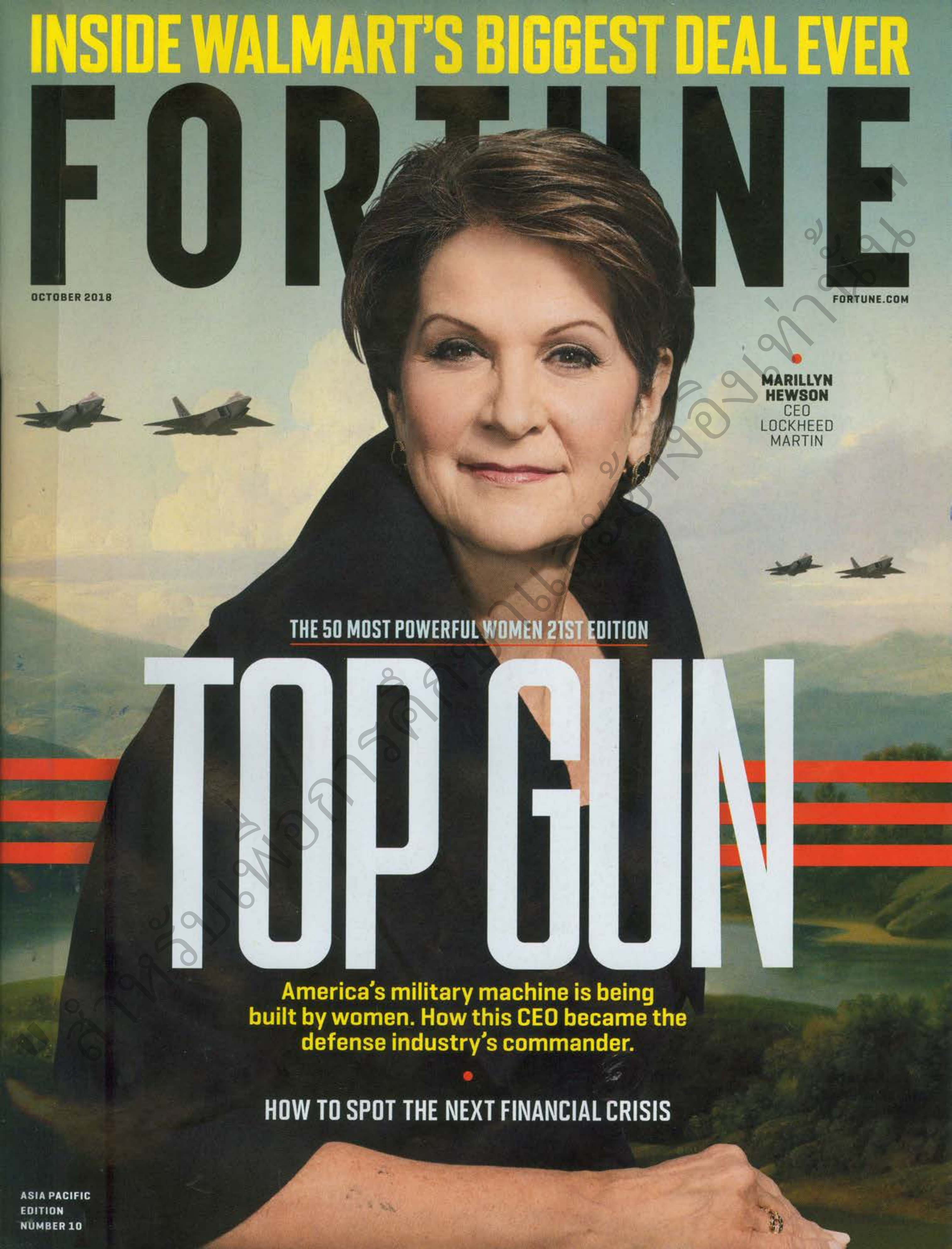


INSIDE WALMART'S BIGGEST DEAL EVER

FORTUNE

OCTOBER 2018

FORTUNE.COM

MARILLYN HEWSON
CEO
LOCKHEED MARTIN

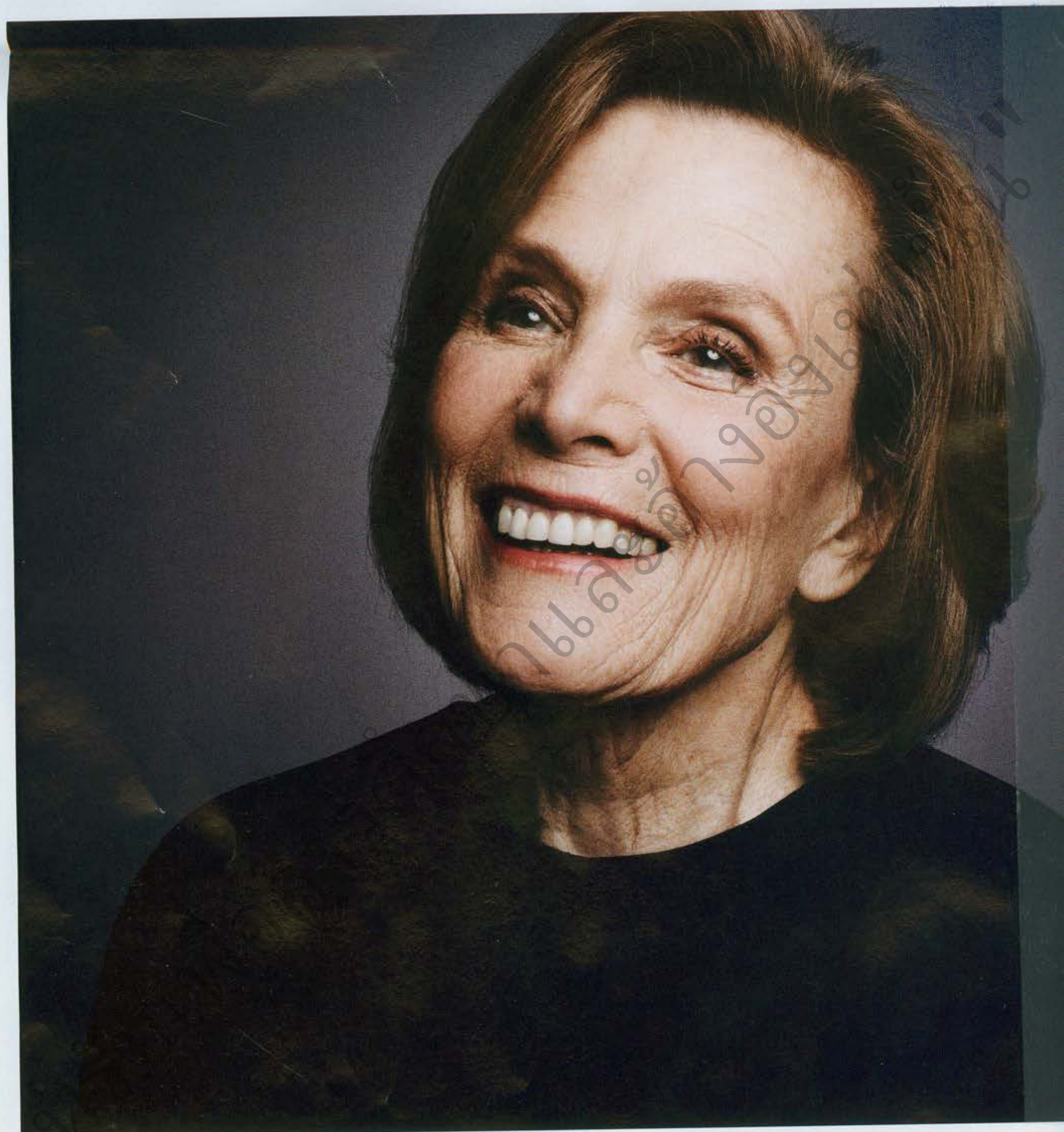
THE 50 MOST POWERFUL WOMEN 21ST EDITION

TOP GUN

America's military machine is being built by women. How this CEO became the defense industry's commander.

HOW TO SPOT THE NEXT FINANCIAL CRISIS

ASIA PACIFIC
EDITION
NUMBER 10



INSPIRING.

For over 50 years, Dr. Sylvia Earle has dedicated her life to exploring and preserving the oceans. She holds the depth record for untethered dives, helped develop the Deep Rover submersible and has authored over 200 publications. Now, with her Mission Blue project, the first female National Geographic Explorer-in-Residence is helping identify, highlight and protect the most threatened ecosystems on the planet. Rolex is proud of its long-term relationship with a true pioneer, as she continues her inspiring quest to make a difference. It doesn't just tell time. It tells history.

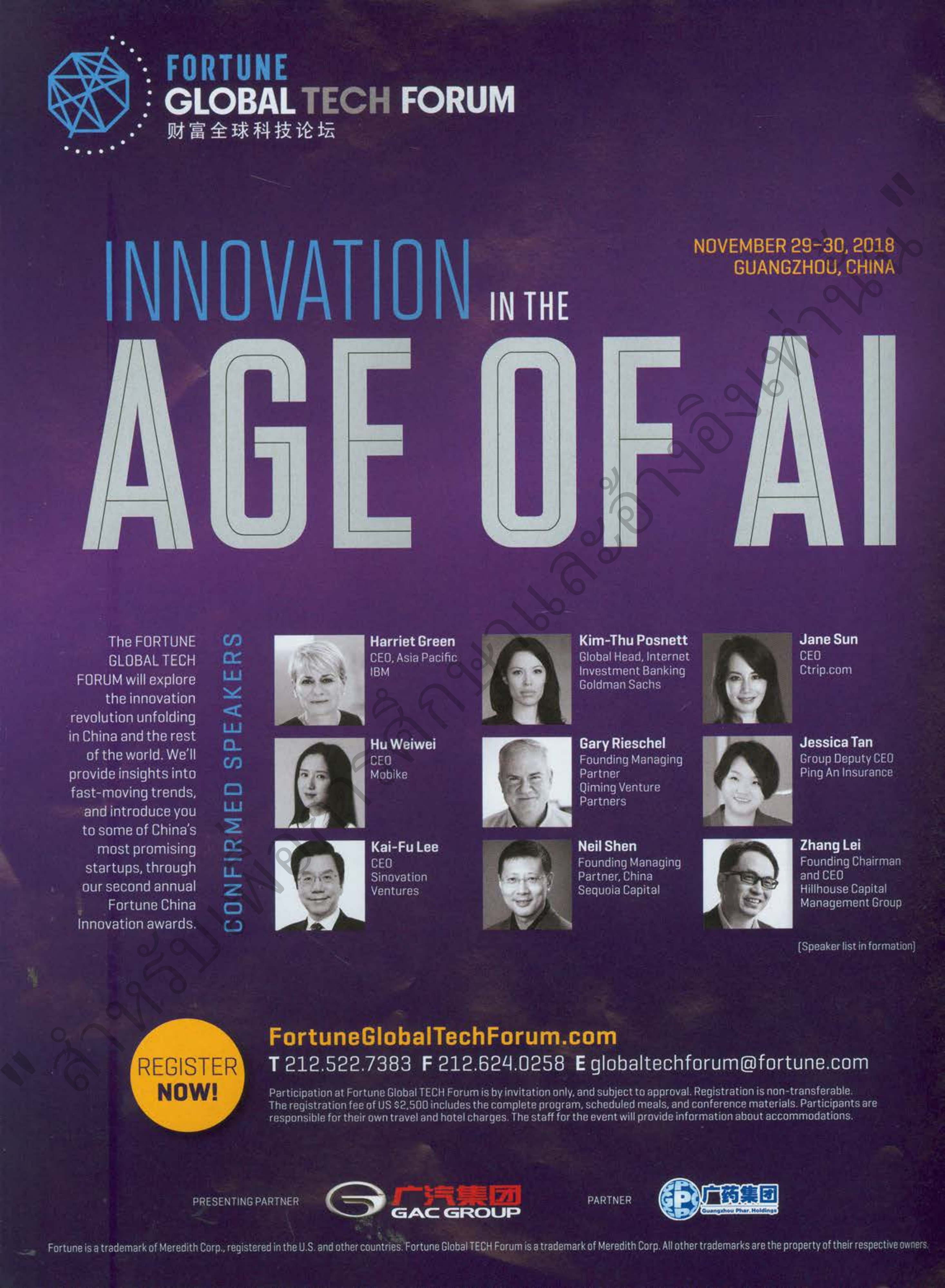
"I WANT MY FELLOW HUMANS TO KNOW ALL ABOUT LIFE IN THE SEA, TO INSPIRE THEM TO GO SEE FOR THEMSELVES."

Sylvia A Earle

SYLVIA EARLE
MARINE BIOLOGIST AND EXPLORER

OYSTER PERPETUAL LADY-DATEJUST 28

ROLEX


FORTUNE
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财富全球科技论坛
INNOVATION IN THE AGE OF AI
NOVEMBER 29–30, 2018
GUANGZHOU, CHINA
The FORTUNE GLOBAL TECH FORUM will explore the innovation revolution unfolding in China and the rest of the world. We'll provide insights into fast-moving trends, and introduce you to some of China's most promising startups, through our second annual Fortune China Innovation awards.
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OCTOBER 1, 2018

VOLUME 178 /// NUMBER 4

FEATURES
MOST POWERFUL WOMEN

▲ PHOTOGRAPH BY **CELESTE SLOMAN**

▲ ON THE COVER: MARILLYN HEWSON PHOTOGRAPHED BY **MACKENZIE STROH;** COLLAGE BY **HÉLÈNE BUILLY**

AIRCRAFT PHOTOS: STEVE THORNE—GETTY IMAGES

CONTENTS

VOLUME 178 /// NUMBER 4

CORRECTIONS

"Dream Big" [Sept. 1] incorrectly identified Global Good, an arm of Intellectual Ventures, as a nonprofit.

In "Turnover at the Top" [Sept. 1], we incorrectly said there were two black CEOs in the *Fortune* 500; in fact, there are three.

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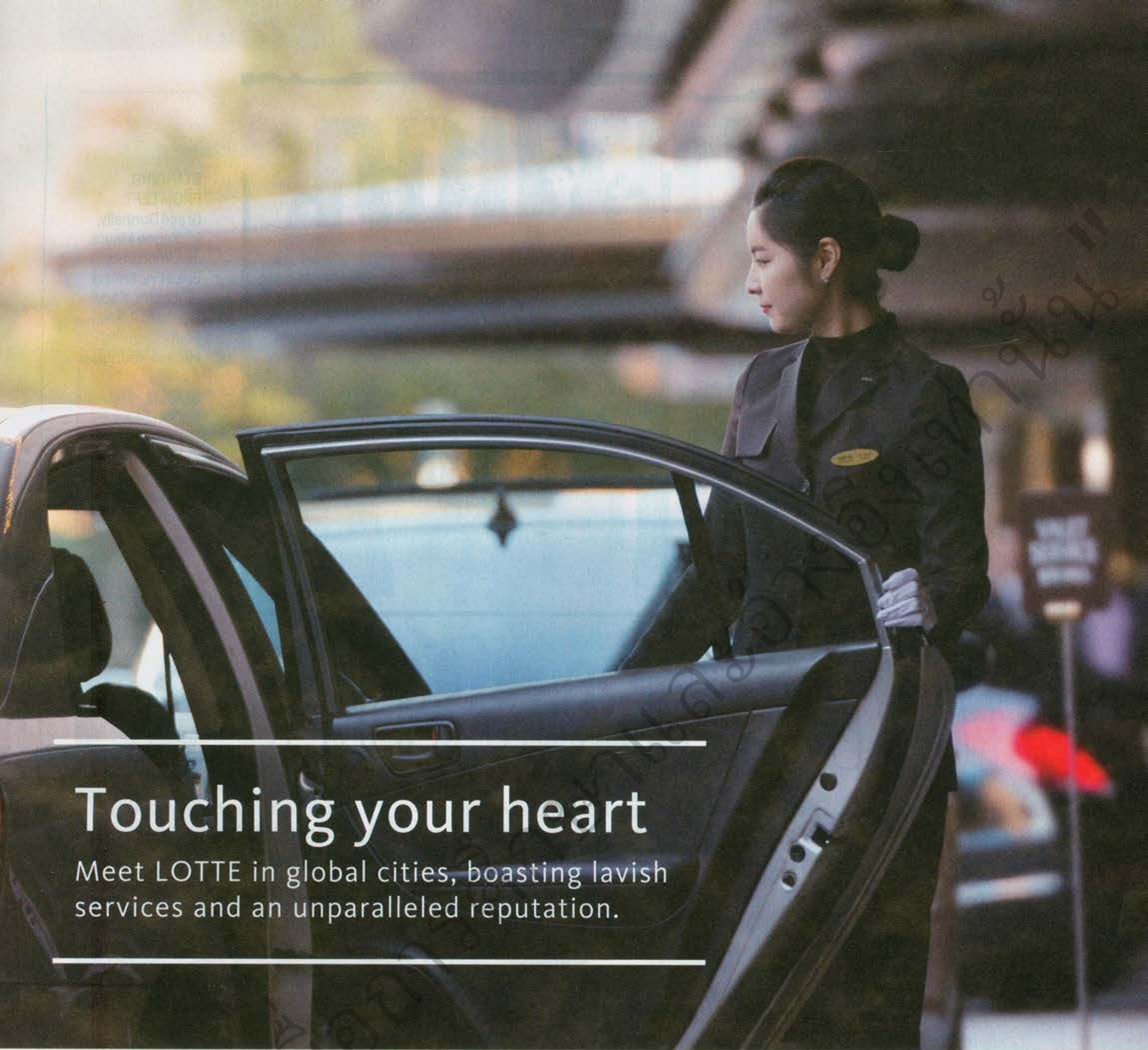
Touching your heart
Meet LOTTE in global cities, boasting lavish
services and an unparalleled reputation.

STANDING, FROM LEFT: Grace Donnelly, McKenna Moore, Jen Wieczner, Erika Fry, Emma Hinchliffe, Kacy Burdette, Lisa Marie Segarra, Monica Rodriguez

SEATED, FROM LEFT: Carson Kressler, Polina Marinova, Kristen Bellstrom, Beth Kowitt, Lucinda Shen

FOREWORD

FORTUNE'S POWER SOURCE

PART OF OUR MISSION AT *FORTUNE* these past many decades has been to benchmark success. Our well-established rankings, though, don't merely show who's up and who's down from one year to the next. They reflect the changing face of business—and, to a fair extent, of society itself.

Consider our 2018 Most Powerful Women list—the 21st edition of what we, at *Fortune*, consider to be one of our most prestigious franchises. The No. 1 picks on our U.S. and international rankings, respectively, reveal plenty about our changing world: Marillyn Hewson, chief executive of Lockheed Martin, who tops our domestic list (and commands our cover), is part of a coterie of women CEOs who now utterly dominate America's defense industry, a sector long ruled by men. Four of the top five military contractors in the U.S., in fact, are (or will soon be) run by women. Please see Jen Wieczner's insightful essay and interviews on page 50.

Meanwhile, Emma Walmsley, who became the first (and so far, only) woman to lead a large, innovative pharma company, is leading a quiet revolution of her own at British drug giant GlaxoSmithKline—a story masterfully told by *Fortune*'s Erika Fry and Claire Zillman (see page 58).

But this year's MPW list and accompanying feature stories—all expertly overseen by deputy digital editor Kristen Bellstrom and senior writer Beth Kowitt (both seated in the right photo, above)—also reflect a more sobering business change: a counterintuitive and unfortunate strengthening of the glass ceiling. As KB and BK point out in their introduction to the package (page 30), there are just 24 women CEOs on this year's *Fortune* 500, down from 32 the year before.

Kristen and Beth spent much of the past summer assembling and vetting the list and putting this issue together. As did the rest of the team assembled above. *Fortune* photo director Mia Diehl even made sure that all of our MPW feature subjects were photographed by women.

As for benchmarking success, well, there is one ranking I feel more confident about than ever: The team shown above is the best in the business.

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

▲ PHOTOGRAPH BY **REBECCA GREENFIELD**

BRIEFING

THE WORLD IN 11 PAGES

How to Spot the Next Financial Crisis

A decade after the last devastating crash, here's a breakdown of the DNA all economic disasters share.

By Geoff Colvin

MARKETS

TEN YEARS AFTER the weekend that upended the financial world, its most important lessons lie not in what has changed, vast and profound though that is, but in what hasn't changed. The main causes of the last crisis—human self-delusion and irrationality—will be the main causes of the next one. If that seems unbearably depressing, cheer up: It tells us what to watch out for.

Lehman Brothers' bankruptcy announcement in the predawn darkness of Sept. 15, ▷▷

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▲ PHOTO ILLUSTRATION BY TRES COMMAS

▷▷ 2008, wasn't the first or worst event of the financial crisis, but it was the most frightening because it was unthinkable, given the investment bank's size and exalted stature. It unmoored us from our certainties and set the stage for other disorienting changes, many of which are now embedded in our daily lives.

But those same certainties were built on foundations that turned out to be unfounded. We all *knew* that U.S. homeownership rises over the long term; that's part of what America is about. That unshakable confidence helped fuel the easy-credit homebuying frenzy of the early 2000s, a frenzy driven by the belief that an unprecedented spike in property prices would last indefinitely. Big institutional investors—including Lehman—bought into the faith-based rally, betting on the kinds of shaky subprime loans that eventually brought them down and cratered the economy. (As for the homeownership rate, it plunged, erasing 40 years of increase, and is nowhere near recovering.)

If delusional optimism led to widespread financial harm, delusional pessimism has kept many Americans from healing. We're still less likely to own stocks than we were even after the dotcom meltdown of 2000–01, says the Gallup research firm. More of us are truly terrified of anything associated with finance, which makes us behave bizarrely. A new survey by the Betterment robo-advisory firm finds, incredibly, that 48% of respondents think the stock market hasn't gone up in the past decade, including 18% who think it has gone down. That's half of American adults, and it would take them 10 seconds online to learn that stocks are up 140% since Lehman failed. But they don't look. They're like the person who can't open the letter from the IRS. The very thought makes them quiver.

GREENSPAN ADMITTED HE WAS "SHOCKED" THAT HIS MODEL OF "THE CRITICAL FUNCTIONING STRUCTURE THAT DEFINES HOW THE WORLD WORKS" DIDN'T WORK. HE WASN'T ALONE.

Such self-destructive behavior reminds us of what we relearned in the crisis: Most people don't behave rationally. Too many on Wall Street believed the madhouse markets reflected people making the machinelike calculations of classical microeconomics. Former Federal Reserve chairman Alan Greenspan, a hyperrational libertarian for 40-plus years, confessed before a congressional committee he was "shocked" that his model of "the critical functioning structure that defines how the world works" didn't work. He wasn't alone.

The most damaging irrationality was a dogged but mistaken belief that fundamental rules of valuation no longer applied—that *this time is different.* The phrase became the title of a bestseller by economists Carmen Reinhart and Kenneth Rogoff, showing that such a belief has fueled financial disasters for centuries. Deep-rooted errors identified by behavioral finance—overconfidence, overextrapolation, drawing big conclusions from small samples—reinforced the misjudgment.

No one knows what will trigger the next crisis, but we know for sure it will be built on the same kind of mistakes. Don't count on employers, banks, insurers, or regulators to protect you. But you can shield yourself because you already know how to spot trouble. Specifically:

• Ask yourself regularly which markets look reasonably priced only if you believe that fundamental rules of valuation no longer apply. To help you identify such hotspots ...

• Listen to the responsible fringe—thinkers with strong records who are contradicting the mainstream view. Last time they included fund manager Jeremy Grantham and economists Robert Shiller and Nouriel Roubini. You can't know if they're right, but you can prepare for the possibility that they might be. That means ...

• Don't predict the future—you can't. Instead, envision scenarios and plan for each one. Don't worry that most of your plans will be wasted; it's better to be prepared for events that don't happen than unprepared for those that do.

The crisis that erupted 10 years ago reminded us that even in a worldwide financial calamity, not everyone suffers equally. Hedge fund manager John Paulson made billions betting against subprime mortgages, a business that had abandoned usual valuation rules. You may not do so well, but we know that some people will come through the next crisis just fine. Resolve, rationally, to be among them.

