INTERNET OF THINGS GETS REAL • MIRACLE-GRO GETS STONED

JULY 26, 2016

Forbes

AMERICA'S 25 RICHEST FAMILIES

KIM KARDASHIAN

SHE MADE $45 MILLION FROM ONE GAME

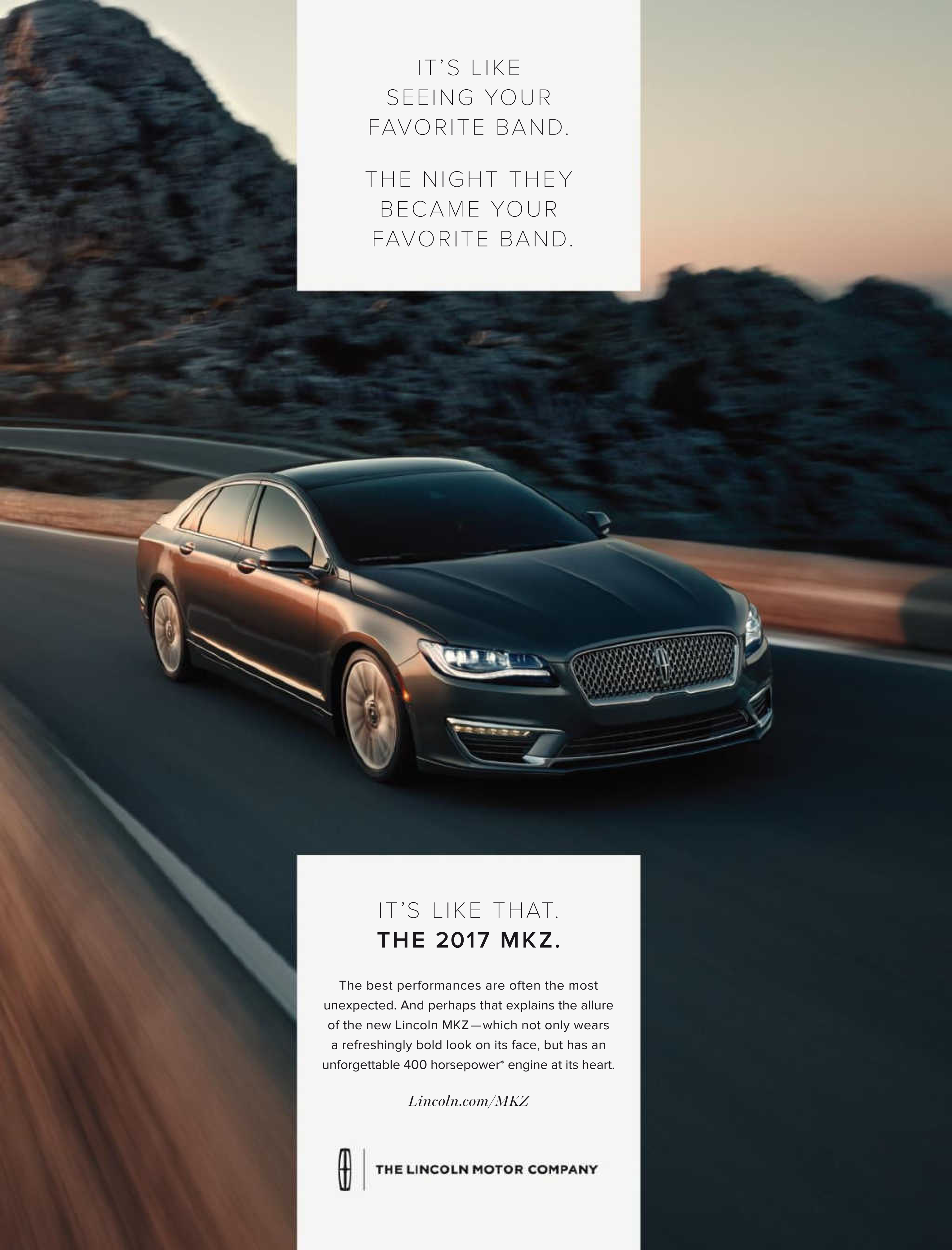
THE NEW MOBILE MOGULS

HOW ANYONE WITH A FOLLOWING CAN CASH IN.

PLUS: THE WORLD'S 100 TOP-EARNING CELEBRITIES


KPMG Voice
WHAT'S NEXT AFTER AN ERA OF RAPID INNOVATION
Forbes
CHRISTINA LOMASNEY
COFOUNDER AND CEO, MODUMETAL
THE GREAT REWRITE
PLANET 2.0
BrandVoice WITH KPMG
MEET THE PEOPLE TRANSFORMING OUR FUTURE

*2017 MKZ equipped with available 3.0L engine and AWD. Horsepower rating achieved with 93-octane fuel.


IT'S LIKE
SEEING YOUR
FAVORITE BAND.
THE NIGHT THEY
BECAME YOUR
FAVORITE BAND.
IT'S LIKE THAT.
THE 2017 MKZ.
The best performances are often the most unexpected. And perhaps that explains the allure of the new Lincoln MKZ—which not only wears a refreshingly bold look on its face, but has an unforgettable 400 horsepower* engine at its heart.
Lincoln.com/MKZ
THE LINCOLN MOTOR COMPANY

Contents // July 26, 2016

VOLUME 198 NUMBER 1

Forbes

ON THE COVER

ON THE COVER: PHOTOGRAPHED IN LOS ANGELES BY JAMEL TOPPIN FOR FORBES

KIM KARDASHIAN WEARS A TOP BY BASSIKE AND SKIRT BY SOPHIE THEALLET; CHOKER IS KIM'S OWN

HAIR BY JEN ATKIN FOR THE WALL GROUP; MAKEUP: ARIEL TEJADA; STYLING: RENELOU PADORA; STYLIST ASSISTANT: MYRLAUN WALKER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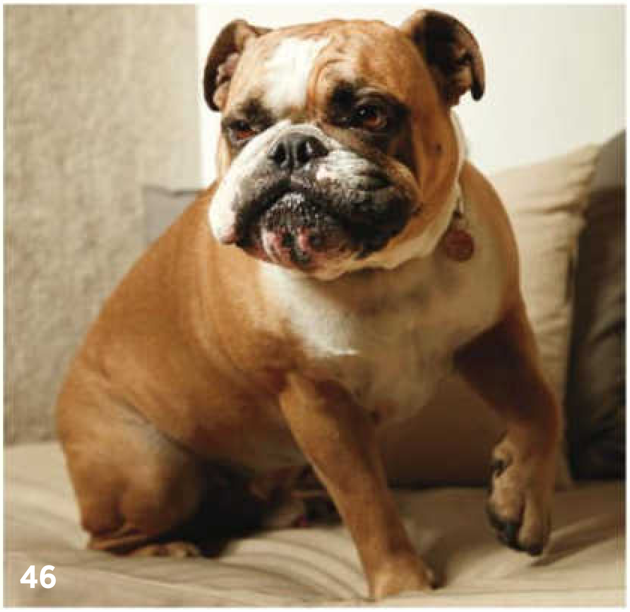
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ForbesBrandVoice

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JULY 26, 2016 —VOLUME 198 NUMBER 1

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INSIDE SCOOP

Our Vision and Strategy Ignite an Audience

BY LEWIS D'VORKIN

THIS WASN'T SUPPOSED to happen in the digital era. Magazines, everyone said, would die. A generation weaned on the Web would have no use for print. Millennials, well, they spend their time on Facebook.

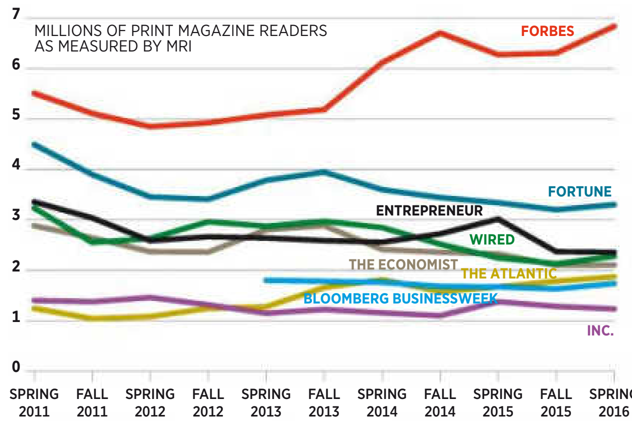
Not so fast—at least for FORBES. Check out the chart below. Our readership is growing, as measured by market research firm MRI, the go-to source for statistics like these. Then scan our top ten most-read issues (again, according to MRI). Six of them came within the last calendar year.

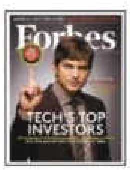
I have a simple explanation. Today's entrepreneurs are even more in synch with our brand mission than risk takers who came before. In fact, they're the very same people who go to Forbes.com, now with 45 million monthly visitors (as measured by comScore), quadruple what it was six years ago.

So digital and print can live together—as long as the vision and the strategy are right. F

MAGAZINE RISING:
BUCKING INDUSTRY TRENDS TO LEAD THE WAY

MRI AUDIENCE TREND





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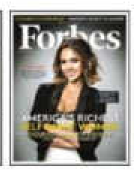
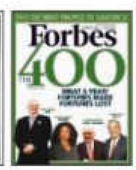
APR. 19, 2016

8,787,000
OCT. 19, 2015



8,350,000
JUNE 15, 2015



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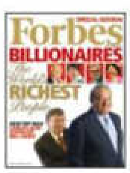
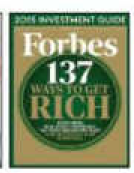
OCT. 19, 2009

8,038,000
SEPT. 7, 2015



7,892,000
MAR. 29, 2010



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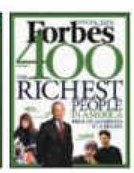

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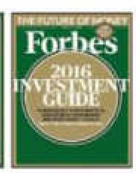
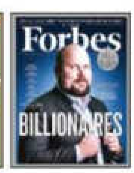
OCT. 6, 2008



7,446,000
DEC. 28, 2015



7,420,000
MAR. 23, 2015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TOO LATE. SHE JUST CHANGED IT.
ENGAGEMENT IS LIVE.
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Run Simple
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BREXIT
THE UGLY AFTERMATH

BY STEVE FORBES, EDITOR-IN-CHIEF

THE BILL to the world for Brexit will be huge, far beyond the stock market hits it let loose.

• **Uncertainty.** Investment is critical for growth and a higher standard of living. Capital spending has been stagnant in most of the world since 2008–09, thanks to higher taxes, a tsunami of new regulations and highly harmful central bank policies. Brexit will compound these obstacles for Europe and the U.K. Why put money at risk if you don't even know what the rules will be? An already sluggish world economy will slow even more.

• **The unraveling of the EU.** To prevent another European-instigated world war, post-WWII diplomacy has focused on tying European countries together. This effort has been astonishingly successful. Despite centuries of bloody rivalries, a war among EU nations, particularly between France and Germany, is inconceivable today.

But ugly forces are once again stirring because of chronic economic stagnation and massive Mideast immigration. Xenophobic parties of the kind that plagued Europe before WWII are on the rise in France, Austria, Hungary and elsewhere. Ominously, Germany is not immune to antiliberal impulses. The most popular figure there is a member of the Green Party. The second most popular is the foreign minister, a socialist, who has declared that the sanctions against Russia for its aggression in Crimea and Ukraine are a "provocation," and who wants Berlin to distance itself from Washington and work more closely with Moscow.

• **The threat of aggression grows.** Most immediately ominous are the ambitions of Russia. Vladimir Putin wants to achieve what the old Soviet Union never could: domination of Europe. The EU's existential crisis, exacerbated by Brexit, plays right into his malignant hands. Europe's disarray will tempt Putin to subjugate the Baltic nations of Estonia, Latvia and Lithuania under the pretense of protecting Russian minorities there, who, by the way, have no desire to be Moscow's subjects again. These states are part of NATO, and the U.S. and other NATO members are under treaty obligation to defend them from a Russian assault. A Munich-like capitulation by President Obama would destroy NATO, the alliance that enabled the West to win the Cold War. The Balts are visibly fearful that their days of independence are numbered. Poland is also increasingly anxious about its security.

The U.S. and NATO are planning to station an additional NATO battalion in each Baltic country and in Poland. None of this will deter a determined Putin.

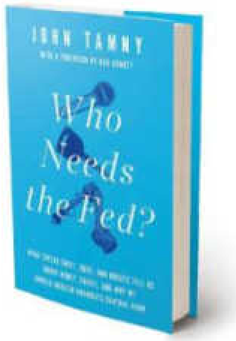
• **Central banks will double down on their failed policies.** The Federal Reserve, the European Central Bank (ECB) and the Bank of Japan (BOJ) have engaged in antigrowth policies. (The Bank of England has been less of a sinner in this regard.) The suppression of interest rates and the binge buying of long-term bonds have destructively distorted credit markets, restricting capital to small and new enterprises (*see p. 12*). Like doctors of old who kept bleeding their patients even when they didn't get better, leaders of the ECB and BOJ are feverishly stepping up their economic malpractice.

The Federal Reserve's painfully slow liberalization of interest rates will continue to drag on. While not expanding its bloated bond portfolio, the Fed is elongating maturities, which exacerbates the malfunctions of our financial markets.

• **Survival of the U.K.** Scottish nationalists took heart from the Brexit vote. Scotland was overwhelmingly in favor of remaining in the EU, and secessionists think they could now win an independence referendum. The only good thing about the post-Brexit turmoil is that it may give moderate Scots pause: Political divorce can be as painful and messy as the personal kind.

Still unknown is what will unfold in Northern Ireland, which also voted against Brexit.

Too Bad Keynes Couldn't Have Read This Book



John Tamny's latest effort, **Who Needs the Fed?** (Encounter Books, $25.99), with its seemingly simple but profound insights, will fundamentally reshape how monetary policy is viewed and made. It will retain its potency for years to come because it's written in such a jargon-free and entertaining way. No other treatise on money would use Taylor Swift, Donald Trump, LeBron James, legendary football coaches Nick Saban and Jim Harbaugh, robots and the now-classic film *Splash* to skillfully illustrate points of principle.

Today the U.S. and the world are suffering grievously from a cart-before-the-horse mentality when it comes to how central banks approach money. Reflecting obsolete thinking that grew out of a misdiagnosis of what caused the Great Depression, these institutions and their political masters believe that money controls the economy. Manipulate interest rates—the price lenders charge borrowers—and, voilà!, you can steer the economy like a driver does a car. Regarding this, Keynes and his followers had it exactly backward. Money *reflects* the real economy, which is the production of products and services. It no more directs what we buy and sell than scales control a person's weight. Money is not wealth; it *measures* value the way watches measure time. Money is a *claim* on services and products, just as a ticket can be a claim on attendance at a concert or for a coat checked at a restaurant.

Tamny hammers home the truth that money and credit are not conjured up out of thin air by governments and banks. When you borrow money, you are borrowing real resources created by people. Otherwise, Zimbabwe, Argentina and other chronic debasers of money would be global powerhouses.

This backward way of looking at monetary policy is a critical cause of the current global economic malaise. Quantitative easing, zero or now-negative interest rates and the hyperregulation of banks have deformed credit markets everywhere. Small and new businesses are deprived of adequate credit. "When [the Fed] 'eases' or 'tightens' credit, it, at best, distorts where economic resources migrate."

Tamny deftly explodes a number of other pernicious myths. Among them:

• **Banks multiply money.** That's what we're taught in school, but it's nonsense. When someone borrows money, that may increase some arbitrary measure of "money supply" like M2. But that act of borrowing doesn't increase the real resources of an economy any more than a landlord "lending" (renting) an apartment increases the real number of apartments.

• **A rising money supply is inflationary.** By that criterion Switzerland should be experiencing hyperinflation. Because of consistently sound management of the franc, Switzerland's currency is one of the most highly desired in the world.

• **A central bank that "creates" more money or a government that spends more money will generate prosperity.** By the Fed's way of thinking, increasing Baltimore's money supply would bring better times. No, it would not. Those resources would quickly find their way out of that anti-growth, antipolice and regulation-ridden city. In contrast, even if the Fed were to try to suppress the "money supply" in Silicon Valley, it would remain disproportionately large.

Tamny has unconventional takes on the future of our suffocatingly regulated banks (because big opportunities have been suppressed, the best talent will migrate away), the Federal Reserve (the power of that destructive institution will decline) and Bitcoin (its volatility will be its undoing).

As for the ultimate in unconventional wisdom, Tamny suggests that perhaps Congress should define the dollar as a certain weight in gold and then leave the "creation of actual money to the private sector ... [and] fully legalize private money."

Cruisin' to Wealth

This year is shaping up to be one of the most turbulent ever. The presidential campaign has completely defied all predictions and expectations. Europe is in turmoil because of Britain's stunning decision to leave the EU. Global economies are faltering. Interest rates are going negative. What's an investor to do?

One wise move would be to sign up for the 26th Forbes Cruise for Investors: Nov. 29–Dec. 6, sailing from San Juan, P.R. to New Orleans, with stops at St. Barts, St. Kitts and Key West, Fla.

When not touring, you'll be able to harvest profitable insights from longtime FORBES columnist and highly esteemed money manager Ken Fisher; Fox TV investing star Elizabeth MacDonald; one of the world's most insightful (and spellbinding) energy and technology experts, Mark Mills; and the outstanding economist Stephen Moore. I will be sharing post-election observations. Acting as master of ceremonies will be the scintillating host of *FORBES on Fox*, David Asman.

You won't want to miss this opportunity for relaxation and fattening up your pocketbook.

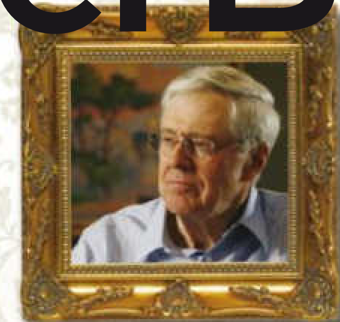
LeaderBoard

July 26, 2016

When New York's Four Seasons restaurant closes this month after 57 years, the birthplace of the power lunch will auction its collection of modernist furniture, including Philip Johnson banquettes and Eero Saarinen Tulip tables. Even the dishes, emblazoned with the iconic logo designed by Emil Antonucci in 1959, are up for sale. **PAGE 22**

Forbes LeaderBoard

1. WALTON
$130 bil ▼ 7 members
Wal-Mart recently announced plans to shutter all 102 of its smaller-format Walmart Express stores in the U.S.



2. KOCH
$82 bil ▼ 4 members
Politically powerful brothers Charles and David run conglomerate Koch Industries, maker of Brawny paper towels, Dixie cups and more.

3. MARS
$78 bil ▼ 3 members
Trio of siblings owns the world's largest candy company, which is lately vowing to limit the amount of sugar in the confections it makes.

THE RICH LIST

America's Wealthiest Families

GREAT FORTUNES ARE notoriously easy to lose. Not so for the nation's richest clans, however, who have bucked the odds and held on to their wealth for generations, in some cases since the 19th century. Collectively, the 25 wealthiest American families are worth $722 billion, down $11 billion (1.5%) from a year ago.

These scions of some of America's great business founders own such classic brands as Campbell's soup, Windex, Hyatt Hotels and more. Among them are names familiar (Walton, Rockefeller) and less so (Sackler, Duncan). One newcomer is likely the least known of all: the Goldman family, whose late patriarch, Sol (1917–87), quietly purchased hundreds of properties across New York City. For more, please visit forbes.com/families.

4. CARGILL/MACMILLAN
$49 bil ▲ 23 members (est.)
Fourteen billionaire heirs hold stakes in the agribusiness titan, America's largest private company.

5. COX
$41 bil ▲ 5 members
Onetime newspaper empire now mostly involved in cable television and the automotive industry.

6. S.C. JOHNSON
$30 bil ▲ 13 members (est.)
Cleaning-products giant is run by the family's fifth generation.

7. PRITZKER
$29 bil ▼ 13 members
Hyatt hotel clan feuded over trusts, eventually divvied up a diverse fortune.

8. (EDWARD) JOHNSON
$28.5 bil ▲ 4 members
Boston-based brood owns nearly half of mutual-fund behemoth Fidelity Investments.

9. HEARST
$28 bil ▼ 67 members
William Randolph Hearst III chairs the media group started by his grandfather in 1887.

10. DUNCAN

$21.5 bil ▼ 4 members

Dan Duncan's children have doubled their fortune since inheriting massive pipeline company Enterprise Products Partners.

11. NEWHOUSE

$18.5 bil ▲ 3 members

Weakness in print media offset by $11.4 billion sale of cable-TV firm Bright House Networks to Charter Communications.

12. LAUDER

$17.9 bil ▲ 6 members

Makeup mavens run Estée Lauder, home to such brands as Clinique, Bobbi Brown and M-A-C.

13. DORRANCE

$17.1 bil ▲ 11 members (est.)

Heirs to Campbell's fortune share spoils of John T. Dorrance's 119-year-old condensed-soup formula.

14. ZIFF

$14.4 bil ▼ 3 members

Three brothers' fortune stems from the 1994 sale of publishing business Ziff Davis.

15. DU PONT

$14.3 bil ▼ 3,500 members (est.)

This past December the chemical giant announced plans to merge with rival Dow Chemical; government antitrust review proceeds apace.

16. HUNT

$13.7 bil ▼ 33 members

Oil-and-gas heirs have branched out over time into real estate, hotels and the NFL's Kansas City Chiefs.

16. GOLDMAN

$13.7 bil ★ 7 members

Children of the late Sol Goldman *(see "Towering Fortune," p. 18)* own 400 properties across New York City.

18. BUSCH

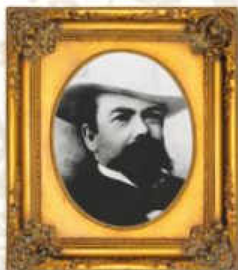
$13.4 bil ▼ 30 members (est.)

Family sold Budweiser beer—now known as "America," at least through election day—to Brazilian investors in 2008.

19. SACKLER

$13 bil ▼ 20 members (est.)

Sales of painkiller OxyContin, made by family's Purdue Pharma, have slowed.



20. BROWN

$12.3 bil ▼ 25 members (est.)

Booze barons make Jack Daniel's, Finlandia vodka, Herradura tequila and more.

21. MARSHALL

$12 bil ▲ 3 members (est.)

Late oilman J. Howard Marshall II traded shares in a petroleum company for a stake in Koch Industries.

22. MELLON

$11.5 bil ▶ 200 members (est.)

Immigrant Thomas Mellon made money in land, coal and banking in the 1800s.

23. BUTT

$11 bil ▲ 5 members

Family owns H-E-B Grocery of Texas, founded by Florence Butt in 1905.

23. ROCKEFELLER

$11 bil ▶ 174 members

Nineteenth-century titan John D. Rockefeller created the family fortune with Standard Oil.

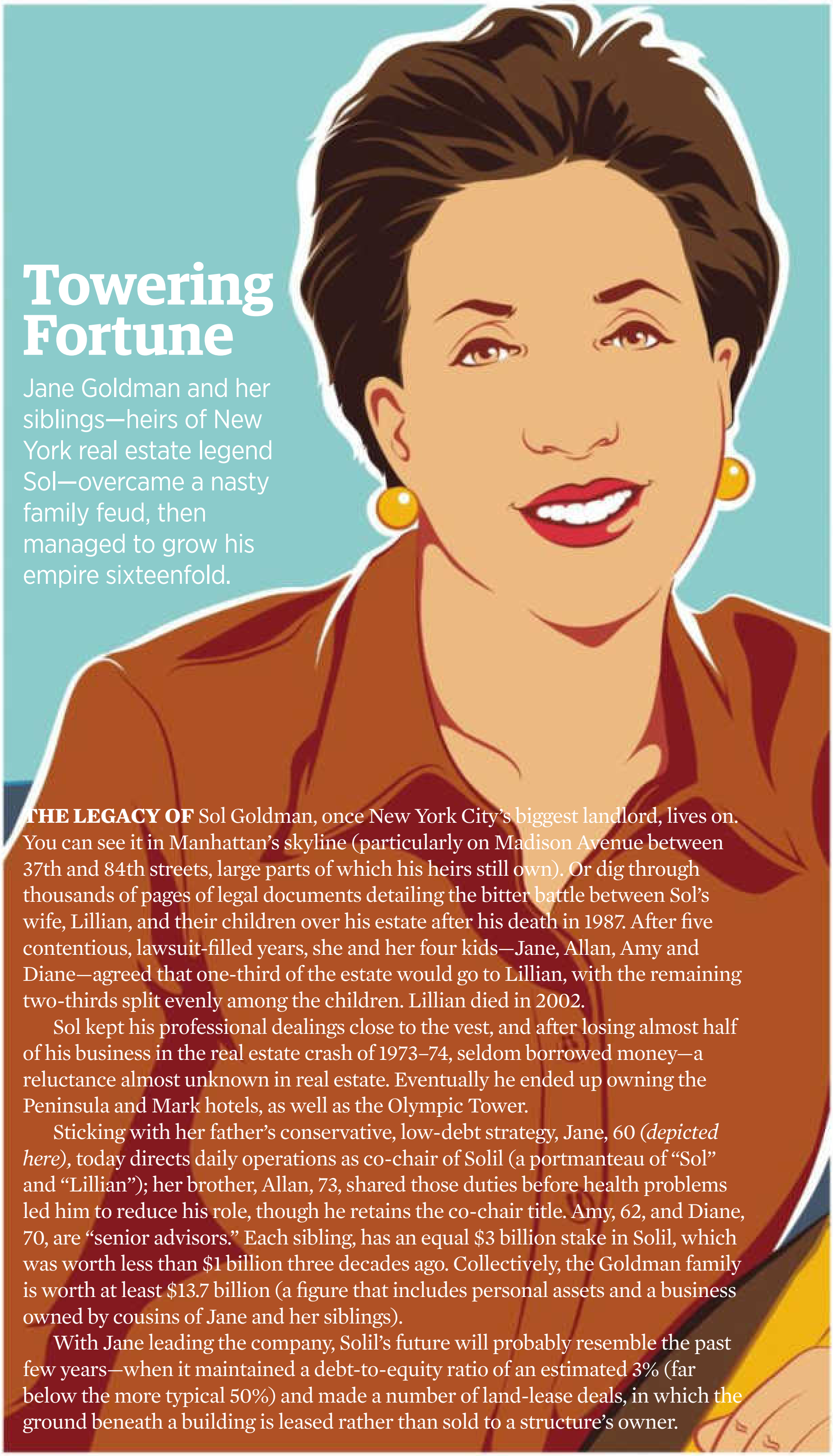
25. GALLO

$10.7 bil ▲ 17 members (est.)

