisades W., Bldg. One, 6300 Bee Cave Rd., Austin TX 78746
    - Schroder Investment Management LTD, 31 Gresham Street, London, U.K. EC2V 7QA
    - Norges Bank Investment Management (Norway), Bankplassen 2, P.O. Box 1179, Sentrum Oslo, Norway, NO-0107
    - NFJ Investment Group LLC, 2100 Ross Ave, Suite 700, Dallas, TX 75201
    - Thrivent Asset Management LLC, 625 Fourth Avenue South, Minneapolis, MN 55415-1624
    - Northern Trust Investments Inc., 50 S. LaSalle St., 4th Floor, Chicago, IL 60603
    - Quantitative Management Associates LLC, 751 Broad Street, Newark, NJ 07102
    - Keeley Asset Management Corp., 111 W. Jackson Blvd. #810, Chicago, IL 60604
    - Fidelity Management & Research Co., 245 Summer Street, Boston, MA 02210
    - The Boston Company Asset Management LLC, 1 Boston Place, Suite 2600, Boston, MA 02108
    - Renaissance Technologies LLC, 800 Third Avenue, New York, NY 10022
    - TCW Investment Management Co., 865 South Figueroa Street, Suite 1800, Los Angeles, CA 90017
    - Investec Asset Management Ltd. (U.K.), Woolgate Exchange, 4th Floor, 25 Basinghall St., London, U.K. EC2V 5HA
12. Not applicable.
13. Publication title: Fortune
14. Issue date for circulation data below: September 15, 2016
15. Extent and nature of circulation:
    Average number of copies each issue during preceding 12 months
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    - b. Paid circulation
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    - e. Total free or nominal rate distribution 152,869
    - f. Total distribution 895,668
    - g. Copies not distributed 50,023
    - h. Total 945,691
    - i. Percent paid 82.9%

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    - g. Copies not distributed 56,620
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    - i. Percent paid 81.4%
16. Publication of Statement of Ownership will be printed in the November 1, 2016, issue of this publication.
17. Signature and date: Maria Beckett, SVP Finance, September 16, 2016
    I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).

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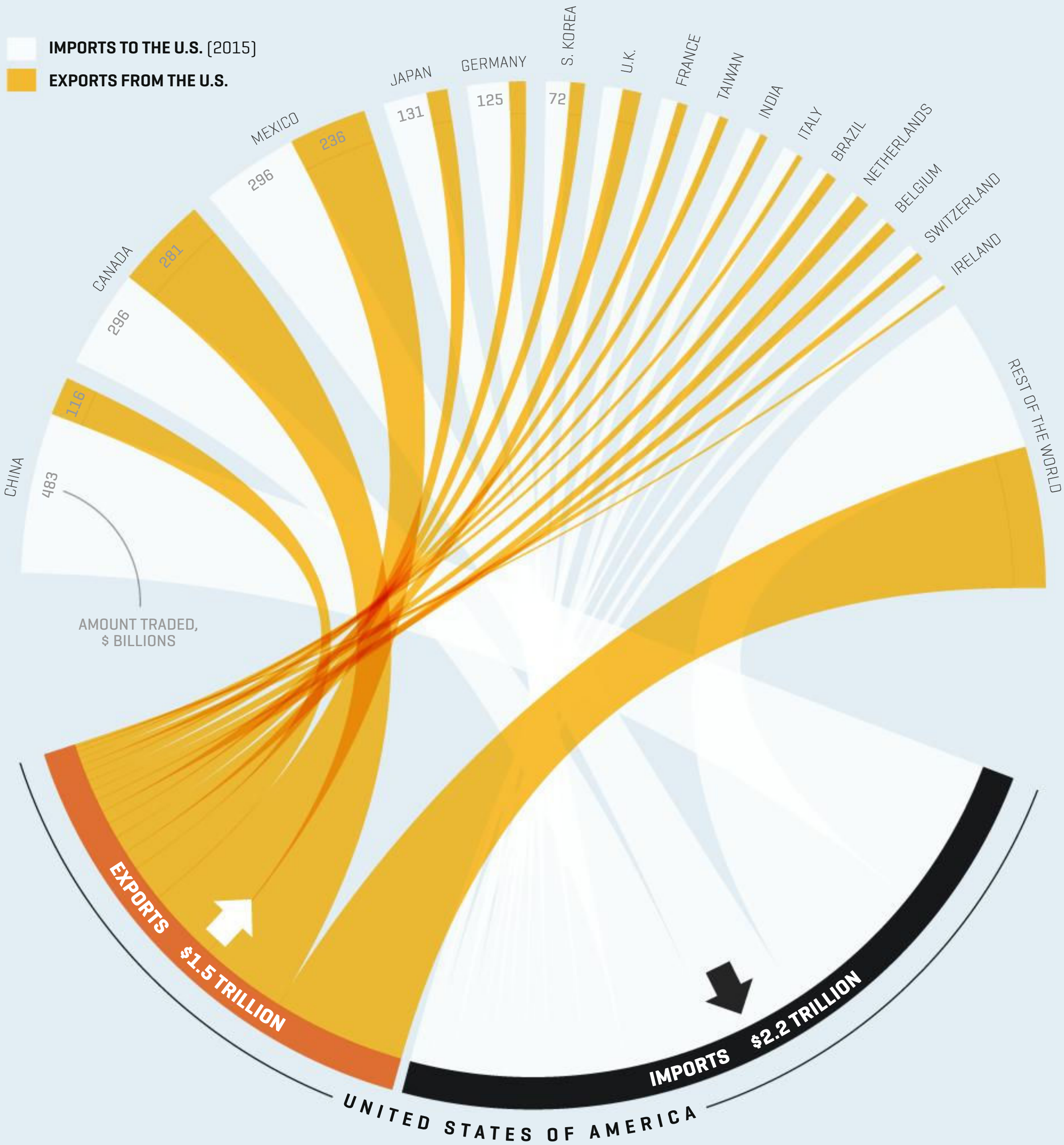

TRADING WITH AMERICA

POPULIST VOICES on the left and right have found this much to agree on in this campaign season—they think freer trade has been a disaster for American workers and needs to be rolled back. The reality, unsurprisingly, is more nuanced. The U.S. does run a trade deficit, but that doesn't mean we're "losing" to other countries. Plus, as the chart demonstrates, we're so deeply enmeshed in the global economy that simply pulling up stakes isn't an option. —TORY NEWMYER

DATA: **U.S. DEPARTMENT OF COMMERCE**

GRAPHIC BY **NICOLAS RAPP**


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Essential building blocks for the heart of your portfolio at 1/10th the cost of typical mutual funds.1 Smaller fees mean bigger dreams. Start building at iShares.com/build
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