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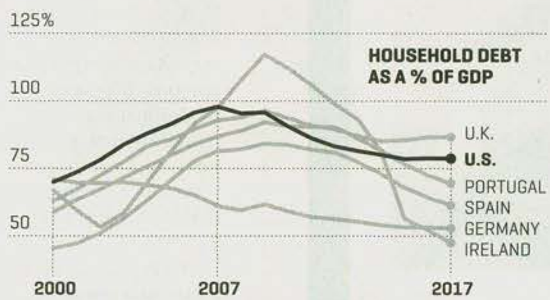
ANALYTICS

Seeing Trends in the Data

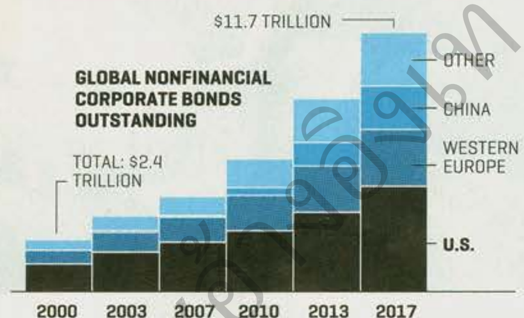
10 YEARS AFTER THE GREAT RECESSION, NEW THREATS HAVE APPEARED.

DEBT DOESN'T CAUSE all financial crises, but it caused the last one, and global debt has again climbed to a sweaty-palms altitude. That doesn't mean a crisis is necessarily imminent; luck and wise policy can achieve a soft landing. The danger is that a shock, like Lehman Brothers' 2008 collapse, or just a confluence of individually minor factors (steadily rising interest rates, gradually increasing loan defaults), could destabilize an increasingly fragile system. —**GEOFF COLVIN**

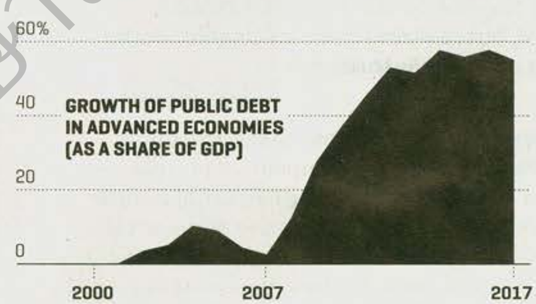
1. One of the problems that triggered the financial crisis, excessive household debt, has abated ...



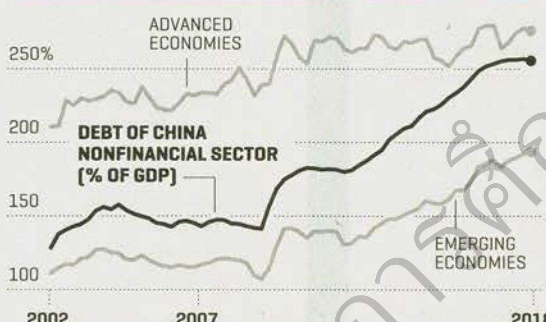
2. ... but in the 10 years since, corporate debt has reached threatening highs ...



3. ... as has government debt in advanced economies ...

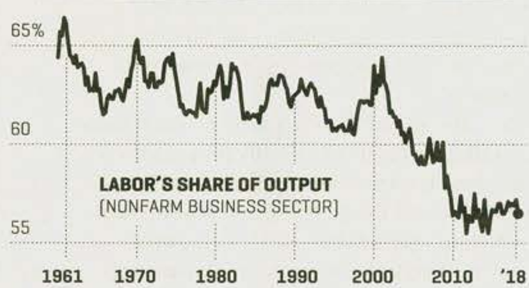


4. ... while China's debt has been among the fastest-growing in modern history.



5. Long-running social problems remain: Income inequality is about the same as before the crisis ...

6. ... while labor's share of U.S. GDP, which has been falling since 1960, has shown no clear rebound in the past decade.



SOURCES: BANK FOR INTERNATIONAL SETTLEMENTS; MCKINSEY GLOBAL INSTITUTE ANALYSIS; U.S. BUREAU OF LABOR STATISTICS; WORLD BANK

BeiGene's share price has fallen 11.3% since its IPO.

A Biotech Boom in China? Not Just Yet

Chinese biopharma stocks have lucrative potential, but realizing gains will involve some growing pains. By Sy Mukherjee

EMERGING

RECENT REGULATORY changes in China have led to an outpouring of enthusiasm from investors and biopharmaceutical companies looking to gain a foothold in one of the world's major markets—a market that was, until recently, stymied by restrictions that barred pre-revenue biotech firms from listing on the Hong Kong stock exchange.

That all changed earlier this year. "They didn't have a mechanism for a true publicly traded biotech sector, and that changed overnight," says Brad Loncar, a veteran biotech investor who recently launched an index fund for Chinese biopharma companies. "This is the beginning of a new era of biotech in China."

But Loncar also noted that despite evolving regulations—including moves to specifically prop up the local Chinese biotech sector and speed drug approvals for companies around the globe—there are still some strong headwinds against the industry's growth.

For instance, a recent vaccine-manufacturing scandal involving falsified data and ineffective drugs led to arrests in China and probably made health care investors skittish.

That has led to lackluster returns in these early days of the market. Two Chinese companies with recent IPOs—Ascletis Pharma and BeiGene—have seen their shares fall 47.7% and 11.3%, respectively, since listing in Hong Kong.

But, Loncar says, the arc of Chinese biotech is likely to be a success story, especially following the recent regulatory changes he believes can siphon capital to risk-taking, early-stage drug developers. "It's important not to obsess about the ups and downs of any one company—take a holistic view," he says. "One piece of good news could turn it around."

BLOCKCHAIN

ART CRYPTO

ANDY WARHOL: artist, icon ... blockchain poster boy? New York City–based Masterworks is preparing to sell digital tokens representing shares in a $1.8 million Warhol portrait of Marilyn Monroe—seeking the first SEC-sanctioned securities offering of a painting. Overseas, a September auction of ART tokens representing stakes in Warhol's *14 Small Electric Chairs* raised $1.7 million.

While blockchain's immutable ledger theoretically allows collectors to verify the provenance of the masterpieces, there are downsides: They can't hang the paintings at home. And cryptographic security won't protect the tableaux from tricksters. Just ask the guy who in June used a blockchain to falsely claim ownership of the *Mona Lisa*.

—JEN WIECZNER

CAMPAIGNS

MIDTERM MONEY MADNESS

IT'S NOT JUST YOU: This 2018 midterm cycle *is* crazy—with more candidates running and more cash raised than in any comparable election year post–*Citizens United*. Digital advertising is set to increase from less than 1% of campaign ad spending to more than 20%, according to analysts Borrell Associates. The biggest online spender so far is Rep. Beto O'Rourke, a Texas Democrat who has put $4.7 million into digital ads in his bid to oust Sen. Ted Cruz.

The Next Crisis: A Frack Up?

Bethany McLean takes on the shale oil industry in her new book, *Saudi America: The Truth About Fracking and How It's Changing the World.*
Interview by Leigh Gallagher

Q&A **In the book you argue that the entity most responsible for the fracking boom is Wall Street, and you compare valuations to the first dotcom boom. Can you explain that?**

What's made this whole thing work is that fracking companies aren't valued on earnings. Nor are executives compensated for producing returns for shareholders. Fracking companies have been valued as a multiple of the acreage they own, or on their level of production, regardless of whether it's profitable or not. CEOs have been compensated based primarily on production. It's analogous to the way dotcom companies were valued on multiples of eyeballs. It all sounds logical until it doesn't.

You quote Charlie Munger as saying, "Imported oil isn't your enemy. It's your friend." Why does he say that—and do you agree with him?

Oil and gas are called nonrenewables for a reason! Shale has bought us more time, but it doesn't buy us forever. Munger's argument is that hydrocarbons are still an essential and irreplaceable element in products like fertilizers, meaning that we wouldn't be able to feed our population without them. Sure, there might be a replacement one day. But there isn't yet. So the security of our nation depends on the continued availability of oil. Why, in the absence of any certainty about what will replace hydrocarbons, should we continue to burn through our existing supply? So that we can beat our chest over the mythical notion of energy independence? Why not import what we need and save our supply for the proverbial rainy day? It makes perfect sense to me.

WAGE WINNERS (AND LOSERS)

+0.1%
REAL WAGE GROWTH
Wages rose 2.9% in the year ending August 2018. But factoring in inflation, the numbers are effectively flat.

+4.8%
FINANCIAL SERVICES
The 8.6 million people employed in financial services saw the biggest wage increases.

+1.5%
MINING
Despite political buzz about bringing back coal, mining wages have risen the least in the past year.

SOURCE: BUREAU OF LABOR STATISTICS

O'ROURKE: JOHN GLASER—CSM/SHUTTERSTOCK; MCLEAN: MIRANDA SITA

WHO'S ON TOP?

THE NEXT TRILLION-DOLLAR STOCK

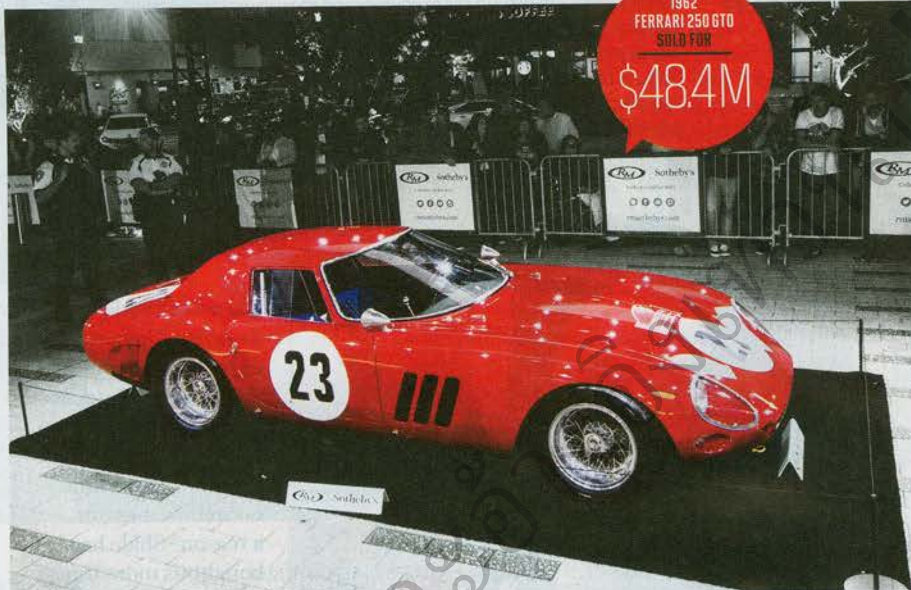
Apple and Amazon have each recently reached a valuation of $1 trillion. Here's why these companies could be next to join the 13-figure club.
—LUCINDA SHEN

MICROSOFT

Satya Nadella's Microsoft has made a radical shift toward cloud-computing and subscription software. The giant wowed shareholders with 91% cloud revenue growth during fiscal year 2018—closing in on market leader Amazon Web Services.

ALPHABET

Alphabet's revenue has grown 25% in the past year, but much of its lofty rise in stock price over the same period comes from investor confidence in two growth areas: the cloud, and its Waymo self-driving-car unit. The tech giant's cloud business recently surpassed $1 billion in quarterly revenue.



DARIN SCHNABEL—COURTESY OF RM SOTHEBY'S

Hold Your Horses

Don't let a record-setting Ferrari fool you—the classic car market is (finally) slowing down.

By Daniel Bentley

VROOM **BUYING COLLECTOR CARS** as an alternative asset class has an irresistible appeal to wealthy motorheads. A blue-chip Ferrari or prewar Bugatti is a guaranteed ticket to the fairways of Pebble Beach, Calif., during the prestigious Monterey Car Week, and to any number of Concours d'Elegance car shows around the world. Your stock portfolio, however successful, just doesn't open doors like that.

The appeal of automotive speculation becomes even more intense when attending the auctions at such events and hearing the jaw-dropping numbers being called out before the hammer comes down. The latest darling of the car auction world: a 1962 Ferrari 250 GTO that RM Sotheby's sold at Monterey for $48.4 million, including buyer's premium—a new record for a car at auction. Just weeks prior, another 250 GTO sold for $70 million in a private sale to David McNeal, founder of WeatherTech, a maker of floor mats.

These astronomical figures, however, mask an underlying softness in the classic car market. According to analysis by CarGurus, an online marketplace, all cars 25 years old or older rose in price more than 60% in the past three years, but just 2.9% in the past 12 months. The Historic Automobile Group Index, which measures rare collectible cars, is up just 0.05% so far in 2018. (Even with a slow start to the year, the S&P 500 is up 8.5% year to date.)

Tom Papadopoulos, a Long Island, N.Y.–based classic car dealer with more than 25 years of experience, says he's not surprised by the numbers. "A couple of years ago you had speculators, not car people, buying up cars, regardless of their condition and flipping them at the auction houses. Those people have now moved on to something else." Real car people, he says, are more selective: "Condition is everything."

BIG BOXES

Retail Bricks Bring Online Bucks

Companies that resisted closing stores are growing online sales as a result.

By Phil Wahba

Best Buy proves Black Friday and Cyber Monday can peacefully coexist.

WHAT DO WALMART, TARGET, Kohl's, Home Depot, Nordstrom, and Best Buy have in common? They've been reporting sizzling online sales in the past couple of years. What else do they have in common? They've barely closed any stores during that time, bucking retail's big trend and belying the idea that their big store fleets are albatrosses that leave them helpless before the Amazon juggernaut.

While Amazon now accounts for nearly half of U.S. digital sales, these retailers are fighting for their fair share—and finding success. In their respective second quarters, Walmart U.S. and Target saw online sales rise more than 40%.

After spending billions on equipping stores to receive or ship online, and building up faster delivery capability and top-of-the-line inventory management systems, these retailers are emerging as the survivors in retail's big reckoning, able to leverage the one thing Amazon doesn't have just yet, even with its Whole Foods acquisition: a big network of stores.

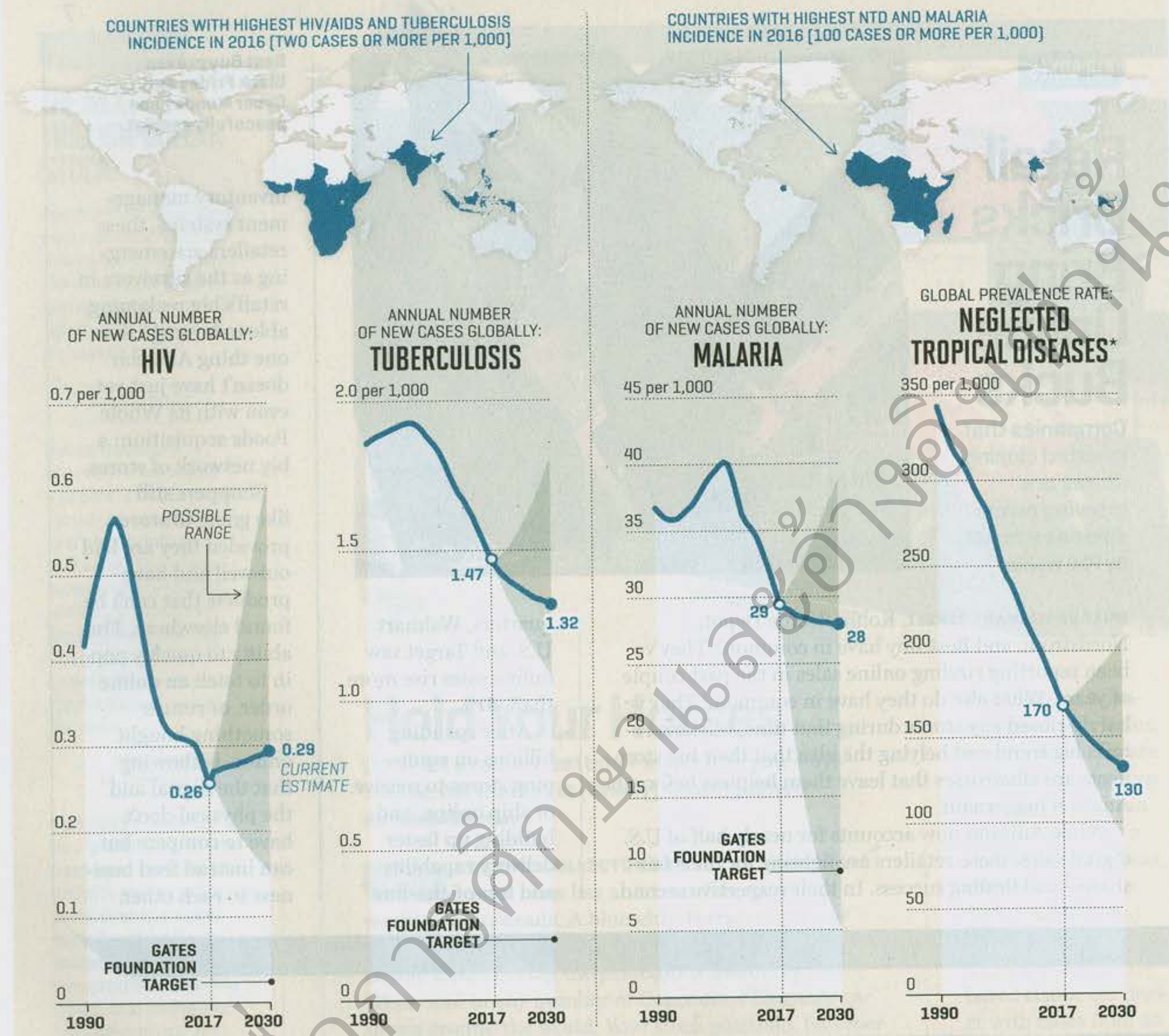
Shoppers still like going to stores, provided they are laid out well and have products that can't be found elsewhere. The ability to quickly pop in to fetch an online order, or return something bought online, is showing that the digital and the physical don't have to compete but can instead feed business to each other.

FINTECH

A TIPPING POINT FOR "TAP TO PAY"

WHEN APPLE LAUNCHED its Apple Pay mobile wallet four years ago, it was an example of a nifty technology that was ahead of critical infrastructure. It made for a great demo, in other words, but there weren't many places to use it—at least in the United States. Back then, Apple says, only 3% of U.S. retail locations were equipped with near-field communication technology, also known as contactless payment systems. As retailers have swapped out cash registers for readers, usage of Apple Pay and competing products has exploded. Apple says more than 5 million U.S. merchant locations, or greater than 50% and growing, now accept it (CVS and 7-Eleven both rolled out Apple Pay in September). This means the fabled day is fast arriving when consumers can forget their wallets at home—but never their smartphones. —**ADAM LASHINSKY**

BEST BUY: MARK RALSTON—AFP/GETTY IMAGES; WALLET: JUSTIN SULLIVAN—GETTY IMAGES; APPLE PAY: CHRIS RATCLIFFE—BLOOMBERG VIA GETTY IMAGES



* SUM OF 15 NTDS SUCH AS DENGUE, SCHISTOSOMIASIS, AND ROUNDWORMS

SOURCES: INSTITUTE FOR HEALTH METRICS AND EVALUATION, UNIVERSITY OF WASHINGTON; GATES FOUNDATION

Promise and Peril in the Global War on Poverty

The Bill & Melinda Gates Foundation issued a candid report on the health of the world. *Fortune* talks with its CEO, Dr. Sue Desmond-Hellmann, about why the stakes for all of us are so high. By Clifton Leaf

CHANGE THE WORLD

FOR DECADES Ethiopia was a land of seemingly unending poverty, beset by one humanitarian crisis after another. A drought-induced famine in 1973–74 was estimated to have left 300,000 dead. A still greater famine, in the mid-1980s, killed twice as many. A third, in 1990–2000, starved tens of thousands more.

Since then, however, Ethiopia has made such remarkable strides in growing its economy—and just as important, in building a comprehensive social safety net—that the Bill & Melinda Gates

Foundation now says it's on track to "almost eliminate extreme poverty by 2050."

Rwanda, a country torn apart by genocide barely a generation ago, has spent the years since that horror protecting its current generation of children by investing in health care—doubling down on vaccination efforts and supporting a widespread community health worker program. The result: Between 2000 and 2015, the mortality rate of kids under 5 fell at a record pace.

Fifteen-year-old students in Vietnam, a country where per capita GDP is less than 1/25th what it is in the United States, sharply outperform their American and most European counterparts on international math and science tests. Why? One reason, again, is investment. Vietnam spends nearly 6% of its GDP on education, according to the World Bank. (The U.S. spends about 5%.)

All three of these surprising achievements are highlighted in the *Goalkeepers 2018 Data Report*, written by Bill and Melinda Gates and released on Sept. 18. But the dispatch—an assessment of the progress made so far on the United Nations' 17 Sustainable Development Goals and done with the help of the University of Washington's Institute for Health Metrics and Evaluation—is anything but rah-rah. For every encouraging data point, indeed, there is one that alarms. For every promising advance in the global war on poverty and disease is a perilous outcome if we lose focus or steam.

"What I like about this year's *Goalkeepers* report is that it's precise, homing in on countries where there has been genuine progress as well as the places where it still needs to happen," says Dr. Sue Desmond-Hellmann, who was a leading cancer researcher, a biotech executive, and the chancellor of the University of California, San Francisco, before becoming CEO of the Gates Foundation in 2013. "It's fantastic that a billion people, for example, have lifted themselves out of poverty since 2000—that's just astounding. But if you look at

Sue Desmond-Hellmann, CEO of the Bill & Melinda Gates Foundation, listens to mothers at Hagere Selam Kebele Health Post in the Tigray region of Ethiopia in October 2016.

© JIRO OSE—BILL & MELINDA GATES FOUNDATION

"YOU MIGHT SAY, 'WHY DO I CARE ABOUT DRC? WHY DO I CARE ABOUT NIGERIA?' WELL, EBOLA REMINDS US AGAIN THAT A HEALTH CRISIS ANYWHERE IS A HEALTH CRISIS EVERYWHERE."
—Sue Desmond-Hellmann

the numbers, three-quarters have been in China and India," she says.

The result is a concentration of the planet's remaining poor largely in one place: Africa. And if the current population and economic trends hold, it's going to get worse. By 2050, 86% of the world's extreme poor—those surviving on the equivalent of $1.90 a day—will be living in sub-Saharan Africa. Close to half of this total, moreover, will reside in just two countries: the Democratic Republic of the Congo (DRC) and Nigeria.

Which brings us back to that Janus-like dualism in the report. "The promise is, if you invest in health, if you invest in education, great things happen," says Desmond-Hellmann. If we apply the same strategy that worked in much of Asia and India, we could have "a third wave of poverty reduction in sub-Saharan Africa, another wave of empowered people and opportunity. The peril is, if it doesn't happen, you're going to have African youth [nearly 60% of the continent's population is under the age of 25] who won't have that opportunity and who will struggle with inequality."

The latter environment is a petri dish for instability, violence, mass migration, and—as we're seeing now with a continuing outbreak of deadly Ebola in a war-torn region of Central Africa— ▷▷

▷▷ a potential threat to global health as well. In their report, however, Bill and Melinda Gates de-emphasize such concerns in favor of what they see as a more compelling reason for action—an *investment* case: a chance to harness "young people's enormous potential to drive growth." Africa's youth, they write, "are the activists, innovators, leaders, and workers of the future."

Their blueprint for tapping into this giant reservoir of human capital focuses on four key areas.

❶ Invest in health.

The Gates Foundation's primary focus is tackling the major health challenges of the developing world—eradicating malaria, HIV, tuberculosis, pneumonia, and the diarrheal diseases that still sicken and kill many children, despite the enormous progress that's been made so far in preventing infections. A central part of the strategy going forward is the same as it has been until now: vaccination—which offers "the greatest bang for the buck" in public health, Desmond-Hellmann says. "Vaccines and bed nets [to prevent bites from malaria-carrying mosquitoes] are low-cost ways that governments can protect their children." (Bed nets alone have prevented more than 500 million cases of malaria.) "We, as a foundation, can work with those governments—we can talk to the Minister of Health and the Minister of Finance about the wonderful returns on investment," she says.