California clan owns the world's largest family-owned winery and a dairy farm.

EDITED BY KERRY A. DOLAN

NEW BILLIONAIRE



Towering Fortune

Jane Goldman and her siblings—heirs of New York real estate legend Sol—overcame a nasty family feud, then managed to grow his empire sixteenfold.

THE LEGACY OF Sol Goldman, once New York City's biggest landlord, lives on. You can see it in Manhattan's skyline (particularly on Madison Avenue between 37th and 84th streets, large parts of which his heirs still own). Or dig through thousands of pages of legal documents detailing the bitter battle between Sol's wife, Lillian, and their children over his estate after his death in 1987. After five contentious, lawsuit-filled years, she and her four kids—Jane, Allan, Amy and Diane—agreed that one-third of the estate would go to Lillian, with the remaining two-thirds split evenly among the children. Lillian died in 2002.

Sol kept his professional dealings close to the vest, and after losing almost half of his business in the real estate crash of 1973–74, seldom borrowed money—a reluctance almost unknown in real estate. Eventually he ended up owning the Peninsula and Mark hotels, as well as the Olympic Tower.

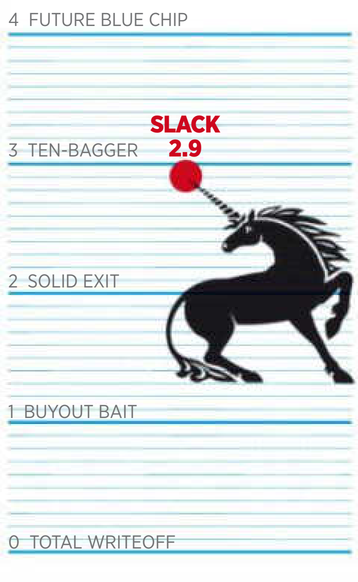
Sticking with her father's conservative, low-debt strategy, Jane, 60 *(depicted here)*, today directs daily operations as co-chair of Solil (a portmanteau of "Sol" and "Lillian"); her brother, Allan, 73, shared those duties before health problems led him to reduce his role, though he retains the co-chair title. Amy, 62, and Diane, 70, are "senior advisors." Each sibling, has an equal $3 billion stake in Solil, which was worth less than $1 billion three decades ago. Collectively, the Goldman family is worth at least $13.7 billion (a figure that includes personal assets and a business owned by cousins of Jane and her siblings).

With Jane leading the company, Solil's future will probably resemble the past few years—when it maintained a debt-to-equity ratio of an estimated 3% (far below the more typical 50%) and made a number of land-lease deals, in which the ground beneath a building is leased rather than sold to a structure's owner.

UNICORN METER

Promising Conversation

IT'S THE TALK of Silicon Valley—and the buzz around messaging app Slack is all positive, according to our recent poll of the FORBES Midas List, the world's greatest venture capitalists.



SCORECARD

REID HOFFMAN

+$770 MILLION

NET WORTH: $3.7 BILLION

Microsoft will pay $26.2 billion to add Hoffman's LinkedIn to its professional network. The all-cash bid—Microsoft's biggest-ever acquisition—sent LinkedIn shares up 47% the day the deal was announced.

NEW BILLIONAIRE BY CHLOE SORVINO; UNICORN METER BY ABRAM BROWN
ILLUSTRATION BY ARRON SACCO; DAVID PAUL MORRIS/BLOOMBERG (BOTTOM RIGHT)


Cognitive inventory is here.
When a product is "hot," how do you keep the right styles and sizes in stock and ready for customers to buy? To help reduce lost sales, major retailers can use cognitive technology to look at structured data like sales reports and unstructured data like tweets and weather feeds. When your business thinks, you can outthink.
outthink trends
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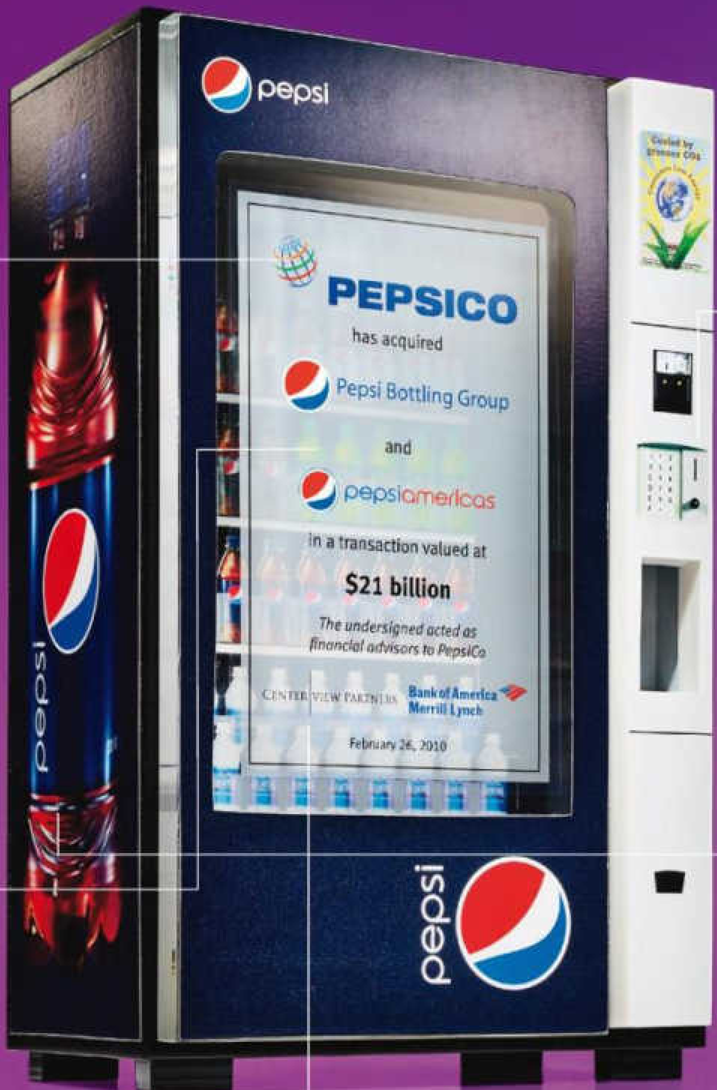
DEAL TOY

Soda Pep

In 2010 Pepsi reacquired two of its independent bottling divisions, hoping for fizzier profits.



SPIN (OFF) THE BOTTLE
In the late 1990s Pepsi streamlined, spinning off fast-food operations (Taco Bell, KFC and Pizza Hut, now collectively known as Yum Brands) and its North American bottling businesses. A decade later, though, CEO Indra Nooyi, at the helm since 2006, decided that more control over production and distribution would caffeinate the bottom line.

CUP RUNNETH OVER
By agreeing to acquire Pepsi Bottling and Pepsi-Americas in August 2009, Pepsi consolidated 80% of its North American beverage manufacturing, sales and distribution under its own roof, boasting at the time of $400 million in expected annual savings.

LOOSE CHANGE
Pepsi's dealmaking hasn't delivered tastier profits. Net income, $5.5 billion in 2015, is down 14% from five years earlier; the stock price has been as flat as a week-old 2-liter. It has kept pace with eternal rival Coke, though, and Nooyi beat back a challenge from activist investor Nelson Peltz, who had a $1.8 billion stake and called for a split of Pepsi's beverage business and its Frito-Lay snack empire.

THE PEPSI CHALLENGE
As Pepsi reunited with its bottlers, investors gulped down shares of Coke bottler Coca-Cola Enterprises. Just before Pepsi's transaction closed, Coke CEO Muhtar Kent agreed to his own deal, swapping foreign bottling assets for CCE's North American portfolio and causing CCE's stock to shoot up 33% in a day.

RUSSIAN RECONNAISSANCE
Investment banker Blair Effron, cofounder of boutique Centerview Partners, had a hand in most big consumer-products deals of the past decade. After Pepsi reacquired its bottling operations, Effron helped Nooyi chase global growth with its 2010 acquisition of Russian dairy-and-juice company Wimm-Bill-Dann.

BY STEVE SCHAEFER
PHOTOGRAPH: SAM KAPLAN FOR FORBES

LeaderBoard

RICHEST BY STATE

Michigan

POPULATION: **9.9 MILLION**

2014 GROSS STATE PRODUCT: **$459 BILLION** (1.9% GROWTH)

GSP PER CAPITA: **$46,321** (RANKS NO. 37 NATIONWIDE)

RICHEST: **DAN GILBERT, $4.9 BILLION**

WHEN DAN GILBERT'S Cleveland Cavaliers made history last month—clinching the NBA crown after the city's five-decade championship drought—it was the most expensive NBA title ever. The Cavs' record $107 million payroll far surpassed the NBA's salary cap, forcing Gilbert to fork over more than $50 million to the league as a "luxury tax." He seemed perfectly content with his decision after his team's triumph, declaring, "No fan base deserves this more."

In another Midwest city, Gilbert, 54, is a savior of a different kind. He has spent $2.2 billion buying and renovating more than 80 downtown Detroit buildings to lure young talent to his Quicken Loans. Founded as a brick-and-mortar lender in 1985, Quicken took off in the late 1990s when Gilbert launched a website to offer mortgages in all 50 states from one office. He took the company public in 1998, made $320 million from its sale to Intuit a year later and bought it back for $64 million after the tech bubble burst. It's now America's largest online retail mortgage lender, closing $220 billion in loans since 2013.

The next struggling enterprise he hopes to turn around: Yahoo. Gilbert has reportedly made a bid for the ailing tech giant (neither would comment for this story), and Gilbert's pal Warren Buffett says he might finance the deal.

SCORECARD

ALIKO DANGOTE

–$3 BILLION

NET WORTH: $14.1 BILLION

Africa's richest man lost nearly a quarter of his fortune when Nigeria's government removed the naira's peg to the dollar, sending the currency down 30% in a single day.

ON THE BLOCK

Custom banquettes, including this one, which was Philip Johnson's. (Estimate: $3,000–$5,000.)

Moveable Feast

Your favorite table at New York's Four Seasons will now always be available.

STARTING THIS MONTH, you'll no longer be able to make a reservation at New York's iconic Four Seasons Restaurant—but you can still get a table. Or some chairs. An entire banquette, even. On July 16 the birthplace of the power lunch is leaving the landmarked Philip Johnson–designed space in the Seagram Building that has been its home since 1959. Ten days later Wright Auctions will be selling the restaurant's entire contents—approximately 500 lots—including Mies van der Rohe Barcelona chairs, Tulip tables by Eero Saarinen and sofas designed by Johnson. Here's a taste of what's up for bid.

Barcelona chairs and ottomans by Ludwig Mies van der Rohe. (Estimate: $5,000–$7,000 each.)

Tableware and cookware by L. Garth and Ada Louise Huxtable. (Serving bowl estimate: set of 3, $1,500–$2,000.) The Chair *(left)* by Hans Wegner. (Estimate: set of 4, $4,000–$6,000.)

RICHEST BY STATE BY CHASE PETERSON-WITHORN; ON THE BLOCK BY MICHAEL SOLOMON
ILLUSTRATION BY CHRIS LYONS; MICHAEL PRINCE (BOTTOM LEFT)

LeaderBoard

30 UNDER 30

The Young Ones

Burgeoning talent from the FORBES 30 Under 30, in 30 words or less.

STACEY FERREIRA

FORGE | 23

Ferreira launched her first venture in high school and dropped out of NYU to take a Thiel fellowship. Forge, her work-scheduling app, is currently in beta testing.

COLIN CARLSON

UNIVERSITY OF CALIFORNIA, BERKELEY | 19

Carlson finished college at 15, while his peers were still in high school; today his doctoral research focuses on how parasites are threatened by climate change.

MEGAN GRASSELL

YELLOWBERRY | 20

Yellowberry's success as a Victoria's Secret alternative for teenage girls continues: The company launches its first line of quick-drying sun-protection athletic swimwear on Kickstarter this month.

KARAN JERATH

THE UNIVERSITY OF TEXAS AT AUSTIN | 19

In high school Jerath invented a wellhead capable of mitigating an underwater oil spill; it's now patent pending. This fall he'll present at the International Society of Petroleum Engineers' conference.

ARI WEINSTEIN

DESKCONNECT | 22

MIT dropout Weinstein bagged college to streamline your weekdays, developing popular apps DeskConnect and Workflow, which make it easier to work across platforms and devices.

CHRIS DROSE

BLEECKER STREET RESEARCH | 22

Drose earned an English degree in May. The next month he published critical research on a ChromaDex board member; the company's stock price saw a 50% same-day drop.

SCORECARD

BRITISH BILLIONAIRES

–$18 BILLION

Amount the U.K.'s 50 richest lost the day after Britain voted to leave the European Union. The ten fortunes most affected:

1.
Gerald Cavendish Grosvenor and family
$2.3 BIL

2. (tie)
David Reuben
$1.6 BIL

Simon Reuben
$1.6 BIL

4.
Bruno Schroder and family
$930 MIL

5.
Peter Hargreaves
$730 MIL

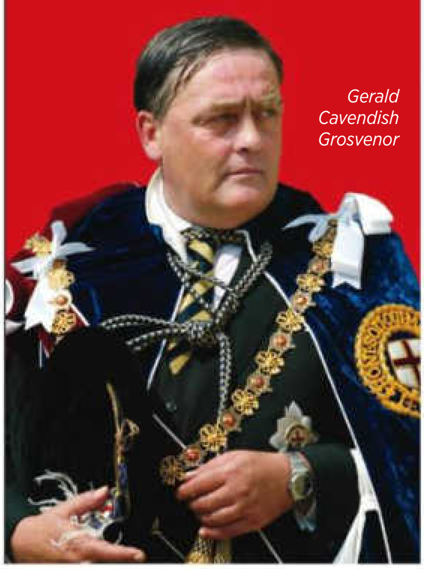
6.
James Ratcliffe
$700 MIL

7.
Denise Coates
$630 MIL

8.
Michael Ashley
$550 MIL

9. (tie)
Ian Livingstone
$470 MIL

Richard Livingstone
$470 MIL



Gerald Cavendish Grosvenor

30 UNDER 30 BY KATHRYN DILL
ILLUSTRATIONS BY PATRICK WELSH; REUTERS


10 SECRETS TO CLOSING THE SALE
P HARRISON
DATA TECHNOLOGIES
EXPRESS AIRLINES
BOARDING PASS
BOARDING PASS
EXPRESS AIRLINES
BOX LUNCH
SPEARMINT
GUM
Xtra Strength
Acid Reducer
30 Tablets
Another successful
business trip.
(Made possible with paper and packaging.)
Gas Up
Thank You
Come Again
DUPLICATE
CLICK
BALL POINT
PENS
12
SLEEP AID
Sleep Tablets
Software Sales
by Category
Data Recovery 20%
Forecasting 15%
Data Housing 30%
Accounting 10%
Theft Protection 25%
Purchase Order
745200
Data Technologies
2500 Commerce Street
Dallas, TX 75201
Accounting software
Data Recovery software
Theft Protection software
Data Housing
Forecasting software
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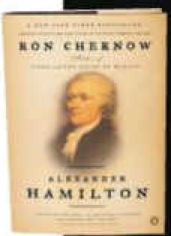
BUSINESS LIBRARY

Pages on Stages



THE ORIGINALITY of the Broadway smash *Hamilton* isn't in dispute, but in one way, Lin-Manuel Miranda's historical hip-hop sensation is utterly derivative: It's the latest in a long, long (chorus) line of hit musicals based on books.

Novels, memoirs, fairy tales and biographies have long served as source material for Broadway, and in some cases—*Cats* and *The Phantom of the Opera* are two prominent examples—the show's appeal far outshines that of the book. (That's not so with *Wicked;* the Gregory Maguire novel on which it's based has sold more than 3.6 million copies just since 2001, when Nielsen began tracking book sales.)

Ron Chernow's 2004 doorstop, *Alexander Hamilton,* has sold well, some 623,000 copies to date, buoyed by the show it inspired. As for the musical, it has so far grossed some $80 million—a mega-success, but it hasn't been open long enough to challenge Broadway's all-time highest grosses. As Hamilton himself might put it, though, just you wait. Just you wait.

TOP-GROSSING MUSICALS BASED ON BOOKS, 1984–PRESENT

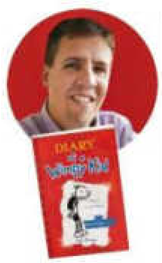
Musical	Gross[1]	Source	Copies sold (2001–present)
The Phantom of the Opera	$1.06 bil	*The Phantom of the Opera,* by Gaston Leroux (1909)	293,000
Wicked	$1.03 bil	*Wicked: The Life and Times of the Wicked Witch of the West,* by Gregory Maguire (1995)	3.6 mil
Les Misérables[2]	$538.9 mil	*Les Misérables,* by Victor Hugo (1862)	906,000
Beauty and the Beast	$429.2 mil	*Beauty and the Beast,* by Jeanne-Marie Leprince De Beaumont (1740)	417,000
Cats	$366.4 mil	*Old Possum's Book of Practical Cats,* by T.S. Eliot (1939)	155,000
Mary Poppins	$294.6 mil	*Mary Poppins,* by P.L. Travers (1934)	195,000
Matilda	$172.7 mil	*Matilda,* by Roald Dahl (1988)	938,000
The Color Purple	$128.3 mil	*The Color Purple,* by Alice Walker (1982)	644,000
The King and I	$116.1 mil	*Anna and the King of Siam,* by Margaret Landon (1944)	10,000
Fiddler on the Roof	$99.8 mil	*Tevye the Dairyman and the Railroad Stories* by Sholem Aleichem (1894)	16,000

[1] Gross figures reflect on-Broadway grosses only. [2] Cumulative, including revivals.
Sources: Nielsen BookScan; The Broadway League.

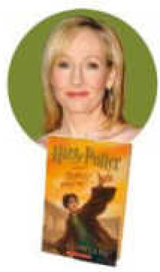
KIDS INCORPORATED

Getting children to rouse themselves from their screen-induced summer torpor is no small feat—unless you're one of the leading authors for under-12s, the top five of whom pulled in $73.6 million in the past year. The secret? Don't insult the moppets' still-developing intelligence. "I wrote the first *Diary of a Wimpy Kid* for adults," says list-topper Jeff Kinney. "The whole time I thought I was writing comics for grown-ups, and then my publisher told me I had actually written a children's series. If you don't write down to kids, you have a better chance of reaching them."

THE HIGHEST-PAID CHILDREN'S AUTHORS

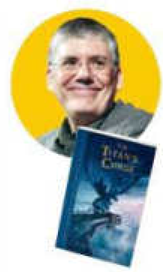


1. JEFF KINNEY
Diary of a Wimpy Kid series
$19.5 MIL



2. J.K. ROWLING
Harry Potter series
$19 MIL

3. DR. SEUSS
There's a Wocket in My Pocket!, etc.
$17 MIL



4. RICK RIORDAN
Percy Jackson & the Olympians series
$9.5 MIL

5. RACHEL RENEE RUSSELL
Dork Diaries series
$8.5 MIL

All earnings estimates are from June 1, 2015 through June 1, 2016, before taxes and fees. Book figures courtesy of Nielsen BookScan, whose U.S. Consumer Market Panel covers approximately 85% of the print book market.

BY MADELINE BERG AND NATALIE ROBEHMED

THEO WARGO/GETTY IMAGES; OLIVER BERG/DPA/NEWSCOM; MARTINA SALVI/REX/NEWSCOM; GENE LESTER/GETTY IMAGES; SCHICCHI/ROPI VIA ZUMA PRESS/NEWSCOM


#haveKINDLEwillTRAVEL
CUSCO, PERU HIRAM BINGHAM, INCA LAND @ AMAZONKINDLE
amazon

LeaderBoard

FORBES @ 100

As FORBES' September 2017 centennial approaches, we're unearthing our favorite covers.

Financiers at the Front: June 1, 1918

FOURTEEN MONTHS after America's entry into World War I, Wall Street had contributed men to the armed forces—B.C. Forbes walked through the emptied Bankers Trust Company Building and counted 490 away on the front lines—and men to sell the government bonds necessary to finance the war. "Brokers went the length of discouraging purchases in other securities and exhorting their customers to invest in the war loan," B.C. wrote in his cover story. By his calculation, no other industry was supplying more "free service" to the war effort.

Victory would arrive five months later but not before America had raised $17 billion ($320 billion today) in five debt offerings while sending more than 1 million men off to Europe.

SIGN OF THE TIMES

Ceiling Crashers

Rosie the Riveter is an icon of World War II, but women taking men's place in the workforce during wartime goes back long before. FORBES highlighted Ida E. Fox of Chicago as a role model. The former stenographer had become a local foundry's purchasing agent even before the conflict began: "I have always loved figures. I love to be in control and power. I like responsibility and the chance to go ahead without orders from anyone."

DOPPELGANGERS

A Tale of Two Schwabs

1918: Charles M. Schwab, steel millionaire. Woodrow Wilson tapped Schwab—who had run Carnegie Steel and U.S. Steel—to lead the Emergency Fleet Corp. and bolster U.S. shipbuilding. Schwab squandered his $200 million fortune (close to $3 billion today) on lavish living and bad investments.

2016: Charles R. Schwab, investing billionaire. Chuck formed the core of his money-management firm around the kinds of prudent investment tips that Charles M. (no relation) should have used.

FORGOTTEN FIGURE

Working Warriors

Vets wounded in WWI returned from Europe only to face another battle: Many employers were reluctant to hire them. Enter Douglas C. McMurtrie, director of the Red Cross Institute for Crippled and Disabled Men. He labored to get wounded soldiers working again through training and job placement—as messengers, elevator operators, hotel clerks, even toymakers.

BY ABRAM BROWN

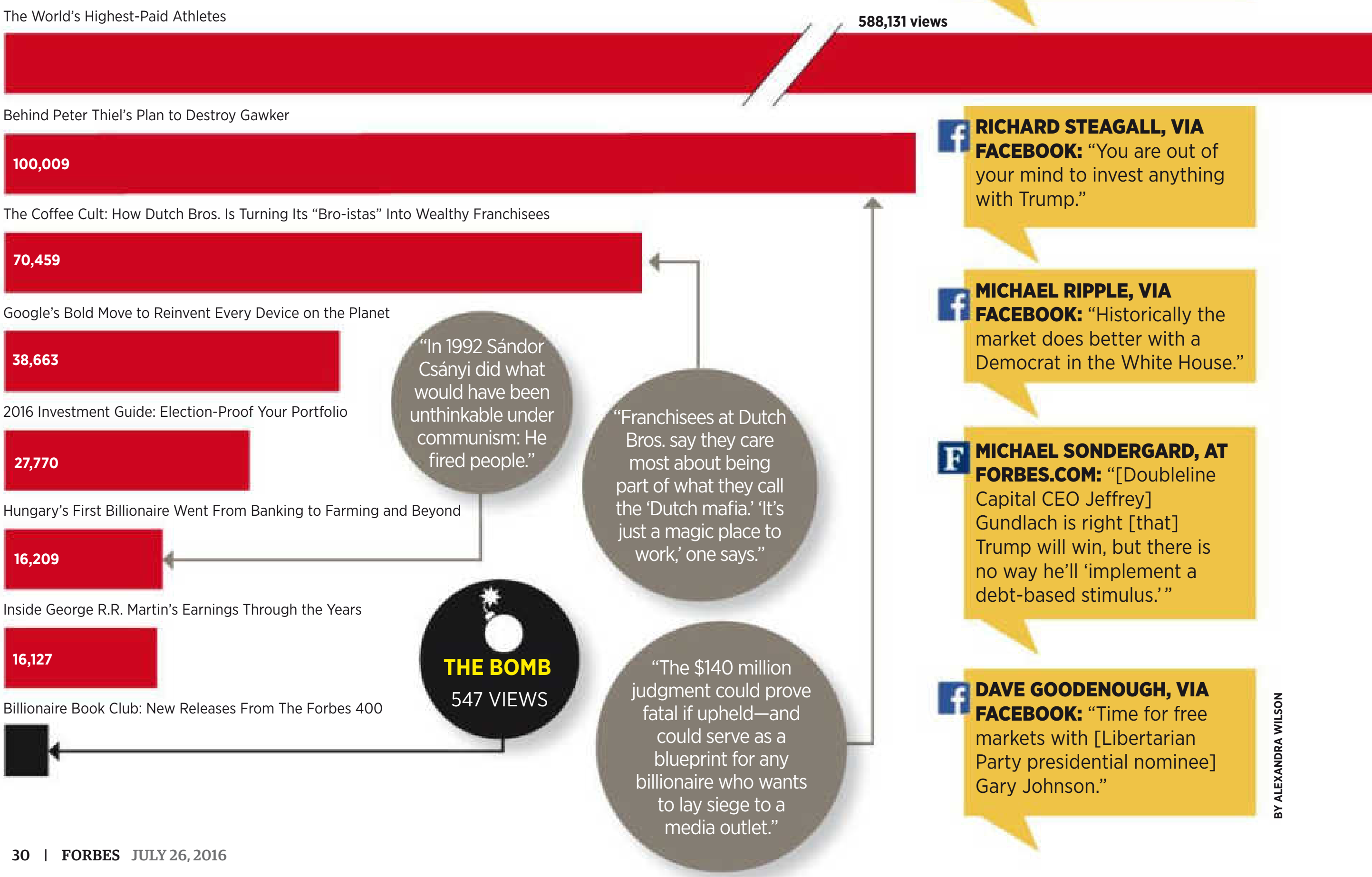
EVERETT COLLECTION HISTORICAL/ALAMY; LIBRARY OF CONGRESS; PHOTOQUEST/GETTY IMAGES; MARCIO JOSE SANCHEZ/AP

CONVERSATION

MIGUEL HELFT'S June 29 cover feature on new Google CEO Sundar Pichai and his headlong rush into artificial-intelligence development left readers (mostly) welcoming our new robot overlords. "The future is AI," tweeted Howard Bussey, a computer specialist so deep in the weeds he actually programs in Fortran. Pichai's vision and plan to leverage Google's power, reach and resources to outrace AI hopefuls, including Apple, Amazon and Facebook, led many—the team at Canadian digital-communications outfit Grand Slam Media prominent among them—to compare him to Elon Musk. Still, plenty of readers, wary of AI's potential pitfalls, urged caution. Tweeted @cluntai, "Does this read apocalyptic to anyone else?"