Innovation here is critical. Rotavirus, a major cause of diarrhea, is preventable now because of vaccines made by Merck and GSK. Ebola may well be, too, if a new experimental Merck vaccine, now being tested, proves to be effective. "You might say, 'Why do I care about DRC? Why do I care about Nigeria?' Well, Ebola reminds us again that a health crisis anywhere is a health crisis everywhere," says Desmond-Hellmann. "And having the vaccine available is a direct result of investment by the private sector."

"IF WE INVEST IN HUMAN CAPITAL TODAY, YOUNG PEOPLE WEARING SANDALS IN THE POOREST, FASTEST-GROWING COUNTRIES WILL BE RIDING BICYCLES TOMORROW—AND INVENTING CHEAPER, CLEANER, SAFER CARS NEXT WEEK."

—Bill and Melinda Gates, *Goalkeepers 2018 Data Report*

❷ Invest in education.

"Vietnam," says the Gates Foundation CEO, "drove their gross domestic product growth 300-plus percent over 25 years by investing in education." But the ROI here isn't just economic. "One of the strongest determinants of a child's health is the educational status of his or her mom," the CEO says. "And so when you invest in education—and particularly include both boys and girls, which most of the world happily does now—you're investing in the future of those young women as mothers, too, as well as in the health of their children."

❸ Invest in sanitation.

Many philanthropies have made providing access to clean water their goal. The Gates Foundation is turning its attention to another social determinant of health: sanitation. Says Desmond-Hellmann: "It's part of our theme that we'll do things that others can't or won't."

The foundation has "made a lot of investments in toilets, particularly in India, which has a massive national program to have safe toilets for all their citizens," she says. Another focus is helping communities that don't have a sewer system (and can't afford to build one) to leapfrog into a less expensive approach called "fecal sludge management"—a system that safely transports, dries, and treats the waste.

❹ Support family planning.

Rapid population growth makes it harder for regions to break the chains of poverty. In Africa, even a 50% reduction in the poverty rate would leave the number of poor people essentially the same because the population is projected to nearly double by 2050, the *Goalkeepers 2018 Data Report* points out.

Desmond-Hellmann says the foundation's aim is simple: making sure that every woman who wants contraception can get it. "Our philosophy is that a woman should be able to have the number of children she wants and with whom she wants. And that is, for me, female empowerment, not colonialism." ■

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The 20 Best Workplaces for Manufacturing and Production

WHETHER THEY MAKE replacement hips or water-saving toilets, the manufacturers on this list all have something in common: Their employees love working there.

Fortune, along with research partner Great Place to Work, surveyed thousands of people to determine 2018's best workplaces for manufacturing and production. Medical technology firm Stryker tops this year's list, with employees praising the company's management style as well as its atmosphere.

As unemployment continues to shrink, Americans can be increasingly choosy about where they ply their trade, making a welcoming workplace all the more important.

Read the full list on Fortune.com.

—Radhika Marya

1. STRYKER
HQ .... Kalamazoo
SECTOR .... Medical devices
U.S. EMPLOYEES 17,122

2. JM FAMILY ENTERPRISES
HQ .... Deerfield Beach, Fla.
SECTOR .... Automotive
U.S. EMPLOYEES 4,222

3. FONA INTERNATIONAL
HQ .... Geneva, Ill.
SECTOR .... Food and beverage
U.S. EMPLOYEES 220

4. MARS
HQ .... McLean, Va.
SECTOR .... Food and beverage
U.S. EMPLOYEES 13,954

5. AMERICAN TRANSMISSION
HQ .... Waukesha, Wis.
SECTOR .... Energy distribution
U.S. EMPLOYEES 659

6. HILCORP
HQ .... Houston
SECTOR .... Oil and gas
U.S. EMPLOYEES 1,973

7. CONCHO RESOURCES
HQ .... Midland, Texas
SECTOR .... Oil and gas
U.S. EMPLOYEES 1,466

8. FOH INC.
HQ .... Miami
SECTOR .... Restaurant supplies
U.S. EMPLOYEES 118

9. DEVON ENERGY
HQ .... Oklahoma City
SECTOR .... Oil and gas
U.S. EMPLOYEES 2,616

10. GRACO INC.
HQ .... Minneapolis
SECTOR .... Machinery
U.S. EMPLOYEES 2,209

11. ARTHREX
HQ .... Naples, Fla.
SECTOR .... Medical devices
U.S. EMPLOYEES 3,188

12. PRO FOOD SYSTEMS
HQ .... Holts Summit, Mo.
SECTOR .... Food and beverage
U.S. EMPLOYEES 138

13. CONNECTRAC
HQ .... Dallas
SECTOR .... Building materials
U.S. EMPLOYEES 64

14. REYNOLDS AMERICAN
HQ .... Winston-Salem, N.C.
SECTOR .... Tobacco
U.S. EMPLOYEES 5,281

15. POWERBLANKET
HQ .... Salt Lake City
SECTOR .... Machinery
U.S. EMPLOYEES 49

16. MICHELIN NORTH AMERICA
HQ .... Greenville, S.C.
SECTOR .... Automotive
U.S. EMPLOYEES 16,245

17. RADIO SYSTEMS
HQ .... Knoxville
SECTOR .... Pet products
U.S. EMPLOYEES 588

18. NIAGARA CONSERVATION
HQ .... Flower Mound, Texas
SECTOR .... Plumbing products
U.S. EMPLOYEES 65

19. OPUS ONE WINERY
HQ .... Oakville, Calif.
SECTOR .... Food and Beverage
U.S. EMPLOYEES 91

20. 3M
HQ .... St. Paul
SECTOR .... Manufacturing
U.S. EMPLOYEES 36,682

ILLUSTRATIONS BY JONATHAN CALUGI

BUILDING WITH BITS AND BYTES

The $10 trillion global construction industry is finally going digital, using software to streamline processes, trim waste, and automate many of the tasks on the job site. The efficiencies were expected. But a complete overhaul of the way it does business? That it never saw coming. By Clay Dillow

AT THE BUILD SITE for One Dalton, a 61-story luxury residential tower rising over Boston's Back Bay, you'll find all the trappings of a major construction site: hard-hatted tradespeople in neon vests, the steady din of diesel delivery trucks, a massive hoist moving tools and materials along an unfinished facade.

One thing you won't see much of is paper. The once-ubiquitous sheaves of oversize design drawings and blueprints that typically litter every flat surface on any job site have vanished, replaced by tablet computers and smartphone apps—some of which are even made by Suffolk Construction, the Boston-based builder developing One Dalton.

For just about any other industry, a shift ▷▷

▷▷ from the physical to the digital would come off as passé in 2018. For a $10 trillion global construction industry playing technological catch-up, it's proving downright revolutionary. The global engineering and construction sector holds the dual distinctions of being one of the world's largest industries—yet one of its least efficient. By some accounts, construction projects regularly lose up to a third of their value to waste. Productivity growth in the industry has averaged just 1% each year over the past two decades, compared with a 2.8% growth rate for the global economy as a whole, according to McKinsey & Co.

"The industry never really invested in tech or IT," says Steffen Fuchs, a McKinsey partner who specializes in capital productivity. "So it's been operating the same way since the 1940s."

To close the gap—and grab a piece of the $1.6 trillion in cost savings the industry could realize if it brings its productivity in line with other sectors—construction companies are (finally) leveraging technologies like artificial intelligence, cloud-based data analytics, and mobile computing to drive efficiency and boost margins. And for the first time, the tech industry is showing up at the job site with the right tools. Since 2013, construction technology received more than $18 billion in cumulative investment, according to McKinsey. Silicon Valley software giants in particular have gone on a construction-tech spending

Measure twice, construct once: Utah's Layton Construction has embraced tech as a way to get the work done faster and leverage untapped opportunity at the job site.

spree. In February, Oracle acquired Aconex for $1.2 billion (after spending about half that for Textura in 2016); in April, global positioning giant Trimble snapped up Viewpoint for $1.2 billion; and in July, Autodesk acquired Assemble Systems for an undisclosed sum.

Autodesk can claim some credit for sparking the shift through its push into building information modeling. BIM, as it's known, broadly refers to the use of three-dimensional digital models rather than 2D blueprints to represent buildings and structures. Prior to BIM, architectural drawings told builders what a structure should look like but not how it should be built—a disconnect that long forced builders to devise bespoke construction solutions on the job site. "Instead of reverse-engineering a project, as was done traditionally, we now have a seat at the table in the design process," says John Cannistraro Jr., who runs a mechanical construction firm based in Watertown, Mass.

What's more, BIM has enabled the collection and storage—in a digital format—of the massive troves of project data that are now at the core of the industry's digital transformation. Technology companies are mining that data for insights that could boost the efficiency of both current and future projects by beaming actionable, real-time information directly to builders' mobile devices.

Observers believe the construction industry's ongoing digitization has the potential to reshape not just an industry but also the entire built world, the term for all human-made surroundings. "In a lot of industries [technology companies] are replatforming existing technologies," says Koji Ikeda, an equity research analyst at Oppenheimer & Co. "In construction they're not just replatforming legacy technologies but the way the industry does business."

Look no further than One Dalton, which topped out in August. "We were, from a design perspective, way behind on this," says Jim Grossmann, Suffolk's national director of construction operations. "And the only way we got caught up was through these technologies."

It's difficult to account for the building that never got built or the costly mistake that was never made, but the industry is coming around. "Construction is going to be our next billion-dollar business," says Autodesk CEO Andrew Anagnost. "There's no doubt about it." ■

LINDSAY DANIELS—LAYTON CONSTRUCTION

Q+A

THE AUTHORITY ON A.I.

How will artificial intelligence change the way we work? We ask researcher turned entrepreneur Andrew Ng, who dishes on his latest ventures and the challenges that lie ahead. Interview by Vauhini Vara

ANDREW NG, A 42-YEAR-OLD COMPUTER SCIENCE professor at Stanford University, made his name leading artificial intelligence efforts at two of the world's biggest tech companies, Google and Baidu. Last year he suddenly left Baidu, and over the next many months he launched three high-profile A.I. initiatives of his own: a series of online A.I. courses called deeplearning.ai, a business called Landing AI that develops artificial intelligence for manufacturing companies, and an incubator for startups known as the AI Fund. *Fortune* spoke with Ng about why he left the world of Big Tech, what's next for his projects and his field, and what the rise of artificial intelligence might mean for the rest of us.

***FORTUNE:* First, let's talk about Landing AI. Who are your customers, and what are you building for them?**

ANDREW NG: We're helping companies figure out what it means to become a great A.I. company. Google Brain, which I led, was arguably the single biggest force for turning Google into a great A.I. company. I'm pretty sure I led the team that transformed Baidu as well. So one thing that really excites me is the potential for other companies to become great A.I. companies. How much worse off would the world be if we didn't have electricity or if we didn't have the Internet? A.I. is like that. When you look at the overall impact on society, the benefit is so huge that we just ▷▷

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▷▷ can't imagine what the world was like before.

You left Baidu last year to start your own ventures. Why? What was missing from your life in Big Tech?
Baidu and Google are great companies, but there are a lot of things you can do outside them. Just as electricity and the Internet transformed the world, I think the rise of modern A.I. technology will create a lot of opportunities both for new startups and for incumbent companies to transform. With the rise of the Internet, older companies like Microsoft and Apple transformed, even though they weren't Internet companies before. But there were also startups: Google, Facebook, Amazon, and Baidu. So, too, with A.I. Look at the three teams I'm involved in: The AI Fund is involved in creating new companies from scratch, Landing AI is involved in helping incumbent companies do A.I., and deeplearning.ai is for everyone else.

You launched the AI Fund in January with $175 million in funding. Where have you invested that money?
There are two companies that the AI Fund has invested in—Woebot and Landing AI—and the AI Fund has a number of internal teams working on new projects. We usually bring in people as employees, work with them to turn ideas into startups, then have the entrepreneurs go into the startup as founders.

Some people would argue that it's difficult for startups to compete because the Internet and other effects help big companies compound their power. Isn't it inevitable that big tech companies will offer products similar to yours and make it more difficult for you to compete?
Microsoft seemed like the 800-pound gorilla 15 or 20 years ago. Now we have Google, Facebook, and Amazon. Uber and Airbnb used the rise of mobile [computing] to become great companies. I think the rise of A.I. is bigger than the rise of mobile. Large companies are sometimes as worried about startups as startups are about large companies. Ultimately it will be about who delivers the best service or product.

Smart start: Ng meets with employees at the Silicon Valley offices of the AI Fund, his effort to foster a new generation of artificial intelligence companies.

When do you think factories might be fully automated?
It depends on your definition of fully automated. I've been in factories with very few people—giant buildings with only 200 employees. I think what's changed is that instead of doing manual work, a lot of these people are operations people and software engineers—highly skilled and working with machines.

What happens to the medium-skilled people who in the past might have been working on the factory floor?
There have been a lot of reports written about the hollowing out of the middle class. I think society's best solution to that is education, so that people in the middle and at the bottom can move up. Frankly, I really don't see a solution other than education. The speed of change places more pressure on individuals to keep learning.

A lot of people in Silicon Valley support the idea of universal basic income—a guaranteed, no-strings-attached payment that everyone would get.
There's a lot of value in the dignity of work. Rather than unconditional basic income, where you pay people for anything, I think we should pay people to study because that creates the structure for them to gain the skills they need to reenter the workforce. One of the hardest things about education is that while the long-term benefits are profound, there's a short-term cost. Because people are better at optimizing for the short term, I think basic income can be conditional basic income where we pay people to study.

What's your end goal for A.I.? What do you hope it will accomplish?
Every time there's a technological disruption, we're given an opportunity to remake large parts of the world. I would like the world to be fairer, I would like everyone to have better access to opportunities and education, I would like to relieve people of menial tasks, I would like democracy to run better. I really believe that with technology, we can remake large parts of the world to be much better than they are today. I wouldn't bother working so hard if I didn't fundamentally believe that. ■

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CONVERSATION

Q+A

REID HOFFMAN

One of Silicon Valley's most successful founders and investors writes a playbook for explosive growth.

Interview by Polina Marinova

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REID HOFFMAN KNOWS a lot about growing companies at a breakneck pace. An executive at PayPal during the company's earliest days, Hoffman later cofounded social network LinkedIn and now invests in fast-growing companies at Greylock Partners.

For years, Hoffman, who has been referred to as "the startup whisperer of Silicon Valley," has been advising founders to take risks that prioritize speed over correctness and efficiency. In a new book, *Blitzscaling: The Lightning-Fast Path to Building Massively Valuable Companies,* Hoffman shares his secrets for startups that want to achieve global dominance.

The concept he calls "blitzscaling" provides a set of techniques that allow entrepreneurs to grow their businesses quickly, while outmaneuvering competitors. For the full interview, see Fortune.com.

FORTUNE: What is blitzscaling, and who does it apply to?

REID HOFFMAN: Blitzscaling is prioritizing speed over efficiency in the development of a company even in the face of uncertainty. You are optimiz- ▷▷

▷▷ ing for growing your business and your customers at a fast rate, which means you'll spend capital inefficiently and you'll do it by taking risks in uncertain times. You choose to do so because that's how you essentially become the first to scale.

How can entrepreneurs put themselves in a better position to blitzscale their company?
One attribute I look for in entrepreneurs is a willingness to learn. Part of the challenge of blitzscaling is that you have to be constantly evolving your management team. You move from "everyone's a doer" to "most people are doers" to "managers of doers" to "managers of managers." There's this constant evolution during which you have to be learning new patterns, and that requires that you are an intense learner.

Another one is that they have to be constantly recruiting because they need the best people to help them with the company. Are you constantly recruiting new and better executives? Are you bringing the best possible talent on board? Are you bringing in the best possible people as investors? Part of learning is also correlated with recruiting across all these dimensions.

At what point in a startup's life cycle does it need to focus its efforts on blitzscaling?
There are a couple of triggers. If you're in a complete space by yourself and have no competition and no need for critical mass, generally speaking, you'd do something that's more like "fast scaling," in which you measure your customer acquisition cost and you're really effective in spending your dollars and growing your organization in ways that minimize chaos.

But more often than not, for startups, you either have actual competition or prospective competition because, in a hyperconnected world, competition can come from anywhere. You're in a situation where competition is coming, or it's already there and you have to think about how to beat it. What you're doing is you're running toward a place where the market will let you blitzscale as much as possible. You're actually running for the launch point before your competition because the first to scale is what matters.

In the process of running toward the launch point, you're figuring out product-market fit, and you're aligning capital to try to recruit the best possible talent. It's not about being sure yet of your business plan or your go-to-market strategy—you're launching into it while you're working on those things.

Is it naive to think that a founder can continue to lead the company as it enters each new stage?
It's not naive. In fact, your preference as an investor is to have the founder scale the whole way. Think Mark Zuckerberg and Jeff Bezos. That's a good thing from an investor's standpoint. Now what generally happens is that you're constantly evolving your management team. There's no science to this, but I often counsel founders and tell them they'll probably trade out half of their management team.

You say blitzscaling companies should ignore customer complaints because it's "one of the fires that's easier to let burn until you have finished fighting bigger, more deadly fires." How do you justify this idea?
Well, it's not that you always ignore your customers, but you ask yourself: "What are the key things I need to do, and what do I need to ignore in order to scale?" With PayPal, we knew that customer service email complaints were growing exponentially. We knew we could survive getting low product ratings for a while because we were still an absolutely essential service so we could focus on building out our product.

Of course, if you ignore your customer forever, you die. It's that we were able to ignore a piece of it temporarily in order to get to a high volume and become an essential part to how payments are made on the web. Ultimately, that's what made us valuable to customers.

Ignoring your customers forever is a recipe for death. It's about ignoring customers in certain aspects because that's the right way to play. ■

5 STAGES OF A BLITZSCALED COMPANY

STAGE ONE: A Family
A company with one to nine employees living in one another's pockets. Founders are doers.

STAGE TWO: A Tribe
Tens of employees. Managers are also doers. Founders are focused on financing, recruiting, and PR.

STAGE THREE: A Village
Hundreds of employees. Managers are managers of doers. Executive team takes over recruitment. Founders focus on future of company.

STAGE FOUR: A City
Thousands of employees. Founders have specialized areas of interest.

STAGE FIVE: A Nation
More than 10,000 employees, a collection of smaller communities with shared goals. Company occupies position of major influence.

A FORMULA FOR BETTER RETURNS

Changing corporate reporting rules could boost R&D spending—and make investors happier. By Ryan Derousseau

PRESIDENT TRUMP'S IMPROMPTU Twitter musings often move stock markets (along with investors' heart rates). But in one recent tweet, the President proposed a reform of those markets—one that some money managers see as a potentially important improvement.

In August, Trump made a surprise announcement via tweet that he had asked the Securities and Exchange Commission to consider reducing the required number of financial reporting periods for public companies from four a year to two. Trump cast the proposal as a money-saver for companies, but some investors like it for a different reason: It could discourage the kind of short-term thinking that undercuts research and development and hurts shareholders in the long run.

Once a company goes public, it's legally obligated to release detailed financial information every quarter. Analysts and shareholders study these reports intently, using them as a stethoscope to track the corporate heartbeat. Many companies also provide "guidance," or estimates of how earnings will fare in the future, and when a company misses those marks, the stock often suffers.

That, in the eyes of critics, is where the trouble begins. ▷▷

▲ ILLUSTRATION BY **JONNY WAN**

▷▷ For some companies, meeting quarterly estimates to bolster share prices begins to outweigh long-term planning, encouraging maneuvers that range from cheap short-term tricks (like stock buybacks) to self-destructive cuts—including reductions in R&D spending.

Those choices, in turn, can lead to weaker results. K.R. Subramanyam, an accounting professor at the University of Southern California, recently evaluated nearly 2,000 companies, focusing on "dedicated guiders," those within each industry that issued guidance most frequently. Those companies met quarterly goals more often than their peers but also invested less in R&D—and generated lower earnings growth over the long term.

Data like this helped move the Business Roundtable, the lobbying group chaired by JPMorgan Chase CEO Jamie Dimon, to join with Warren Buffett this summer in urging companies to provide guidance less frequently. The President's proposal would go a step further by reducing the reports themselves.

Not everyone agrees that such changes would benefit investors. Some observers, including Subramanyam, believe that many companies would keep playing the guidance game even if reporting requirements were eased. They also argue that stock prices would exhibit more volatility around earnings announcements if those reports happened only twice a year.

Still, some shareholders would probably benefit. Stocks of "higher quality" companies—those with stable management, healthy balance sheets, and track records of solid performance—would likely get a boost, since investors would trust them even if management "went quiet" for a while. And the biggest beneficiaries might be the market's lab geeks—companies that devote a high percentage of their budget to R&D. After all, at any given time, you can find stocks that are getting clobbered by impatient investors because company leaders' long-term plans are hurting short-term earnings.

Here are three R&D big spenders that are currently caught in that bind, and whose stocks could rebound as their research investments pay off. (That's true, whether or not reporting rules change.)

LAGGING NOW. LEADING LATER?

Ford, 3M, and Expedia are making big strategic investments in research, development, and expansion—but investors haven't been impressed.

SOURCE: BLOOMBERG

The industrial giant **3M (MMM, $207)**, famed for Scotch tape and Post-its, invests 6% of revenues in R&D—about double the level of the average industrial firm. Morningstar estimates that each of those dollars eventually generates $9 of profit. Still, that forecast hasn't been enough to boost 3M's stock, which is down 13% over the past six months. The company has also suffered from a slowdown in smartphone purchases in China, which has hurt sales of electronics that sport its optical film (used as protective covers on the devices), and the auto-sector slump has nicked its car-care product line. Still, 3M's problems have nothing to do with execution, says RBC analyst Deane Dray, who says the stock deserves to trade at a premium to its peers.

Less frequent reporting could also benefit companies in mid-turnaround. **Ford Motor (F, $9)**, which PwC identifies as one of the auto industry's largest R&D spenders, is a prime example. Ford has made big commitments to autonomous-vehicle research, putting it on a collision course with Silicon Valley. And it hasn't yet launched a long-awaited revitalized product mix, which will include a new Explorer SUV and a relaunched Bronco SUV series. But if those efforts pan out, and Ford reduces other expenses, "the stock is undervalued," says Morningstar analyst David Whiston. The rebound will likely take a while, but investors will get paid to wait; the stock's dividend yield now stands at 6.4%.

Travel-tech company **Expedia Group (EXPE, $131)** gets 45% of its revenue outside the U.S. To boost that share, it's spending heavily on marketing and development in regions where its presence is limited—particularly Europe, where it lags Booking Holdings, owner of travel sites like Priceline and Kayak, by a significant margin, notes Wedbush analyst James Hardiman. Investors have been skeptical of the market-building, driving shares down 10% over the past year, but they've warmed up as more details have emerged. A big success in Europe could lift their mood in the long run. ■

▲ GRAPHIC BY NICOLAS RAPP

PASSIONS

TIME
WELL SPENT

LUXURY

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RING THE CHANGES

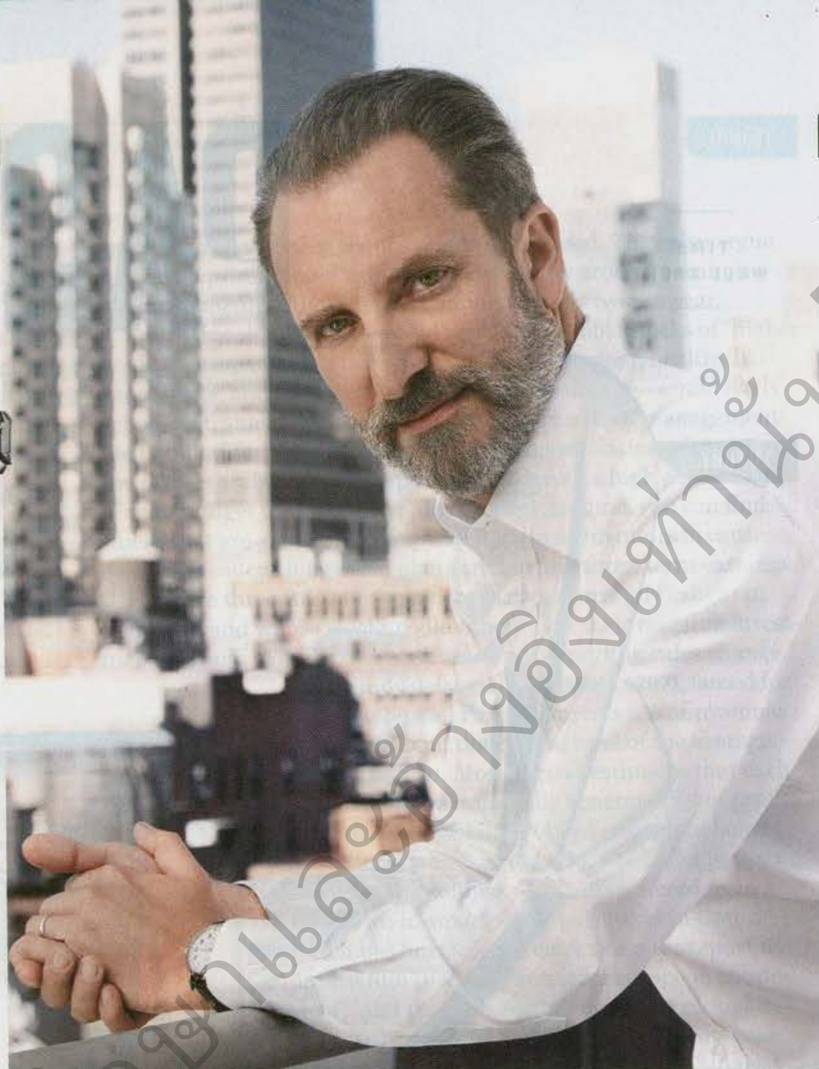
A 181-year-old jeweler begins developing at the speed of now. By Phil Wahba

SITTING IN THE LIBRARY at Tiffany & Co.'s corporate headquarters in New York City's Flatiron District, Alessandro Bogliolo is marveling at the delicate "T" in the setting of the ring that anchors the company's upcoming jewelry collection, Tiffany True, its first new engagement line in nearly a decade.

The ring features a new cut of diamond, and its setting is designed so that its four link sides create a basket for the ring, allowing it to sit lower on the finger for a more modern feel. You don't instantly notice the "T," and that is just how Bogliolo wants it.

"The setting is subtle, not in your face," the Tiffany CEO tells *Fortune* as he shows off various items in the Tiffany True collection, including a gold bracelet made of interwoven gold "T"s. The ring can be personalized—platinum ▷▷


[1] Tiffany True engagement ring in platinum with a white diamond and in 18K yellow gold with a yellow diamond. [2] Tiffany True interlocking bands. [3] CEO Alessandro Bogliolo. [4] Tiffany's jewelry design and innovation workshop in Manhattan.




▷▷ with white diamonds, for instance, or 18K yellow gold with yellow diamonds. Prices start at $7,000 and can run well into six figures.

The new collection will be a big test for Tiffany and for Bogliolo, who took the reins almost a year ago and was tasked with updating a jeweler many have come to see as stodgy. "In this little object, you have so much in terms of newness," he says, putting the ring on his pinkie to lift it in the air.

Newness has become a mantra for Bogliolo, who came to Tiffany from Diesel and was at Sephora and Bulgari before that. After stumbling for years, Tiffany seems to be getting back on track, and much of that is the faster metabolism taking hold in the company on his watch, speeding up the pace and frequency of new-product introductions.

Bogliolo became CEO at a time of some turmoil at the 181-year-old New York jeweler. His predecessor was ousted after barely 22 months, and Tiffany found itself in the crosshairs of activist investors pushing it to modernize more quickly, a need made urgent by a streak of disappointing sales results that ended last year.

The Italian admits that Tiffany needed a shake-up, saying that as with many old companies, caution had set into the culture, an assessment Wall Street analysts agree with. "This is a company that's always held on to its heritage for dear life. Their heritage has made them a little outdated," says Stacey Widlitz, president of SW Retail Advisors, who thinks Tiffany's new lines are righting the ship.

Still, so much of Tiffany's revenue comes from decades-old collections by Elsa Peretti (which alone generate 9% of sales) and Paloma Picasso. And Tiffany's bestseller remains its classic namesake engagement ring with a six-prong setting, introduced in 1886.

Tiffany's "T" collection of now 130 items has been a big success. And so far in 2018, there are signs that Tiffany is building on that momentum. Its Paper Flowers collection, the biggest launch of platinum and diamond jewelry by Tiffany since 2009, and the first by chief artistic officer Reed Krakoff—the man who helped turned Coach into an upscale handbag behemoth and joined Tiffany in early 2017—is off to a promising start. The collection, consisting of flower petals made up of diamonds and tanzanite held together with a platinum pin, was launched with a splashy party in May that attracted the likes of model Kendall Jenner. Prices

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4

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range from $2,500 to $790,000. The idea is to redefine the notion of fine jewelry, a term that can sound stuffy. "Luxury has gotten much more irreverent," Krakoff says.

Krakoff also created a lot of buzz, with a pinch of ridicule, last year with the Everyday Objects home decor collection that featured items like a tin can for $1,000 and a $165 pizza cutter. But while such items may sound as if they're way out of Tiffany's wheelhouse, Krakoff saw them as crucial in reminding shoppers of Tiffany's inventiveness.

"The tin can is craftsmanship. It's a way to show our virtuosity in a way that's unique to us," Krakoff says. Besides, he adds, the item had Tiffany roots: It was inspired by Andy Warhol, a onetime collaborator with the jeweler.

And still more important, it got people talking about Tiffany again.

The duo of Bogliolo and Krakoff has also been stunned by the popularity of the new Blue Box Cafe on the fourth floor of Tiffany's flagship on Manhattan's Fifth Avenue (the store is getting a three-year face-lift that could cost $250 million). The café is one of the hardest bookings to land in a city with no shortage of high-end dining options.

Bogliolo dismisses the notion of Tiffany as a dusty, uninventive company. On the contrary, daring has always been part of its soul. He points to company founder Charles Lewis Tiffany, who made his mark in the 1800s by buying a big chunk of France's crown jewels and making baubles out of them for the Vanderbilts. He wants today's executives to tap that spirit.

Key to instilling inventiveness in the culture is upping the tempo. In a bid to speed up its new-product developments, the company consolidated its design and engineering teams, located in disparate offices in Rhode Island and New York, into a sleek new workshop in the Flatiron District. Its location down the street from Tiffany's head office makes it easy for Bogliolo to pop over, which he does at least once a week.

The facility, which opened in April, is already enabling faster prototyping of jewelry and the exchange of ideas and is worth the extra expense of renting office space in Manhattan, the CEO says.

The 17,000-square-foot facility features five 3D printers that make wax or resin models for the rings and played a large role in accelerating the development process of the True collection. Tiffany gets 21% of sales from engagement rings, and at a time of declining marriage rates, it's easy to see why the company can ill afford to let this side of its business stagnate.

Not every new line Tiffany has introduced has been a runaway success. The company's wristwatches, relaunched a few years ago, are well-regarded products, but they represent just 1% of the company's global sales and don't have the big Swiss players breaking a sweat.

With engagement jewelry sales on the rise again after three years of decline, Tiffany is anchoring its renaissance on what it does best and is most famous for with more frequent updates for the modern shopper. "Customers, rightfully so, want to know what is new," Bogliolo says. F

IF *FORTUNE'S* MOST POWERFUL WOMEN list is a referendum on the state of women in business, then the lesson of the 2018 ranking is clear: Progress still comes with a caveat.

It was a year of change, personified by new No. 1s atop both our domestic and international lists: in the U.S., Lockheed Martin's Marillyn Hewson (page 50), who is leading a cadre of women at the helm of defense contractors; and abroad, GlaxoSmithKline's Emma Walmsley (page 58), who is remaking the British pharma giant. We saw executives who had fallen off the ranking return in big jobs—Anthem's Gail Boudreaux and Starbucks' Roz Brewer—and others, like Walmart's Judith McKenna (page 42), land major promotions.

But 2018 also saw the number of female CEOs leading *Fortune* 500 companies drop from 32 to 24, a reminder that momentum can stall. Women of color know this too well; our list mirrors the glaring lack of diversity that still plagues companies' C-suites, a state of affairs highlighted by the departure of icons like PepsiCo's Indra Nooyi. As Stacey Abrams, the Democratic nominee for governor of Georgia, tells us in her recent essay on leadership, "We can toast achievement, but we must continue to demand more, to demand parity."

—Kristen Bellstrom and Beth Kowitt

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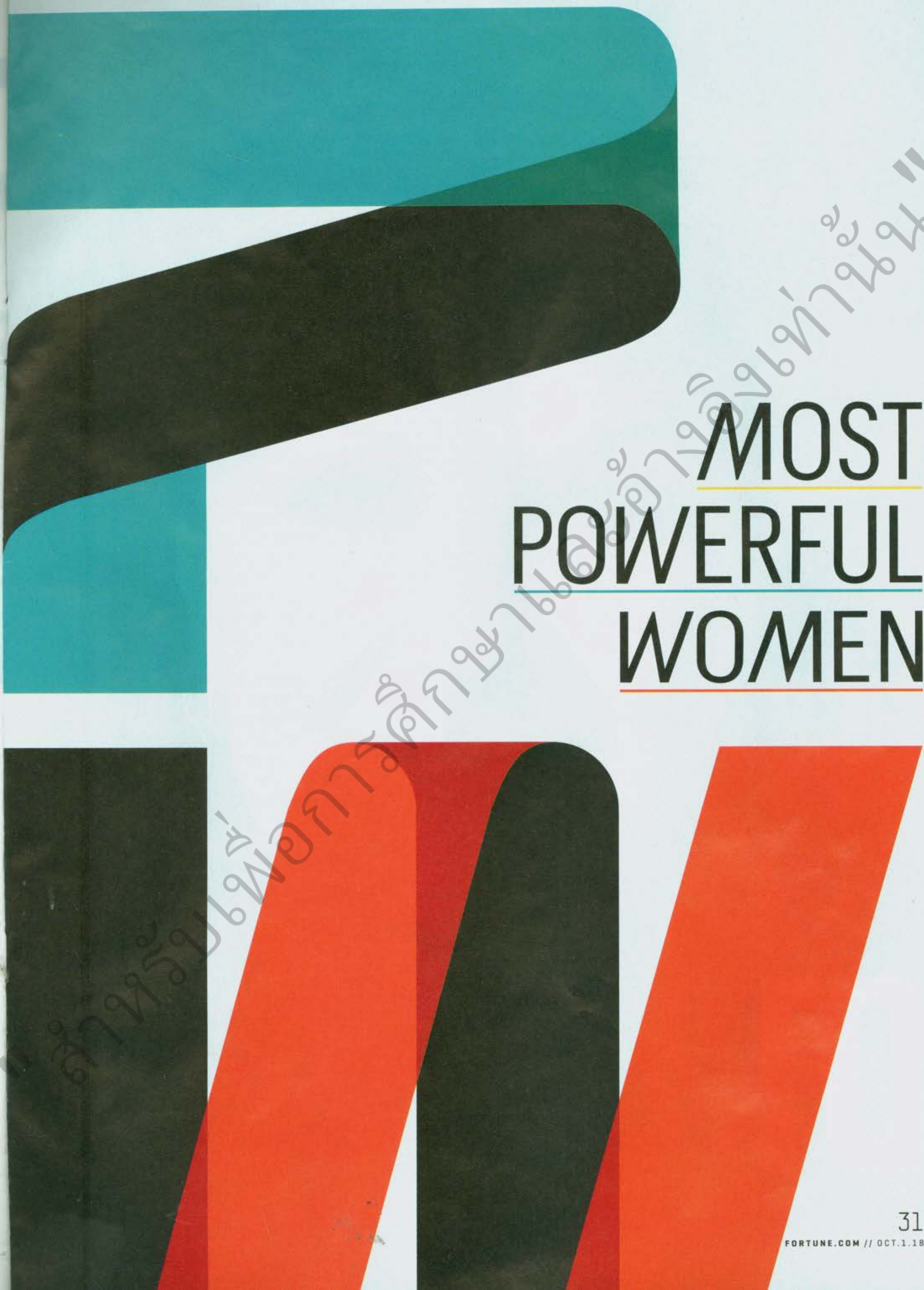


MOST POWERFUL WOMEN

▲ PHOTOGRAPH BY **MACKENZIE STROH**

O 2: WILL WIDMER; 3: BRIAN SNYDER—REUTERS; 4: CHESNOT/GETTY IMAGES; 5: COURTESY OF ANTHEM; 6: SCOTT EISEN—GETTY IMAGES; 7: SHAWN THEW—EPA/SHUTTERSTOCK

2017 RANK: ▲ 03

Marillyn Hewson

Chairman, President, and CEO, 64,
Lockheed Martin

Nothing says power like rockets and ramparts. Hewson has become the top purveyor of U.S. defense at a time when geopolitical threats (and the government funding that goes along with them) abound—not just on earth, but also in space and cyberspace. As head of the country's largest government contractor, Hewson rises to No. 1 this year, having positioned Lockheed Martin in the sweet spot to cater to the modern military's needs—from its humming F-35 fighter jet program to its ability to equip the White House's proposed "Space Force." Lockheed is also leading the charge to develop hypersonic weapons, which travel five times as fast as the speed of sound. Such new tech has become a U.S. national security priority given advances in Russia and China, helping Lockheed win about $1 billion in contracts so far in 2018. That's been a tailwind for the stock, with returns up 15% year over year, boosting Lockheed's market value to nearly $100 billion.

02

Mary Barra

Chairman and CEO, 56,
General Motors

▼ 01

GM hit a few speed bumps in the past year: The Chevrolet Bolt EV, once a bestseller, slipped behind all three of Tesla's electric cars in sales, while a brewing trade war with China threatened the automaker's profits. Meanwhile, GM recorded a $3.9 billion loss in 2017, owing largely to the new U.S. tax law. Still, Barra is barreling ahead. She scored a $2.25 billion investment in autonomous-vehicle venture GM Cruise from the SoftBank Vision Fund and plans to deploy GM's first self-driving cars for ride sharing in 2019.

03

Abigail Johnson

Chairman and CEO, 56,
Fidelity Investments

▲ 04

Assets under administration climbed 20%, to $6.8 trillion, in 2017 at the country's largest provider of workplace retirement savings plans, with profits up more than 50%. The exodus from Fidelity's actively managed stock funds is finally slowing, with investors pulling out $47 billion in 2017, vs. $58 billion in 2016. Even in the wake of a sexual misconduct scandal (a pair of portfolio managers were dismissed), Johnson stayed focused on beating competitors, slashing fees, and debuting new products.

04

Ginni Rometty

Chairman, President, and CEO, 61,
IBM

▲ 06

After five years of shrinking sales, IBM finally turned the corner in 2018, reporting modest revenue growth in January. Since then, Big Blue has posted a slight bump in sales each period, much of it coming from the old-school mainframe computing business. It's a good sign for Rometty, but Wall Street is looking for clearer signals that IBM's newer businesses, like its cloud-computing and data-crunching units, will lift the company for years to come. IBM's stock is relatively flat over the past year, vs. a 16% rise for the S&P 500 index.

05

Gail Boudreaux

President and CEO, 58,
Anthem

◄ RETURN

Health care industry vet Boudreaux makes her return to the list at the helm of Anthem. In the position for less than a year, she's already put the $90-billion-in-revenue insurer on the right trajectory, with the stock up 45% year over year. Since coming on board, Boudreaux has completed acquisitions of America's 1st Choice, HealthSun, and Aspire Health. Previously, Boudreaux was CEO of UnitedHealthcare, the largest division within UnitedHealth Group—before leaving in 2014.

06

Sheryl Sandberg

COO, 49,
Facebook

▼ 05

It's been a trying year for Facebook and perhaps one of the most challenging in the career of its COO. The social networking giant has been at the center of a seemingly never-ending stream of controversies, leading to a day of congressional grilling for Sandberg, who is now tasked with preventing more data privacy blunders and repairing Facebook's reputation. The bright side: Facebook's core online ad business continues to boom, and hot properties like Instagram could make up for its tepid user growth.

07

Safra Catz

Co-CEO, 56,
Oracle

▲ 08

Catz has turned cloud into a critical part of the Oracle machine, with the business now making up a growing chunk of the company's nearly $40 billion in revenue. But despite big deals with the likes of AT&T, Oracle was late to the cloud game and is still struggling to play catch-up with rivals Microsoft, Amazon, and Google—and the share price has suffered as a result. Meanwhile, Catz, who first entered Oracle's C-suite in 2005 as CFO, has upped her public profile, joining the board of Disney in February.

O 2: WILL WIDMER; 3: BRIAN SNYDER—REUTERS; 4: CHESNOT/GETTY IMAGES; 5: COURTESY OF ANTHEM; 6: SCOTT EISEN—GETTY IMAGES; 7: SHAWN THEW—EPA/SHUTTERSTOCK

KEY ● NO CHANGE ▲ MOVED UP ▼ MOVED DOWN ◄ RETURN ★ NEW

08

Phebe Novakovic

Chairman and CEO, 60,
General Dynamics

▲09

Novakovic won a steady stream of contracts this year, including a $5 billion agreement to build the latest class of nuclear-armed submarines. But with the Pentagon poised to boost broader defense spending, General Dynamics is also looking beyond hardware for growth. The company did its biggest M&A deal ever in 2018, acquiring IT services firm CSRA for $9.6 billion—which, combined with GD's existing business, makes the company the nation's second-largest IT contractor.

09

Ruth Porat

SVP and CFO, 60,
Google, Alphabet

▲10

Alphabet's stock has jumped 25% over the past year as Wall Street continues to admire Porat's streamlining of the company's enormous business. The CFO has told analysts that Alphabet's investment in data center infrastructure and machine-learning tech will continue to fuel its surging online ad business, music to the ears of profit-focused investors. Porat has also emphasized the importance of Google's growing cloud-computing business, which posted $1 billion in quarterly sales for the first time this year.

MOST POPULAR INDUSTRY: TECH

10

Susan Wojcicki

CEO, YouTube, 50,
Google, Alphabet

▲14

YouTube continues to boom under Wojcicki, who reports directly to Google CEO Sundar Pichai. The online video service now counts 1.9 billion monthly users—a growing number from the coveted young-adult market—who watch over 180 million hours of content daily. And while YouTube has been plagued by fake news and other controversies on its platform, it has (so far) managed to weather the storm better than rivals like Facebook. Analysts estimate that YouTube could make up to $20 billion this year.

11

Lynn Good

Chairman, President, and CEO, 59,
Duke Energy

●11

Under Good's leadership, Duke Energy, which provides electricity to 7.6 million customers, is slowly pivoting away from fossil fuels. It added more than 1,000 megawatts of renewable energy in the past year and announced that it will close seven coal plants over the next three decades. Revenues hit $23.2 billion, and profits were up slightly in 2017. Yet the stock has languished, dropping 6% over the past 12 months—owing in part to what the company says are the short-term effects of new tax regulation.

12

Angela Ahrendts

SVP of Retail and Online Stores, 58,
Apple

▲13

Apple's highest-ranking female exec continues the consumer tech giant's epic quest to convert its brick-and-mortar stores into destinations. Ahrendts, who joined the board of Ralph Lauren this year, leads about 67,000 people, and her retail business, while not Apple's fastest-growing, remains huge: eMarketer estimates that combined in-store and online sales are about $74.3 billion. Ahrendts has also been instrumental in expanding Apple's reach in China, which now counts more than 40 stores.

13

Tricia Griffith

President and CEO, 53,
Progressive

▲15

Griffith, who first joined Progressive as a claims rep, enters her 30th year at the company in fine fashion. Profits are up 54% over 2016—and investors have taken notice: The stock has surged by more than 48% over the past 12 months. The company is gaining market share; it recently surpassed Allstate to become the third-largest U.S. car insurer and grew net premiums written by 16% in 2017. Also boosting the bottom line: her strategy of selling bundles of auto plus home insurance, which were up 30% last year.

14

Judith McKenna

President and CEO, 52,
Walmart International

▲28

McKenna was promoted in February from Walmart U.S. COO to head of international—a business that, like everything else at Walmart, is massive. Its $118 billion in revenue would land it at No. 44 on the Global 500 if it were a stand-alone company. McKenna is overseeing a radical transformation of the portfolio, including Walmart's acquisition of an approximately 77% stake in India's largest online retailer, Flipkart. The $16 billion deal is the biggest ever in both the pure e-commerce sector and Walmart's history.

15

Karen Lynch

President, 55,
Aetna

▲21

Already responsible for most of Aetna's revenue, Lynch is set to take on an even greater role following CVS's $69 billion acquisition of the company. She will preside over the health insurance side of the combined entity, guiding it through a union that could shift drug and insurance prices across America. It's little wonder she's being tapped: Lynch helped please shareholders with a smoother-than-expected exit from Aetna's unprofitable Affordable Care Act business, with shares up 25% year over year.

O 8: PAUL MORIGI—GETTY IMAGES; 9: COURTESY OF GOOGLE; 10: FRANCOIS G. DURAND—GETTY IMAGES; 11: F. CARTER SMITH—BLOOMBERG/GETTY IMAGES; 12: JOE PUGLIESE; 13: COURTESY OF PROGRESSIVE; 14: CELESTE SLOMAN; 15: BILL TAUFIC—COURTESY OF AETNA

KEY ● NO CHANGE ▲ MOVED UP ▼ MOVED DOWN ◄ RETURN ★ NEW

16

2017 RANK: ▲ 18

Ann-Marie Campbell

EVP, U.S. Stores, 53, **Home Depot**

Campbell started her career at Home Depot as a cashier in South Florida. Now, 33 years later, she oversees 2,000 stores and about 90% of the company's $101 billion in revenue, which is up nearly 7% over the previous year. In December the company announced an $11 billion investment plan, with nearly half going to brick-and-mortar locations. In addition to giving stores a face-lift, Campbell is adding lockers for self-service and online sales, since 47% of Home Depot's online orders are picked up at physical locations.

▲ PHOTOGRAPH BY **AUDRA MELTON**

O 17: COURTESY OF ENTERPRISE; 18: CHRISTA NEU; 19: COURTESY OF JPMORGAN CHASE; 20: DAVID RYDER—BLOOMBERG/GETTY IMAGES

17

Pam Nicholson

President and CEO, 58, **Enterprise Holdings**

● 17

Nicholson runs the largest car rental company in the world with a global fleet of 2 million vehicles—more than twice that of her next largest competitor. Despite consumers' growing use of car-sharing and ride-hailing apps, the company, which rents cars through Enterprise, Alamo, and National Car Rental, grew revenue by 8% to $24 billion last year. Enterprise has also made some forward-looking moves this year, including entering a deal with Voyage, an autonomous-vehicle startup, to service and maintain its fleet.

18

Cathy Engelbert

CEO, 53, **Deloitte**

▼ 16

On Engelbert's watch, Deloitte has made big bets on technologies like blockchain, robotics, and cloud, including a splashy 2018 partnership with Google and SAP. Revenue, meanwhile, has been on the rise, reaching $19.9 billion in fiscal 2018, up more than 23% from when she took the reins in 2015. Such growth has endeared her to many in the Big Four accounting firm, yet it remains unclear whether she will serve a second term; her current four-year term expires in spring 2019.

19

Marianne Lake

CFO, 49, **JPMorgan Chase**

▲ 24

Considered by her boss, Jamie Dimon, to be one of the quickest minds he's encountered, Lake plays more of a copilot's role in running America's largest bank. The CEO's mention of Lake in a succession-planning missive early this year solidified her status on a short list of candidates for the top job when Dimon eventually retires. Lake's shepherding of the bank's stress-testing submissions has helped JPMorgan Chase mostly sail through the process while allowing it to up its dividends and other shareholder payouts.