THE INTEREST GRAPH

Fans flocked online to our annual ranking of the top-earning sports stars—in numbers nearly 75,000 higher than Major League Baseball's minimum annual salary.



POL POSITIONS

Our "Election-Proof Your Portfolio" investment guide for a Trump or Clinton administration stirred up skepticism and partisan passions in equal measure.

JIMTARHEEL AT FORBES.COM: "What a valuable message in contrast to recommendations of 'alternative investments.' I'll put my money on [ex-Vanguard CEO] Jack Bogle."

KEN NETH, VIA FACEBOOK: "If I were a gun manufacturer, I'd donate to Hillary's campaign."

JUAN BENAVIDES, VIA FACEBOOK: "Why not exploit the stock market for its inefficiency regardless of who is in office instead of complaining about right, left, middle?"

RICHARD STEAGALL, VIA FACEBOOK: "You are out of your mind to invest anything with Trump."

MICHAEL RIPPLE, VIA FACEBOOK: "Historically the market does better with a Democrat in the White House."

MICHAEL SONDERGARD, AT FORBES.COM: "[Doubleline Capital CEO Jeffrey] Gundlach is right [that] Trump will win, but there is no way he'll 'implement a debt-based stimulus.'"

DAVE GOODENOUGH, VIA FACEBOOK: "Time for free markets with [Libertarian Party presidential nominee] Gary Johnson."

BY ALEXANDRA WILSON

USING PUBLIC ANGER

DONALD TRUMP has tapped into the public's anger by decrying unfair trade practices, insecure borders, bad schools, failed health care reform, uncontrolled national debt, arbitrary regulations, a social safety net that fails minorities and the poor, entrenched government corruption, subordination to political correctness, multibillion-dollar payments to Iran and rule by executive order.

The anger is aimed at the bad results—flat wages, $19 trillion in debt, rich lobbyists, weakened defenses, Iranian funding of terrorism—and is heightened by the government's unresponsiveness. There's a sense that the government won't change course, no matter how badly it's doing.

Trump's complaints have been more detailed than his solutions, which has brought criticism from those accustomed to policy-wonk campaigns. The losing 2012 presidential candidate had offered a 59-point plan called Believe in America. It meant well, but was too long and left many voters bored with its complexity. To voters the solutions shouldn't be elaborate—the goal is to reverse course. The government had spent $800 billion on "shovel-ready projects" that disappeared into the ether, and then it made no effort to fire the failures. That and dozens of other federal disasters should have been used to galvanize voters in 2012.

Trump has inspired more emotion than traditional politicians. Some of his words have been thoughtless, mistaken and divisive, but many others have hit home, as shown by record primary support. President Obama lashed out at Trump after the nightclub killings in Orlando but left himself open to Trump's haymaker that Obama seemed madder at Trump than at the Pulse killer or Islamic terrorism. Almost anyone watching Obama's seething attack would understand Trump's point.

High emotions are unsettling, but upheavals have to be emotional in order to succeed. Even the signers of the Declaration of Independence were blunt and loud, blaming the king emotionally and by name: "He has erected a multitude of New Offices, and sent hither swarms of Officers to harass our people, and eat out their substance." That's not to equate our current malaise to the colonists' or to elevate Donald Trump; it's to invite and defend an emotional presidential campaign aimed at upheaval.

The stakes are high. The government's overreach into families, freedom, pocketbooks, property and privacy is overwhelming us and is unstoppable under the present system. Trump's fury at the status quo helps the election campaign build enthusiasm and a mandate for change. The Declaration of Independence listed at least 29 grievances.

It won't be easy to break the status quo. The establishment created the current system for its benefit and will fight hard to maintain it. For example, it worked for decades to create the capital's wealth factory, while locking in the nation's fiscal decay. This column has explained the 100-year deterioration in constitutional checks and balances that has resulted in out-of-control spending, debt and federal overreach ("Constitution Eroding," Dec. 10, 2012). Without an upheaval the current spending rules point to even faster fiscal ruin: The CBO expects the fiscal deficit to average nearly $1 trillion per year over the next ten years as spending surges to over $6 trillion per year.

MAKING GOVERNMENT WORK

If the political revolution takes hold in the U.S. as it did in the U.K.'s Brexit vote, it's critical that the democratic systems created on the other side of the upheaval work better than the current ones. The new system should be based on personal liberty, a limited federal government, national security, private property and the rule of law—core values of the American Revolution and the Constitution and the antithesis of socialism and progressivism.

As the upheaval against big government strengthens, the solutions are clear: The U.S. can grow much faster and achieve higher median incomes if the government lowers tax rates, cuts costs and debt and seeks stable money. We will be safer if we name the enemy and bolster our defenses. The government must create federal regulations and health care policies that are less costly, less harmful and more effective.

To reestablish these will take good presidential judgment, thousands of constructive and well-vetted decisions on how to implement effective change and major new procedures. The progressive movement has been incredibly successful at using the current system to enlarge the central governments in Washington and Brussels—at the expense of society. An upheaval will have to create new systems that rebuild prosperity, security and equal opportunity.

THOMAS KUHLENBECK FOR FORBES

DAVID MALPASS, GLOBAL ECONOMIST, PRESIDENT OF ENCIMA GLOBAL LLC; PAUL JOHNSON, EMINENT BRITISH HISTORIAN AND AUTHOR; AND AMITY SHLAES, PRESIDENTIAL SCHOLAR AT THE KING'S COLLEGE AND CHAIR OF THE COOLIDGE FOUNDATION BOARD, ROTATE IN WRITING THIS COLUMN.
TO SEE PAST CURRENT EVENTS COLUMNS, VISIT OUR WEBSITE AT WWW.FORBES.COM/CURRENTEVENTS.

ECONOMY'S TRAGIC MISMATCH

A FEW WEEKS AGO I spoke to a trade group of construction company CEOs and CFOs. I thought their top concern would be taxes, regulations, the slow-growth economy or, perhaps, the 2016 election. Wrong. It was the lack of skilled labor.

Welders, carpenters, HVAC technicians—the U.S. has far too few of them. The shortfall in welders alone runs as high as 240,000, and it will get worse. The American Welding Society predicts it will reach 340,000 by 2024. The average welder is 54 years old, compared with about age 40 for the American workforce as a whole. Young people simply aren't going into skilled trades like welding.

The shortage of skilled tradespeople amounts to a tragic mismatch. These jobs can pay well. Including overtime, welders can make more than $100,000 a year—and the lack of welders means there's plenty of overtime. A welder will need a high school diploma or GED equivalent, followed by at least nine months of professional training. Private welding schools run about $16,000, but many junior colleges with a vocational focus offer training for far less. In financial terms the return on investment is terrific. So why aren't more young people headed into the skilled trades?

Lack of exposure is one reason. As reported by David Freedman in the July/August 2016 issue of *The Atlantic*, only 1 in 20 public high schools offers serious vocational training.

A second reason owes to incorrect conclusions drawn from the growing pay gap between the college-educated person and the non-college-educated. In general the trend is true, but the skilled-trades jobs are an exception. The average salary for a lawyer in the U.S. is $135,000, but the median salary isn't much over $110,000, as most lawyers aren't partners at Skadden Arps. So a hustling welder can make more than a median lawyer, with far less money invested in education. The welder can be earning money by age 18, the lawyer not until 25.

A third and controversial reason has to do with gender. While women earn 60% of both undergraduate and master's degrees, as well as 47% of law degrees and 48% of medical degrees, men still vastly outnumber women in the skilled trades. So the question isn't why are Americans not going into skilled trades, but why are young American men not going into them?

BOYS ADRIFT

You can't write anything today about gender differences without ruffling feathers, whether traditionalist or feminist. But in his freshly updated 2007 book, *Boys Adrift: The Five Factors Driving the Growing Epidemic of Unmotivated Boys and Underachieving Young Men* (Basic Books), Leonard Sax, a board-certified physician, as well as a Ph.D. in clinical psychology, tackles the reasons head-on. Male brains develop differently than female brains. At age 5, when most kids are entering kindergarten, boys are one to two years behind girls, particularly in such abstract skills as language and reading. (Kindergarten boys are the equals of girls, or slightly better, in experiential learning.) So right from the start boys are more likely to develop a dislike of school that never quite goes away. By the time boy brains catch up, at age 14 or so, many boys have already checked out. They've slipped through the cracks, and today there are fewer adult male mentors in K–12 schools to catch them.

From Tom Sawyer to Ferris Bueller one might say that boys have always been likelier to hate school. But another factor has emerged. Unlike our mischievous fictional icons Sawyer and Bueller, many boys today have scant ambition and energy. More men between the ages of 18 and 30 are failing to launch themselves into productive adulthood. Evidence: More now live at home with their parents than live with a spouse or partner, a trend not seen since the early 1930s, when the country was poorer and more rural. Multigenerations living in one house made sense then.

The failure to launch may have physical roots. Dr. Sax notes that the sperm count of the average young American male today is much lower than what his grandfather's sperm count was. Bone density is also declining. The average young American man is literally less vital and more brittle than before, the examples of well-trained athletes and soldiers notwithstanding. Is this due to fast-food diets, lack of physical activity, rising obesity levels or something else? Dr. Sax shares his opinions.

American boys need physical work. Millions need a trade-school education. The economy needs it, too.

RICH KARLGAARD IS THE PUBLISHER AT FORBES. HIS LATEST BOOK, *TEAM GENIUS: THE NEW SCIENCE OF HIGH-PERFORMING ORGANIZATIONS*, CAME OUT IN 2015. FOR HIS PAST COLUMNS AND BLOGS VISIT OUR WEBSITE AT WWW.FORBES.COM/KARLGAARD.

THOMAS KUHLENBECK FOR FORBES

Verticals

July 26, 2016

Andi, a 4-year-old dachshund, often accompanies her owner, Lisa Bernier, to the office at Bark & Co. Bernier runs the startup's popular dog blog, BarkPost, part of its ambition to become a canine conglomerate. **PAGE 46**

PHOTOGRAPH BY MARK FUHRMAN FOR FORBES

MATTHEW FURMAN FOR FORBES

New Frame of Mind

Michaels, the venerable arts-supplies store, has crafted one of retail's most unlikely comebacks by transforming its stores and—gasp!—ignoring e-commerce.

BY SAMANTHA SHARF

Under CEO Chuck Rubin, Michaels sells more than 33,000 items inside immense, 18,000-square-foot stores.

Emerging from the escalator of the subterranean Michaels in midtown Manhattan, CEO Chuck Rubin pauses at the entrance to make a point. To his right is a rack containing a dozen adult coloring books, their pages full of fairies, dogs, butterflies and Harry Potter characters. They're one of the hottest items in the store and brought in an estimated $40 million in revenue last year. A decade ago Michaels, which prided itself on stocking the basics, probably wouldn't have carried those books and certainly wouldn't have displayed them prominently. Now trendy products are front and center, part of Michaels' attempt to attract new types of customers and make its cavernous stores more navigable. "We're not Apple. We don't make the new iPhone that people will line up in advance for," Rubin says. "We need products that people want in an environment they want to shop in."

Michaels is one of the most surprising retail successes of recent years. It has stuck to transforming its brick-and-mortar stores while almost completely ignoring e-commerce. Back in the 2000s it had a more limited concept of its customers and what it should sell them. Then Blackstone Group and Bain Capital, the private equity firms, bought Michaels for more than $6 billion in 2006 and watched sales stall and profits vanish. Change didn't come easily. Six people had the CEO role before Rubin, the son of a Boston liquor store owner who worked his way up through Office Depot, took the job in 2013.

Rubin knew Michaels couldn't simply stick to its knitting. While the company's core hasn't changed—it sells cheap craft supplies—Rubin has modified its stores to make it easier for novice crafters to find items. They're bringing in more of those types of customers by moving beyond sewing-room basics, adding cooler items, like those coloring books, and Michaels-exclusive products, such as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• NEW! Path to Gold Status exclusively for business owners
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• Earn 5X points per $1 spent at 4,000+ participating Marriott® properties
• Earn 2X points per $1 spent at office supply stores and restaurants
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Accounts subject to credit approval. Restrictions and limitations apply. Marriott Rewards Premier credit cards are issued by Chase Bank USA, N.A. Offer subject to change. See MarriottPremierBusiness.com for pricing and rewards details. Marriott Rewards points needed for a standard reward free night range from 7,500 points for Category 1 hotels to 45,000 points for Category 9 hotels. Refer to MarriottRewards.com for all reward redemption values. © 2016 JPMorgan Chase & Co. All rights reserved.

Isaac Mizrahi-branded yarn.

Its 1,352 stores brought in $4.9 billion in sales last year, up 22% since 2010. Sales per square foot are around $225, rising from $205. Earnings have more than tripled to $363 million. And since Michaels went public again two years ago, its stock has increased almost 60%, while the S&P Index gained 2%. "Michaels has done a lot to improve store operations—some basic things it lacked in the past," says Michael Baker, a Deutsche Bank retail analyst.

The most striking part of Michaels' success is how it contradicts the digital era's implied mandate for retailers—that survival hinges on selling online. But Michaels hasn't wasted millions competing with Amazon.com on e-commerce. It's grown while focusing squarely on improving what's within its stores' four walls.

The namesake of Michaels was a bespectacled, cherub-faced Texan named Michael Dupey. He turned his dad's Dallas five-and-dime into a chain of crafts stores and sold them to the billionaire Wyly brothers in 1983. The combined firm IPOed as Michaels Stores a year later and expanded steadily through the '90s.

By the time it attracted Bain and Blackstone, it had two co-CEOs, Jeff Boyer and Greg Sandfort. As the business began to decline the next year, the duo departed. Brian Cornell, a grocery veteran, replaced them before leaving to run far bigger Sam's Club in 2009. Then Wal-Mart executive John Menzer took the spot for three years before suffering a stroke. Another pair of co-CEOs (Charles Sonsteby, the chief financial officer, and Lew Klessel, a Bain Capital executive) filled in until stability finally presented itself in the form of Chuck Rubin.

At first blush Rubin seemed an unlikely choice. He didn't knit, bake or paint. But he was just the type of outsider he wanted Michaels to draw in. To make Michaels stores a more friendly environment to new shoppers, he has added big red signs to guide customers to departments, like baking supplies and paint. The displays are more accessible now—shorter in height, less crowded and newly adorned with decals explaining an item's best use. Employees wear easy-to-spot cardinal-colored vests.

Better stores alone weren't enough. Michaels needed more popular goods that could build a broader audience, too. That's why Michaels has started selling things like washi tape—bright rolls of decorating tape in every shade and design imaginable—and kinetic sand, a Play-Doh-style moldable substance. And then there's the strange success of the Rainbow Loom, a child's toy that turns colorful rubber bands into bracelets, necklaces and key chains. His executives had spotted the toy for sale in a couple of Dallas stores in spring 2013. After racing to strike a supply deal with its creator, a Nissan Motors engineer, Michaels sped up its supply chain to get Rainbow Loom on shelves in time for Christmas 2013. It became a smash hit, adding an estimated $100 million to 2013 sales. "Rainbow Loom was a grand slam. It doesn't happen too often," says Rubin. But, he adds, "the skills that we developed were reusable." Today Michaels often gets products to shops six months after they're designed (or bought from a supplier). It used to take a year plus.

The Web remains a no-man's-land for Michaels. The company doesn't believe selling craft supplies is well suited to e-commerce. A large part of Michaels' clientele want to, say, feel a fabric before buying it, and a lot of its sales come through spontaneous purchases and browsing—the kind of discovery shopping keeping Barnes & Noble open. Even if Michaels wanted to compete with Amazon, it almost certainly couldn't build something bigger or better. Why go face-to-face with a giant when you can dodge it? Still, some think Michaels can't hide forever. "Nobody is immune from Amazon," says Wedbush Securities analyst Michael Pachter.

No more than 5% of Michaels' revenue comes from online, and its e-commerce business didn't exist until two years ago. Rubin knows all that stands between Michaels and Bezos is the in-store experience, which largely explains his preoccupation with upgrading the shops. And he knows his stores need to continue improving. "It can be a little intimidating—that's the downside," he says from the Manhattan location, displays of graduation party supplies and day planners behind him. "The plus side is that this is a place that has everything for creativity." ✱

FINAL THOUGHT

✱ *"I want to be part of the resurgence of things that are tangible, beautiful and soulful, rather than just give in to the digital age."* —**JACK WHITE**

#

BY THE NUMBERS

COLD COMFORT

AS ICE CREAM SEASON HITS ITS MIDSUMMER PEAK, THE INDUSTRY IS FEELING THE CHILL FROM STAGNANT TAKE-HOME SALES. IMPULSE BUYING REMAINS STRONG, THOUGH, AND BIG NAMES SUCH AS BEN & JERRY'S AND BREYERS HAVE MIXED UP MORE SINGLE-SERVING VARIANTS TO SATIATE CRAVINGS. WITH 22% OF THE GLOBAL MARKET, UNILEVER BRANDS DOMINATE THE TOP SELLERS WORLDWIDE.

1. MAGNUM
(Unilever)
$2.5 BIL
2015 GLOBAL SALES

2. HÄAGEN-DAZS
(General Mills)
$2.1 BIL

3. CORNETTO
(Unilever)
$1.6 BIL

4. BEN & JERRY'S
(Unilever)
$1.2 BIL

5. BREYERS
(Unilever)
$960 MIL

CAROLYN JENKINS/ALAMY

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Harvard Business School

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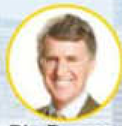

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Dueling Unicorns

Stuart McClure and George Kurtz were once cofounders and best friends. Now, as CEOs of rival high-flying security companies, they're battling to dominate the digital defense market.

BY THOMAS FOX-BREWSTER

Stuart McClure, goateed and soft-spoken, is confident and calm as he recites a well-rehearsed pitch on how his company, Cylance, is using artificial intelligence to shake up the antivirus industry. "We block 99.9% of the attacks out there," he says, sounding like he's selling a bottle of Purell. "Response to our product has been so overwhelming that we're almost compelled to accelerate expansion so everyone can get their hands on it."

McClure has a lot to be confident about: In June his nearly four-year-old, 420-employee company was valued at $1 billion after raising a $100 million Series D round from Blackstone Tactical Opportunities and Insight Venture Partners. But mention the name George Kurtz, his former partner and the current CEO of rival unicorn CrowdStrike, and the even-keeled 47-year-old security entrepreneur loses his cool. "George is a major competitor, and he'll say anything to stop you from writing a story like this," McClure says in a burst. "We're beating him constantly in the market because he doesn't do anything around prevention—they only do detection, and they don't do it all that well."

RoboCop: CrowdStrike CEO George Kurtz patrols networks for cyber thieves.

The distaste is mutual. George Kurtz, also goateed, isn't shy about taking shots at his former friend's tech claims. "All the credit should go to Cylance's marketing department," says Kurtz. "Their machine learning has been around for a long time. Most security companies have it—we did it at McAfee years ago."

McClure and Kurtz—once pals, partners and bestselling coauthors—are now fierce competitors. Each leads an approximately billion-dollar security startup battling for a chunk of the surging security market. With the avalanche of recent hacks—from the record-breaking theft of $81 million from Bangladesh Bank to the theft of 32 million Twitter

passwords—companies are scrambling to secure their networks. Research firm Gartner says the security software market hit $22 billion in 2015. Sales have grown by $1 billion for three straight years.

The race is on for Cylance and CrowdStrike—as well as other richly valued security startups like FireEye and Palo Alto Networks—to convince corporate clients that their software will keep out the criminals in the cheapest and most efficient way possible.

ETHAN PINES FOR FORBES

Cylance acts like a border guard, blocking shady actors before they enter the network. Its Amazon-hosted brain performs a cyber strip search, breaking down a file into a large number (potentially millions) of "characteristics" in the search for red flags. McClure says Cylance's AI gets smarter with every piece of data it scans by learning which features are malicious (like code that can move data to a criminal's server) and which are benign. It can uncover and remove infections on the network, too, as it did for the

Stuart McClure, founder of Cylance, uses machine learning to block suspicious files from entering IT systems.

U.S. government's Office of Personnel Management after malware stole the data on 21.5 million workers.

CrowdStrike, meanwhile, is a digital cop, patrolling networks for suspicious behavior. It keeps a constant record of everything happening across the system and offers a post-breach recovery service that hunts hackers and closes off the doors they exploited. In June CrowdStrike helped the Democratic National Committee after Russian hackers stole opposition research on the presumptive Republican nominee, Donald Trump.

Despite their warring companies and competing security approaches, the lives of McClure and Kurtz remain strikingly intertwined. The pair started working together in 1999, when they cofounded Foundstone, a firm that built software and hardware to identify and repair network security holes. That same year they co-authored the Web security bible, *Hacking Exposed*, which has sold more than 600,000 copies. In 2004 the pair joined McAfee after the antivirus giant bought Foundstone for $86 million. There they thrived, both rising to the role of global chief technology officer—Kurtz first and then McClure.

Kurtz, frustrated with McAfee's plodding speed and legacy technology, resigned as CTO in 2011, launching CrowdStrike in 2012. McClure soon followed, starting Cylance the same year. Both companies use machine learning to target ever evolving malware threats. Both are based in Irvine, Calif., a ten-minute drive apart. Both companies, according to sources, will have sales in the neighborhood of $100 million in 2016. And both men now sit atop paper fortunes, having attracted massive amounts of capital in a short period of time. CrowdStrike raised $156 million from Google Capital, Accel, Rackspace and Warburg Pincus; Cylance raised $177 million from Blackstone, Insight Venture Partners, DFJ Growth and Khosla Ventures.

The bad blood between McClure and Kurtz built slowly, a result of festering jealousies and disagreements over the future of security. The friendship fractured in 2012. McClure says it got ugly after he declined Kurtz's invitation to join him at CrowdStrike. "I've known George since 1998. We were best friends for 14 years," says McClure. "But I decided I needed to live my life with high integrity and with high-integrity people, so I decided to do this gig on my own. He's still bitter about it."

Kurtz tells it differently. He says McClure approached him to join CrowdStrike but asked for too much equity.

The squabbling extends to their old startup, Foundstone. McClure says he was the real founder: "I built the company from scratch. George begged me to be the CEO. ... I said, 'I'll take the president title, and you can take CEO,' because I'm a nice guy." Kurtz and other cofounders (who asked not to be named) contest that story, claiming six equal partners voted in Kurtz as boss.

As for their bestselling book, *Hacking Exposed*, McClure says Kurtz's name should never have been on it: "He wrote one chapter, but he makes it sound like it's his book. I gave him the book cover because I'm a nice guy." Kurtz declined to comment on that claim.

But McClure and Kurtz can agree on one thing: Their futures hinge on signing up big clients in the private sector. And so the former friends continue along the same, tight trajectory. Cylance and CrowdStrike are both going global; in 2016 each firm opened new offices in Europe and Asia. Cylance already claims more than 1,000 clients, including Gap, Panasonic and Toyota. Kurtz says CrowdStrike is working with three of the top ten largest global companies and five of the biggest banks. Kurtz will reveal only a few customer names: Rackspace, the cloud provider that's also an investor; Australian mobile giant Telstra; and publisher Tribune Media.

As the battle rages on, McClure can claim a recent, albeit superficial, victory over Kurtz: In June he beat out his old buddy and fellow nominee in EY's Entrepreneur of the Year prize for Orange County. Says McClure: "I think he's extra-bitter about that." *

FINAL THOUGHT

* *"If you do not let yourself be seen, you cannot see."* —**VIRONIKA TUGALEVA**

TRENDING

WHAT THE 75 MILLION FORBES.COM USERS ARE TALKING ABOUT. FOR A DEEPER DIVE GO TO **FORBES.COM/TECHNOLOGY**

COMPANY
SAMSUNG

A smart investment in smart gadgets? The South Korean electronics giant announces $1.2 billion in U.S. research spending on the Internet of Things.