20

Amy Hood

EVP and CFO, 46, **Microsoft**

▲ 26

In the five years since becoming CFO, Hood has been a key architect of the tech company's renaissance, during which its stock has returned nearly 300% (including more than 50% in the past year alone). In June, Microsoft celebrated hitting $100 billion in fiscal-year revenue for the first time, as well as the acquisition of developer forum GitHub, a $7.5 billion deal Hood helped engineer. A booming cloud business helped lift total revenue 14% in fiscal 2018—the company's fastest sales growth in a decade.

DEBUTS (RED) AND RETURNS (BLUE)

21

Michelle Gass

CEO, 50,
Kohl's

★ NEW

After five years as a top lieutenant, Gass is in the driver's seat at Kohl's at last. The no-frills department store chain is enjoying a rebirth fueled by some of Gass's moves, such as lining up Under Armour as a partner and, more daringly, striking up a partnership with Amazon by giving that rival space at some stores. Gass was also key to rejiggering Kohl's popular shopper loyalty program and pushing the chain to be an early mover in the activewear boom. The result was one of the best holiday seasons in 2017 of any retailer.

22

Kathy Warden

President and COO, 47,
Northrop Grumman

★ NEW

Northrop Grumman's next—and first female—CEO has been on a rocket-ride up the defense contractor's ranks: Once head of Northrop's tech-centric mission systems division, Warden was promoted last fall to president and COO, then quickly tapped to take over the top job, effective Jan. 1, 2019. An expert in military-grade IT and cybersecurity, Warden's latest focus has been overseeing the integration of Orbital ATK, the precision weapon and satellite maker Northrop acquired in June for $9.2 billion.

23

Leanne Caret

President and CEO, Defense, Space & Security, and EVP, 51, **Boeing**

▲ 30

A three-decade Boeing vet, Caret now presides over one of the nation's top five defense businesses, a division with a top line nearly as big as the revenue of competitors Raytheon and Northrop Grumman. Caret also beat out rivals this summer when Boeing won a highly sought $805 million contract with the U.S. Navy to provide drones for refueling fighter jets—Boeing's first major new Pentagon program in years. That and other new deals are putting Caret's division on track to grow revenue for the first time since 2013.

24

Geisha Williams

President and CEO, 57,
PG&E

▼ 19

Williams made history when she joined the list last year as the first Latina to run a *Fortune* 500 company. Since then, PG&E's finances have been scorched by the California wildfires, sending the stock tumbling by about a third. In June the company took a $2.5 billion charge against earnings for potential fire-related liabilities and in the future may face other fines related to the disaster. On a brighter note: PG&E last year met California's 2020 renewable energy goals three years ahead of schedule.

25

Margaret Keane

President and CEO, 59,
Synchrony

● 25

Keane had a rough summer: In July, Synchrony revealed that, as of 2019, it will lose its business issuing Walmart-branded credit cards to Capital One, bringing its nearly two-decade relationship with the mega-retailer to an end. With Walmart accounting for over 10% of the company's interest and fees on loans, the loss has fomented worries that other major partners may also eye alternatives. But it's not all gloom and doom—Synchrony recently agreed to extend its partnership with PayPal.

26

Mary Callahan Erdoes

CEO, JPM Asset and Wealth Management, 51,
JPMorgan Chase

▲ 27

Erdoes's money management division at JPM reached a record $2.8 trillion in assets last year—spinning off enough revenue to qualify for the *Fortune* 500 if it were a stand-alone company. That's led to new responsibilities for Erdoes, including co-oversight of the bank's chief administrative office and a new data-driven business she created featuring digital wealth management tools. Still, she has suggested there's more work to do at the unit, which had layoffs this summer.

27

Barbara Rentler

CEO, 61,
Ross Stores

● 29

Ross had a banner year, with profits jumping 22%, to $1.4 billion, and sales up 10%, breaking the $14 billion revenue mark for the first time. In August, the press-shy Rentler upped the California-based off-price retailer's total long-term store-count target to 3,000 locations (it has just under 1,700 today), and in September the stock hit an all-time high. The smooth ride could get a bit rockier, though; the company is forecasting earnings per share for the second half of the year that are below analyst expectations.

28

Vicki Hollub

President and CEO, 58,
Occidental Petroleum

▲ 32

Under Hollub's leadership, Occidental outperformed the market in 2017 despite depressed oil prices globally, with shares up more than 25% year over year. Since becoming CEO in 2016, she's focused on cost cutting, and her strategy seems to be working: After losing $574 million in her first year at the helm, the energy explorer turned a $1.3 billion profit last year. Hollub also pushed for an expansion of Occidental's operations in the Southwest's Permian Basin, growing revenue 29% to $13.3 billion last year.

O 21: COURTESY OF KOHL'S; 22: COURTESY OF NORTHROP GRUMMAN; 23: MACKENZIE STROH; 24: DREW KELLY; 25: COURTESY OF SYNCHRONY FINANCIAL; 26: COURTESY OF JPMORGAN CHASE; 28: COURTESY OF OCCIDENTAL PETROLEUM

KEY ● NO CHANGE ▲ MOVED UP ▼ MOVED DOWN ◄ RETURN ★ NEW

29

Heather Bresch

CEO, 49,
Mylan

▼ 23

Mylan is still singed from the firestorm that erupted two years ago over price hikes to its EpiPen allergy shot. As pressure from President Trump and regulators has constrained drug pricing, Bresch is struggling to make money in the U.S.—particularly after cannibalizing Mylan's own sales by launching a generic EpiPen. After a 20% drop in North American revenue in the first half of 2018, Mylan lowered its financial outlook for the year, and the board now says it's exploring strategic options, which could include a merger.

30

★ NEW

Beth Ford

President and CEO, 54, **Land O'Lakes**

Ford was promoted into the top job from the chief operating officer role in August, taking over the nearly $14-billion-in-revenue co-op at a challenging time for the agriculture industry. The operations guru has helped Land O'Lakes look beyond its core dairy business, investing in technology and R&D such as its ag-tech platform. Now Ford, who made history when she became the first openly gay female CEO of a *Fortune* 500 company, will have to grapple with the tariffs placed on U.S. dairy goods and grain in response to President Trump's trade war. She's the first woman to run the co-op and the latest addition to the small group of female CEOs leading *Fortune* 500 companies.

31

Lisa Davis

CEO Siemens Energy, 54,
Siemens AG

★ NEW

A member of the German technology giant's managing board, Davis oversees all activity in the Americas and serves as CEO of Siemens Energy. That puts her in charge of more than half the revenue of the $92 billion company: In fiscal 2017, the Americas region brought in $26.6 billion in revenue, while Siemens's energy portfolio had sales of $23.3 billion. She also oversaw Siemens's massive Egypt Megaproject, which was completed in July and increased the country's power generation capacity by more than 40%.

32

Julie Sweet

CEO North America, 50,
Accenture

▲ 38

Sweet's North America business, which accounts for roughly half of Accenture's revenue, edged up nearly 4% in 2017, to $16.3 billion. The company is pushing aggressively into digital, cloud, and security services (Accenture calls the trio "the New"); they now account for about half of her region's business. Investors seem to like the tech focus: The stock is up 27% over the past 12 months. Sweet is also investing in her people—Accenture has trained 60% of its North American workforce in new IT this year.

29: ERIC GAILLARD—REUTERS; 31: COURTESY OF SIEMENS AG; 32: CINDY ORD—GETTY IMAGES

▲ PHOTOGRAPH BY **JENN ACKERMAN**

33

MPW

34

Kathleen Murphy

President, Personal Investing, 55, **Fidelity Investments**

▲35

Like Fidelity overall, Murphy's retail investing business posted strong numbers in 2017: Client assets surpassed $2 trillion, up 20% year over year, for its sixth consecutive year of record growth. Her division made news in August when Fidelity announced the industry's first zero-fee stock-index funds, cut fees on other index mutual funds, and did away with investment minimums. The moves raised—or perhaps lowered—the bar for Fidelity's competitors in the battle to woo cost-sensitive investors.

◀RETURN

Roz Brewer

COO and Group President, 56, **Starbucks**

Brewer sits both on the board and in the C-suite of the coffee giant: She was already a Starbucks director when the company tapped her in September 2017 to head up operations and the $15.7 billion Americas business. Now the former CEO of Walmart's Sam's Club division is drawing on her retail expertise to reverse a sales slowdown in the U.S. market—a slide that has contributed to a 5% decline in Starbucks stock so far this year. To help, Brewer is focusing on the company's digital rewards program—membership is up 14% year over year—as well as closing stores in dense urban markets and opening new ones in the middle of the country and the South to expand geographically in the U.S.

35

Mary Mack

Senior EVP of Consumer Banking, 55, **Wells Fargo**

▲37

In 2016, Wells Fargo gave Mack a critical task: fixing its scandal-plagued community banking division. With that mission still a work in progress, CEO Timothy Sloane handed her yet another troubled segment in December: consumer lending, which had just been hit by fines for unfair loan charges. But while management seems to trust Mack's ability to lead a turnaround, Wells Fargo's reputation remains on the ropes, with investors wondering whether the bank will ever manage to clean up the mess.

36

Anna Manning

President and CEO, 60, **Reinsurance Group of America**

▲44

Even in the face of persistently low interest rates in the U.S., Manning has continued to grow the top life reinsurer. Reinsurance Group of America's revenue increased 9% in 2017 to a record-breaking $12.5 billion, thanks in part to the company's push into Asia. That business grew 33% last year amid rising interest in reinsurance in the region. Still, Manning's job is not without its challenges. A deadly flu season in North America kept earnings subdued, heading into early 2018.

34: COURTESY OF FIDELITY; 35: COURTESY OF WELLS FARGO; 36: COURTESY OF REINSURANCE GROUP OF AMERICA

▲ PHOTOGRAPH BY **BROOKE FITTS**

37

Jennifer Taubert

EVP, Worldwide Chairman, Pharmaceuticals, 55, **Johnson & Johnson**

▲43

Taubert, who was promoted from her role overseeing pharmaceuticals in the Americas in June, runs the drug business that accounted for nearly 50% of the company's 2017 revenue. In her previous role, she was a key advocate for J&J's acquisition of Actelion, a $30 billion deal that was completed last summer. In the past 12 months, popular drugs like Darzalex and Imbruvica have led to double-digit growth in Taubert's pharmaceutical segment and buoyed the company's total revenue to $76.5 billion.

38

Lynne Doughtie

Chairman and CEO, 55, **KPMG U.S.**

▼36

Doughtie hit some rough patches in the past year, including when former partners were charged with fraud in January. This spring, the firm revealed plans to add new independent directors to improve corporate governance. Doughtie has soldiered on, growing revenue 4% to $8.96 billion in 2017. The company is continuing its investment in A.I. and data analytics, announcing a new alliance with Google Cloud and expanding existing partnerships with IBM Watson and Microsoft.

NUMBER OF CEOs OF PUBLIC COMPANIES

39

Bridget van Kralingen

SVP Blockchain, Industry Platforms, Accounts, and Partnerships, 55, **IBM**

▲40

Van Kralingen's responsibilities at IBM include overseeing some of the company's biggest customer accounts (think Bank of America, Coca-Cola, and CVS Caremark) and managing key partnerships with the likes of Apple and SAP. She's also spearheading IBM's push into cutting-edge technologies like blockchain that the company believes are key for future growth. Nearly one-third of IBM's $79 billion in annual revenue falls under her purview, which encompasses a team of roughly 12,000 IBM workers.

40

Kelly Grier

U.S. Chairman and Americas Managing Partner, 49, **EY**

★NEW

Named to her new post in July, Grier now leads more than 72,000 people, represents the firm in regulatory matters, and oversees the $15.6 billion in revenue generated by the Americas business, EY's largest. The promotion comes 28 years into her career at EY, where she previously led the central U.S. region, serving many of the firm's biggest audit and advisory clients. Her tenure heading up the Americas is off to a good start: The region had a strong fiscal year 2018, with revenues up more than 7% over last year.

41

Crystal Hanlon

President, Northern Division, 53, **Home Depot**

●41

Hanlon oversees 795 stores in 24 states—a roughly $30 billion purview that's been critical to maintaining Home Depot's ongoing retail winning streak. Even though housing sales have declined, consumers are still spending big money on DIY projects. In August the company reported the highest quarterly sales and net earnings in its almost 40-year history, beating analyst expectations and upping its own guidance. Investors like what they see: The stock is up 32% over the past 12 months.

42

Michele Buck

President and CEO, 57, **Hershey**

▲45

Buck has wasted no time since taking the helm of the iconic candy company last year. In January, Hershey bought SkinnyPop maker Amplify Snack Brands for $1.6 billion—the biggest deal in the $7.5 billion company's history. The acquisition is part of Buck's strategy to adjust to consumers' changing tastes by adding healthier snacks to its lineup. But she is also battling rising transportation, packaging, and ingredient costs, and investors are unimpressed so far. The stock is down 4% year over year.

43

Jennifer Morgan

President, Americas and Asia Pacific Japan, 47, **SAP**

★NEW

Morgan, an MPW "On Our Radar" pick in 2017, has had a speedy rise at SAP, going from head of regulated businesses to overseeing all of the Americas, Japan, and Asia Pacific in just five years. Her sprawling territory brought in more than $14 billion in revenue in 2017 and accounted for some 70% of the company's cloud subscription and support revenue. The first-ever American woman to sit on SAP's executive board, Morgan is also known for investigating—and closing—SAP North America's gender pay gap.

44

Carolyn Tastad

Group President, North America, 57, **Procter & Gamble**

▼39

Tastad is trying to reignite revenue growth in the consumer giant's $30 billion North America business, the company's biggest and most profitable region. To do so, the P&G lifer is upping prices on key brands as she faces rising materials costs, increased competition, and a changing consumer landscape—headwinds that have in part triggered a 10% year-over-year decline in the stock. Tastad is doubling down on innovation, launching new products like Herbal Essences Bio: Renew and Tide Simply Plus Oxi.

37: COURTESY OF JOHNSON & JOHNSON; 38: SCOTT HALLERAN—GETTY IMAGES FOR KPMG; 39: COURTESY OF IBM; 40: COURTESY OF ERNST & YOUNG; 41: COURTESY OF HOME DEPOT; 42: COURTESY OF HERSHEY; 43: COURTESY OF SAP; 44: MARK KAUZLARICH—BLOOMBERG VIA GETTY IMAGES

KEY ● NO CHANGE ▲ MOVED UP ▼ MOVED DOWN ◀ RETURN ★ NEW

ON OUR RADAR

MICHELE EVANS
EVP FOR AERONAUTICS, **LOCKHEED MARTIN**
In her new role, effective Oct. 1., Evans will oversee a $21 billion business, becoming the second woman in executive leadership after CEO Hewson.

JENNY FLEISS
COFOUNDER AND CEO JETBLACK, **WALMART**
The Rent the Runway cofounder is giving Walmart a new look by heading up a personal-shopping service—the first startup incubated inside the retailer.

JANET FOUTTY
CHAIRMAN AND CEO CONSULTING, **DELOITTE**
Foutty's $9-billion-in-revenue segment has become a critical part of Deloitte's business, sparking speculation that she's a potential CEO contender.

SALLY GRIMES
PRESIDENT, PREPARED FOODS, **TYSON FOODS**
Grimes oversees more than a quarter of the company's $38 billion in revenue and is helping to create a new corporate brand identity for the meat multinational.

BARBARA HUMPTON
U.S. CEO, **SIEMENS**
Formerly tasked with running government technologies for the German giant, Humpton was promoted in June and now oversees the $23-billion-in-revenue U.S. business.

KATRINA LAKE
FOUNDER AND CEO, **STITCH FIX**
Lake IPO'd her startup in late 2017—and it's been on a tear since. The stock more than tripled since it went public, and the market cap is nearing $5 billion.

DHIVYA SURYADEVARA
EVP AND CFO, **GENERAL MOTORS**
In September, Suryadevara [below] became the first female CFO of the Big Three automaker, making the company one of only two *Fortune* 500 enterprises to have an all-woman CEO-CFO team. The 13-year GM veteran was a core player in the company's Opel divestiture, acquisition of self-driving subsidiary Cruise, and investment in ride-hailing company Lyft.

MARNE LEVINE
VP, **FACEBOOK**
After a big promotion, the former Instagram COO is in charge of relationships with key collaborators as VP of global partnerships and business development.

JAMIE MILLER
EVP AND CFO, **GE**
The former CIO turned CEO of transportation was elevated to CFO in November. Her mission: to implement a financial turnaround of the wounded industrial giant.

JENNIFER SALKE
HEAD OF AMAZON STUDIOS, **AMAZON**
Salke, ex-president of NBC Entertainment, joined the tech giant in February and is now deploying Amazon's estimated $4.5 billion war chest to beat rivals.

45 Mary Dillon
CEO, 57,
Ulta Beauty

▲48

Dillon has overseen one of the most spectacular retail expansion stories ever, and she is convincing investors—who have sent the stock up 25% year over year—that she can keep building Ulta. With online sales rising nearly 40% a quarter, an industry-leading loyalty program, and all the new high-end beauty brands she's lined up, it's clear Ulta continues to prove a traditional retailer can battle Amazon. Dillon recently joined the board of private equity giant KKR, further cementing her status as a power broker.

46 Helena Foulkes
CEO, 54,
Hudson's Bay Company

▼12

Foulkes finally landed a CEO job in 2018. It just wasn't at CVS Health, where she had been leading its $81 billion retail pharmacy business. Instead, Foulkes moved to a different part of the retail universe, in February becoming CEO of Hudson's Bay, a sprawling and money-losing conglomerate of department stores. She has moved quickly to fix the business, selling off Gilt Groupe, closing Lord & Taylor's flagship, and merging HBC's struggling Kaufhof chain with a German rival. But will it be enough?

47 Deanna Mulligan
President and CEO, 55,
Guardian Life Insurance

▼46

In 2017, Mulligan led Guardian Life, known for its dental and whole life insurance businesses, to record earnings and handed out $913 million in dividends to policyholders—another annual record. While much of Guardian's growth can be attributed to the small-business market, where it's the third-largest insurer, Mulligan is pushing the company into new markets. Earlier this year, Guardian targeted workers in the growing gig economy with the launch of an online insurance marketplace geared toward individuals.

48 Bonnie Hammer
Chairman, NBCUniversal Cable Entertainment and Studios, 68, **Comcast**

▼47

Last year Hammer grew profits and revenue for an unprecedented 14th consecutive year, raking in nearly $3 billion and $6 billion, respectively, despite increased competition. Her networks, which include USA, Bravo, and E!, average some 100 million viewers a week, helping make her portfolio the largest profit generator within NBCUniversal. The long-serving cable chief also negotiated key deals, including tying down the valuable World Wide Wrestling Raw series on USA through 2024.

45: REBECCA GREENFIELD; 46: COURTESY OF HUDSON BAY; 47: COURTESY OF GUARDIAN INSURANCE; 48: MARY ROZZI; SURYADEVARA: JACOB LEWKOW

51

49

Anne Finucane
Vice Chairman; Chairman, BofA Merrill Lynch Intl., 66, **Bank of America**

▲50

A decade after the financial crisis, BofA is finally performing again for investors—its stock price has nearly doubled over the past two years—and Finucane can take much of the credit. She oversees the bank's customer data analytics, which helped its consumer and wealth-management group reap $11 billion in profit in 2017. She also leads its capital deployment group, which focuses on socially responsible lending and investing. Finucane's biggest looming challenge: guiding the bank in Europe post-Brexit.

50

Kathryn Marinello
President and CEO, 62, **Hertz Global Holdings**

★NEW

When Marinello stepped in as CEO of Hertz in 2017, the car-rental industry was in disarray, with upstarts like Uber and Lyft providing an alternative to renting. Facing losses of nearly $500 million that fiscal year, she knew Hertz was in need of drastic change. After instituting a tech overhaul and downsizing of its fleets, Hertz saw a profit of $327 million in 2017. Now it's speeding into the next phase of its turnaround, rolling out new systems to improve customer experience and streamline the rental process.

BONUS PICK!

Oprah Winfrey
Chairman and CEO, 64, **OWN**

Welcome back, Oprah. The media mogul was a fixture of the MPW list for years, coming in at No. 6 in 2010 and No. 50 in 2012, before dropping off in 2013 when her cable network, OWN, wasn't big enough to hold her slot. Now Winfrey's back, in the 51st spot. After her 2015 investment in Weight Watchers and de facto spokeswoman status, she all but single-handedly revived the company—its stock shot up to a high of $103 in June from $6.79 when the star got on board. The investment helped her make an appearance on the world's 500 richest people list (the only black female entrepreneur in the bunch). Winfrey also invested this year in True Food Kitchen, a healthy-restaurant chain. And, let's not forget, Winfrey inspired a political movement with her acceptance speech at the Academy Awards and became a near-serious candidate for President. Plus she found time to star as an omnipotent celestial being in *A Wrinkle in Time* and keep OWN on an upward trajectory. Oprah's next act indeed.

49: SIMON DAWSON—BLOOMBERG VIA GETTY IMAGES; 50: COURTESY OF HERTZ; OPRAH: WILLIAMS & HIRAKAWA—AUGUST

KEY ● NO CHANGE ▲ MOVED UP ▼ MOVED DOWN ◄ RETURN ★ NEW

THE WORLD ACCORDING TO WALMART

NO. 14

JUDITH MCKENNA ● PRESIDENT AND CEO, WALMART INTERNATIONAL

Before JUDITH MCKENNA took over, the mega-retailer's international business was routinely ignored. Then came the company's $16 billion stake in India's Flipkart— the biggest pure e-commerce deal of all time. Does she have your attention now?

By BETH KOWITT

▲ PHOTOGRAPH BY CELESTE SLOMAN

Judith McKenna in her conference room at Walmart headquarters in Bentonville, Ark.

E

EVERYTHING AT WALMART IS SUPERSIZED—including its international business. Walmart International is bigger by sales than JPMorgan Chase, Boeing, and Google's parent company, Alphabet. Even Coca-Cola, Delta Air Lines, and Facebook combined can't touch its scale. The retailer's dealings abroad generate more revenue than the GDP of Ukraine and surpass the value of all trade conducted between the U.S. and U.K. in a year.

But here, perhaps, is the most surprising stat of the bunch: Walmart's \$118-billion-in-revenue international operation is the biggest business in the world that no one seems to pay very much attention to at all.

Among his 1,900 institutional investor clients, Bernstein's Brandon Fletcher can count on one hand the number of in-depth conversations he's had about the company's footprint outside the U.S. The business is a victim of the law of large numbers, the kind of problem unique to a very big fish that lives not in a small pond but a vast ocean—in this case swimming amid the retailer's gargantuan half-a-trillion dollars in sales. "Investors just kind of overlooked it," says Telsey Advisory Group analyst Joe Feldman.

Until this year, that is.

Since April, Walmart has undertaken a flurry of deals that are not only transforming the face of its international business, but are, by extension, also rewriting the company's place in the retail landscape. First Walmart agreed to merge its U.K. business Asda with J Sainsbury (it will hold 42% of the combined entity). Then, just over a month later, it said it would off-load the majority of its Brazilian operation to a private equity firm. The moves are a retrenchment in markets that were part of Walmart's global footprint for some two decades.

But those deals look small in comparison to the \$16 billion Walmart spent in August for an approximately 77% stake in Flipkart, India's biggest online retailer. The investment, which Bryan Roberts of retail marketing firm TCC Global calls "eye wateringly expensive," is the biggest in Walmart's history and the largest ever in the pure e-commerce sector (just in case there weren't enough superlatives in the mix already).

Walmart has aspired and toiled—and succeeded—in its quest to become not just the biggest retailer in the world but the biggest company on the planet, period, and has done so by obsessing over how to grow its top line. Then, in a span of just a few weeks, it seemed to throw the scripture handed down by founder Sam Walton out the window, by essentially trading a reasonably stable, profitable business in the U.K. for a money-losing venture in India that may take a decade to even begin to show signs of paying off.

"It's a series of jaw-dropping moves," says Neil Stern of retail consultancy McMillanDoolittle. "There's a willingness to make these huge bets and to think about retail differently."

Judith McKenna, a Brit who has headed up the international business since February, tends to lean a bit more toward classic English understatement: "It's certainly been a busy four months," she said at an investor meeting in June—although later this summer at Walmart headquarters in Bentonville, Ark., she admits, "I'm not necessarily recommending it as a way to come into a job."