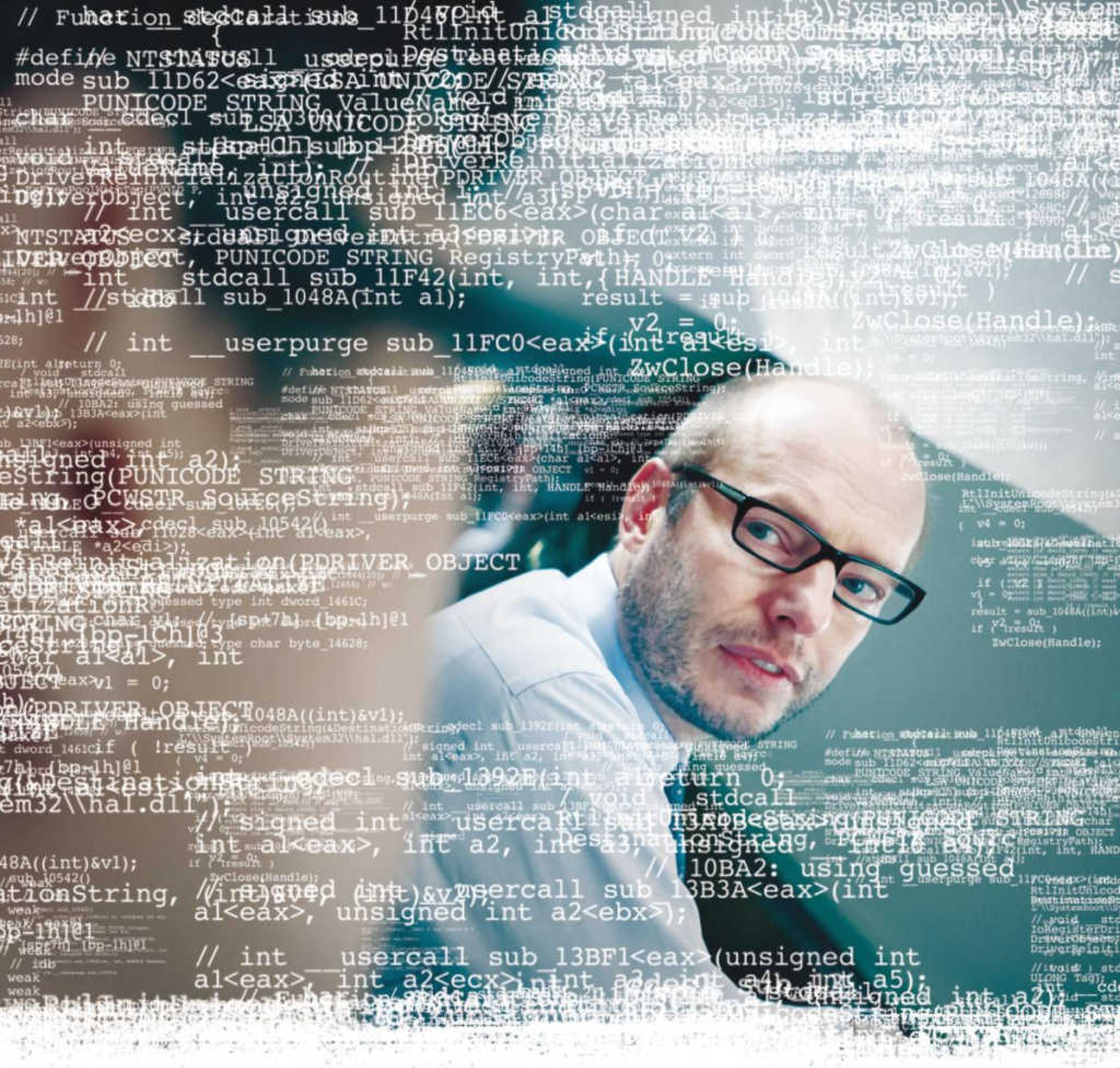
PERSON
ELON MUSK

Touts his $2.8 billion bid to merge Tesla with SolarCity, his own sun-power company, as the ultimate in "end-to-end clean energy products" for well-heeled zero-carbon enthusiasts.

IDEA
BLOCK THOSE ADS!

Content providers, beware: A new report from eMarketer projects that 70 million Americans will use desktop and mobile ad blockers this year, up 34% from 2015.

SERGIO FLORES/BLOOMBERG



The Alpha Pup

Four-year-old Bark & Co. leads the pack of businesses selling monthly subscription boxes to dog owners. But can it satisfy its investors?

BY ABRAM BROWN

Hoping to please dogs, founders Meeker, Werdelin and Strife have tried a blog, an e-commerce site and open-mic nights.

MATTHEW FURMAN FOR FORBES

There is a subscription box for almost anything you can imagine these days, and dog toys and treats are no exception. Given the willingness of Americans to spend on their furry friends, it should come as no surprise that a bunch of online operations are competing to offer canines a reliable stream of objects to eat, chew on or lose under the sofa.

The top dog in this racket is BarkBox, which was launched in 2011 by Matt Meeker, 43, Henrik Werdelin, 41, and Carly Strife, 30. For about $20 a month, subscribers get a container based on a theme. In April, for instance, dogs received baseball-shaped cookies and toys resembling ball caps and bats. Two months earlier they got a plush toy—a takeout container with dumplings spilling from it—to mark the Chinese New Year. The service has accumulated more than 200,000 subscribers and about $40 million in sales. None of its subscription-box competitors are much beyond $1 million in revenue.

But to please investors, Meeker, Werdelin and Strife need to get a lot bigger. Their grand vision? "Disney for dogs," says Strife. Meeker adds, "I'd like us to reach every dog in America." So far, however, creating brand extensions has been a struggle. They've scored some hits, including BarkShop, an e-commerce site, and BarkPost, a blog about dogs, and they've rebranded themselves from BarkBox to Bark & Co. to reflect the expan-

sion. But there have been flops, too. "We like to strike fast," says Meeker, "and sometimes we take on too much."

The stakes are high. Sales by all of Bark & Co.'s businesses hit $50 million last year, and the founders expect them to reach $100 million this year. They have raised $77 million in investment capital, including a $60 million round closed in May, from backers like August Capital and Resolute Ventures. Venture capitalists generally want to see investments increase at least five times in value. They won't comment on Bark & Co.'s valuation, but multiples on comparable public companies suggest it's between $150 million and $200 million. For the investors to get that five-times return, sales would probably have to hit $500 million. "Our goal is to give them a 100-times return," Meeker says.

Bark & Co. got started in 2011 after Werdelin, an MTV vice president turned Index Ventures executive, met Meeker, who ran a Polaris Ventures incubator, on a networking cruise for entrepreneurs. Later, a mutual friend introduced them to Strife, an early Uber employee. At the time Birchbox had just debuted its subscription cosmetics business, and the trio wondered if they could do something similar. In December 2011 they launched BarkBox online while keeping their day jobs. With spending on pets nearly doubling between 2006 and 2015 to more than $60 billion a year (about two-thirds on dogs), they were able to raise $1.7 million in June 2012 and another $15 million over the next two years.

The founders say BarkBox's customer base has been built primarily through social media, including 2.1 million Facebook likes and 1.2 million Instagram followers. The company employs 150 but uses an infrastructure-light model, owning no warehouses and outsourcing the packing of boxes. By itself, they say, the subscription business is profitable, with a gross margin of 36%.

Those profits and the venture funding have been used to support the extensions the founders want to develop. BarkPost, for example, has built an audience of 10 million monthly unique visitors, by offering advice and feel-good stories (an NFL player adopts a rescue dog). BarkLive hosts open-mic nights in New York City for canine-centric comedians (selling out at $20 a ticket). BarkShop sells products—toys, treats, leashes—designed by a team led by a former Lego executive. Among this year's best sellers: a Donald Trump chew toy.

While the founders expect those three businesses to bring in some $25 million in 2016 revenue, a Werdelin-run team is working on more extensions. He likes to have four or five ideas in the works because he knows not all will succeed. Neither BarkCam, a Tinder-like mobile app to help people find rescue dogs, nor BarkBoard, a dog-face-emojis app, developed a strong following after their releases.

The biggest disappointment has been BarkCare, a concierge vet service that offered house calls in New York and San Francisco starting at $199. "I think it's our favorite product that we've ever launched," says Strife, seated next to her cofounders in Bark & Co.'s Manhattan office, a scruffy blond terrier mix napping nearby. They misjudged demand—Fido may enjoy fresh treats each month but probably doesn't visit the vet as often—and the marketing style (one vet made house calls on a BarkCare-branded white moped) proved too whimsical for owners worried about their dog's health. Launched in February 2013, BarkCare lasted little more than a year. "We couldn't make it grow as fast as we needed to," says Meeker.

After failures like BarkCare, however, the founders hired a former Viacom exec to manage BarkBeta, a newly created three-person team that has taken command of the development process, operating on a strict budget: 1% of quarterly revenue. The goal is for a product to move from lightbulb moment to testing to launch within a few months.

With investors watching and the clock ticking, timing is important. There is probably a limit to how far the subscription business can carry them, says Sucharita Mulpuru-Kodali, an e-commerce analyst at Forrester Research. She sees the entire subscription-box industry as one big bubble. "The vast majority of people are not going to buy a subscription box," she says.

If that's true, Bark & Co. will have to connect on another idea. Recent efforts have included BarkAir, a chartered jet service that lets man and dog fly together in comfort, and an Ancestry.com-style DNA database for dogs. "We want to stay ambitious," Meeker says. *

FINAL THOUGHT

"Dogs are not our whole life, but they make our lives whole." —ROGER A. CARAS

TRENDING

WHAT THE 75 MILLION FORBES.COM USERS ARE TALKING ABOUT. FOR A DEEPER DIVE GO TO **FORBES.COM/ENTREPRENEURS**

PERSON

JOHN BUTTOLPH

After chicken-and-biscuits chain Mrs. Winner's filed for bankruptcy, Buttolph, an attorney, took trademarks in lieu of legal fees. Now he's the owner and hopes to revive the eatery.

COMPANY

SHIPPINGEASY

Katie May, new CEO of the shipping-software startup, knew its product was failing. Her choice: shut down the firm and return $2 million of investor cash, or forge ahead. She forged ahead.

IDEA

ELECTRIC BIKES

The inspiration for Michael Burtov's wheel, which makes any bicycle electric, came from a Disney movie. When he introduced it on Kickstarter, funders pledged more than $1 million.

ETHAN PINES FOR FORBES

Mr. Big Time

Bob's Watches brought transparency to the fraud-filled market for used and vintage Rolexes—and is making millions.

BY SUSAN ADAMS

The 2009 Rolex Datejust on the Bob's Watches website has a black dial, Roman numerals with the familiar five-tipped crown in place of the number XII and the signature "Cyclops"—the magnifying crystal at 3 o'clock, introduced in 1953, said to help the wife of Rolex cofounder Hans Wilsdorf read the date. Bob's prices the timepiece at $6,499. If you're looking to sell the same model, Bob's will pay $5,200. That's no secret. It's right there on the Web page above the rectangular gray "sell" button.

Revealing that $1,300 markup is fundamental to the success of Bob's Watches. "The price he's willing to pay gives you a degree of transparency," says Richard Wilt of White Plains, N.Y. He bought his first Rolex, a 2003 Datejust, for $3,600 from Bob's in April. Wilt says he even felt reassured by the spread. "It helps you trust where you stand."

The "he" is not actually named Bob. Rather, he's 60-year-old Bob's Watches owner Paul Altieri. His decision to list both figures, which he compares to the bid and ask prices on a stock exchange, sets him apart from other pre-owned-watch sellers on the Web. He introduced the feature six years ago when he relaunched Bob's Watches, a domain he bought for $8,000 from a North Carolina dealer, Bob Thompson, who was retiring. Started as an experiment that combined full-disclosure pricing with obsessive policing of fakes, Bob's Watches has grown quickly, bringing in a profit of nearly $2 million on revenue of just under $20 million last year.

Altieri works with his wife—COO Carol Altieri—and 18 employees in a 5,000-square-foot space in Huntington Beach, Calif. that includes a dustproof room where a Rolex-trained watchmaker does overhauls and repairs. (The site offers other luxury brands—Patek Philippe, Panerai and Omega among them—but is known for its Rolexes.) Next to Altieri's desk sits a 6-foot-tall safe containing some 150 watches from his personal collection of 400 vintage Rolexes, which he says are worth north of $3 million. The rest are in a bank safe-deposit box he visits

The minute details: Paul Altieri, owner of Bob's Watches, applies a Kelley Blue Book–style model online, publishing his sale price next to the sum he'll pay to buy the same watch.

weekly to swap out models he enjoys wearing.

Defined as watches that are at least 30 years old, vintage Rolexes can appreciate steeply. In early June, Altieri sold a 1953 "Jean-Claude Killy" Rolex chronograph at Christie's for $233,000. Championship skier Killy, who sits on the watchmaker's board, is believed to have worn the model, enhancing its value. Altieri bought the watch in November 2013 for $150,000. Even

ETHAN PINES FOR FORBES

Posh time: a Rolex Daytona in Everose gold ($24,999), a favorite of Victoria Beckham.

after the auction house's $50,000 in commissions, he made a handsome profit.

Altieri came late to watch selling, though he always loved Rolexes. The son of a bulldozer operator who owned a small construction company in Cranston, R.I., he saw Rolex ownership as a symbol of success. "Rolex stood for quality, luxury, achievement," he says.

Before reinventing Bob's, Altieri ran through five businesses after graduating from Boston College in 1979. First he joined a buddy in a Los Angeles jewelry store that traded in gold and silver chains. Several years later, when metal prices started falling, he tried a pasta and pizza restaurant franchise with his older brother that lost $100,000. He was more successful with two check-cashing businesses. The second, a chain of 25 stores, sold to a private equity firm for $10 million in 2004. Next he opened a jewelry store in a nondescript Huntington Beach mall that offered low rents, flanked by the Mattress Place and a Cash 4 Gold store. That space later morphed into Bob's Watches.

In the meantime he had become fascinated with e-commerce, noticing that buyers were getting more comfortable spending larger sums. Dozens of dealers and individual sellers already offered used Rolexes, but the online marketplace was chaotic. Ebay was a minefield of fakes and watches that had been altered with aftermarket parts. Buyers and sellers alike tried to cheat.

At that time most dealers, both on- and offline, wrangled the lowest possible prices from sellers and then jacked them up as much as 100%, all behind closed doors, Altieri says: "People had no place to find Rolexes and see their real value. They didn't have a safe place to sell their watches."

Altieri wanted to build that safe place. "The idea was never to make a big amount of money," he says. Instead, he hoped to create an efficient marketplace and profit as the business scaled. But how to set prices in an opaque market? He combed through eBay sales as well as auction records. He also spent $400 for access to a price list compiled by a Houston-based dealer's exchange called the International Watch & Jewelry Guild (IWJG). Then he priced his watches at the lowest number he found among those sources. He set the "buy" price from sellers at a 30% discount, an arbitrary figure he hoped would yield at least a 10% margin after overhead and servicing. "It was a risk," he says. "I didn't know if it was going to work."

He also vowed to deal only in authentic Rolexes: watches with parts made by the 111-year-old Swiss company that are consistent with each model's production year. Altieri can spend as much as $4,000 to replace a single bezel.

He decided to buy the Bob's Watches domain because it had been registered since 1999, making it just four years younger than Amazon and winning it trust in Google rankings. To get his first inventory, he paid $198,000 for 25 Rolexes at an IWJG show, then sold them online at cost. It caught on: In 2010 Bob's Watches grossed $2 million. Three years later it hit $10.5 million and last year nearly $20 million.

That number could be even higher if Altieri didn't turn away the many overtures he gets from dealers trying to buy his stock at his asking price. Why not make those sales? After all, new dealers would further mark up the price, lifting all boats and helping Altieri get more for his watches, too. "It's not what we're about," he says. "Let that end consumer find us—and then he'll tell 30 friends to shop at Bob's."

FINAL THOUGHT

"You may delay, but time will not." —**BENJAMIN FRANKLIN**

MARGIN PROPHET

BIG LEAGUE CHEW

LAST YEAR **JAKE HEIMARK,** 28, LAUNCHED PLUS GUM, A PALO ALTO–BASED COMPANY WITH TEN EMPLOYEES THAT MAKES CANNABIS-INFUSED CHEWING GUM. IT COSTS $15 FOR SIX PIECES, EACH WITH 25 MILLIGRAMS OF THC.

WHAT'S PLUS GUM'S GENESIS?

I moved to Denver and joined a cannabis accelerator called Green Labs for $450 a month. I realized there was a hole in the market. A lot of people who consume cannabis don't fit the typical stoner profile: They're active and don't really like smoking. But the only other way to consume it is through a high-calorie edible.

WHAT'S THE EFFECT FROM CHEWING ONE PIECE?

I like to compare 25 milligrams of THC to a beer and a half. It takes the edge off but doesn't end your night.

DO YOU CONSUME MORE NOW THAT YOU'RE RUNNING PLUS GUM?

My consumption is about the same, but now I use gum. My cofounders consume quite a bit more than I do. —*S.A.*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A
STAND
LIVE
FRIDAY
SEPT 9 8|7c
STAND UP TO CANCER
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#reasons2standup
#su2c
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STAND UP TO CANCER IS A PROGRAM OF THE ENTERTAINMENT INDUSTRY FOUNDATION (EIF), A 501(C)(3) CHARITABLE ORGANIZATION. IMAGES FROM THE STAND UP TO CANCER 2012 AND 2014 SHOWS.
THE AMERICAN ASSOCIATION FOR CANCER RESEARCH (AACR) IS STAND UP TO CANCER'S SCIENTIFIC PARTNER.

Too Big to Be Bearish

Brexit is shaking markets, global growth stinks, and election nervousness is gripping Wall Street. Still, BlackRock's $1.2 trillion bond man is buying.

BY STEVE SCHAEFER

Rick Rieder, BlackRock's top bond manager, doesn't work in tech, but these days he's preoccupied with disruptive innovation and how it may be affecting economic data.

Growing up in the suburbs of New York City, he saw the rise of personal computing in the 1980s drive his father's office products store—which sold typewriter ribbons and other supplies—out of business. "It taught me that a great business can be made obsolete instantaneously by new technology," says Rieder, 54.

As the chief investment officer of global fixed income at $4.7 trillion asset manager BlackRock, Rieder oversees $1.2 trillion invested in everything from mortgage-backed securities and corporate bonds to the debt of municipalities and countries everywhere from Iowa to Indonesia. But rather than limit his obsession to yield curve machinations or the utterances of the Federal Reserve, Rieder focuses on how upheavals in technology may be affecting underlying drivers of capital markets: jobs, GDP and inflation.

"We're going through the largest set of secular changes that I've ever seen. The minutiae we focus on is insane," he says, referring to potentially enormous productivity gains like Amazon's factory robots and Google's self-driving cars, which are not yet being captured by traditional economic-growth metrics.

Rieder holds up a chart that shows the number of photographs taken each year. The figure has grown exponentially, now on its way to 3 trillion, yet the world's top camera companies, like Japan's Olympus and Canon, have seen revenues and market values collapse.

New technologies and tools—like smartphones—require a different way of thinking about growth, he argues. While other bond bigwigs like DoubleLine's Jeffrey Gundlach and Janus' Bill Gross are sounding alarms over the economy, Rieder is an unabashed optimist.

According to Rieder, two components are key to his unorthodox thinking about GDP and consumer spending: quantity and price. He argues that the amount of economic activity has surged in recent years, "but we're doing it at a fraction of the cost." For instance, IT spending by corporations has been sluggish, but the amount of computing power being purchased has risen dramatically.

"It means we can grow without inflation," he says. "The argument that the economy is in a morass is just flat wrong."

Despite his low profile, Rieder is no lightweight among bond gurus. His position atop BlackRock's mountain of fixed-income assets comes after decades trading bonds at places like E.F. Hutton and Lehman Brothers. Rieder developed a reputation for having a steady hand and a tireless work ethic. In the late 1990s, for example, he righted Lehman's troubled emerging markets credit business after infamous hedge fund Long-Term Capital Management imploded. "My world was upside down. ... I just remember Rick was super calm, composed even though everything was collapsing," recalls Mohammed Grimeh, a managing director at Standard Chartered Bank and a former Lehman emerging markets trader.

In 2008, after 21 years at Lehman, Rieder and his team spun out into a Lehman-backed hedge fund, R3 Capital. After Lehman collapsed Rieder got a call from BlackRock cofounders Rob Kapito and Larry Fink, who were looking for a new fixed-income chief. In 2009 BlackRock acquired R3, which had about $1.5 billion under management, and a year later installed Rieder as head of the firm's actively managed fixed-income portfolios, then near $600 billion in assets.

With double the assets today and BlackRock bets firmly placed across the fixed-income spectrum, Rieder can't help being a bond perma-bull in public. So the key to "reading" Rieder is deciphering his relative bullishness. Here are Rieder's

BlackRock's fixed-income chief, Rick Rieder, is perma-bullish and proud.

strongest convictions right now:

Buy junk bonds over investment-grade. "I think high-yield, if you take out commodities, energy and health care, is in better shape than investment-grade," Rieder says. Many highly rated companies have been borrowing heavily for M&A transactions or share buybacks, while lower-rated companies have been extending maturities and shoring up funding. "If you can clip 6% to 7% yields in a world where equity may not do much, that's pretty attractive."

Emerging markets are ready for a rebound. "Many of these countries have been through crises, brought dollar-denominated debt way down and reserves way up," Rieder says. In particular he likes India and Mexico.

Buy selected sovereign debt of Europe. "U.S. rates have been a sanctuary for 25 years, but I think investors need to diversify. In light of the Brexit vote, we expect volatility across Europe, and we think that the ECB will keep rates lower for longer." Rieder likes the discounted bonds of Italy, Spain and Ireland.

Buy asset-backed bonds. Rieder also likes securitized products tied to mortgages, auto loans and credit card receivables, as well as collateralized loan obligations (CLOs), which he says are priced at a discount to their underlying assets: "They provide stable cash flow for portfolios built to survive today's low-rate environment but will also perform relatively well on any increase in rates." *

DAVID YELLIN FOR FORBES

FINAL THOUGHT

"All things are ready, if our minds be so." —**WILLIAM SHAKESPEARE**

The Selfie Trust

You, too, could be wrecked financially by a lawsuit or sudden business reversal. But what if there were a way to protect a good chunk of wealth for your own use?

BY ASHLEA EBELING

On the Wednesday before Thanksgiving, with his staff already gone for the holiday, Dr. Mike, a 58-year-old Delaware pediatrician, gets a phone call from a chronically alarmed father named Peter Wolf. Wolf says his son, Peter Jr., has a fever and a rash, is lethargic and seems seriously ill. Having seen a dozen kids with similar symptoms that day, Dr. Mike instructs Wolf to give Peter Jr. lots of fluids and bring him in on Friday if he isn't better. But on Thanksgiving Peter Jr. is rushed to the hospital with bacterial meningitis. The infection leaves him deaf and with signs of cognitive impairment.

Peter's parents sue, and the Delaware Supreme Court upholds an $8.5 million jury award against Dr. Mike. Since he carries only $3 million in malpractice insurance, more than half his $9 million net worth is at risk. But wait—federal and state laws protect the $3.5 million Dr. Mike holds in pension plans, an IRA, life insurance and an annuity. Plus, he presciently put $2.2 million in two asset protection trusts—one offshore and one a home state trust he created in 1997 after Delaware became the second state to legalize the domestic asset protection trust, or DAPT.

This hypothetical (but not implausible) horror story comes courtesy of Peter Gordon, a Wilmington trust and estate lawyer who has set up more than 150 DAPTs in Delaware. If you have a substantial net worth and own a business, could face malpractice suits or are contemplating marriage, you might have heard a similar pitch. Lawyers typically charge around $10,000 to set up a DAPT.

The idea of protecting assets in a trust for your own benefit is controversial but spreading—this year West Virginia became the 16th state to allow it.

Traditionally, you transfer assets into an irrevocable trust for the benefit of others—say, your kids. If you're worried about their money habits, choice of mate or lawsuit risk, you make it a "spendthrift" trust—an independent trustee is appointed to administer trust payments and to make sure none go to your kids' creditors or exes. A DAPT is a "self-settled" spendthrift trust, meaning you, the donor, are also a beneficiary. If someone gets a judgment against you, the independent trustee will (in theory) refuse to use trust assets (which, remember, came from you) to pay your debts.

ROBERT BABBONI FOR FORBES

Is this stiff-your-creditors ploy really legal? It wasn't before 1997, when Alaska, in a bid to attract out-of-state trust business, passed the first DAPT law.

You can't use a DAPT to shirk a current creditor or claimant—at least not right away. Delaware gives creditors four years (sometimes longer) to go after assets put in a DAPT. Nevada, the most pro-debtor state, usually gives creditors just two years and doesn't give ex-spouses owed alimony, property settlements or even child support any special rights beyond that.

Do DAPTs work as advertised? Maybe not, particularly if you live in one of the 34 states that haven't allowed DAPTs and you set one up in another state, or if you declare bankruptcy. Of three published court decisions involving DAPTs, debtors have lost two.

In 2011 a federal bankruptcy judge ruled an Alaska man's funding of an Alaska DAPT was a fraudulent transfer that should be voided. (Federal law places at risk transfers made up to ten years before bankruptcy.) In 2013 a federal bankruptcy judge ruled a Washington State man couldn't rely on an Alaska trust for protection, since his home state had a strong public policy against DAPTs.

The lone debtor victory was rendered, not surprisingly, by a home-state court: In 2015 the Delaware Court of Chancery dismissed most of a creditor's claims against three Delaware DAPTs as time-barred under Delaware law, even though they were set up by a New York woman who then moved to Florida.

"A client using a DAPT is being made a lab rat by their attorney," warns Jay Adkisson, a Las Vegas asset-protection lawyer, FORBES contributor and DAPT skeptic. "It's all kind of a wink and a nod."

"The promoters exaggerate the potential benefits and minimize the potential risks," says Joe McDonald, a tax lawyer in Concord, N.H. He has set up around 40 DAPTs but has turned away would-be clients who already faced legal claims.

Those who favor DAPTs argue that the real point—as it is with offshore asset protection trusts *(see p. 58)*—is to make it such a hassle to get at DAPT assets that a creditor or legal opponent will settle for what they can get from insurance and other assets. "You want to make it as scary as possible for the creditor," explains Las Vegas lawyer Steve Oshins, a DAPT fan.

Still interested? Take the following steps. You may find you can sleep well without a DAPT, and, if you do fund one, it will be harder to challenge.

Up your insurance. A plaintiff will be less likely to hassle with a DAPT if your malpractice or general liability (umbrella) insurance is ample.

Identify assets that are already creditor-proof. Under federal bankruptcy law, employer-based retirement plans such as 401(k)s are fully protected from creditors, as is $1.28 million of your own individual retirement account. Protection for inherited IRAs varies by state. So does protection for life insurance, annuities and 529 college accounts.

Retitle assets. Assuming it's not your spouse you're seeking protection from, make sure your family home is held as "tenants by the entirety." That way, a creditor of just one spouse won't be able to levy on the property.

Calculate your net worth that's still at

Going Offshore

BY KELLY PHILLIPS ERB

THE RECENT LEAK of millions of documents from Panamanian law firm Mossack Fonseca served as a reminder of what wealthy Americans should already know: Hiding assets offshore can be risky and hiding them from Uncle Sam is a crime. Yet law-abiding folks continue to stash money offshore for reasons that include asset protection, privacy, investment diversification and, yes, in some cases, legal tax savings.

Be prepared to spend $50,000 in legal and trust fees to set up an offshore trust and $10,000 a year to administer it. You'll also incur extra U.S. compliance costs.

Trust reporting rules are tricky, but U.S. citizens and residents with offshore accounts worth $10,000 or more must not only disclose them on their tax returns (and pay taxes on any earnings) but also report them in a separate annual filing with the Treasury known as a Foreign Bank Account Report (FBAR). The penalty for failing to file a required FBAR can be up to 50% of the account's value for each missed year.

So don't consider an offshore trust unless you're putting at least $1 million in it, says Philadelphia trust and estate lawyer Paula M. Jones. And as with a domestic asset protection trust (DAPT), to avoid the appearance of a fraudulent transfer, you'll need to keep sufficient assets outside the trust to pay day-to-day expenses and current liabilities.

With 16 states now permitting DAPTs and places like Delaware, Nevada and Wyoming allowing the true (beneficial) owners of shell corporations to remain secret, why go offshore for asset protection? It's an even "greater obstacle for creditors," answers New York trust and estate lawyer Gideon Rothschild. That means they're more likely to settle for insurance and/or your nontrust assets.

In the Cayman Islands it's a crime to even inquire about a person's accounts, let alone to disclose their contents. Assets you put into a Belize trust can get protection from creditors nearly immediately, compared with a two-year wait in Nevada, the most debtor-friendly U.S. state.

Yet anyone who thinks foreign trusts can be used to hide assets from an angry ex or to avoid a current court judgment "is kidding themselves," Rothschild says. If a court asks you about a trust's existence, you must disclose it. Lie and it's perjury. Refuse to answer and you're in contempt.

What if a U.S. judge concludes you fraudulently moved assets into a trust and orders them returned? If it's a DAPT, then the U.S. trustee will have to comply. If it's a foreign trust, the independent trustee may respond that the laws of his own country bar turning over the funds. The Cook Islands doesn't even recognize foreign judgments.

So then what? In the worst case, you could end up rotting in jail for contempt until you comply. Sure, there's the impossibility defense—as in, it's impossible for me to get at the assets to comply. But courts have held that's no defense when your inability to repatriate the assets is the intended result of your own conduct in setting up the trust. In the most famous case a couple that moved cash to the Cook Islands to protect themselves from the consequences of their Ponzi scheme spent five months in jail.

Offshore trusts can also come in handy to build as well as to protect wealth. Hedge funds are often incorporated offshore to avoid both heavy U.S. regulation and entity-level taxation. And there are some exotic investments that are simply easier to hold in a foreign entity.

Liesel Pritzker Simmons, heir to a piece of the Pritzker family fortune, and her husband, Ian, turned up in the leaked Panama law firm papers as shareholders of a Panamanian-registered company called Blue Valley Agroinvestment. Turns out the couple was using it to make a social impact investment—in a sustainable-agriculture project in Colombia.

risk. Here's the key: Is the cash flow generated by these assets more than enough to cover your expenses and debts? If not, transfers to a DAPT could more easily be attacked as a fraudulent conveyance.

Consider other trust options. If your at-risk assets generate more income than you'll ever need, set up a traditional, plain-vanilla trust, with your children (but not yourself) as beneficiaries. This should hold up in court, but you really are giving the assets away. Oshins recommends those living in non-DAPT states use a hybrid Nevada DAPT: The trust names a client's spouse and children as beneficiaries, but a "trust protector" has the power to add the client as a beneficiary. (This hasn't been tested in court; a judge might decide you were really a beneficiary all along, Adkisson warns.)

Decide on a DAPT percentage. Still want a DAPT? The crucial question now is: What percentage of your at-risk assets should go into it? Remember, money in this protected trust is not supposed to be used for current or anticipated living expenses. Oshins says he uses the "eyeball test": "Could I look a judge in the eye and say I didn't feel I needed access to these assets?"

FINAL THOUGHT

"A false sense of security is the only kind there is." —**MICHAEL MEADE**

ROBERT BABBONI FOR FORBES

GO, CONSIDER, STOP

EYE ON EARNINGS

THE FED'S INTEREST-RATE CAUTION IS A COMPLICATION FOR INCOME INVESTORS LIKE **LINDA BAKHSHIAN**, WHO RUNS $4.9 BILLION AT PITTSBURGH-BASED FEDERATED INVESTORS.

ALLERGAN

Has ample capital after selling its generics business to Teva Pharmaceutical. A strong core of products (Botox) and potential blockbusters in the pipeline should help it generate earnings in the mid-$20 range per share.

DISCOVER FINANCIAL SERVICES

Diversified lender has industry-low charge-off rates and 20% return on equity. When charge-offs rise, its conservative underwriting should offer insulation, but the Fed's rate-hike caution is an earnings-growth hurdle.

CALIFORNIA WATER SERVICE GROUP

Be wary of pricey stocks in sectors like utilities and consumer staples. Such firms often carry rich valuations because they're seen as replacements for bonds with pitiful yields. If rates rise, watch out.

TRUMP OR HILLARY?
EITHER WAY, THERE'S A WAY TO PROFIT

CRAZY AS THIS COLUMN will sound to many readers, I have two new political reasons you've never heard why stocks will likely exceed expectations straight ahead, with some volatility thrown in for good measure.

First, blunt history: In election years when Republicans win, markets have done better than when Democrats win. Think I'm ideological here? Hear it out. S&P 500 data since inception show GOP victory years were 21.6% stronger than Democrat years—and mostly back-end-loaded. Democrats, though, fared 22.4% better than Republicans in inaugural years. Simple facts, simple data!

It's a flip-flop market thing. We get excited about pro-market, pro-business presidential prospects when a GOPer wins and then get disappointed after he takes office. Buy on the rumors, sell on the news. With Democrats, it reverses: Less business-hostile than feared means a positive surprise in inaugural years.

I actually see Trump winning (which means a good second half for stocks). Even if he doesn't win the popular vote, if he manages to keep it close—despite Clinton's overwhelming margins in places like California and New York—he's still in the game in the electoral college.

And if I'm wrong? Then the political cycle would argue for a milder next six months and a strong 2017 inaugural year. Either way, take your pick—and pick these seven stocks good for this bull ride:

TWO NEW POLITICAL REASONS WHY STOCKS WILL LIKELY EXCEED EXPECTATIONS STRAIGHT AHEAD

In December I recommended **NOVO NORDISK (NVO, 53)** at $53. It's fared so-so but should do much better—with its far-into-the-future predictable earnings stream—as uncertainty keeps falling this year. While it isn't cheap, it needn't be right now. It's time!

By contrast, **CVS HEALTH (CVS, 94)** is almost exactly the reverse. As America's largest retail pharmacy chain by a wide margin and superbly managed, it did wonderfully from when I suggested it on Apr. 14, 2014 until last July—up 50%—but has been a dog since, down 16%. So it's time to buy again. It should have another long run in the sun before this bull market ends. Its great—and aging—health-oriented customer demographic makes it cheap at 70% of revenue and 15 times my 2017 earnings estimate.

HORMEL FOODS (HRL, 35) has cratered on profit margin and "peak earnings" fears. Way overdone! Its commitment to new products on top of its eternal favorites like Dinty Moore, Muscle Milk, Skippy, Spam, Stagg Chili and Wholly Guacamole—plus its global effort—fully justify its P/E of 20 times my Oct. 2017 earnings estimate.

Similarly valued is **MONDELEZ INTERNATIONAL (MDLZ, 45)**—a name less known than the blockbuster brands it owns, like Cadbury, Chips Ahoy, Honey Maid, Nilla, Nutter Butter, Oreo, Trident and so many more. High-quality consumer staples regularly shine in maturing bull markets because cautious later entrants are too fearful to own stocks earlier but become comfy with names like these—and bid them up. The time is perfect. Take a bite.

There is nothing I like about entertainment giant **COMCAST (CMCSA, 63)**—its offerings rot our social fabric—except the stock, which is great, growing endlessly and profitably. Want to get ahead from sliming the world? Then buy Comcast at twice annual revenue and 16 times my 2017 earnings estimate.

As I said last month, old tech typically spurts in the later phase of a bull market. **ORACLE (ORCL, 41)**, the leader in large business software systems, hasn't spurted recently and is due. Not much downside either at 14 times my May 2017 earnings estimate, with a dividend yield approximating that of a ten-year government bond.

Update on **AMAZON (AMZN, 722)**, last recommended on Aug. 12: Despite its lofty valuations and 63% increase over the last year it hasn't done much this year. Again, expect a spurt ahead. It should lead the market overall with fits and starts through the end of this cycle—maybe longer. F

THOMAS KUHLENBECK FOR FORBES

MONEY MANAGER KEN FISHER'S LATEST BOOK IS *BEAT THE CROWD* (WILEY, 2015). VISIT HIS HOME PAGE AT WWW.FORBES.COM/FISHER.

REAPING RETURNS FROM URBAN RENEWAL

ECONOMICALLY DEPRESSED areas have plagued cities for years. One tool used for redeveloping these blighted areas is called Tax Increment Financing (TIF). These bonds raise funds to build out, refurbish and enhance troubled areas. Sometimes they're tax-free, and sometimes they're not. The bonds rely on the appreciation of the new or renovated buildings and areas as well as on incremental tax revenues from the projects to pay investors their timely principal and interest. TIF bonds are 100% dependent on the success of a particular project.

All 50 states use TIF financing. The key for investors is assessing the viability of the project being financed. These days courts favor pensioners (voters) over general obligation bondholders, so TIFs, with no pension obligations and a dedicated revenue stream, have a distinct advantage.

Here's one TIF bond I like. Portland, Ore. has a 351-acre parcel within the Downtown Waterfront Urban Renewal Area. This is a mature project with 65% of the properties being used for commercial activity. There is little vacant land left, and this redevelopment area has been transformed into several high-density urban neighborhoods. The issuer did a refunding in 2012 by coming to market with taxable and tax-exempt municipals.

Assessed property values are stable, incremental revenues are rising, and there is no plan to issue more debt. Buy these **PORTLAND, ORE. RIVER DISTRICT URBAN RENEWAL & REDEVELOPMENT TAXABLE BONDS, SERIES A, 4.28% TAXABLE MUNIS MATURING JUNE 15, 2025 (CUSIP: 73674NBQ3).** Rated A1 by Moody's, they are federally taxable but exempt from Oregon state tax. The strength in the tax base continues to be good. Bonds yield 3% to the 2022 call and 3.38% to the final 2025 maturity. A bond in the tax-exempt **SERIES C, 5% DUE JUNE 15, 2030 (CUSIP: 73674NCH2)** will have tax-exempt yields of 1.85% to the 2022 call and 3.4% to maturity.

IF 3% YIELDS AND REVITALIZING BLIGHTED URBAN AREAS ARE IMPORTANT TO YOU, THEN TIF BONDS SHOULD STRIKE A CHORD

That little voice in your head should say, "Hmmm, the Portland River District is mature, the financials show increasing assessed value, the top ten taxpayers include AT&T, CenturyLink and SPF Brewery, to name a few. None represent more than 5.5% of total assessed value." If so, then you understand the basics of TIF bond risk assessment.

Atlanta's Eastside Project issued a tax-free TIF to refund its original 2007 bonds. The Eastside Project encompasses 890 acres within the city's central business district and midtown area. Bonds are backed by a lien on incremental tax revenues. Of the ten largest taxpayers, none represent more than 5% of the assessed value. However, there is a concentration of multifamily residences. This makes sense, given Millennials' preference for renting in high-density areas. Audited 2015 financials show an estimated 3.13 times debt-service coverage.

If you live in Georgia or a state with no personal income tax, then invest in **ATLANTA, GA. TAX ALLOCATION EASTSIDE PROJECT, 5% DUE JAN. 1, 2027, CALLABLE JAN. 2026 (CUSIP: 047849EB6)**, yielding 2.11% to the call and 2.33% to maturity, and rated A+ by Fitch. Taxable equivalent yields are 3.49% to the call and 3.86% to maturity for those in the top federal bracket.

A TIF of a different flavor is the District of Columbia Tax Increment Revenue for the Gallery Place Project, comprising one million square feet of urban retail, entertainment, residential and office space. The project, which is close to the Smithsonian, the National Mall and multiple entertainment, retail and culinary hot spots, was completed in 2005.

The tax increment is paid by businesses and residences located within the project, and these tax-exempt bonds are rated AA– by Fitch.

Buy **DISTRICT OF COLUMBIA TAX INCREMENT REVENUE BONDS FOR GALLERY PLACE PROJECT (CUSIP: 254840DR9) 5% CALLABLE JUNE 1, 2021, MATURING JUNE 1, 2027.** The tax-free yield to call is 1.8% and 3.35% to maturity. That is a taxable equivalent yield of 2.98% to the call and 5.54% to maturity if you are in the 39.6% bracket.

Essential information and details of TIF project areas can be found in their official statements, which are located online at emma.msbr.org. These TIF taxable and tax-free bonds are a great diversification for corporate bonds in your tax-deferred accounts and general obligation bonds in your municipal bond accounts.

MARILYN COHEN IS PRESIDENT OF ENVISION CAPITAL MANAGEMENT, A LOS ANGELES FIXED-INCOME MONEY MANAGER. VISIT HER HOME PAGE AT WWW.FORBES.COM/COHEN.

THOMAS KUHLENBECK FOR FORBES

WHAT'S YOUR NUMBER?

RETIREMENT SAVERS: If you don't have a fairly precise idea of your number, you'd better work on getting it. I'm not talking about the number of dollars you're planning to pile up by age 66. I'm talking about the dollars you spend every year on money management.

Look for the number on the year-end statement from your financial advisor. It adds up five things: the percentage asset fee (if any), loads paid to buy investment products, expenses built into products you own, the 20% incentive fees buried inside your hedge funds and the market impact (bid/ask spread) of securities trades that you made or that were made on your behalf inside a fund.

Oh, dear. The number is missing? Doubtless the brokerage is planning to add that sometimes embarrassing disclosure to its reports. But its IT department is tied up at the moment.

So come up with the number yourself. I'll show you how by figuring the costs incurred by one saver who shared a portfolio spreadsheet with me. X, as I will call him, is an engineer in his 60s. He has $1.1 million with a large and reputable brokerage firm. (He has a lot more in employer retirement plans, but they won't be part of this analysis.)

The brokerage account consists of a bit more than $900,000 in tax-deferred IRAs and the balance in money markets currently earning nothing. The whole pot is subject to the broker's 1% asset fee. So we're starting with $11,000 in annual costs right there.

HOW TO FIGURE YOUR PORTFOLIO'S TOTAL COST

The IRAs are invested in an assortment of individual stocks plus a blizzard of mutual and exchange-traded funds. For each fund position I multiply the dollar amount by an expense ratio pulled off Morningstar.com. I assume, charitably, that neither the money markets nor the individual stocks have any transaction or other costs associated with them.

What about the trading costs incurred by funds? These are a matter of some debate, but I think a conservative estimate is that trades cost 0.25% round-trip on average. For a fund with 100% turnover, then, you could add 0.25% to the Morningstar expense ratio. X's broker, mercifully, selected funds with fairly low turnover, so trading has not made a big dent in X's net worth.

When I add up the indirect costs (fund overhead and fund trading) in the brokerage account I come up with $3,600. So X is losing $14,600 a year to money management.

And what does he get for it? Clutter. X owns 21 funds. This messy amalgam accomplishes nothing that could not be achieved with three cheap index ETFs (holding bonds, U.S. stocks and foreign stocks). Individual stocks? They make sense in a taxable portfolio, where you can extract capital losses, but no sense in a tax-deferred account.

I can guess why the broker came up with the busy portfolio: to attach a fireworks display to what is a trivial assignment, namely, identifying the three index funds. You don't need to pay someone $11,000 to do that.

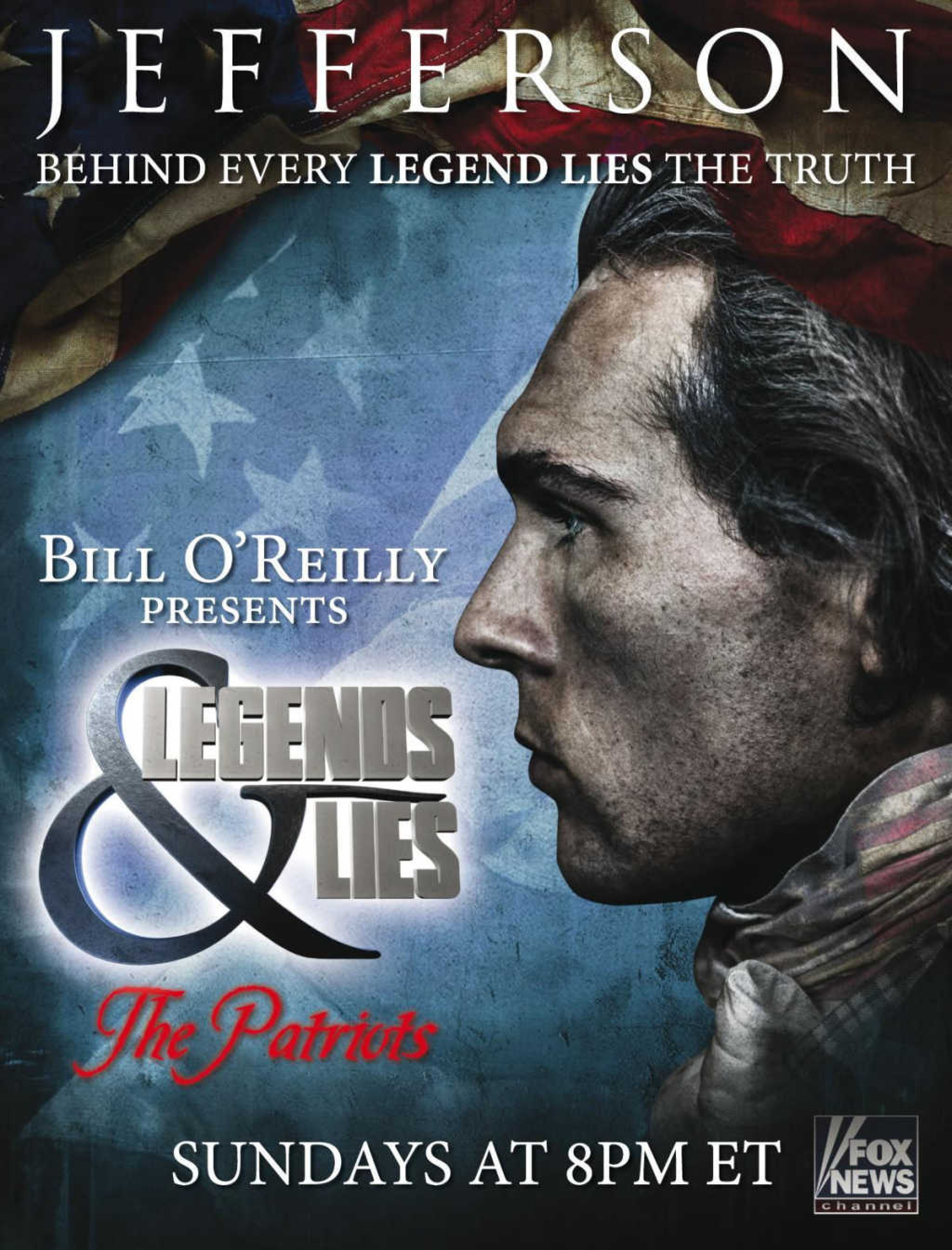
Some financial advisors earn their keep. They design retirement and estate plans, calculate the optimum amount of your IRA to Rothify, find ways to extract state tax benefits from college savings without giving away too much in fees, help you arrange your assets so that they are not damaged by college-aid formulas and find tax-smart ways to liquidate appreciated assets.

What are you spending on financial advice? Get out your Excel and do the arithmetic. Now assign a value to the tax-cutting and other tips you're getting. The correct value to assign to security selection is zero.

The index portfolio for your retirement account, if you are past middle age: 40% each in **SCHWAB U.S. BROAD MARKET (SCHB, 49)** and **VANGUARD TOTAL BOND MARKET (BND, 84)**, and 20% in **VANGUARD TOTAL INTERNATIONAL STOCK (VXUS, 43)**. The annual cost, per $1 million, is $620.

THOMAS KUHLENBECK FOR FORBES

GO TO FORBES.COM/SITES/BALDWIN FOR MORE ON INCOME STRATEGIES.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Features

July 26, 2016

PHOTOGRAPHED BY MICHAEL PRINCE FOR FORBES

PHOTOGRAPHED IN LOS ANGELES BY JAMEL TOPPIN FOR FORBES. KIM KARDASHIAN WEARS A BODYSUIT BY ULVANA SERGEENKO WITH SKIRT AND THIGH-HIGH BOOTS BY BALMAIN. HAIR BY JEN ATKIN FOR THE WALL GROUP; MAKEUP BY ARIEL TEJADA; STYLING BY RENLOO PADORA.

CREDIT TK

CELEBRITY 100

GAME CHANGERS

THANKS TO CELLPHONES AND THE APP STORE, THERE'S A NEW WAY TO MONETIZE FAME. MEET THE NEW MOGULS OF GAMING: KIM KARDASHIAN, ELLEN DEGENERES AND DOZENS OF OTHER BOLDFACED NAMES HAVE QUICKLY CREATED A $200 MILLION COTTAGE INDUSTRY AROUND MOBILE GAMES.

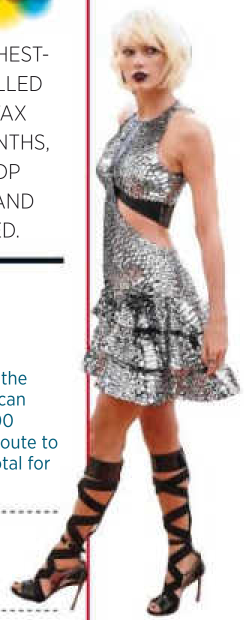
BY NATALIE ROBEHMED

CREDIT TK

CELEBRITY 100

THE WORLD'S 100 HIGHEST-PAID CELEBRITIES PULLED IN $5.1 BILLION PRETAX OVER THE PAST 12 MONTHS, MORE THAN THE GDP OF BELIZE, GAMBIA AND BHUTAN—COMBINED.

1 Taylor Swift
MUSICIAN *U.S.*
$170 MIL
The pop superstar smashed the Rolling Stones' North American touring record, grossing $200 million on the continent en route to a quarter-billion dollars in total for her 1989 World Tour.

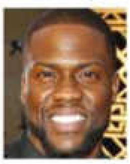


2 One Direction
MUSICIANS *U.K.*
$110 MIL

3 James Patterson
AUTHOR *U.S.*
$95 MIL

4 Dr. Phil McGraw
PERSONALITY *U.S.*
$88 MIL

4 Cristiano Ronaldo
ATHLETE *PORTUGAL*
$88 MIL

6 Kevin Hart


COMEDIAN *U.S.*
$87.5 MIL
Small guy, big year: The 37-year-old comedian packed venues at a level more comparable to Bruce Springsteen or Paul McCartney than to Louis C.K. or even Jerry Seinfeld, all of whom he outearned.

7 Howard Stern
RADIO HOST *U.S.*
$85 MIL

8 Lionel Messi
ATHLETE *ARGENTINA*
$81.5 MIL

9 Adele
MUSICIAN *U.K.*
$80.5 MIL
With a new album that sold a record 3.38 million copies in its November 2015 opening week, she's the only musician on our list who made more than half her money from music.

KIM KARDASHIAN

As with so many glass-walled boardrooms in West Hollywood, a media mogul sits at the head of the table to do some big-money business. Pencil in hand, Kim Kardashian flicks through a binder of emoji ideas, finally ticking off a red bandanna, tanning oil and a swimsuit.

"I should take a photo of myself in the Pablo one-piece, and you can use that," the reality television star says, referring, in the true vertically integrated nature of modern celebrity, to her husband Kanye West's merchandise line. Later she will Instagram a selfie in the swimsuit that her app developer, Whalerock Industries, will turn into an emoji and include in an app that her fans can download for $1.99.

It's easy to scoff at this and pretty much everything else Kim Kardashian does. The embodiment of the selfie era, she has stoked the notoriety she gained from a sex tape a decade ago by sharing almost every detail of her life, begetting, like some nightmare mash-up of Andy Warhol and *Groundhog Day*, perpetually more fame.

But in obsessing over the details of an avatar, Kardashian has stumbled into an entirely new way to monetize fame, and she's been shrewd enough to capitalize on a massive scale. Kardashian stars in a mobile game, Kim Kardashian: Hollywood, in which players create their own celebrity, befriend Kim and work their way onto the A-list.

Vapid, yes, but the numbers look very smart. Since its June 2014 launch Kim Kardashian: Hollywood has been downloaded 45 million times and generated $160 million in revenue. FORBES estimates that Kardashian has pocketed $45 million from it over that period. This year she earned $51 million to land at No. 42 on FORBES' Celebrity 100 list; 40% of her yearly paycheck came from the game.

She's not alone. As gaming has moved from consoles to desktops to smartphone apps, the ability to create a marketable game has spread from pro athletes to pretty much anyone with a following. Some are obvious: action hero Jason Statham in a shoot 'em up game. Football announcer Tony Gonzalez, a former all-pro, coaches personal training sessions. But many are plowing niches at the end of the long tail: Tom Hanks, an avid typewriter collector, built an app that simulates writing on a typewriter, while William Shatner's Shatoetry composes poetry for purchasers. From pretty much nowhere at the beginning of the decade, celebrity-driven mobile games have become a $200-million-a-year business, FORBES estimates, with at least 30 celebrities—including 12 of the Celebrity 100—either boasting their own mobile game or ready to release one.

CLOCKWISE FROM TOP RIGHT: EZRA SHAW/GETTY IMAGES; JESSE GRANT/GETTY IMAGES; STEFAN HOEDERATH/GETTY IMAGES; JEFF VESPA/GETTY IMAGES; MIKE COPPOLA/GETTY IMAGES

“I became really intrigued with the tech world. I started spending a lot of time in San Francisco,” says Kardashian, without a hint of irony. “I realized this is really going to be the next cycle of my career and this is what I want to focus on.”

Spending time in San Francisco, either literally or figuratively, means adapting to Silicon Valley’s payment model. Rather than take a flat licensing fee, the vast majority of celebrities make money from apps the way you might if you managed to get something into the App Store: The more it sells, the more you make. At times, they’ll negotiate a minimum guarantee.

As with most things celebrity, it’s a hits business. Kardashian’s game is a groundbreaker. Comedian Ellen DeGeneres isn’t far behind: She leveraged her smart and goofy persona with Heads Up!, a trivia game that’s been downloaded 25.5 million times and clocked an estimated $25.9 million in sales since its 2013 launch. YouTube videogame commentator PewDiePie—whose game, Legend of the Brofist, allows you to pretend you’re him and fight with cartoon barrels—has a run rate of almost $1 million a month, according to data provider ThinkGaming.