Indeed, McKenna and her team bear a Walmart-size responsibility with Walmart-size consequences. In reprioritizing the company's global footprint, they are effectively placing bets on the future of retail. "We've made no secret that in certain markets we'll do no more bricks and mortar," McKenna says—a striking admission from a company that built its U.S. fortunes on the back of big-box retailing. Instead, Walmart is redeploying its capital in the e-commerce sphere, a move driven in large part by its existential battle with Amazon. In the U.S., Walmart got serious about that fight in 2016 with its $3.3 billion acquisition of online retailer Jet.com. Now it is preparing to duke it out across the globe with its Flipkart deal, investments in JD.com and Dada-JD Daojia in China, alliance with Rakuten in Japan, and acquisition of online marketplace Cornershop in Mexico and Chile.

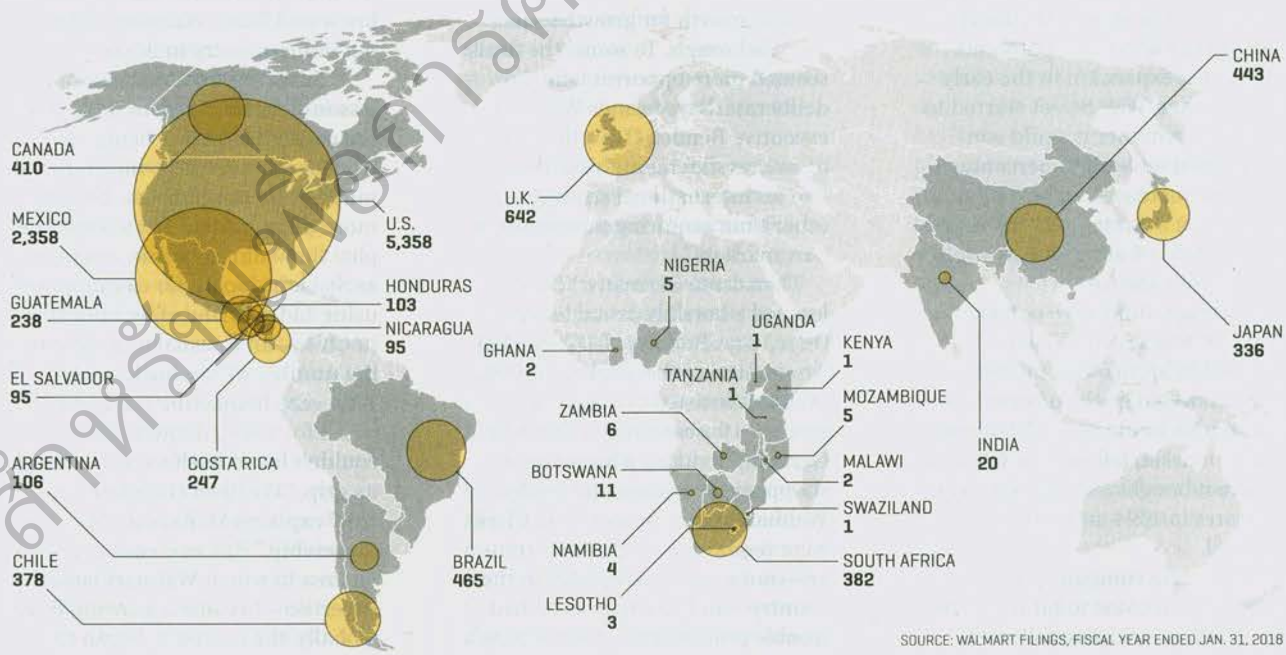
The approach looks very different from the Walmart of the past, which was prone to measure success by how many countries it had crossed off its list. The culture of Walton stood for the supercenter store model, explains Rick Bendel, Walmart's onetime international chief marketing officer, but "that isn't the credential one needs to build the next phase of Walmart." Now it's McKenna's job to transform the retailer from an American company that happens to have an international business into a truly global enterprise.

THE REVIEWS of Walmart's international achievements read a bit like the Rotten Tomatoes page of a B action movie: "Very spotty," says Edward Jones analyst Brian Yarbrough. Harvard Business School professor Rajiv Lal calls it "a mixed picture," while industry consultant Craig Johnson weighs in with "checkered." And bluntly from Wolfe Research's Scott Mushkin: "It's just not good."

> **People tell you what the problem is—and they usually tell you what the answer is."**
>
> **Judith McKenna**
> PRESIDENT AND CEO, WALMART INTERNATIONAL

Walmart Properties Worldwide

WHILE THE DOMESTIC MARKET BRINGS IN THE LION'S SHARE OF PROFITS AND REVENUE, WALMART HAS MORE STORES INTERNATIONALLY THAN IN THE U.S.



SOURCE: WALMART FILINGS, FISCAL YEAR ENDED JAN. 31, 2018

It says a lot then about the challenges of expansion that despite the tepid ratings, Walmart's international performance is probably the closest thing the industry has to an American success story. "Even in the struggles they've had, they're still doing better than any U.S. retailer has done in the modern era," says Matt Hamory of consulting firm AlixPartners.

Which all goes to say that expanding beyond borders—a process tinged with the subtext of ego, nationalism, and culture clash—is colossally hard. "Because companies have been so successful in one culture," explains Bill Bishop of consultancy Brick Meets Click, "it's impossible for them to believe that they're not going to be successful in another." Some executives simply cannot process the fact that to consumers beyond their home market, they are often viewed as just another big box selling someone else's products.

The allure of growth, though, has been too tempting for most companies to ignore. Walmart got serious about the potential for global expansion in the early 1990s when Wall Street started to question whether it could continue its double-digit percentage revenue increases. Management landed on a strategy that dictated that a third of new growth would come from abroad.

Walmart's first store outside the U.S. was a Sam's Club that opened in Mexico City in 1991. Mexico would go on to become the company's most successful international market, followed by Canada, where it bought a struggling chain of stores in 1994 and turned it around.

But as the company pursued more acquisitions to hit its aggressive targets, criticism followed.

▲ **Customers pay for their shopping at self-serve checkout counters inside an Asda supermarket.**

"It was growth for growth's sake," says Yarbrough. To some, the deals seemed more opportunistic than deliberate. Says former Walmart executive Bendel, "It's a little bit of an overstatement to say they had an international strategy—other than acquiring businesses in new markets."

Then came Germany. "They learned a horribly brutal lesson there," says Roberts of TCC Global. After entering the market in 1998, Walmart insisted on bagging groceries for customers, which in Germany signaled a higher-end shopping experience and eroded Walmart's value proposition. Clerks were required to smile at customers—not socially acceptable in the country—and Germans even had trouble pronouncing the company's name. Walmart clashed with local unions and just generally struggled to give shoppers a reason to switch from the discounters they already knew and liked. Walmart pulled out of the country in 2006.

"I think there was a sense of big lessons learned," says Bendel, "and the consequence was being extremely careful not to interfere too much." The company has become more thoughtful about when to deploy the Walmart name, operating as Seiyu in Japan, for example, and using Lider as one of its brands in Chile—an unusual move given the number of Starbucks and 7-Elevens blanketing the globe.

Yet for years, Bentonville couldn't bring itself to truly release its grip. "We liked complete control," explains McKenna. "We liked ownership." But as e-commerce—an area in which Walmart lacked expertise—became a growing force globally, the company began to

> **“They overpaid for Flipkart, just as they overpaid for Jet.”**
>
> **Scott Galloway,** PROFESSOR OF MARKETING AT NYU STERN SCHOOL OF BUSINESS

reconsider. Add the lure of massive emerging markets, which promise untold profits to those savvy enough to approach them with the right partners, and the retailer came to the realization that it could no longer do everything itself. Now with its various stakes and holdings around the globe, in a lot of places Walmart is starting to look more like an investor than a retailer. “I think we'll get to a place where we aren't making all the day-to-day decisions,” says Richard Mayfield, CFO of the international division. Partnerships, he says, “are not something that's in our DNA—we're learning.”

MCKENNA IS IN the unique position of knowing what it's like to be on both sides of a Walmart acquisition. She was working as the financial controller for British grocer Asda when in 1999 Walmart acquired it for $10.8 billion—the company's biggest deal ever until Flipkart.

Her rapid progress up Asda's ranks, to CFO and then COO, drew the attention of the grocer's parent, but McKenna initially brushed off questions about whether she'd be game for a broader role.

“I didn't really want to do anything else,” she says. “I thought I had the best job in the universe, and I had broken every ceiling going, and I was quite happy with it, thank you.” During a recent talk about career development at company headquarters, she described the inclination as an unwillingness to put your head above the parapet—that's the “castle bit on a castle,” she clarified for the blank stares in the room. If you put your head above it, she explained matter-of-factly, you're likely to get shot.

When Asda's CEO left in 2010, McKenna kept coming up as a possible successor in the British press, which covered the U.K. grocery sector with the same breathlessness most tabloids reserve for celebrity breakups. McKenna says she didn't feel like she had the operations experience and took herself out of the running.

But the episode got her thinking that maybe it was time to peek over the parapet after all. In 2010, she put her hand up to run a newly-formed small stores division, and the next time she was approached about a move to Bentonville—and a strategy and development role—she went for it.

A few years in, she found herself in the middle of a crisis. Walmart U.S.'s same-store sales, a critical industry metric, had fallen for five quarters in a row. Greg Foran, president and CEO of Walmart U.S., brought McKenna on as his operations chief to help fix the business. He thought she had the right combination of strategist, operator, and cultural ambassador—as well as what he calls “an amazing engine.”

At her first market manager meeting, McKenna faced a “tidal wave” of feedback about everything that was wrong in the stores. “I went home that night and said to my husband, ‘I absolutely have no idea where to start here, and actually I don't know if I can do it.’” (He told her to get over herself and “get on with it”—a phrase McKenna also employs with regularity.) McKenna started to fly around the country to meet with store managers, eventually visiting every state. She would sit in the front of the room and just hear them out. “People like to be listened to,” she says. “And you know what, they tell you what the problem is—and they usually tell you what the answer is.”

They told her was there was too much inventory. That associates weren't motivated. That they lacked what McKenna calls TNTs—tiny noticeable things—like equipment to clean the floors: “I stood on a stage and said, 'I'd like to announce we're bringing back propane buffers.' The place went nuts." She relaxed the dress code and reinstituted Walmart Radio, relieving store employees of a heavy rotation of Celine Dion and Justin Bieber CDs.

Some of her initiatives, however, were not so tiny. Someone with McKenna's finance background will often try to "save their way out of a problem," says Foran. "It's 'How do I cut?' as opposed to growing the top line." Instead, McKenna and Foran spearheaded a more than $2 billion investment in increased wages, training, and technology for store employees so they could spend more time out on the floor with customers.

A good number of the tools McKenna employed to help turn around the U.S. business originated at Asda, which was once a hotbed of innovation for the company—if there is such a thing in the grocery industry. Take click-and-collect, the process of ordering online and picking up at the store. Now the bedrock of Walmart's U.S. e-commerce strategy, it started out in the U.K. "I wouldn't underestimate the benefit we've had as a company from the ability to share best practices and talents," she says. But McKenna knows that the center of gravity is shifting, and going forward she'll be looking further east instead.

In fact, this spring she got on a plane and returned to Asda's headquarters in Leeds to hold a town hall after employees learned that the company was being merged. Walmart, which expects a noncash loss on the deal, would take a minority stake in the newly combined entity with J Sainsbury. It was hard emotionally for McKenna, who had learned everything she

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We're not at heart a tech company. There are other people who can be better at that than us.”

Judith McKenna
PRESIDENT AND CEO, WALMART INTERNATIONAL

knows about retail from her time at Asda. But, she says, "that's what it's going to take."

THAT KIND OF resolve came in handy on May 9, when Walmart announced its 77% stake in Indian e-commerce giant Flipkart. The stock tumbled 3% on the news that the company had sunk $16 billion into the deal—not that far off from a year's worth of free cash flow. The move is expected to drag down earnings per share by 60¢ in its next fiscal year.

Dialing in for an analyst call that day, McKenna, CEO Doug McMillon, and CFO Brett Biggs received only one of the perfunctory "congrats" typical of the forum and instead faced a wave of skepticism.

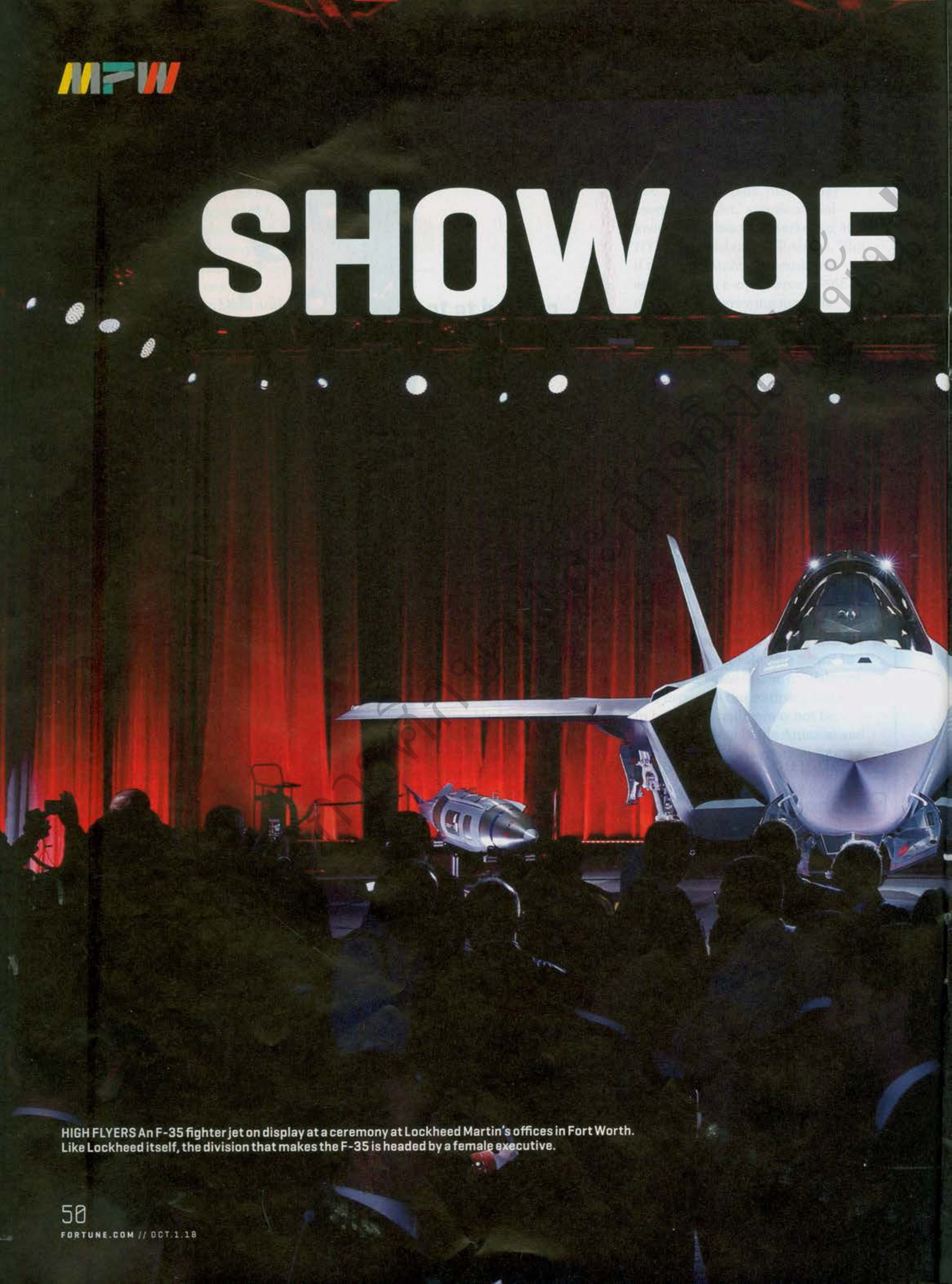
How did Walmart plan to stem Flipkart's operating losses? When would it break even? Why not deploy that capital in the U.S. rather than in India, a wild-card market—especially when Walmart's international track record was not so hot?

India's retail market is on its way to $1 trillion, but e-commerce represents only 2% of the overall pie. "They overpaid, just as they overpaid for Jet," says Scott Galloway, a professor of marketing at NYU Stern School of Business. "But if they can establish themselves as a leader in e-commerce in one of the fastest-growing markets in the world, it may be worth it." Amazon had developed right under Walmart's nose in the U.S., just as Alibaba did in China, where Walmart is now trying to play catch-up. The $16 billion may simply have been the price of admission to play in the globe's second-most-populated country.

It's also the cost of not having all the answers—something that Walmart has been increasingly willing to admit to as the digital and physical worlds collide. McKenna likes to give the career advice that the skills that got you to your current job are not necessarily the ones that will make you successful in your next role. She seems to realize the same is true of Walmart. The expertise the company built in big-box retailing may not be what it needs to battle Amazon and Alibaba in an omnichannel future. "We're not at heart a tech company," McKenna says. "There are other people who can be better at that than us." Flipkart is one of them, and McKenna, who's proved she's willing to ask questions rather than dole out directives, plans to bring lessons learned from India to other markets—just as she brought best practices from the U.K. to the U.S.

As CFO of Asda, colleagues would rib McKenna for being risk averse. "I used to say it was in my job description," she jokes. She's had to learn to get more comfortable with it. "I think that's an important shift in us as a business—and for individuals like me." For McKenna and Walmart, the biggest risk may be not taking one at all. ■

SHOW OF

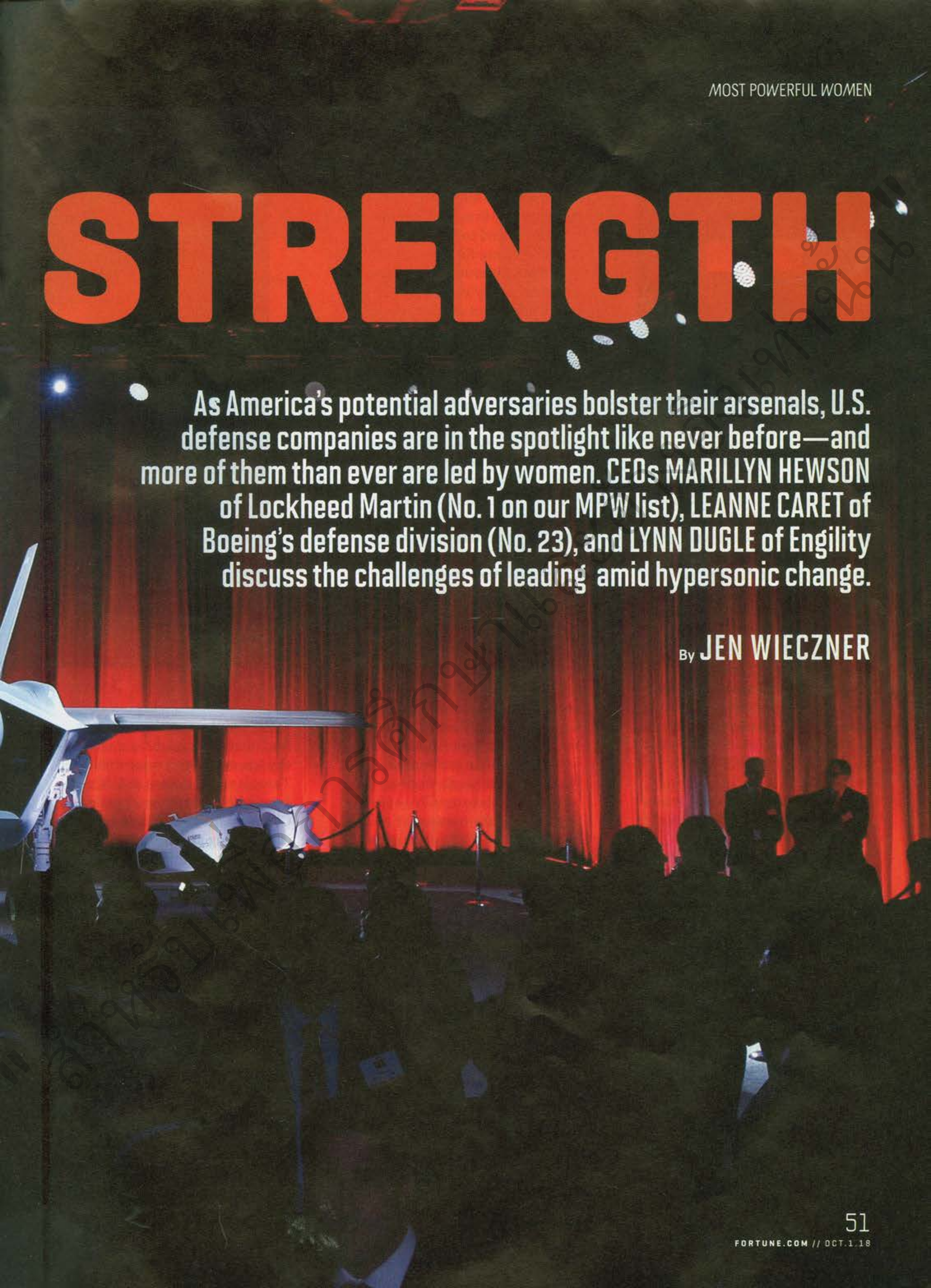


HIGH FLYERS An F-35 fighter jet on display at a ceremony at Lockheed Martin's offices in Fort Worth. Like Lockheed itself, the division that makes the F-35 is headed by a female executive.

STRENGTH

As America's potential adversaries bolster their arsenals, U.S. defense companies are in the spotlight like never before—and more of them than ever are led by women. CEOs MARILLYN HEWSON of Lockheed Martin (No. 1 on our MPW list), LEANNE CARET of Boeing's defense division (No. 23), and LYNN DUGLE of Engility discuss the challenges of leading amid hypersonic change.

By JEN WIECZNER



"THE LAST MAN STANDING." That's what some on Wall Street have recently nicknamed Tom Kennedy, the chairman and CEO of Raytheon. After all, he's the only leader of a top five U.S. defense business who isn't on *Fortune*'s Most Powerful Women list—and for that fact, says Kennedy, "I couldn't be prouder of our industry."

This July, Northrop Grumman announced that CEO Wes Bush would step down at the end of the year and be replaced by the first woman to hold that office, current COO Kathy Warden. She will join an elite club of defense contractor CEOs that includes Lockheed Martin's Marillyn Hewson, General Dynamics' Phebe Novakovic, and Leanne Caret, who heads Boeing's defense, space, and security division. Together, their companies generated a staggering $110 billion in defense-related revenue last year.

Warden's promotion made waves across the corporate world, where diversity advocates marveled at the way the once male-dominated defense and aerospace industry had, in a few short years, blown up its own glass ceiling, elevating women higher and faster than most of the *Fortune* 500. "It isn't a male-female thing, necessarily, but really just acknowledging that talent won," says Lynn Dugle, CEO of military IT and cybersecurity firm Engility, which recently agreed to be acquired by rival contractor SAIC.

In the S&P 1500, women account for nearly 19% of the CEOs in aerospace and defense, according to the Pew Research Center, compared with just 5% across all companies. No sector works more closely with the government and military than defense, which may be one reason it's closer to gender equality. With the armed forces making deliberate efforts to expand women's roles and the emergence of a generation of female generals as well as Air Force and Navy secretaries beginning in the '90s, "the defense industry has realized they need to mirror their customers," says Patrick Gray, the aerospace, defense, and aviation practice leader at executive search firm Heidrick & Struggles. A decade ago, the companies redoubled their efforts. "It's not an accident ... that they've become C-suite or a CEO," says Lareina Yee, a senior partner at McKinsey.

No one felt the shift more viscerally than Linda Hudson, who in 2009 became CEO of BAE Systems and the industry's first female leader. When she launched her career surrounded by male colleagues, in 1972, "I needed them to forget I was female," she recalls. By the end of her career, she says, "being female had somewhat turned into an advantage—that you had risen against all odds."