But since the core component of entrepreneurship is risk, the games that fail wind up yielding very little to the celebrity and put pressure on the game producers. In Hollywood, where celebrity socialism still rules, the free market now exists on everyone’s phones.

WHILE THE GENESIS ULTIMATELY goes back to pinball and slot machines, the father of modern celebrity gaming was, unsurprisingly, Michael Jackson, with his 1990 Sega game, Michael Jackson’s Moonwalker, which console players could dance through. Still, it was mostly a boys’ thing; the percentage of adults who owned and regularly used consoles was small, and videogame players skewed heavily male, cutting off at least half the potential market.

Now, however, pretty much all of us have a game platform in our pocket and purse at all times. The smartphone has opened the industry up to a far wider audience—55% of mobile gamers are women, according to research firm EEDAR—and helped the celebrities shilling for it make millions more from back-end profits over upfront endorsement deals.

“I love my big computer, but I can’t even tell you the last time I sat in front of it,” says Kardashian, 35, gesturing to her iPhone 6 Plus with her white-painted nails. “I’m always on my phone.”

Leading the charge in celebrity-driven mobile games is Glu Mobile, the San Francisco-based developer behind Kardashian’s and Katy Perry’s games. Owned in part by Chinese tech giant Tencent, Glu has bet big on star subjects: 30% of its $249.9 million in 2015 revenue came from games with celebrity names in the title, including $71.8 million generated by Kim Kardashian: Hollywood.

Glu’s secret sauce: “Take a game engine that we already know has a high lifetime value and monetizes well and figure out how to turbocharge it,” says CEO Niccolo de Masi. Turbocharging means overlaying a celebrity with a huge social following on top of tested games that have already succeeded on their own merits.

Kim Kardashian: Hollywood was patient zero. It started life as Stardom: The A List (2011) and Stardom: Hollywood (2013), in which players earn points to work their way to fame. At its

10 Rush Limbaugh
RADIO HOST ***U.S.***
$79 MIL

11 LeBron James
ATHLETE ***U.S.***
$77 MIL
King James led the Cavs to Cleveland’s first pro sports crown in 52 years, winning his third NBA Finals MVP Award. He also signed a lifetime deal with Nike in December potentially worth more than $1 billion.

12 Madonna
MUSICIAN ***U.S.***
$76.5 MIL

13 Ellen DeGeneres
PERSONALITY ***U.S.***
$75 MIL

13 Rihanna
MUSICIAN ***BARBADOS***
$75 MIL

15 Garth Brooks
MUSICIAN ***U.S.***
$70 MIL

16 Roger Federer
ATHLETE ***SWITZERLAND***
$68 MIL

17 AC/DC
MUSICIANS ***AUSTRALIA***
$67.5 MIL

18 Rolling Stones
MUSICIANS ***U.K.***
$66.5 MIL

19 Dwayne Johnson
ACTOR ***U.S.***
$64.5 MIL
Rock-solid box-office numbers helped the erstwhile wrestler become the world’s highest-paid actor.

20 David Copperfield
MAGICIAN ***U.S.***
$64 MIL

21 Calvin Harris
MUSICIAN ***U.K.***
$63 MIL

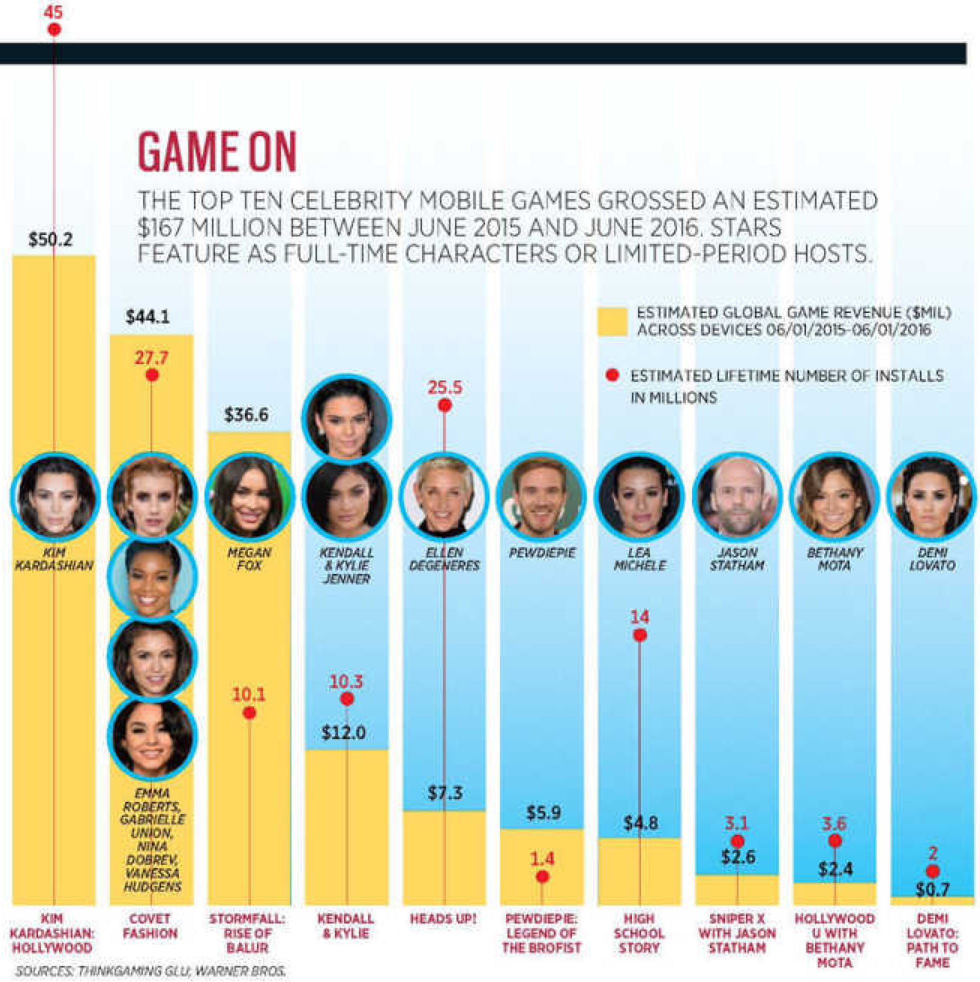
22 Diddy
MUSICIAN ***U.S.***
$62 MIL

peak, in 2013, Stardom: Hollywood had just 250,000 active daily users, but developers knew a good chunk of them were spending money—its 500,000-odd downloads generated an estimated $2.5 million, or $5 apiece.

"We rapidly worked out that the core fantasy for a Kim follower is exactly what the Stardom game was about, which was becoming famous," says de Masi. In the summer of 2013 de Masi called Kardashian's agent, who brought the game to her.

"I loved videogames, growing up," Kardashian says. "I remember I asked Kanye, 'Should I do this?' He was like, 'Yes!' That's how he got into music, because he wanted to do music for videogames and wanted to create videogames." But Kardashian was still cautious: "I was like, 'I wonder if people are really going to ... mimic my life.'"

For the ever image-conscious Kardashian, the chance for control over her own virtual character was too good to turn down. By the end of fall she and de Masi had nailed down a contract brokered by her mother/manager, Kris Jenner, that provided Kardashian with a small six-figure-minimum guarantee against, sources say, a whopping 40% cut of revenues, after platform fees. (Glu denies this figure.) Kardashian also had overall editorial approval, spending a year finalizing clothing ideas and okaying



GAME ON: GETTY IMAGES

CELEBRITY 100

23 Jackie Chan
ACTOR *CHINA*
$61 MIL

24 Bruce Springsteen
MUSICIAN *U.S.*
$60.5 MIL

25 Paul McCartney
MUSICIAN *U.K.*
$56.5 MIL

26 Justin Bieber
MUSICIAN *CANADA*
$56 MIL
A comeback album, with such hits as the aptly named "Sorry," propelled the bad boy back onto our list.

26 Kenny Chesney
MUSICIAN *U.S.*
$56 MIL

26 Novak Djokovic
ATHLETE *SERBIA*
$56 MIL

26 Kevin Durant
ATHLETE *U.S.*
$56 MIL

30 Matt Damon
ACTOR *U.S.*
$55 MIL

30 Ryan Seacrest
RADIO HOST *U.S.*
$55 MIL

30 U2
MUSICIANS *IRELAND*
$55 MIL

30 The Weeknd
MUSICIAN *CANADA*
$55 MIL

34 Beyoncé
MUSICIAN *U.S.*
$54 MIL
Queen B turned betrayal into *Lemonade:* The record became her sixth No. 1, helping her outearn husband Jay Z.

34 Gordon Ramsay
CHEF *U.K.*
$54 MIL

36 Jay Z
MUSICIAN *U.S.*
$53.5 MIL

37 Luke Bryan
MUSICIAN *U.S.*
$53 MIL

each storyline in the game. She signed off on "every single outfit, to the eyeliner, to the hairstyles, to the color tones," she says, and still does. ("She responds to my texts faster than my own employees," says de Masi.)

When the game launched, Kardashian says, she was overwhelmed by the positive comments. Then it tallied $74.3 million in its first six months. "When I found out what my percentage was, I was, like, 'Oh, my gosh,'" she says. "Then I was like, 'Okay, whatever we've got to do to keep this going.'"

As with almost all of these games, the model is giving the game away for free and then monetizing the most devoted players through in-app purchases—little extras that add elements and keep the game fresh. With that in mind, Kardashian started synching real-life events with virtual ones, taking the game characters to Punta Mita, Mexico the same day Kardashian arrived. "The whole idea was to make it feel as live-time as possible," she explains. "I would give [Glu] bikinis and be like, 'Hurry up and mock up this bikini, because I'm going to wear it, and then you can have it live in the game!'" They began matching vacations and work trips to in-app activity—and fans ate it up.

Free games tend to have a life cycle of less than 18 months—not long for an endeavor that may require a team of two dozen expensive developers. But the back-end incentive drives celebrities to promote games for far longer than they would a regular endorsement. Rather than just getting a lump sum up front, celebrities sign a multiyear contract that usually includes a noncompete clause preventing them from building games with other developers. In addition to a guarantee, most developers pay a cut of revenue that escalates depending on how well the game performs; Glu's typical royalty rate is close to 22%.

In turn, the celebrity promotes the game on social media and TV. DeGeneres showed the potential power of such advertising: She regularly played the 99-cent Heads Up! on her show, viewed by 3.6 million people a day, according to Nielsen. That has helped keep the game a mainstay on the top-paid app charts—and allowed DeGeneres to pocket an estimated $9 million from the app since.

Other companies have pushed the framework. Launched in 2013, Covet Fashion generates some $44 million in annual revenue, lengthening the shelf life of its app by signing up stars to briefly "host" a game for a month at a time. Its 97%-female game players style outfits for a rotating cast of former Disney and Nickelodeon stars: Emma Roberts, Gabrielle Union, Nina Dobrev and Vanessa Hudgens have all taken turns as the celebrity face of the app. For brief takeovers, talent is either paid based on the number of new users he or she signs up—around 2 cents per new download—or receives a minimum guarantee and a cut of the extra revenue brought to the game, as with Covet Fashion.

Roberts, the first-ever host, helped boost December 2015 revenues by $26,000, to an estimated $3.5 million. In January Union nudged sales to $3.7 million; the next host, Dubrov, juiced revenues up to $4.3 million. The most recent, Hudgens, saw estimated monthly revenues of $3.9 million, but she snagged approximately 2 million new users for the game. That likely earned Hudgens some $50,000—pocket change, but not bad for lending her likeness and coming up with ten style challenges for fashion fanatics.

ON A MAY EVENING at Manhattan's dimly lit Slate nightclub, well-heeled guests are swiping at iPads on cocktail tables. They are at the launch party for Fetty Wap's new

BOTTOM FROM LEFT: SPLASH NEWS/NEWSCOM; JAMIE MCCARTHY/GETTY IMAGES; ANDREW REDINGTON/GETTY IMAGES; ANDREW D. BERNSTEIN/NBAE/GETTY IMAGES; MIKE MARSLAND/GETTY IMAGES

37 Tom Cruise
ACTOR ***U.S.***
$53 MIL

37 Phil Mickelson
ATHLETE ***U.S.***
$53 MIL

37 Cam Newton
ATHLETE ***U.S.***
$53 MIL

37 Jordan Spieth
ATHLETE ***U.S.***
$53 MIL
With $21 million in prize money, including his $10 million FedEx Cup bonus, golf's golden boy nearly tripled last year's haul.

42 Kim Kardashian
PERSONALITY ***U.S.***
$51 MIL

43 Kobe Bryant
ATHLETE ***U.S.***
$50 MIL
The NBA's third all-time leading scorer retired as its top all-time earner, after pulling in $680 million during his playing career.

44 Muse
MUSICIANS ***U.K.***
$49 MIL

45 Foo Fighters
MUSICIANS ***U.S.***
$48.5 MIL

46 Johnny Depp
ACTOR ***U.S.***
$48 MIL

47 Toby Keith
MUSICIAN ***U.S.***
$47.5 MIL

48 Judy Sheindlin
PERSONALITY ***U.S.***
$47 MIL

49 Lewis Hamilton
ATHLETE ***U.K.***
$46 MIL

49 Jennifer Lawrence
ACTOR ***U.S.***
$46 MIL
For the second straight year Lawrence is Hollywood's highest-paid woman.

51 Tiger Woods
ATHLETE ***U.S.***
$45.5 MIL

52 Eli Manning
ATHLETE ***U.S.***
$45 MIL

53 Joe Flacco
ATHLETE ***U.S.***
$44.5 MIL

CELEBRITY 100

54 Bigbang (see p. 76)
MUSICIANS ***SOUTH KOREA***
$44 MIL

54 Tom Brady
ATHLETE ***U.S.***
$44 MIL

Deflategate didn't flatten Brady's earnings: He led the NFL in merchandise sales during the 2015 season and signed a contract extension in March that included a $28 million signing bonus.

54 Floyd Mayweather
ATHLETE ***U.S.***
$44 MIL

Though he retired in September, the man called Money earned $12 million outside the ring over the last 12 months through personal appearances and profits from his TMT line of merchandise.

57 Jerry Seinfeld
COMEDIAN ***U.S.***
$43.5 MIL

58 Ben Affleck
ACTOR ***U.S.***
$43 MIL

58 Sofía Vergara
ACTOR ***COLOMBIA***
$43 MIL

Sure, she makes millions from *Modern Family,* but the actress has learned the real money is in endorsements and licensing deals: She promotes furniture, coffee machines and even nursing uniforms.

60 Rory McIlroy
ATHLETE ***U.K.***
$42.5 MIL

61 Elton John
MUSICIAN ***U.K.***
$42 MIL

61 Russell Wilson
ATHLETE ***U.S.***
$42 MIL

street-racing game—an endeavor published despite the rising rapper's serious motorcycle accident eight months prior.

Fittingly, Fetty Wap: Nitro Nation Stories, released by Creative Mobile, crashed. It never appeared on the App Store's top free-app list. As one of an estimated 40,000 racing games in the App Store, it failed to stand out.

Fetty is far from alone. Game developer Pocket Gems, which took in an estimated $34 million in 2015 from Episode, a choose-your-own-adventure game targeted at teenage girls, released a chapter of the game with singer Demi Lovato dubbed Demi Lovato: Path to Fame. The Glu model—a preexisting game plus a celebrity with lots of social followers—failed to replicate the Kardashian magic. Lovato's stand-alone app drew an estimated 2 million installs but likely generated revenues of less than $1 million.

Another huge pop star, Shakira, similarly failed last year with Love Rocks Shakira, a 2015 puzzle game by Angry Birds developers Rovio. Players have to match up links of gems—a proven game formula but one completely unrelated to the Colombian superstar's talents. Despite the fact that the game uses her image for advertising, her name in the title and her music in the background, that disconnect translated into mere seven-figure download totals and a measly six-figure revenue.

Even the world's glitziest athlete doesn't succeed if the context is wrong. Soccer star Cristiano Ronaldo (No. 4 on the Celebrity 100) released Cristiano Ronaldo: Superstar Skater in 2015. Rather than feature him on a pitch, Ronaldo skateboards through the streets of Las Vegas eluding paparazzi. The bizarre partnership landed just 1.3 million downloads, per estimates, not even 1% of his 219 million social followers. A just-released soccer-themed game, Kick'n'Run, is performing better.

Poorly matched celebrity takeovers don't juice user numbers, either. Comedian Gabriel Iglesias joined

HEADS UP, UP AND AWAY

Would you pay 99 cents to play charades? Well, more than 25 million have. Heads Up!, the hit game from Ellen DeGeneres and Warner Bros. Entertainment, has players guess the word on the cellphone screen held to a friend's head as time counts down. Topics include superstars and blockbuster movies; the app records videos of goof-ups. Simple—and lucrative.

The idea was spawned from *The Ellen DeGeneres Show*, when DeGeneres played a version with guests holding physical cards. Developers worked on it for six months ahead of its May 2013 launch, and it immediately shot to the top of the App Store and was downloaded over 650,000 times in its first month. DeGeneres provided priceless marketing by playing it with celebrities on her variety show.

Despite her in-show backing, DeGeneres' branding is purposely sparse. Fans will identify her eyes in the logo and recognize a show regular, Jeannie, in its App Store examples, but there is little else. That has likely helped it reach outside the demographics of the show, inching into bars and family dinners. (Heads Up! Kids, a picture version that removes the necessity of reading English, launched in 2014.)

Play spikes on the weekend and around holidays: Between 300,000 and a million games are played a day on average, but on Thanksgiving that leaps to 3 million games. On New Year's Day numbers climb to 4.5 million; Christmas Day sees 5.5 million games played. Its multiplayer requirement necessitates telling friends about the game, but that setup may have capped its success: Mobile gaming's biggest moneymakers are all single-player games that can be logged into on the train, in line or alone at home. Still, Heads Up! has had remarkable staying power: It remains among Apple's top-paid apps three years after launch and a fun way for DeGeneres to supplement her already hefty income. *—N.R.*

CLOCKWISE FROM TOP: DUSTIN BRADFORD/GETTY IMAGES; MICHAEL ROZMAN/WARNER BROS; GREGG DEGUIRE/GETTY IMAGES; PATRICK SMITH/GETTY IMAGES tower defense game Timenauts for 11 days in March. The game, which focuses on battling enemies, has little to do with being funny. Estimates suggest he scored under 100,000 new downloads for the game.

But perhaps the biggest lesson comes from one of the biggest stars in the world, Katy Perry. Though she has some 210 million followers on social media, FORBES estimates that Katy Perry Pop was downloaded just over 1.3 million times, likely generating only six figures in revenue. A disaster for Glu, given that it likely cost several million to make, even before counting the upfront minimum guarantee paid to Perry and the estimated six figures spent in initial marketing costs.

The problem: Katy Perry Pop was little more than a music-driven version of the Kardashian game. It was a me-too product—as was another mediocre performer, Britney Spears: American Dream—right down to the foundations. Seemingly skinned from the same original Glu game, Stardom: Hollywood, players create their own musician, befriend Perry or Spears and sing their way to the top. Customers clearly saw through it.

SINCE MOBILE GAMES FOLLOW the hits model, they face the same pressures. Kardashian's younger Jenner half-sisters released a game, Kendall & Kylie, in February, which is the Glu version of a spinoff. It grossed $8.6 million in its first six weeks—very good, but not spectacular.

And, as could be expected, even Kim Kardashian: Hollywood has seen a slowdown: It made $2.5 million less during 2015 than it had just six months prior. While Glu's revenues more than doubled between 2013 and 2014 and have crept up further since, investors are skeptical that it can reproduce its success. Its market cap has been more than halved in the past year, to a bit over $300 million; it posted a net loss of $7.2 million in 2015. Its multiple is a below-market 10.9.

To chase the next hit, Glu is doubling down on its tactic by signing up the biggest stars in multiple categories. Taylor Swift, who sits atop the Celebrity 100, will release a game later this year. The Celebrity 100's top chef, Gordon Ramsay, just released Gordon Ramsay Dash, which is consistent with the Kardashian model and his area of expertise. The game is a celebrity-charged overlay of an existing Glu release, Cooking Dash, whose 2016 version has been downloaded an estimated 15.6 million times and has generated some $27 million. That's before Ramsay's firepower has even been applied.

Nongaming companies are diversifying into celebrity apps that bank on the growth in messaging. "[Gaming's] not going away, but it will converge with all things mobile," says Zack Sugarman, vice president of digital at Wasserman Media Group. "You have to include communication, chat and emoji, though." Hence Kardashian's conference room fussing with her "Kimoji," launched in December, which has since spurred simulacra from basketball player Steph Curry (StephMoji), Justin Bieber (JustMoji) and others.

Kardashian's new push: a $2.99-a-month eponymous app that gives paying users exclusive beauty tutorials and Kardashian content, which currently includes "How to Go Four Days Without Washing Your Hair" and "Bronzed and Braided."

"When people looked at me in a way like, 'Why is she stepping into the tech world? That's not her territory! Stick to reality TV!' I was like, 'No,' " Kardashian recalls. "This is fun for me. Now I'm coming up with Kimojis and the app and all these other ideas. I don't see myself stopping." No matter the medium, looks like we're stuck with her. F

FROM TOP: TONY BARSON/GETTY IMAGES; RAY MICKSHAW/FOX/GETTY IMAGES; ANDREW CHIN/GETTY IMAGES; CLAUDIO PASQUAZI/ANADOLU AGENCY/GETTY IMAGES

63 Dr. Dre
MUSICIAN ***U.S.***
$41 MIL

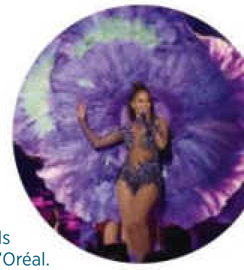
63 Katy Perry
MUSICIAN ***U.S.***
$41 MIL
Last year's top-earning musician wrapped up her $204 million Prismatic World Tour, banking additional millions from endorsement deals with H&M, Claire's and CoverGirl.

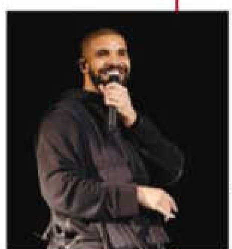
63 Sebastian Vettel
ATHLETE ***GERMANY***
$41 MIL

66 Jimmy Buffett
MUSICIAN ***U.S.***
$40.5 MIL

67 Mumford & Sons
MUSICIANS ***U.K.***
$40 MIL

68 Jennifer Lopez
MUSICIAN ***U.S.***
$39.5 MIL
Jenny From the Block has more rocks than ever, thanks to her gig judging the last season of *American Idol,* a handful of live shows and endorsement deals with the likes of L'Oréal.





69 Drake
MUSICIAN ***CANADA***
$38.5 MIL
The Canadian rapper had the best music sales of anyone not named Adele.

70 Philip Rivers
ATHLETE ***U.S.***
$38 MIL

70 Tiësto
MUSICIAN ***NETHERLANDS***
$38 MIL

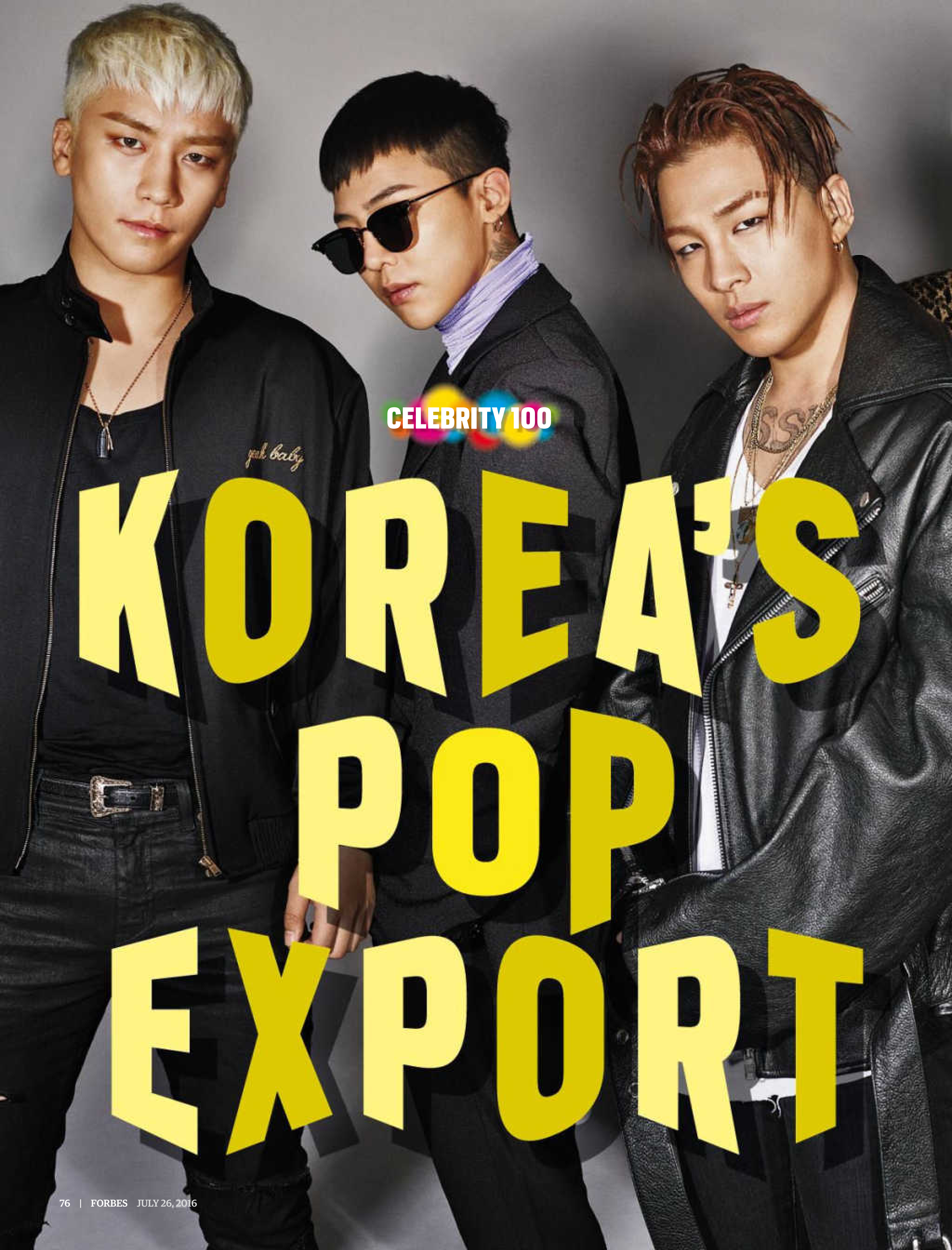
72 Zlatan Ibrahimović
ATHLETE ***SWEDEN***
$37.5 MIL

72 Rafael Nadal
ATHLETE ***SPAIN***
$37.5 MIL
Last year was the first since 2004 in which the tennis champ did not win a grand-slam event, ending his record ten-year streak—but he still had his second-best earnings total ever.