On the battlefield, the U.S. has the odds on its side—and these women plan to keep it that way. Even as they compete for government budget dollars, the executives say they share a duty to the United States: "To ensure that there is an unfair fight—unfair in our favor," as Caret puts it.

Yet maintaining this country's lead in military might and technology has never been more difficult. There is rising unease in U.S. relations with superpowers Russia and China, whose technical prowess is increasing at a breakneck pace. Add to that the nuclear capabilities of rogue states including North Korea and Iran, and continuing atrocities by acolytes of extremist factions. There are credible threats of attacks (physical and cyber) even beyond Earth's atmosphere. And heads of state have shown a willingness to disregard international law on chemical warfare and genocide. "Every year it seems to get even more dramatic," Hewson says of the geopolitical risk climate.

Those fears have resounded in Washington, D.C., where a Republican-led Congress granted

PREVIOUS SPREAD: ATILGAN OZDIL—ANADOLU AGENCY/GETTY IMAGES

the Pentagon a budget increase of more than 15%—to $700 billion for fiscal 2018—with vocal support from the other side of the aisle. It hasn't hurt to have a hot-tempered Commander-in-Chief who has been direct about announcing what he wants on the national security front, whether it's cost reductions on Lockheed's F-35 fighter jet or "smart" missiles to fire on Syria (both expressed via tweets). All told, executives describe what may be the best industry climate of their careers. "What makes this the perfect storm is that we really do have consensus around what needs to happen in our defense space," says Dugle.

Against that backdrop, the female CEOs have had a chance to shine. Since Hewson took over Lockheed Martin in 2013, for example, the stock has returned 338%. Overall, since President Trump's election, aerospace and defense stocks have outperformed the market by 29 percentage points. In separate interviews, Hewson, Caret, and Dugle discussed leadership when the stakes are the highest. (Warden and Novakovic declined to participate.) What follows is in their words, edited for length and clarity.

Trailblazing

MARILLYN HEWSON
Chairman, CEO, and president, Lockheed Martin

Phebe Novakovic at General Dynamics and I started as CEOs on the same day in 2013. Phebe and I are good friends and have talked about what it's like on day one as the first female leader of our companies. And early on, I kind of felt like, "Well, gee, I don't want to be recognized that I achieved this just because of my gender." I just wanted to be recognized that I achieved that through being in a company that gives us opportunities to learn and grow and be strong and demonstrate our capabilities in our performance. And through those results, ultimately we can achieve the most senior

▲ **MILITARY FORCES: From left: CEOs Marillyn Hewson of Lockheed Martin, Lynn Dugle of Engility, and Leanne Caret of Boeing's defense, space, and security division. Women account for 19% of the CEOs in aerospace and defense, compared with just 5% for the S&P 1500 as a whole.**

○ HAIR AND MAKEUP, CARET: CONNIE TSANG

▲ PHOTOGRAPHS BY MACKENZIE STROH

position in the company.

However, both Phebe and I discuss that we are role models. And that's something that we should take very seriously because it inspires and motivates other women to say, "I can be in that job."

I can think back at times early in my career when I wasn't quite sure if I was ready for something. Soon after I started at Lockheed Martin, they put me on a special general management development plan, and that is what really got me on a path. And I think back, gosh, over 30 years ago, this company recognized that you invest in talent. It's up to the individual to perform, to accept those opportunities. So when the board offered me the position of running Lockheed Martin, I said, "I'm ready."

When you look at Kathy [Warden] and Leanne [Caret] and others in our industry, it's really a matter of them getting the experiences just like a male would get. We just named a woman, Michele Evans, to lead our $21 billion aeronautics business and the largest program that we have, the F-35. But she didn't get there by accident. She got there because she has developed a long career at Lockheed Martin and gotten a lot of different experiences. She's had profit and loss responsibility. And all of those things I think are what you look for, whether it's a man or a woman, to take over as CEO.

LEANNE CARET
CEO and president of defense, space, and security, Boeing

I was actually told I would never make management. My second-level supervisor said I laughed too much, I smiled too much. But my immediate boss disagreed with his boss, and he said, "We need to get you to a different position because you're not going to be who I think you can be if we don't get you somewhere else." It's about making certain that we're creating opportunities for everyone—for women, for minorities, for men.

But I never had any expectation I would be in this office. I was in a meeting with our chairman, Dennis Muilenburg, and the head of our HR, and all of a sudden, Dennis goes, "Hey, Leanne, can you just stay a little bit longer because I need to talk to you." And they're shutting the door, and I blurted out, "Oh, my God, you're firing me." And Dennis is like, "What? No. I want you to do this [job]."

LYNN DUGLE
Chairman, CEO, and president, Engility

I was the first woman in my family to go to college. And I would have never surmised 25 or even 15 years ago that you'd have women leading a Lockheed Martin, a Northrop

"We need to stay ahead of the curve ... if others are spending on hypersonic weapons, you've got to be able to defend against them."

Marillyn Hewson
CEO, LOCKHEED MARTIN

A rendering of the hypersonic Air-Launched Rapid Response Weapon being developed by Lockheed Martin for the U.S. Air Force.

Grumman, a General Dynamics. In my own career, many times I told myself "no." I remember when the person who was going to be my boss brought me in at Raytheon and said, Would you like to be considered for the president of one of our businesses? And my response was, "Oh, gosh, I think you should think about Person X and Y and Z. They're much more qualified." And I later told a dear friend I had done that, and she said to me, "That is not only the stupidest thing I have ever heard, don't ever tell that story again. You're being a terrible role model." So I was really fortunate that people gave me probably more opportunity than I was ready for.

I worry a lot with nation-state adversaries—if you just add up [the populations of] a few of those big players, we're outmanned. So to me, [gender diversity] is a national security issue. Our country benefits by utilizing every talent, every individual.

One place it is more challenging for women is Saudi Arabia, which has billions of dollars in deals with U.S. defense companies. I've been

Fighting the Next War

Defense contractors are crucial to the technological arms race against potential U.S. adversaries. Here are a few of the frontiers where they're sprinting toward new breakthroughs.

Hypersonics

Hypersonics—aircraft or weapons that can travel five times as fast as the speed of sound—were thought to be five years away from production. But since a recent show-and-tell of Russia's speedy missiles by President Vladimir Putin, the U.S. has awarded a flurry of contracts. "All of a sudden it's like the cord has been pulled," says Jefferies analyst Sheila Kahyaoglu.

Security in Space

The Trump administration's call for a U.S. Space Force this summer met with skepticism. But with myriad U.S. satellites in orbit powering everything from Army communications to GPS-enabled reconaissance, defending them against attack is crucial—and likely what's driving increased spending by the Pentagon on "classified space" technology.

Autonomy

Defense companies were working on self-driving technology long before carmakers. Today, autonomous systems run inside drones, ocean-monitoring submarines, and exploratory spacecraft—and robotics are increasingly used to manufacture the equipment too. Artificial intelligence also appears to be coming to weapons, with autonomous missiles in development.

[there], and my advice to female colleagues traveling there is, don't make rookie mistakes. Rookie mistake No. 1 is getting in the elevator when the doors open. No. Men and women ride in separate elevators. Rookie mistake No. 2: drinking too much coffee—no women's restrooms. Rookie mistake No. 3: getting in the line when it's time to go through security. That's the men's line. There's a women's area off to the side.

Hewson: I spend a lot of time in the Kingdom. I wear an *abaya* and a *shayla* and honor the traditions that they have, particularly in women's dress. But beyond that, I was never treated any differently as a female or differently than I would be by any other senior government official around the world.

Defense in the Trump Era

Hewson: I travel a lot, meeting with world leaders, and what I hear is how significant the geopolitical environment is in terms of its unpredictability, its volatility. It's asymmetrical; it's intercontinental—the threats are just continuing to accelerate, and there's a big concern. It's across all domains, frankly—air, land, space, cyber. Russia and China and non-state actors and terrorists. So it's critically important to maintain and continue to advance our technological superiority. Our adversaries or potential adversaries are progressing very quickly.

Dugle: Leaders on the Hill from both parties realize that our readiness and some of our technology, certainly in space, were being contested in a way we hadn't seen. There are more unknown variables in the equation with space and cyber because we don't have decades of training technique, experience, exercise. I think they offer the biggest potential opportunity to outpace an adversary but probably the bigger challenge. And [lawmakers] stepped forward and gave us the largest budget that we've seen in a decade. It's probably one of the most exciting times to be in this industry that it's ever been.

Caret: The types of conversations this administration is having now, and the insight it's giving us, are unique. They're very good at candor, and you may not always like what you hear. But it's a significant step toward a more collaborative relationship.

Space Wars

Caret: Many people don't realize how important space is today to run our lives. But you're not going to use that GPS in your phone to find your way without the satellites that are up there working. So I'm excited that folks are starting to have a better appreciation of how large this world is.

Dugle: For years we were having a debate: Is space a part of warfare? Which really was ridiculous. Because war on the ground is driven by space. Think about all the satellite communications that allow us to know where troops are and how they're moving and to communicate with them. GPS and precision navigation—if we're going to target something, we need to know where that is. So if adversaries disable our space assets, we're disabled on the ground as well. And it's not just military or warfare. GPS is used for banking transactions. So if that system was somehow disabled, our banking community would be disabled.

Hewson: Things like missile warning are supported by satellites. Or look at what's happening with [Hurricane Florence] this week. This year we launched the most advanced weather satellite that the National Oceanic and Atmospheric Administration puts up—it captures images that are like going from black-and-white TV to high-definition big-screen TV. It maps lightning. And it's helping to save lives because it's predicting earlier weather patterns and hurricanes.

Staying Ahead of the Pack

Hewson: An important area that we're working in is hypersonics—things that can travel over Mach 5 [five times the speed of sound], whether it's weapons or [aircraft or spacecraft or something else]. Others outside the U.S. are ramping up in that area, and we need to stay ahead of the curve, so we're investing significantly in it, as is the Department of Defense. And if you think others are spending on hypersonic weapons, you've got to be able to defend against them. So directed energy, or laser weapon systems, are very important. You don't have to have the same replenishment of munitions, so it's more cost-effective—and just more effective. We also have what's called hit-to-kill technology that's like a bullet hitting a bullet. Before the incoming missile could land or even fragment, we're able to hit it, and it dissipates.

Autonomy is really critically important. In Afghanistan and Iraq, improvised explosive devices were unfortunately very harmful for men and women who were driving trucks [of supplies]. So our team identified a helicopter that was used for logging—taking logs up a mountain—and made it autonomous. And it took millions and millions of pounds of supplies forward. Who could count how many lives that saved because our men and women weren't driving?

Caret: We have an autonomous 55-foot submarine that's floating underwater—it doesn't need to be towed out there, it's self-deployable. It is our belief and our intent that autonomous air traffic is going to be just part of our normal day-to-day transportation. And Boeing is going to be at the forefront of that. There is absolutely no doubt in my mind that one of these days, we're all going to get into our little car pod, and we're just going to go traverse.

> “To me, gender diversity is a national security issue. Our country benefits by utilizing every talent, every individual.”
>
> **Lynn Dugle**
> CEO, ENGILITY

Dugle: The speed at which technology is moving can be a blessing or a curse: If we're the fastest mover, and we get to quantum computing before another country does, it's great. If we get disadvantaged, not so great.

When 9/11 happened, it wasn't because there was a super new technology. It was because an aircraft turned into a weapon. I'm convinced today, with all of the technology and processing power, we'd have a much improved chance of understanding what was happening by using all of that public information, from full-motion video to everybody having a phone that is an emitter. I'm quite confident our intel community does it on a day-to-day basis. One of the best examples is we really can overlay an analytic layer on all the social media data and get sentiment. With the Arab Spring, we knew it was happening early because of technologies. And we can use that situational awareness to protect our country. Still, everything is about a tradeoff—privacy needs to be very highly valued.

Hewson: We expect the governments we do business for are going to be doing things that are appropriate. And I am confident that we are working on the right things to keep this nation safe. That's evidenced by the fact that we haven't had another situation like [9/11] happen. We're still the leader [in defense and military capabilities], and will continue to be. What's important is that we continue to invest in defense and make sure that as technology moves forward, we stay on the forefront. ■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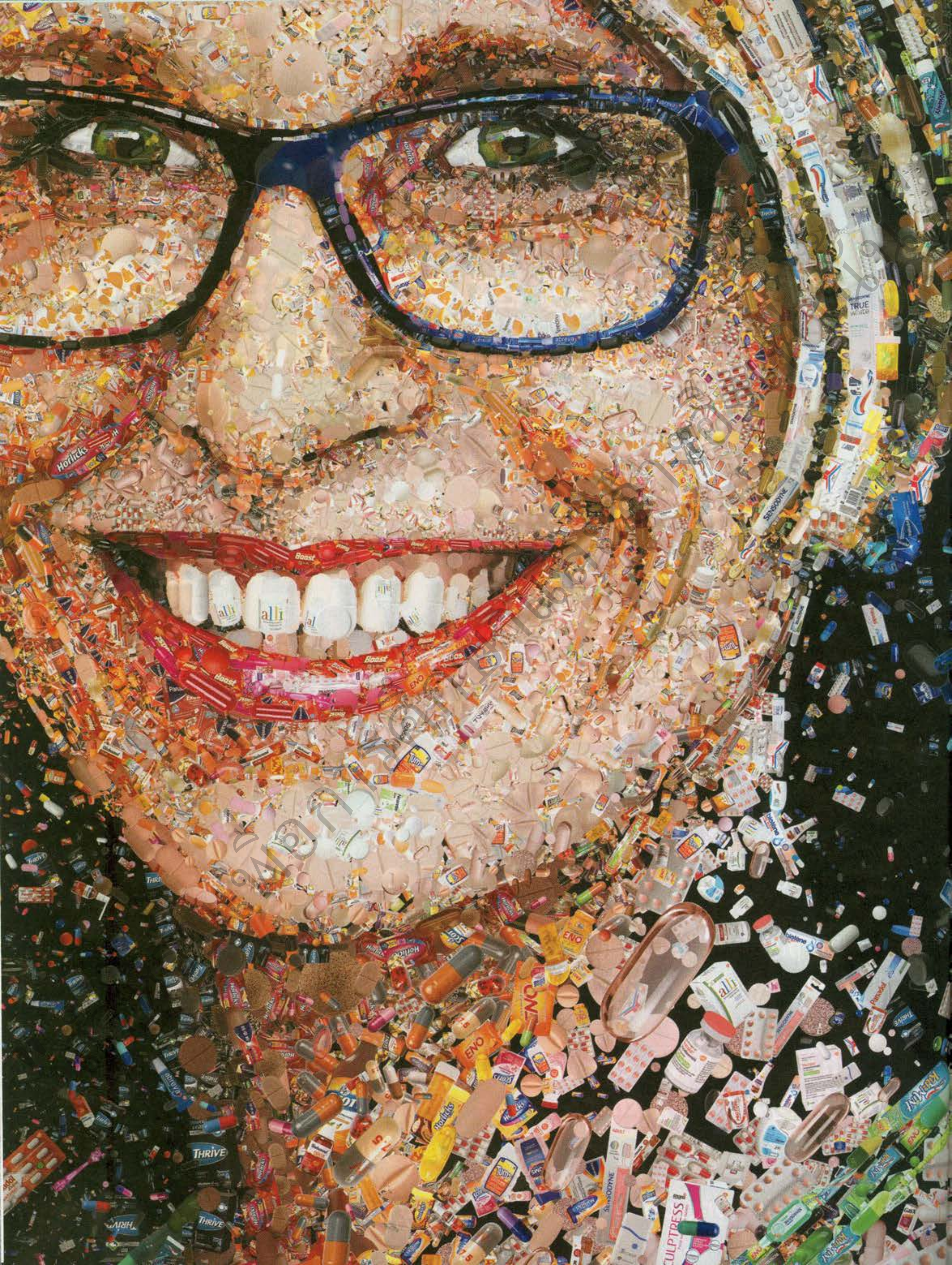
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INTERNATIONAL NO. 01 — EMMA WALMSLEY • CEO, GSK

Last year, EMMA WALMSLEY took over a languishing, three-century-old pharma giant and shook things up from the start. Early reviews are good—but will it be enough to make GlaxoSmithKline an investor darling again?

By ERIKA FRY and CLAIRE ZILLMAN

▲ PHOTO ILLUSTRATION BY CHARIS TSEVIS

EMMA WALMSLEY was just six weeks into her tenure as CEO of GlaxoSmithKline, the $38.9 billion British pharmaceutical firm, when "Glaxit" happened.

Glaxit was not a world-shaking geopolitical tremor à la Brexit, but for GSK it may have seemed hardly less significant. Neil Woodford, the much celebrated British fund manager—who had gained fame for coming out of the dotcom crash and the global financial crisis unscathed, and one of GSK's largest shareholders—announced he was quitting the company. In a blistering 958-word critique—published on May 12, 2017, and garnering coverage from Reuters to the *Telegraph*—Woodford explained why, after 15 years, he was pulling every last pence out of GSK stock.

Those 15 years had been "frustrating" for him; GSK had remained throughout, he charged, "a health care conglomerate with a suboptimal business strategy."

Woodford had long been one of GSK's most vocal critics; for years he had clamored for it to break up into its constituent businesses. (The company has pharmaceutical, vaccine, and consumer health divisions.) He argued the gambit, fashionable in Big Pharma these days, would unlock shareholder value through more focused stand-alone companies. GSK's leaders—most recently former CEO Sir Andrew Witty—had consistently rejected the idea, contending that the firm's conglomerate structure provided stability and some synergies.

But the last straw for Woodford seemed to be Walmsley. Of the company's new chief executive, he wrote, "Even before taking her seat she has been keen to portray herself as a 'continuity candidate.'" In other words, more of the same.

Walmsley may not be ready to ditch GSK's conglomerate structure, but in almost every other way, Woodford's description couldn't be more wrong.

To begin with, there's who she is. Neither a man nor a scientist, Walmsley is something of an outsider in pharmaland. She's the only woman to run one of the large innovative drugmakers, and her path was hardly a typical one. A marketing whiz who spent 17 years at L'Oréal, Walmsley joined GSK in 2010 and started running the company's consumer health care business the following year.

Then, there's what she's done. Since taking charge in April 2017, Walmsley, No. 1 on *Fortune's* International Power 50 list (see page 66), has made swift and radical changes. Within months, she had replaced 40% of her top managers and pulled the plug on 30 drug development programs and 130 brands. She announced plans to stop selling Tanzeum, a diabetes drug for which GSK had won FDA approval only three years prior.

Within a year, she sold off the rare-disease unit and initiated a strategic review of the company's cephalosporins antibiotic business. She assembled a roster of all-star talent to fill out her executive team, and in July she did a $300 million deal with 23andMe, the data-rich direct-to-consumer

PREVIOUS SPREAD, ORIGINAL PHOTOGRAPHS: ALAMY, GETTY IMAGES, AND GSK

In September, GSK CEO Emma Walmsley visited with patients affected by malaria in Manaus, Brazil.

genetic testing company. She instituted new (and unheard of, at GSK) levels of organizational hygiene—implementing uniform key performance indicators, employee standards, and strategies across GSK's three businesses. As Walmsley told *Fortune* in June: "The way I define the job is, firstly, in setting strategy for the company, and then leading the allocation of capital to that strategy—because until you put the money where you say your strategy is, it's not your strategy." For the new boss, that means a new commitment to R&D.

She has also embarked on a cultural overhaul: Meetings get straight to the point and often begin with the question, "What are we here for?" In her first interview as CEO, she told the *Financial Times*, a bit clumsily, that GSK scientists would no longer be "drifting off in hobbyland" under her watch.

Walmsley is the fresh face of discipline and rigor at GSK. When asked how her communication style compared with that of her predecessor Witty, a senior leader who recently left the company chuckled before responding they couldn't be more different.

Sir Andrew Witty may as well have been called Saint Andrew. By the end of his nine-year tenure as boss of GSK, he'd won admiration for his unorthodox business strategies, which tended to buck the worst trends in Big Pharma: Rather than sell drugs for sky-high prices in the few developed markets that could afford them, Witty declared GSK would pursue volume—selling lots of drugs, at lower prices, all over the world.

Such efforts regularly landed GSK atop the virtuous Access to Medicines Index and earned it the No. 1 spot on *Fortune*'s 2016 Change the World list, which recognizes companies that do well in business by doing good for society.

Witty also dispensed with the notoriously sleazy drug-rep sales model, paying his sales staff according to their technical knowledge rather than by the amount of drugs sold. His company was committed to developing vaccines, those vital but extremely low-margin instruments of public health—including the first-ever vaccine for malaria, approved in 2015, after 30 years of effort.

In truth, the strategy was not purely benevolent. GSK, whose meds are mainly for respiratory conditions and HIV/AIDS, didn't have a big stable of revolutionary cancer drugs, or those for rare diseases—the sort that had been fetching astronomical prices. (Notably, the handful of pricey gene-therapy drugs GSK did have in its arsenal—including a $700,000-plus drug for an immune disorder called ADA-SCID or "bubble baby" disease—Walmsley sold off in April, as part of her refocusing campaign.)

But in an era of six-figure prescriptions, investors didn't have the patience for Witty's slow-going, do-gooding volume play. Many were disappointed by the seeming lack of innovative medicines being developed at the storied 300-year-old drug company. GSK's shortcomings were more likely to be lapses in marketing rather than discovery. In recent years, it had actually developed more new drugs than most of its peers; they just weren't commercial successes for the most part. One telling stat put the problem in stark perspective: Due in part to patent expiries, the pharma unit's revenues in 2016 were roughly equal to its revenues in 2004.

When in March 2016, the GSK board announced that Witty would step down the following year, they promised an extensive global search for his replacement. By September, they had found someone right inside the company: a then–47-year-old exec whom Witty himself had recruited years earlier at a networking event in Shanghai.

TO HEAR HER past and present colleagues tell it, Walmsley was the ideal pick. GSK board member Laurie Glimcher, an immunologist and CEO of the Dana-Farber Cancer Institute, calls Walmsley "a force of nature" and "the quickest study I think I've ever met." Moncef Slaoui, GSK's former R&D chief, describes her as a "courageous,

THIS SPREAD: CHARLIE BEST—COURTESY OF GSK supportive, and demanding leader." Excellent at listening and always learning, she's nevertheless quick and unwavering in decisions, colleagues say. She also has a knack for consultant-speak, repeating mantras like "Innovation-Performance-Trust!" and coining catchphrases—"fast moving consumer health care" is a favorite.

She grew up in Cumbria, England, the daughter of Sir Robert Walmsley, a vice admiral in the Royal British Navy with a long résumé of corporate board-ships. She attended St. Swithun's, a posh all-girls boarding school, where she participated in public speaking and choir—and once played Prince Charming in an opera—and then Oxford, where she studied classics and languages. After college she joined the Coba Group, which has since been acquired by PwC, and became a consultant. Sophie Masson, who would later work with Walmsley at L'Oréal, attended St. Swithun's a few years behind Walmsley and remembers her as having "amazing charisma" and being "a leader" even then.

Walmsley joined L'Oréal in 1994, where she climbed the rungs of the French beauty giant, with jobs in the U.K. and France for the L'Oréal Paris and Garnier/Maybelline brands.

In those early years, Patrick Kullenberg, now general manager of L'Oréal Luxe Nordics who worked with Walmsley, says in meetings and presentations she came off as someone with theatrical training because she was so deliberate with her delivery. She spoke, he says, "with effect." Her presence alone stood out among L'Oréal higher-ups, who, Kullenberg remembers, were mostly male and mostly French.

Walmsley later left Europe for the U.S., where she took a top managerial role at Maybelline before moving to Shanghai in 2007 to head up L'Oréal's consumer products division there.

Walmsley was an "admired executive" within the company, Kullenberg notes. She had military discipline when completing tasks. "She'd say something like, 'Don't speak to me until 12 o'clock; I'm focused,'" says Kullenberg, who briefly shared an office with his onetime boss.

She didn't just set high standards for herself. "I remember her being very challenging to us as a team," says Masson, who recalls Walmsley asking for changes to a lipstick launch in the 11th hour. And that managerial style worked. "We were all very impressed by her vision and wanted to deliver for her," Masson says.