(Continued on page 78)

CELEBRITY 100

KOREA'S POP EXPORT



BIGBANG, THE FIRST KOREAN ACT TO LAND ON OUR CELEB 100, PULLED IN $44 MILLION THIS YEAR, OFFERING A WINDOW INTO THE CAMPY K-POP GENRE—AND A BLUEPRINT FOR MAKING MONEY ON MUSIC ANYWHERE IN THE WORLD.

BY ZACK O'MALLEY GREENBURG

As record executive Joojong Joe weaved through the packed crowd at the 19,000-capacity Honda Center in Anaheim, Calif., there to see Korean boy band Bigbang, he spotted a young Russian woman crying. She couldn't explain why. Confident that she wasn't in any actual distress, he moved on.

"It's like the Backstreet Boys back in the day," Joe says with a shrug. "A lot of people cry." Even, it turns out, a Russian obsessed with five androgynous Korean boys. Such is the reach of the hottest global pop genre, the campy Korean variant known as K-Pop.

The top act in its niche, Bigbang took home $44 million in pretax earnings over the past year, easily more than the $33.5 million collected by today's highest-paid American all-male arena pop group, Maroon 5. Bigbang landed the No. 54 spot on our Celebrity 100 list, even topping such artist-entrepreneurs as Dr. Dre (No. 63, $41 million) and Jimmy Buffett (No. 66, $40.5 million), though that's more attributable to the popularity of the group's music than the depth of its members' business savvy.

"We made more than Maroon 5?" says front man Kwon "G-Dragon" Jiyong, 27, through a translator. "Did not know that. My mom is in charge of my earnings."

Fortunately the group's finances are being guided by much more than a mommy manager. The real force behind Bigbang is former K-Pop idol Yang "YG" Hyun Suk and his namesake company—a $630 million publicly traded record label, talent agency and concert promoter with fingers in pies from fashion to marketing to film. The company and its founder are responsible for creating not only Bigbang but also, to a great extent, the modern K-Pop movement, which is in the midst of a transformation from regional staple to international craze.

Within YG's roster, examples abound. Girl group 2NE1 sells out arenas around the world and even did an Adidas commercial with Nicki Minaj, while the video for "Gangnam Style," from pop-rapper Psy, holds the all-time YouTube record, with 2.6 billion views since its 2012 debut. That sort of virality wasn't possible a decade ago, when K-Pop was available beyond Asia mostly via illegal download or at specialty record stores.

"In the past there were limitations to distributing and accessing music," says Yang, whose company is on pace to do a quarter-billion dollars in revenue this year. "Now in the digital age those geographical boundaries are insignificant."

If the rise of K-Pop seems a relatively recent phenomenon, that's because it is. American influence came to the peninsula in earnest during the 1950s with the Korean War and its aftermath, as troops staying in the area exposed locals to Western pop and rock 'n' roll. But it wasn't until the 1990s that those influences combined with European electronic music, American hip-hop and

BIGBANG THEORY

K-POP'S TOP ACT HAS ENTERED THE FIRMAMENT OF HISTORY'S HIGHEST-PAID BOY BANDS WITH A STELLAR 2016—ONLY TWO SUCH ACTS HAVE PEAKED AT A HIGHER SINGLE-YEAR EARNINGS TOTAL.

BOY BANDS, CLOCKWISE FROM TOP LEFT: KEVIN MAZUR/WIREIMAGE; SIMON HARRIS/SH PHOTOGRAPHY/CONTOUR BY GETTY IMAGES; MULTI-BITS/MULTI-BITS VIA GETTY IMAGES; L. BUSACCA/WIREIMAGE; MIKE PRIOR/REDFERNS

CELEBRITY 100

72 Neymar
ATHLETE *BRAZIL*
$37.5 MIL

75 Jason Aldean
MUSICIAN *U.S.*
$36.5 MIL

75 Fernando Alonso
ATHLETE *SPAIN*
$36.5 MIL

77 Gareth Bale
ATHLETE *U.K.*
$36 MIL

78 Marcell Dareus
ATHLETE *U.S.*
$35 MIL

78 Vin Diesel
ACTOR *U.S.*
$35 MIL

80 Peyton Manning
ATHLETE *U.S.*
$34 MIL
Manning's Super Bowl win earned the retiring QB $4 million in incentive bonuses on top of his $15 million salary.

80 Derrick Rose
ATHLETE *U.S.*
$34 MIL

82 A.J. Green
ATHLETE *U.S.*
$33.5 MIL

82 Maroon 5
MUSICIANS *U.S.*
$33.5 MIL

82 Kei Nishikori
ATHLETE *JAPAN*
$33.5 MIL

82 Ed Sheeran
MUSICIAN *U.K.*
$33.5 MIL

86 Dave Matthews Band
MUSICIANS *U.S.*
$33 MIL

86 Robert Downey Jr.
ACTOR *U.S.*
$33 MIL

86 James Harden
ATHLETE *U.S.*
$33 MIL

86 Shah Rukh Khan

ACTOR *INDIA*
$33 MIL
Khan continues to rule Bollywood's box office with the lead role in the hit *Dilwale*—and endorsement deals for dozens of brands you've likely never heard of.

existing traditional Asian genres, coalescing into the beginnings of modern K-Pop.

Yang grew up in this milieu, spending his high school days emulating the music of *Soul Train* and practicing the dance moves of Michael Jackson. In 1992 singer Seo Taiji came to Yang to learn how to dance; they teamed up with a third member to create Seo Taiji and Boys, which married hip-hop and catchy melodies. Their first hit, "*Nan Arayo* (I Know)," made *Rolling Stone*'s list of the best boy band songs of all time.

At the height of Seo Taiji and Boys' popularity in 1996 Yang walked away to launch YG, where he created a K-Pop factory. One of his early charges was G-Dragon, who started receiving musical training from him around age 12, along with future group member Dong "Taeyang" Youngbae. After the pair survived an *American Idol*-style TV competition, Yang did what Simon Cowell would later do with One Direction: pair them with fellow contestants to form a boy band calibrated for maximum appeal.

The band made its debut in 2006 and embarked on a grueling schedule, releasing six albums in the next six years—two in Korean and four in Japanese—with English lyrics sprinkled throughout for good measure. YouTube then took them global. "Didn't make us money," says YG's Joojong Joe. "But still it was good exposure."

YG is vertically integrated, collecting cash not only from record sales but also from acting as a combination of manager, concert promoter and talent agency. The strategy, not unlike the one adopted more recently by Jay Z's Roc Nation, means YG isn't dependent on income from recorded music, which makes up just 25% of its revenues. YG makes just as much from live music as it does from recordings, thanks in large part to Bigbang: The group has been grossing an average of $2.6 million per city on its recent Made world tour.

"Fans are queuing or camping around venues, often starting more than 24 hours before the show," says Yongbae Cho, managing director of concert promoter Live Nation Korea. "With Western artists we tend not to see these kinds of phenomena."

Despite Psy's international breakthrough and Bigbang's explosive earnings, K-Pop is still largely a regional industry when it comes to cash, at least as far as YG is concerned. South Korea accounts for 40% of revenues, while the bulk of its international audience comprises Japan (36%) and China (20%). Even so, Western brands are circling the genre: LVMH paid $80 million to buy 12% of YG in 2014. Additional cash may be coming from the South Korean government, which has been in talks with YG on a $100 million entertainment-focused construction project outside of Seoul. The proposed joint venture aspires to become the Studio City of K-Pop, complete with a mall, concert venues and recording studios.

The next prize lies in North America, with its abundant modern arenas and free-spending crowds. Though the U.S. makes up only a single-digit portion of YG's sales, top acts are selling out arenas on both coasts, prompting some major players in Hollywood to get involved. Psy and one of the stars from the 2NE1 girl group have been scooped up by Scooter Braun, whose management roster includes Celeb 100 veteran Justin Bieber and 30 Under 30 honoree Martin Garrix. (YG still handles the two K-Pop idols' non-U.S. business.)

Remarkably, Bigbang has earned far more than Garrix and almost as much as Bieber. That might come as a shock to most, but not to Yang. "I am not surprised by their success," he says. "I was certain that they were going to be loved by everyone in the world." F

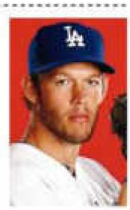
BOTTOM FROM LEFT: EZRA SHAW/GETTY IMAGES; JOEL RYAN/INVISION/AP; JOHN LAMPARSKI/GETTY IMAGES; JAMIE SQUIRE/GETTY IMAGES; ALESSIO BOTTICELLI/GC IMAGES/GETTY IMAGES

86 Melissa McCarthy
ACTOR ***U.S.***
$33 MIL

Who you gonna call? McCarthy earned an estimated eight-figure upfront fee to star in a *Ghostbusters* remake.

91 Usain Bolt
ATHLETE ***JAMAICA***
$32.5 MIL

92 Clayton Kershaw
ATHLETE ***U.S.***
$32 MIL



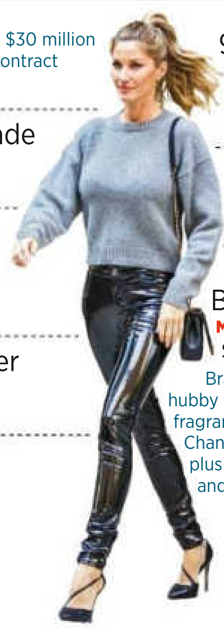
The Dodgers' ace is the only baseball player on our list, thanks to an annual salary that soared to $30 million when his $215 million contract extension kicked in.

92 Dwyane Wade
ATHLETE ***U.S.***
$32 MIL

94 Akshay Kumar
ACTOR ***INDIA***
$31.5 MIL

94 Penn & Teller
MAGICIANS ***U.S.***
$31.5 MIL

94 Brad Pitt
ACTOR ***U.S.***
$31.5 MIL



97 Carmelo Anthony
ATHLETE ***U.S.***
$31 MIL

97 Drew Brees
ATHLETE ***U.S.***
$31 MIL

99 Gisele Bündchen
MODEL ***BRAZIL***
$30.5 MIL

Brady Bündch: Gisele joins hubby Tom on the list thanks to fragrance and beauty deals with Chanel and Carolina Herrera, plus her own lines of lingerie and skin care.

99 Britney Spears
MUSICIAN ***U.S.***
$30.5 MIL

ABOUT THE LIST: The Celebrity 100 list ranks "front of the camera" stars around the globe by their pretax earnings from June 1, 2015 through June 1, 2016 before deducting fees for managers, lawyers and agents. Our figures are based on numbers from Nielsen, Pollstar, Box Office Mojo, Songkick and IMDB, as well as interviews with industry insiders and many of the stars themselves.

EDITED BY: Zack O'Malley Greenburg and Natalie Robehmed. **REPORTED BY:** Kurt Badenhausen, Madeline Berg, Keren Blankfeld, Cherie Hu, Ryan Mac, Maggie McGrath and Susan Radlauer. **ONLINE:** Ariana Santana with Uyen Cao, Tom Conroy, Irwin Hou and Forbes Video.

Digital Door-to-Door

THE HOUSE OF THE FUTURE IS BEING SOLD IN THE MOST OLD-FASHIONED WAY IMAGINABLE: BY POUNDING THE PAVEMENT AND WORKING THE PHONES. SO WHY ARE SOME OF SILICON VALLEY'S SHARPEST INVESTORS SUDDENLY INTERESTED?

BY AARON TILLEY

On the first warm summer week of the year in Provo, Utah, the headquarters of Vivint Smart Home appears quiet. It's not till you make your way to the second floor that you stumble upon a flurry of activity. That's where row after row of cubicles house mostly young men in their 20s, many sporting beards and tattoos. Some stand or pace about the room with headsets on, their eyes focused on sales scripts. Others stare into the distance past suburban office parks and toward the scrubby foothills of the Wasatch Mountains. Mawkish soft rock plays in the background. Above the cubicles, a monitor flashes the names and numbers of top salespeople. This year's prize for the number-one seller is a trip to Hawaii.

It's a pretty low-tech operation, especially when you consider these reps are selling the future. Along with an army of 2,500 door-to-door salespeople across the United States and Canada (and a few in New Zealand), these 200 or so Utahans are aggressively pushing the Vivint smart home. They have already managed to persuade more than a million homeowners to pay between \$40 and \$80 a month to have their houses come to life with Internet-connected thermostats, lights, door locks, doorbells, garage door openers, cameras and sensors, whether they are made by Vivint or one of its partners.

TIM PANNELL FOR FORBES

Traveling tech salesmen: Vivint Smart Home president Alex Dunn (left) and CEO Todd Pedersen.

Built on the back of a humdrum home security enterprise, Vivint has grown into one of the world's biggest and most successful "smart home" businesses, the most visible component to the average consumer of the burgeoning Internet of Things. Still private, Vivint was valued at over \$2 billion in late 2012, and it hit \$650 million in revenue last year, 16% more than the prior year. It recently attracted a \$100 million investment co-led by billionaire tech investor Peter Thiel, who recently made headlines for secretly funding Hulk Hogan's privacy lawsuit against the gossip-rag website Gawker. In contrast to Silicon Valley's gadget-obsessed innovators, who tend to agonize over product design and tech specs, Vivint has succeeded on the sheer power of its sales network. Its door-to-door salespeople spend long days proselytizing the benefits of the smart home to anyone who will listen.

It's not just the legion of peddlers that makes Vivint unique. The company owes its success, in part, to a business model that breaks with industry norm. Rather than sell you individual smart home devices, which can be pricey, Vivint relies on a subscription model. The company installs an average of \$1,500 worth of hardware into a home—a mixture of gadgets made by Vivint and the likes of Nest and Amazon—and in return it charges a monthly fee that can total \$480 to \$960 per year. Customers sign a contract, which lasts between three and a half and five years. Vivint doesn't actu-

A conventional metal part on the left is compared to a corrosion-resistant part "grown" by Modumetal on the right.The company's patented coatings and alloys can extend the life of materials deployed in highly corrosive industrial environments.

THE GREAT REWRITE

Planet 2.0

We've moved beyond the era of innovation. Our world is undergoing a complete rewrite.

BY LEONARD BRODY

Scan the business news and it can seem like the way almost everything works is being rewritten: how we interact, how we buy and sell, how we make things, how we get from place to place.

On the web, anyone can be a global content creator, merchandiser, manufacturer, opinion influencer. Power is dispersing. Markets are being blown to bits. Age-old institutions—from business to politics to religion—are experiencing unprecedented pressure to stay relevant.

On public roads, autonomous vehicles—computerized cars and trucks with no drivers—are a reality and soon may be transporting cargo and people. They will be powered by new kinds of portable energy, as the planet moves away from carbon-based fuels toward more renewable technologies.

The way we make things is in the midst of complete upheaval. New processes and materials are even redefining what we think of as manufacturing. In Seattle, a startup named Modumetal has pioneered an atom-by-atom way to build stronger metals, skipping the traditional process of melting ore to "grow" alloys stronger than steel. Scientists elsewhere are working on "smart" concrete that can repair itself.

The rise of 3D printing is transforming the basic concept of manufacturing, flipping it from a subtractive process (cutting raw materials down into parts or molds) into an additive process, "printing" whatever shapes we want from scratch. This enables vastly quicker production times and mass customization of products for customers. It also enables

(THIS PAGE) PHOTO COURTESY OF MODUMETAL; (OPPOSITE PAGE) TOP AND BOTTOM PHOTOS COURTESY OF ORGANOVO, MIDDLE PHOTO COURTESY OF JOSEPH ESCAMILLA the creation of all-new composites with unprecedented properties, mixed on demand in a computer. The 3D printing pioneer Stratasys calls it "the age of digital materials."

The domain of science fiction is becoming reality, forcing us to examine the implications. In San Diego, a company called Organovo is using 3D printing technology to create human tissue for medical research. The company eventually plans to provide "tissue on demand" to surgeons. Elsewhere in laboratories, scientists have tools for editing genomes, and the promising and terrifying potential to alter or eliminate entire species.

We are amid the largest era of institutional change in the history of our planet. We're calling it "the Great Rewrite." In a series of reports, here and at www.forbes.com/TheGreatRewrite, we will explore the profound forces at work in business and beyond. The Great Rewrite is a phenomenon that goes beyond conventional definitions of disruption and innovation. More than incremental growth or transformative business models, it frames global advancements leading to mass business opportunities and societal benefits. The changes coming via this rewrite won't be confined to disrupting individual products or markets. They will ripple across industries and institutions, fundamentally altering the way our species lives. They will build new industries, force the hand of markets and set us on a path of deep upheaval to the status quo.

Modumetal is rewriting time-tested processes for creating metal. Physicist Christina Lomasney, the company's CEO and cofounder, compares the company's new-style alloys to plywood. They are "grown," using layers of metal atoms, aligned in ways that can give a finished metal properties like extra strength or corrosion resistance. Existing metals and even plastics can be coated using the same process.

The process involves modulating electric current through raw materials—hence the company name. There's none of the fire and brimstone of the steel mill. It's so advanced that industry isn't completely ready for it. Standards that metals must meet to be used in industrial jobs often require that older processes be used.

"The challenge with changing the world is that there is an old way of doing things," Lomasney says.

"The challenge with changing the world is that ***there is an old way of doing things."***

CHRISTINA LOMASNEY
Cofounder and CEO, Modumetal

From top: Organovo uses 3D printing technology to create human tissue for medical research. CEO Keith Murphy with Chief Scientific Officer Sharon Collins Presnell at the Organovo headquarters. The company eventually plans to provide "tissue on demand" to surgeons.

Stratasys founder Scott Crump didn't know his pioneering 3D printing invention would alter the act of creation, rewriting the way things are made. His former company created electronics products—and a futuristic dream. After designing a product with CAD software, he wondered why there wasn't a way to press a button to output a prototype, the way he could print a document from a word processor. Crump invented fused-deposition modeling, or FDM—nozzles depositing layers of material in three dimensions from a computer design.

"One of the things that I retaught myself as an inventor is that you have to break the rules, or the status quo, of what currently defines reality," Crump says. "You have to operate sort of uncomfortably different."

FDM now is used to create more than just prototypes. Surgeons are working with precise 3D color models of patients' internal organs, created directly from CT scans, to preplan surgical strategies. In Japan, automaker Daihatsu will later this year begin allowing buyers of its Copen roadster to go online to select body textures and colors for new cars in almost infinite variety. The plastic body detailing will be custom-printed by Stratasys printers for each vehicle individually on the factory floor.

If Daihatsu, Japan's oldest carmaker, can rewrite its base unit of automotive creation, other traditional companies can, and must, do the same. In coming months, our reports will explore more rewrites in manufacturing, energy, healthcare and other sectors. Our goal in presenting examples like these is to try to put a framework around what is happening, to provide a north star. Our aim is to offer guidance for not just understanding this Great Rewrite that is reshaping the planet, but establishing a footprint in it and working on a path to execute in its wake.

KPMG ***Voice:*** Read more of The Great Rewrite series at **forbes.com/TheGreatRewrite**

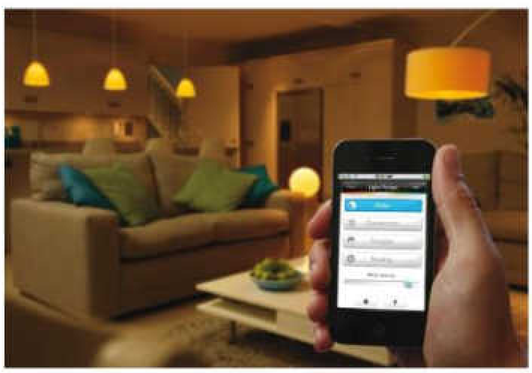
ally start making a profit until about three and a half years into the relationship. It's akin to carriers subsidizing the price of a smartphone. It helps customers avoid the sticker shock of an expensive purchase, and it gives the company a recurring revenue stream. "We know that for the smart home to succeed, it has to be a service that's delivered to the customer," says Todd Pedersen, Vivint's muscular and ultra-competitive cofounder and CEO. "We have to win business every day, every month, every year. We've done this for so long, and we know it's complicated. To get lots of hardware to communicate and do it effectively in a way that delights the consumer is not easy."

NEST CAM
A security camera that lets you know if there's any activity at home (and lets you look in) while you're away. For $10 a month, Nest will hold on to 10 days of video history; for $30 a month, it will hold on to 30 days.

SILICON VALLEY HAS promised us the smart home for decades. One of the earliest proposed uses for the Apple II, in the late 1970s, was to add brains to the kitchen (largely by storing recipes), and ballyhoo about an Internet-connected fridge, the one that famously orders milk when you run low, has erupted regularly since the first dot-com bubble. Mostly the products have seemed like cumbersome technological solutions in search of a problem.

But now that seems to be changing. A flood of cheap Web-enabled sensors connected to ubiquitous high-speed home networks have made the smart home feel less like marketing hype and more like a market opportunity. All the tech giants—Alphabet, Amazon, Apple and Samsung—are making major bets on the smart home. The results have been mixed. While there are compelling devices like Alphabet's Nest learning thermostat and Amazon's Echo smart speaker, none have gained mass adoption. For many consumers, the technology remains too expensive and too hard to install, and its value is still not always clear.

The recent struggles of Nest Labs, the poster child of the current smart home boomlet, serve as a cautionary tale. Led by Tony Fadell, a former Apple executive who helped design the iPod and the iPhone, Nest focused on technology and design. Google, now Alphabet, acquired it for a whopping $3.2 billion in 2014. But one of its products, the Protect smart smoke detector, malfunctioned and had to be temporarily recalled. Later the company faced internal strife over its $555 million acquisition of Dropcam, which makes Internet-connected security cameras, leading to several departures. Last month Fadell left, though he remains an advisor to Alphabet CEO Larry Page. While Nest is said to be growing at a 50% annual clip and is reported to have reached $340 million in revenue last year, it has not created a new product category since the Google acquisition. Strategy Analytics estimates it sold only 1.3 million thermostats last year. And it's not alone in its struggles to reach a mass audience. As of now a mere 5% of U.S. households have a smart home device, according to research firm Forrester. That number is expected to grow to only around 16% by 2021. "The reason the market is growing so gradually is because it can only grow as fast as people are willing to buy $100 to $200 accessories," says Frank Gillett, a Forrester analyst. "Until the industry comes up with a different revenue model, it's only people who are willing to upgrade their thermostat for $250, and most people aren't."



PHILIPS HUE LIGHTBULBS
The Philips Hue Lightbulb was the first mainstream Internet-connected lightbulb to enter the market. With the push of a button, these lights can turn to almost any color imaginable.

VIVINT'S PEDERSEN is convinced he has found the model that will push the industry forward. At 47, he is an unconventional CEO. Broad shouldered and typically wearing a bright orange baseball hat with the Vivint name on the front, he looks better suited for off-road truck races—one of his hobbies—than for the executive suite. He recently experienced a tragedy while participating in a 500-mile off-road race in Baja California. In a maneuver intended to avoid a group of fans near the coastal city of Ensenada he ended up hitting three spectators, including an 8-year-old boy, who was killed. "My heart is torn up over it," Pedersen says.

A Mormon, Pedersen grew up with ten brothers and sisters in southern Idaho. His father was an orthodontist. While attending Brigham Young University in Provo, he paid for his education by cleaning houses and installing drywall. One summer between his sophomore and junior years, he drove to California to inter-

HAIKU CEILING FAN
This fan knows where you are. It has an infrared motion sensor to keep track of occupancy, and then ambient temperature and humidity sensors help keep the room at a comfortable temperature.

SAMSUNG'S FAMILY HUB REFRIGERATOR
For $5,600, this fridge has more tech on it than is probably necessary. A giant, crisp touchscreen sits in front and can run apps and even browse the Web. Three cameras inside take pictures of your food.

view for a job selling pest-control services. He was turned down because the owner thought the young Pedersen wouldn't be any good at it. The rejection was the spark that lit his entrepreneurial fire. He dropped out of the university and founded his own pest-control business in 1992 and began selling door-to-door with a group of friends. "I'm too competitive," he admits. "It's one of my faults."

In 1999 Pedersen decided to transfer his sales know-how into the home-security business, which was booming in Utah. He transitioned his successful pest-control business into APX Security, which resold third-party home security systems built by the likes of GE and Honeywell. The business didn't really take off until 2005, when Pedersen hired Alex Dunn, a veteran of the software industry who had served as deputy chief of staff for then-Massachusetts Governor Mitt Romney. Dunn brought with him the first outside investment the company had ever taken. Goldman Sachs and two private equity groups purchased a 50% stake for $25 million. The company used that cash to fund its early moves into the smart home. In 2010 it started selling its first pieces of smart home equipment, and a few months later APX became Vivint.

In late 2012 Blackstone bought out that 50% stake and added another 23% for a price just north of $2 billion, giving the previous three investors a return of 25 times their investment. All the while, Vivint's management has maintained roughly 20% ownership of the company, with the largest chunk reserved for Pedersen at 12%. FORBES estimates Pedersen has a net worth of more than $250 million.

With the 2012 deal, Goldman Sachs also brought a debt facility for Vivint to fund its business model. It typically takes the company more than three years before it starts making a return on an installation. That means Vivint is burning through cash and is not currently profitable. In 2015 it had more than $650 million in sales, but its operating costs were more than $760 million. "There's lots of cash going out and not as much coming in," Dunn says. "But when you take a look at the unit economics over the lifetime of a customer, it's very profitable."

With the new money from Blackstone and the public debt market, Vivint has also expanded into a flurry of other businesses, such as Internet services and solar installation. Vivint Solar spun out as an independent unit and went public on the New York Stock Exchange in 2014.