Walmsley's progression from brand to brand and country to country was the trademark trajectory of someone headed for the tip-top of L'Oréal's ladder. So it was a shock when Walmsley decamped for GSK. In fact, she seemed to shock even herself in making the move.

It was 2010, and 40-year-old Walmsley, her entrepreneur husband, David, and their four children (all under the age of 10) were in the midst of "a tremendous family adventure" in China, according to an essay Walmsley wrote for LeanIn.org. Then a meeting with Witty and a subsequent offer to take a job as head of consumer products at GSK in the U.K. threw it all into flux.

"I spent a week persuading myself I would be insane to do it," she later wrote, citing worries about being "disloyal" to L'Oréal and "unfair" to her family. Another chief concern: "It would be really

Balancing Act

Wall Street doesn't love GSK's conglomerate structure, but as Walmsley works to recharge her company's drug division, the other businesses provide some cushion. Below, a look at each:

PHARMACEUTICALS

Walmsley's top priority is to reinvigorate pharma, which accounts for 57% of GSK's sales. Drug launches have lagged those of peers, and the CEO aims to speed development and improve marketing. Approvals of two new meds in 2017—a three-drug inhaler to treat COPD and a combination pill for HIV patients—should help, as should a narrower focus for R&D centered on those therapeutic areas and two less established ones for GSK: oncology and immunology.

VACCINES

The $6.8 billion group, which delivers 2 million vaccines per day, is poised to swell following the 2017 approval of **SHINGRIX**, its highly effective vaccine against shingles. The CDC recommends the product for Americans 50 and older. The division has also recorded strong sales of **BEXSERO**, its meningitis vaccine, which in 2018 became the first vaccine to ever receive a Breakthrough Therapy designation from the FDA.

CONSUMER

Walmsley has already transformed the consumer group, which accounted for a quarter of GSK's sales, when she bought out Novartis's 36% stake in the business earlier this year (the two companies formed a joint venture in 2014). Margin growth will now be an even bigger focus for the group. The portfolio of branded products, many of which lead their categories, range from **EXCEDRIN** to **FLONASE** to **TUMS**.

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hard. The brief was a big change agenda: people, portfolio, results and culture," she wrote. "Change is good, but the outsiders leading it aren't usually the most popular."

But she got over those hang-ups, and ultimately made the "bungee jump"–like leap "into the unknown."

WALMSLEY BROUGHT her marketing chops and inherent ambition to the role. GSK's brands, from the denture adhesive cream Poligrip to its antacid product Tums, improved lives but didn't exactly inspire the consumers who used them. Over-the-counter brands, in fact, polled among the least popular brands on the planet. Walmsley asked, *Why shouldn't they be as beloved as Apple or Nike or Coca-Cola?,* and set out on a campaign to make them so.

The journey wasn't easy—the idea of lovable brands wasn't an instant hit with GSK's more science-minded folk—but WPP executive Alina Kessel says the effort and Walmsley's commitment invigorated marketing in the OTC industry. The campaign also coincided with strong business results, with GSK's consumer sales increasing 38% from $6.8 billion to $9.4 billion in the five years Walmsley served as its head, though some of this was due to a joint venture with Big Pharma peer Novartis.

"Consumer had been a sleepy little side organization that brought in a bit of revenue," recalls one former GSK senior executive. "Then all of sudden, she arrives and it's front and center, and you're hearing about it, and you're seeing change, and the marketing people are up onstage, and whoa, that gets interesting."

> **"Until you put the money where you say your strategy is, it's not your strategy."** Emma Walmsley CEO, GSK

In 2014, Walmsley's role became vastly more complex when the company brokered the deal with Novartis. The two firms did a swap—GSK got Novartis's vaccines unit for its oncology assets—and went in together on what became one of the world's largest OTC businesses. GSK's stake in the consumer joint venture was larger, and Walmsley became the new unit's CEO.

"Joint ventures are notoriously difficult, and they're often seen as unsuccessful," says Marvelle Sullivan Berchtold, who then ran M&A for Novartis and sat on the joint venture's board. (Berchtold, a managing director at JPMorgan Chase, recently helped launch the bank's much-heralded foray into health care with Amazon and Berkshire Hathaway.) Beyond the obvious integration challenges, many saw the corporate cultures of Novartis (Swiss and performance-driven) and GSK (British and all about stakeholder management) to be near polar opposites.

Walmsley wowed everyone. "It is hard to overstate how seamless that integration was," says Berchtold. "One could almost forget people often spend years disentangling problems [in joint ventures like this]." Walmsley even managed to keep the highest-level Novartis people on her team. "They spoke so well of her. They felt really very respected, but it was also really clear she was the boss," Berchtold says.

GSK chief digital and technology officer Karenann Terrell—one of Walmsley's first major hires as CEO—was Walmart's chief information officer at the time and witnessed the merging of the two businesses. The execution was flawless and noticed across the industry. "Everyone knew Emma," says Terrell. "Everyone."

That success marked Walmsley, even more than before, as CEO material. Yet when she got the top job, Walmsley approached the position cautiously. For six months prior to officially taking over, she embarked on a GSK listening tour, talking to people inside the company and out for their perspective on GSK.

Walmsley considered her "insider-outsider" status at GSK an advantage as she sought this feedback. She could see both perspectives, and then, just as important, translate it to those who could not.

Cue the session of GSK real talk that took place early in Walmsley's tenure when she gathered senior R&D leaders in a room in London and played for them a video of analysts giving their takes on GSK's R&D performance. "Almost uniformly, they all came back with pretty scathing assessments, saying, 'We don't think we would invest in this,'" says a former senior executive who was there.

The reaction in the room? Silence.

It was a "punch in the nose" for an R&D organization that thought highly of itself and thought the world thought highly of it too, the former exec says.

But the wake-up call, however harsh, was effective. It showed the framework from which Walmsley was working. Her message afterward, the former executive says, was, essentially, "Everything's on the table here. The world is saying it's broken. Let's see if we can fix it."

Right away, she had to perform the delicate dance of acknowledging Witty's much-extolled legacy within the company while addressing GSK's business shortcomings.

"GSK has led a lot on doing well by doing good, but we need to do better to be able to do more good," she told *Fortune* in June. (She declined to be interviewed for this story.) She credits Witty with doing an "amazing job" with GSK's vaccine and consumer businesses, but the company's third division—pharmaceuticals—is the linchpin of her strategy to revitalize the company. "At the heart of pharma is R&D," she said. "I want us to get back to our mojo around science and discovery and development again."

Slaoui, GSK's former R&D chief—he retired when Witty did—was back at GSK headquarters recently, and he noticed a couple of differences immediately. The executive offices were still on the first floor where Witty had moved them, but somehow, they were even more visible now. Everything had been painted white, giving the space a cleaner, sharper feel. "There is nowhere to hide now," he says.

Slaoui found some people energetic and reinvigorated by the new honest, urgent approach to leadership. Others were shaken and apprehensive about what might lie ahead. "GSK is in a different place now," he said. "It's changing."

For evidence, look no further than Walmsley's dramatically refreshed executive team. Leading the pharma group, notably, is Hal Barron, who previously led departments at Genentech and Calico, Google's secretive immortality lab. Barron had turned down many a Big Pharma post in the past, but he agreed to become GSK's new R&D chief this past November. Other recruits include Luke Miels, a seasoned pharmaceutical executive from crosstown rival AstraZeneca—a hire that sparked a nasty legal battle—and up-and-comers from Pfizer, Novartis, and HSBC.

Walmsley's executive team is highly visible—all participating in town halls and investor presentations—a noted departure in style. Witty tended to appear alone at such events. "The most important thing I can do is hire people who are aligned with the ambition and challenge of what we have to do ... [and] give them the freedom and accountability to use their expertise to make difficult decisions," she told *Fortune*.

> **"At the heart of pharma is R&D. I want us to get back to our mojo around science and discovery and development again."**
>
> **Emma Walmsley**
> CEO, GSK

Walmsley may have a more expansive definition of "freedom" than most bosses. Barron, whom Walmsley wooed to GSK over many FaceTime conversations, is based out of San Francisco, rather than one of the company's main research campuses. Walmsley says she appreciates his proximity there to innovation.

That is of course her current priority, and while Barron has been on board for less than a year, he's already made some bold moves, including forging the exclusive $300 million partnership with Silicon Valley–based genetic testing company 23andMe. GSK will now get to use the latter's anonymized genetic data to help validate biological targets for its would-be medicines. Such a deep reservoir of genetic data on millions of people, analysts say, could offer the kinds of insights that ought to boost the chances of developing a successful drug—a must in an industry in which currently only one in 10 drug candidates ever makes it to market. The data might also help in recruiting patients for clinical trials, a long and expensive process, though the two companies are still working out the details of their arrangement.

So far, some 17 months into Walmsley's reign, investors seem to be playing wait-and-see. GSK's share price is flat for the year.

As for former shareholder Woodford, he may be wondering if he Glaxited too soon. In November, just six months after ditching the stock, he admitted he was impressed by some of Walmsley's moves. "In time," he told Morningstar, "Glaxo might be back in the portfolio." ■


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1. WALMSLEY

01
Emma Walmsley
49, CEO
GlaxoSmithKline
U.K.
2017 RANK: ▲02

02
Ana Botín
57, Executive Chair
Banco Santander
SPAIN
▼01

03
Isabelle Kocher
51, CEO
Engie
FRANCE
●03

04
Dong Mingzhu
64, Chairwoman and President
Gree Electric Appliances
CHINA ●04

05
Shemara Wikramanayake
57, CEO Designate
Macquarie Group
AUSTRALIA
★NEW

6. CHUA

06
Chua Sock Koong
61, Group CEO
Singapore Telecommunications
SINGAPORE ●06

07
Alison Cooper
52, CEO
Imperial Brands
U.K.
▲08

08
Ho Ching
65, Executive Director and CEO
Temasek
SINGAPORE
▲10

09
Wan Ling Martello
60, EVP and CEO of Asia, Oceania, and Sub-Saharan Africa
Nestlé
SWITZERLAND ▲11

10
Isabel Ge Mahe
44, VP and Managing Director, Greater China
Apple
CHINA
▲12

13. PENG

11
Gillian Tans
48, CEO, Booking.com
Booking Holdings
THE NETHERLANDS
▲37

12
Wang Fengying
47, Vice Chairman and General Manager
Great Wall Motor
CHINA ▼09

13
Lucy Peng
45, CEO, Lazada
Alibaba
CHINA
▲18

14
Maria Ramos
59, CEO
Absa
SOUTH AFRICA
▲16

15
Wu Yajun
54, Chairwoman
Longfor Group
CHINA
▲19

17. RICHARDS

16
Maggie Wei Wu
50, CFO
Alibaba
CHINA
▼15

17
Anne Richards
54, CEO Designate
Fidelity International
U.K. ▲47

18
Véronique Laury
53, CEO
Kingfisher
U.K.
▲23

19
Ann Cairns
61, Vice Chairman
Mastercard
U.K.
▲35

20
Joey Wat
47, CEO
Yum China Holdings
CHINA
★NEW

21. GONZÁLEZ

21
Mayra González
41, President and Managing Director, Nissan México
Nissan
MEXICO ▲42

22
Olga Naumova
46, CEO
Magnit
RUSSIA
★NEW

23
Nancy McKinstry
59, Chairman and CEO
Wolters Kluwer
THE NETHERLANDS
▲28

24
Jessica Uhl
50, CFO
Royal Dutch Shell
THE NETHERLANDS
▲29

25
Jean Liu
39, President
Didi Chuxing
CHINA
●25

KEY ●NO CHANGE ▲MOVED UP ▼MOVED DOWN ◀RETURN ★NEW

1: SAREL JANSEN—COURTESY OF GSK; 6: COURTESY OF SINGAPORE TELECOMMUNICATIONS; 13: COURTESY OF LAZADA; 17: SIMON DAWSON—BLOOMBERG/GETTY IMAGES; 21: COURTESY OF NISSAN

By Erika Fry, Carson Kessler, Polina Marinova, Ellen McGirt, McKenna Moore, and Claire Zillman

26
Dominique Senequier
65, President
Ardian
FRANCE
▼20

27
Ornella Barra
64, Co-COO
Walgreens Boots Alliance
U.K.
▼13

28
Evelyn Bourke
53, CEO
Bupa
U.K.
★ NEW

29
Lubna Olayan
63, Deputy Chairperson and CEO
Olayan Financing
SAUDI ARABIA
▼22

30
Fama Francisco
50, President, Global Baby Care and Feminine Care
Procter & Gamble
SWITZERLAND
★ NEW


27. **BARRA**

31
R. Alexandra Keith
50, President, Global Hair Care and Beauty
Procter & Gamble
SWITZERLAND
▼26

32
Jane Jie Sun
49, CEO
Ctrip
CHINA
▲38

33
Birgitte Bonnesen
62, CEO and President
Swedbank AB
SWEDEN
★ NEW

34
Wei Sun Christianson
62, Co-CEO, Asia-Pacific; CEO, China
Morgan Stanley
CHINA ▲39

35
Elizabeth Gaines
54, CEO
Fortescue Metals Group
AUSTRALIA
★ NEW


35. **GAINES**

36
Han Seong-Sook
51, CEO
Naver
SOUTH KOREA
▲41

37
Carolyn McCall
57, CEO
ITV
U.K.
▼24

38
Belinda Wong
47, CEO, Starbucks China
Starbucks
CHINA
★ NEW

39
Rachel Duan
48, SVP, GE; President and CEO, GE Greater China
General Electric
CHINA ▼30

40
Adaire Fox-Martin
54, Executive Board; Copresident, Global Customer Operations
SAP
GERMANY ▼31


38. **WONG**

41
Güler Sabanci
63, Chairman
Sabanci Holding
TURKEY ▼17

42
Margarita Louis-Dreyfus
56, Chairperson of Supervisory Board
Louis Dreyfus Holding
SWITZERLAND ▲44

43
Rakefet Russak-Aminoach
52, President and CEO
Leumi Group
ISRAEL
◀ RETURN

44
Cheung Yan
61, Chairwoman
Nine Dragons Paper
CHINA
★ NEW

45
Yang Huiyan
37, Vice Chairman
Country Garden Holdings
CHINA
★ NEW


41. **SABANCI**

46
Nayla Hayek
67, CEO, **Harry Winston;** Chairman, **Swatch Group**
SWITZERLAND ★ NEW

47
Alice Vaidyan
59, Chairman and Managing Director
General Insurance Corporation of India
INDIA ★ NEW

48
Linda Hasenfratz
52, CEO
Linamar Corp.
CANADA
◀ RETURN

49
Nunu Ntshingila
54, Head of Africa
Facebook
SOUTH AFRICA
★ NEW

50
Melanie Kreis
47, CFO
Deutsche Post DHL
GERMANY
▼48

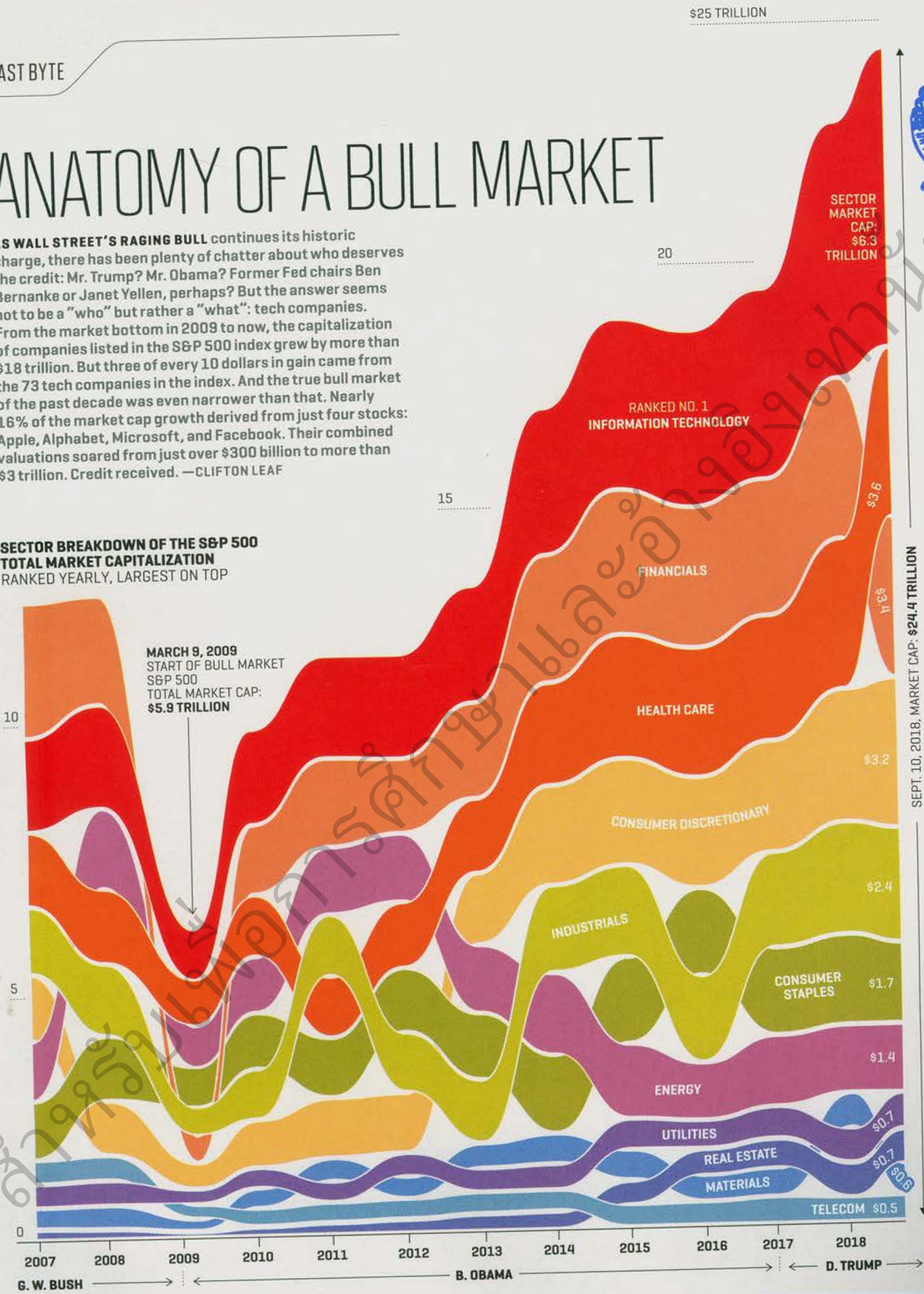

47. **VAIDYAN**

27: TAYLOR CASTLE; 35: BRENDON THORNE—BLOOMBERG VIA GETTY IMAGES; 38: COURTESY OF STARBUCKS; 41: COURTESY OF SABANCI HOLDING; 47: COURTESY OF GENERAL INSURANCE

ANATOMY OF A BULL MARKET

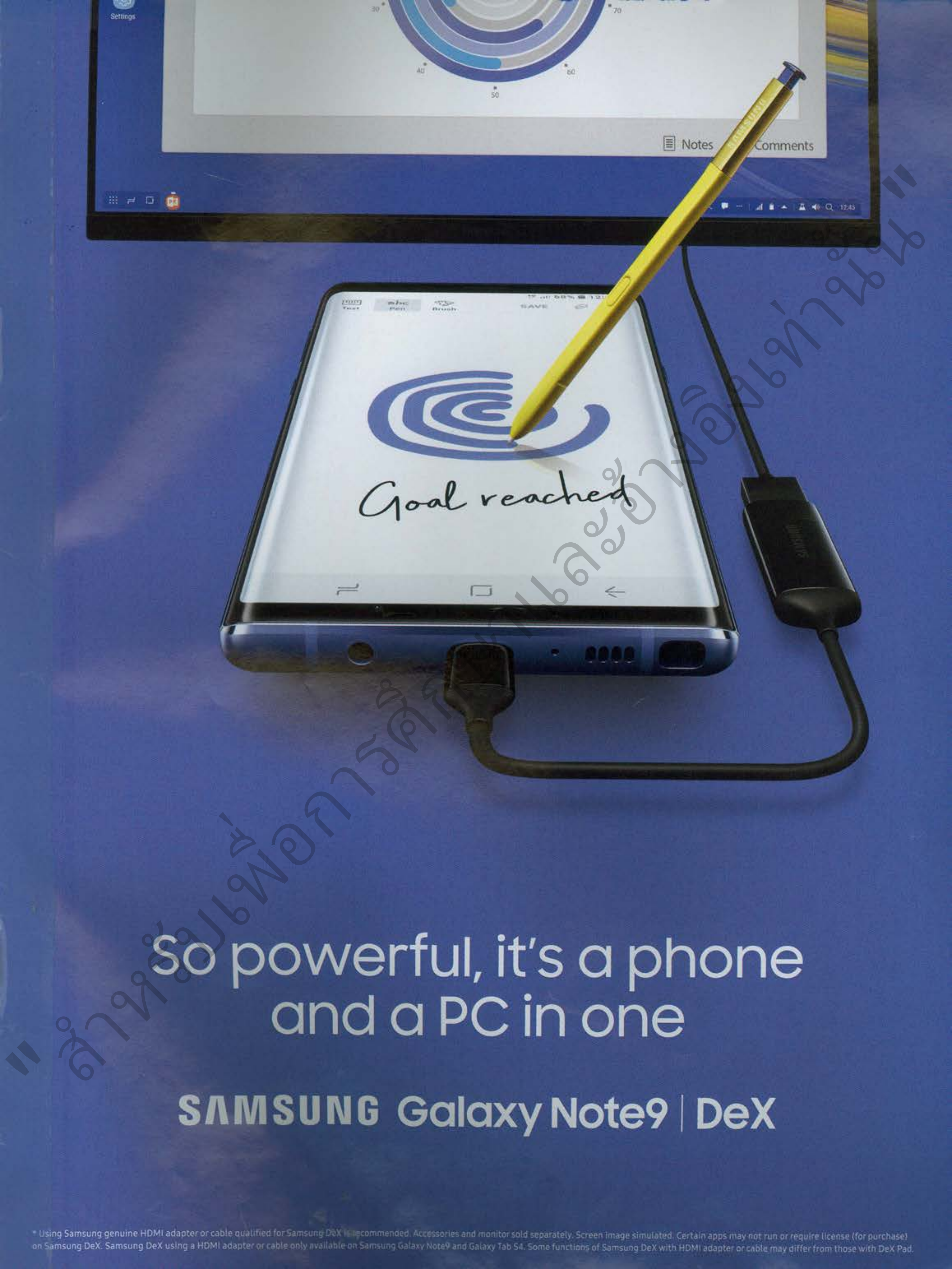
AS WALL STREET'S RAGING BULL continues its historic charge, there has been plenty of chatter about who deserves the credit: Mr. Trump? Mr. Obama? Former Fed chairs Ben Bernanke or Janet Yellen, perhaps? But the answer seems not to be a "who" but rather a "what": tech companies. From the market bottom in 2009 to now, the capitalization of companies listed in the S&P 500 index grew by more than $18 trillion. But three of every 10 dollars in gain came from the 73 tech companies in the index. And the true bull market of the past decade was even narrower than that. Nearly 16% of the market cap growth derived from just four stocks: Apple, Alphabet, Microsoft, and Facebook. Their combined valuations soared from just over $300 billion to more than $3 trillion. Credit received. —CLIFTON LEAF

SECTOR BREAKDOWN OF THE S&P 500 TOTAL MARKET CAPITALIZATION
RANKED YEARLY, LARGEST ON TOP



SOURCE: S&P GLOBAL

▲ GRAPHIC BY NICOLAS RAPP



Settings
Notes
Comments
Goal reached
So powerful, it's a phone and a PC in one
SAMSUNG Galaxy Note9 | DeX
* Using Samsung genuine HDMI adapter or cable qualified for Samsung DeX is recommended. Accessories and monitor sold separately. Screen image simulated. Certain apps may not run or require license (for purchase) on Samsung DeX. Samsung DeX using a HDMI adapter or cable only available on Samsung Galaxy Note9 and Galaxy Tab S4. Some functions of Samsung DeX with HDMI adapter or cable may differ from those with DeX Pad.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