There have been bumps along the way. Door-to-door sales have landed Vivint in hot water. The company has been subjected to numerous lawsuits and customer complaints that center on overaggressive salespeople and misleading sales pitches. Last year it settled a class action, to the tune of $6 million, for so-called robocalling. Vivint denied wrongdoing. The problems are similar to those faced by others with door-to-door sales models. "They have the same issues that everyone that does this has," says Jane Driggs, president of the Better Business Bureau in Utah, which gives the company an A– rating.

But pounding the pavement is becoming less important to Vivint as more consumers are becoming aware of the connected home and start to seek out the gadgets on their own initiative. The fastest-growing part of Vivint's business is coming from inbound calls to its call center—in other words, people who actually want to buy from Vivint rather than have to be persuaded to buy from it. The number of customers acquired through the call center is up 89% year over year. At this point, Vivint gets 65% of its business from door-to-door and 35% from the call center.

As a result, the quality of Vivint's technology is becoming more important than the size of its sales force. That means forging closer ties to Silicon Valley, but as a door-to-door reseller of (mostly) other people's tech it has a hard time being taken seriously there. Beginning in 2015 Pedersen and Dunn made monthly pilgrimages to the Bay Area to talk with venture capitalists and tech players. They were getting turned down over and over again. "People were dismissive," says Pedersen. A breakthrough came with Peter Thiel, whom they first met in early 2015. After going back and forth for a year, Thiel agreed to colead a

$100 million investment in Vivint along with Mitt Romney's Solamere Capital, whose investors include luminaries such as HP Enterprises CEO Meg Whitman, Sun Microsystems cofounder Scott McNealy and former Walmart CEO Lee Scott. "If you took out this idea that this is a technology business, Vivint would continue to show great results," says Spencer Zwick, a Solamere Capital managing partner. "We believe there's a growth story here. It's a company that is no longer just an alarm-monitoring business but a leader in the smart home."

GOOGLE HOME
Google's answer to the Amazon Echo, Home is a smart speaker that's always listening. Ask it to, say, play a song or get the rush-hour traffic conditions. It will integrate with all the Nest smart home devices, too.

THE BIGGEST SUCCESSES in the smart home so far have been sleekly designed devices that have managed to seduce young, tech-savvy consumers. None has achieved quasi-iconic status faster than the Amazon Echo, a cylindrical speaker equipped with a set of microphones and powered by Alexa, an "intelligent" voice assistant. You can tell it to play music from various apps, turn on the lights, check the weather and traffic, or order an Uber. Since it's always connected to Amazon's servers, its capabilities are updated every week. With an estimated 3 million units sold since it was introduced in late 2014, it's been such a hit that Google has already announced a competing product called Google Home. Apple is also said to be working on an Echo rival, powered by Siri.

BELKIN WEMO SMART SLOW COOKER
It's a Crock-Pot with a Wi-Fi chip, so now you can keep track of how your meal is cooking while you're at work.

Vivint doesn't focus on any individual device but rather on many—and, more important, on ensuring that they work together as simply as possible. Inside their "innovation center" in Lehi, Utah, almost 20 miles north of Provo, some 400 engineers and product designers—veterans of consumer-focused companies like Nike, Disney, Amazon and Microsoft—are working on a slew of hardware and software projects. As the company has bet its future on the smart home, it is moving deeper into building its own devices. While its products aren't as flashy as those coming out of Silicon Valley, Vivint makes a handsome thermostat, security camera and doorbell camera. Low cost and ease of use are paramount. "Everything we're focused on is how to create a mass market," says Matt Eyring, Vivint's chief strategy and innovation officer.

The best way to understand the scope of Vivint's ambition—and how it hopes to push into the mass market—is through a tour of a demonstration smart home on the ground floor of the Lehi innovation center. As you walk up to the front door, a Vivint doorbell detects you and sends a push notification to the homeowner's phone. A camera embedded in the doorbell also beams your image to the phone, so the homeowner can see who is there. If the owner requests, the door unlocks itself (with a lock made by Kwikset) and the Vivint thermostat adjusts the temperature to a comfortable setting. Sensors placed around the home detect motion and whether a window is open or closed. A Vivint camera sits on the shelf monitoring the house while the user is away. There's an Amazon Echo that can control the garage door. A display panel made by Vivint sits next to the front door, showing the security-camera footage and allowing the user to manage the house without the phone. You can tell Echo you're going to sleep, and as if by magic, your dead bolts will lock, your security system will arm itself, the thermostat will drop a few degrees and the lights will dim gradually, giving you enough time to make it to bed without tripping over the furniture. Your alarm clock will be set, too. "All this is cool," says Eyring, "but it's just the start."

Indeed, there is still too much in the smart home that is unnecessarily cumbersome. Having a smart lightbulb that you can turn off from your smartphone may be a cool parlor trick, but it's not really that convenient compared with flipping a switch. But Eyring and his crew are thinking about more compelling scenarios, powered by software and artificial intelligence. "The smart home doesn't really exist yet," says Eyring. "The connected home exists. The remote-control home exists. But we'll see in the next six to eight months the first true smart home. It'll be coming along in the next wave." F

The Trillion Dollar Tech War

AS THE DATA-INTENSIVE INTERNET OF THINGS BECOMES A REALITY, THE CLOUD IS SHAPING UP TO BE THE BIGGEST BUSINESS OPPORTUNITY IN A GENERATION, AND AMAZON, MICROSOFT AND GOOGLE ALL WANT TO CLAIM THE BIGGEST SLICE.

BY ALEX KONRAD

For months and months, as Google's brain trust searched for the ideal candidate to lead the company's come-from-behind bid for its biggest new opportunity since Larry Page and Sergey Brin began putting ads on their search engine, one name kept coming up: Diane Greene. Little known outside Silicon Valley, Greene is a legend in tech circles and had been friendly with Page and Brin since their grad-school days at Stanford. She is married to Mendel Rosenblum, a well-known computer science professor there, and the couple has lived on campus for decades. Greene, who is 61, speaks softly, and her round face, framed by blond hair that stops just above her shoulders, frequently lights up into a warm smile. But behind that mom-next-door demeanor is a sharper edge, which flashes in her eyes when the topic turns to competition. Like the Google guys, Greene brims with ambition, brings an engineer's mind-set and has the entrepreneurial bug.

JAMEL TOPPIN FOR FORBES
GROOMING BY SUZANA HALLILI FOR MINERALS BLACK TIE

Amazon CTO Werner Vogels expects AWS to become as big as the company's retail business.

The same year Page and Brin took a leave of absence from Stanford to start Google, Greene, Rosenblum and three others teamed up to start VMware, which revolutionized how companies managed their data remotely using a technique called virtualization. Greene served as its CEO for ten years, building a business valued at $49 billion at its peak and developing a reputation as a singular talent: a computer science whiz with impeccable executive abilities who understood the business of selling technology to the world's biggest companies. In a potent validation of her industry status, Page recruited Greene to Google's board of directors in 2012.

As a board member, Greene began advising Google executives on a missed opportunity: cloud computing. The idea of renting computing power to businesses had been around for some time, and Google had dabbled in it since 2008, when it first allowed startups to build their apps atop its prodigious network of data centers. But Google, distracted by other pursuits—search, maps, mobile and self-driving cars, to name a few—never got serious about the cloud business.

That didn't stop cloud computing from developing, nearly a decade later, into a tsunami that is remaking how businesses think about and use technology. First a new crop of startups—Airbnb, Instagram, Pinterest and others in their cohort—built most of their operations on cloud services supplied by others. More recently, large corporations—the likes of GE, NBC and Shell—have begun moving more of their applications to the cloud.

Now nearly every company is following suit, particularly industrial and logistics giants that see a tremendous opportunity in the so-called Internet of Things. By deploying webs of connected sensors to run their businesses more efficiently, these companies are now depending on IoT applications to manage truck fleets around the globe, monitor soil and ambient conditions in an agribusiness operation, or maintain elevators. For huge amounts of data there's nothing easier than the cloud. As a whole, the shift to cloud applications represents a generational transition in business computing that may be as significant as the advent of networked PCs.

Google Cloud Platform chief Diane Greene is on a quest to catch up to Amazon.

Google, which over two decades has built what is essentially the world's biggest computer network—a sprawling array of massive, connected data centers spanning the globe and equipped with software to power all sorts of applications—seemed in a perfect position to capitalize on the new era of the cloud. Indeed, many inside and outside the company see cloud computing as Google's biggest moneymaking opportunity outside of advertising. Yet as a juggernaut that built a $75 billion business by providing free Web and mobile services to consumers, Google did not have the DNA to create a giant new operation focused solely on selling technology services to other businesses.

That's why Greene's name kept coming up. As Google came to terms with the opportunity, Page asked her to take over the company's cloud computing efforts. She demurred. Soon enough, other executives and fellow board members followed up with her. It was finally Urs Hölzle, one of Google's earliest engineers and the man most responsible for building Google's computing infrastructure, who persuaded Greene to take the job, as the two of them walked their dogs together in the Stanford hills.

There was one wrinkle: Greene was busy with a new, secretive startup called Bebop, which was developing tech to power easy-to-use business-software applications. So in November of last year, Google acquired Bebop for $380 million and named Greene the head of Google Cloud Platform, giving her the reins to build a salesforce and revamp a unit that spent $10 billion on growth in 2015. The appointment thrust Greene into an unusual role: As an Alphabet board member, she is, in some sense, Page's boss. As head of cloud computing, she works for Google CEO Sundar Pichai, who reports to Page.

Greene faces a daunting task. While Google dithered, Jeff Bezos ate the industry up. His improbable bet in 2006 on something called Amazon Web Services, or AWS—a business so removed from the company's retail core that its announcement left many scratching their heads—has become a runaway success whose growth has surprised even Amazon. With more than a million cus-

JAMEL TOPPIN FOR FORBES

Changing the Game with IoT

To realize the full potential of the Internet of Things, businesses need to move beyond short-sighted use cases and consider its broader impact on the world.

EXECUTIVE PERSPECTIVE
by Niall O'Doherty,
Manufacturing & Energy Sector Lead,
Teradata International

By thinking in terms of systems vs. things, we can begin to see the value of using data to better understand the inner-workings and interdependencies of complex systems, and then optimize them.

Most business and technology leaders today agree that the Internet of Things (IoT) represents an unprecedented opportunity in terms of ground-breaking insights and entirely new ways to understand and engage with both customers and "things." But in actuality, IoT's full promise has thus far failed to materialize, in part because of the narrow ways in which organizations define and pursue the potential capabilities.

Businesses need to develop the organizational and technological capabilities to use IoT data at scale, as well as understand the relationships and dependencies across a complex system, such as a smart city, a factory floor or a supply chain. Only through a broader and deeper application of IoT data can companies realize new innovations, revenue streams and cost savings.

The winners in IoT, then, are those who are developing that larger, systems-wide vision. They're basing their initiatives on IoT projects that can optimize entire systems, whether that is the supply chain, a smart city, a production plant or cutting-edge medicine. They're investing in an integrated, scalable, analytical platform that opens up the possibilities for staff to make sense of the data generated by IoT. That is how they're fully ready to realize the true promise and transformational opportunity of IoT.

How IoT Changes Decision Making, Security and Public Policy

SCHOLAR PERSPECTIVE
by Erik Brynjolfsson,
Professor at the MIT Sloan
School of Management,
Director of the MIT Initiative
on the Digital Economy

We're in the early stages of a management revolution. The upheaval is based on our unprecedented ability to collect, measure and digitally record information about human and systems activities, particularly with the finely tuned data sets available through IoT.

Machine-learning and artificial intelligence (AI) technologies have advanced greatly in recent years; the implications range much further than the attention they get for winning competitions with "Go" champions and chess masters. The real significance of these technologies will be found in their ability to automate and augment complex decision making.

As the premium on large, quantitative data sets grows, more companies will continue to move away from making decisions based on what they think and toward those based on what they know. Our research indicates that companies in the top third of their industry in the use of data-driven decision making are, on average, 5% more productive and 6% more profitable than competitors. For organizations to succeed in a time of unprecedented access to data and automated decision making, they will need to develop not just data management, AI and analytics know-how but also sensitivity for social concerns and how these powerful capabilities impact the greater good.

To read the full
EXECUTIVE | SCHOLAR EXCHANGE paper,
visit: www.Teradata.com/MITSloan

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tomers, AWS is on track to generate $10 billion in revenue this year, and its profits ($600 million in the first quarter alone) single-handedly keep Amazon in the black.

What started with a set of three services has since expanded to more than 70 different capabilities, and today entire companies are running on AWS. Its operations, powered by Amazon's data centers, exert a gravitational pull on the entire Internet. On Sunday nights, as Netflix subscribers settle in to watch their favorite shows, roughly 30% of all the bandwidth in the United States runs through AWS, which powers the company's videos. Amazon likes to boast that, thanks to AWS, building a tech business is as easy as assembling a set of Legos. "Anyone can now manage a global business driven by technology," says Amazon CTO Werner Vogels, who recently unveiled a new set of AWS capabilities, including some tailored to IoT applications, at an event in Las Vegas.

AMAZON'S CLOUD PLATFORM LAUNCHED AT THE IDEAL TIME: IN A BOOM OF STARTUPS EAGER TO OFF-LOAD STORAGE HEADACHES TO SOMEONE ELSE.

For all of Amazon's dominance, the cloud computing wars are just getting started. As corporate America and multinationals around the world grow more comfortable with the idea of replacing pricey computing hardware that they have to buy and maintain with a pay-as-you-go model, the market is expected to balloon to anywhere from $370 billion (more than ten times its current size) to potentially as much as $1 trillion.

Regardless of whether the most bullish projections bear out, it is an enormous market—comparable in scale, for example, to the global smartphone business. It's no wonder that it has the biggest superpowers in tech battling one another for customers and mind share. A resurgent Microsoft, driven by CEO Satya Nadella, who once oversaw that company's cloud computing unit, has bet aggressively on the business and established itself as a solid number two behind Amazon with its Azure cloud service. IBM, which remains ahead of Google in market share, and others are also investing to secure a piece of the pie, so the stage is set for a multiyear battle that will be as fierce as any the industry has seen in decades. Greene understands she's the underdog, but she's said over and over that Google has what it takes to succeed: grit, money and massive technological prowess. "I've always enjoyed a challenge," she says.

BEZOS' AMBITION FOR AWS today is both simple and staggering: to make it bigger than Amazon's retail business, which pulled in nearly $27 billion in sales in the most recent quarter. Yet no one, not even Bezos, would have thought this was possible when he and other Amazon execs hatched plans for AWS more than a decade ago. It was, on many fronts, a clever idea. Amazon had already built a flexible computer infrastructure to store the data and run the applications that powered its fast-growing retail operations. Why not package those capabilities and offer them to others?

The launch of AWS proved to be perfectly timed: It coincided with a new boom in social media and mobile startups. Thrifty entrepreneurs racing to build apps loved the idea of off-loading all the headaches of running servers and data storage systems onto someone else, and AWS immediately became the number one option. It remains so to this day. "They're not the only game in town, but they're the automatic choice," says Jason Seats, a partner at Techstars, a high-profile startup accelerator.

Bezos and crew are now engaged in a balancing act: appealing to the much larger corporate market without losing credibility with the startup set. That transformation was apparent at the company's re:Invent conference in Las Vegas. Held in October, the conference attracted some 19,000 techies and developers. Many were there to learn about new AWS tools—like on-demand business intelligence or security—that are essential to the CIOs and CTOs of America's largest companies.

Among the big reveals was a new IoT platform to track and store the data streaming in by the petabyte, as every toothbrush, trash can, city bus and oil drill becomes a sensor. Amazon's twist: Its cloud platform keeps a "shadow" version of a device in its system that users can interact with when the device is offline. The list of customers that showed up to hear Vogels and AWS CEO Andy Jassy, the two headliners, read like a Who's Who of corporate America: Accenture, Capital One, Intel and GE. The CTO of John Deere took the stage to demo an app built on the new IoT package that monitors its vehicles in the field. BMW showcased a connected-car app. They joined the ranks of customers like the state of Washington and, in a public relations coup for AWS, the Central Intelligence Agency, which inked a $600 million multiyear contract to move some operations onto the cloud.

Yet as Amazon has cemented its lead in the fast-growing industry, it's beginning to face the backlash that inevitably follows runaway success. Some companies have become hesitant to use too many AWS products for fear they could end up being locked in to Bezos' world. Rely on Amazon for too many services, the argument goes, and it becomes prohibitively difficult to wean a company off, even as the bills start to pile up.

Nervousness has increased as Amazon, which lowered prices 51 times in the past decade, has begun to pull back on the cuts. "A CIO starts to take notice when they the see the AWS bill become a $50 million line item," says Sam Ramji, chief executive of the Cloud Foundry Foundation. Jassy says he's aware of his customers' concerns: "Lock-in is a question we get a lot, and it's very understandable. We feel like we need to earn your business every hour, every month, every year."

MONTHS AFTER ITS onstage cameo at re:Invent, BMW is back onstage at an industry event in San Francisco to show a sleek new cloud app. Called BMW Connected, the app can tell where a car is going, message a driver's friends and even spot an open parking space. The conference is Microsoft's annual developer showcase, Build. And this time it's not Vogels who is introducing the carmaker but Scott Guthrie, a gangly man in glasses and a plain red polo shirt (his signature) who is the cloud and enterprise boss for all of Microsoft, a position that arguably makes him the most important man at the company after Nadella. "We've had many customers switch from Amazon to us," Guthrie says about the BMW double-dip. "On a win-loss ratio, we do very well."

With Scott Guthrie at the helm, Microsoft's Azure business is growing more than 100% each year.

CHRISTIAN PEACOCK FOR FORBES

In the cloud race, Microsoft knows that its place is, for now, behind Amazon. But it's an ambitious number two. Microsoft's sales pitch to big businesses is straightforward: We have more experience with the demands of large customers. For many, it doesn't hurt that Microsoft brings to the table 30 years of enterprise sales experience and widely used products like Office 365 that can be packaged with Azure. "We differentiate the most in being enterprise-ready," Guthrie says, noting Microsoft has more global data regions (32 to Amazon's 13), better security and more flexibility on where to store data to address global privacy concerns.

Microsoft also beat Amazon to the punch with some IoT features, which Guthrie says helped it win the BMW business. After years of playing catch-up, Azure is hoping to get ahead of its rival with new products that offer its own machine learning and artificial intelligence capabilities.

When it comes to hard numbers, Microsoft still has a long way to go. While the company doesn't break out its cloud revenue from the umbrella "Intelligent Cloud" work group's $6.1 billion in revenue, analysts peg its market share around 9%, less than a third of Amazon's. Guthrie says Azure is growing by more than 100% annually in users and revenue, adding 120,000 subscriptions each month. "We're in that phase where the pie is expanding so dramatically that it's not a zero-sum space," he says. "Where we deeply engage, we win." Some surveys seem to validate those claims. A poll of CIOs and CTOs across more than 300 vendors conducted in April by Enterprise Technology Research showed that as a group they adopted Microsoft at a faster rate than Amazon over the previous year.

Azure has had a few recent high-profile wins like NBC Sports, which plans to stream more than 2,000 sporting events from the upcoming Summer Olympics using its cloud. But to close in on Amazon, Microsoft will need its existing customers—roughly 85% of the country's biggest companies—to spend more than they currently do on Azure.

Part of Nadella's approach to lure them has required nothing short of a U-turn in Microsoft's culture. The company, known for pushing a Windows-only world on its customers for decades, has become much more willing to allow its software to coexist with that of others. If customers want to run some of their business on their own servers, some of it on AWS and some on Azure, that's fine. "A lot of [Microsoft's competitors] talk about hybrid, but when you actually look at what they're talking about, it doesn't have product truth behind it," says Azure executive Jason Zander, one of Guthrie's top lieutenants.

Still, plenty remember the bullying Microsoft of yesteryear, and even today's powerhouses fear a return to those days. Recently, Salesforce seriously considered Azure before selecting AWS as its preferred cloud provider in a contract worth an average of $100 million per year over four years. Amazon and Salesforce both publicly say that AWS won the deal on the strength and maturity of its products. But some believe it was no coincidence that Microsoft lost the deal just as it was beating out Salesforce to acquire LinkedIn in a bombshell $26.2 billion deal. “I wouldn’t say that was a pure technology decision that they made,” Guthrie sniffs.

GREENE HAS A LOT of work to do before Google is taken seriously alongside Amazon and Microsoft. Until recently, aside from hosting the popular social platform Snapchat, Google had done little to show it knew how to work with large-scale customers. Greene is working overtime to fix that, reorganizing her group to function more as a standalone business within Google and bringing together its technical, product, and sales and marketing teams for the first time. And like Microsoft’s Guthrie, she’s courting customers by offering access to Google’s prodigious technology: analytics, machine translation, speech recognition, maps and more. “We’ll be doing a lot more so people can train their own data and build their own models using our software,” Greene says.

“WE’RE IN THAT PHASE WHERE THE PIE IS EXPANDING SO DRAMATICALLY THAT IT’S NOT A ZERO-SUM SPACE.”

That pitch has gained some traction among tech companies with heavy data needs such as Spotify, an AWS customer that deployed some capabilities on Google’s platform this year. And Google is now signing up large corporations like Coca-Cola and Disney on the strength of its data chops.

Many of those customers are using Google for data while placing some critical apps with Amazon and Microsoft. “The advantage is flexibility,” says Coca-Cola CTO Alan Boehme, who is spreading his company’s 1,000-plus cloud apps across all three. And while all the cloud companies offer the usual sales incentives to land major accounts—discounts, free trials of new products, engineering help—Google is getting a reputation for buying its way to market share. The company is attempting to lure several large enterprise customers from Amazon with what amounts to a year of free computing, industry sources say. “Google is trying to make up for some gaps by throwing free resources at folks,” says Microsoft’s Guthrie. Greene is unfazed. “All of a sudden, we’re talking to pretty much every top-1,000 company,” she adds.

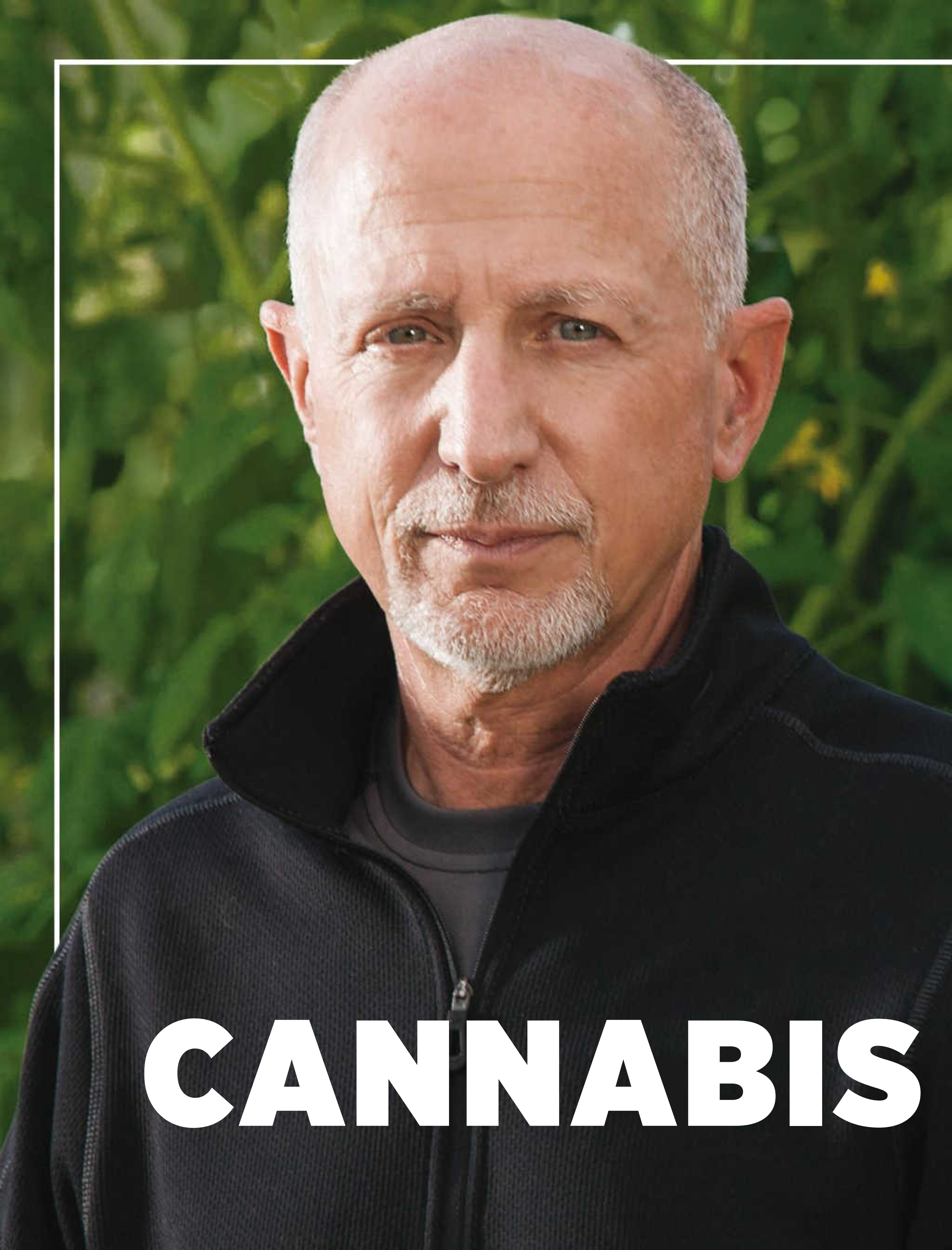
IT’S NOT DIFFICULT to envision a scenario, some industry trackers say, in which all but the more complex cloud tools approach zero in price—largely given away by the big cloud providers as table stakes to get a foot in the door. While that would seem to favor Google’s strengths and give some indication of its path to success several years from now, Google’s credibility issue remains a serious hindrance. While Google has shown signs of giving Greene total support—CEO Pichai appeared at her conference and has given her the budget and the mandate to make a rash of high-profile hires—it will have to show unusual patience to allow her team to build relationships that even she admits can take years.

More likely, it is Microsoft that will pose the biggest threat to Amazon for cloud leadership in the long term. Interest in Azure is at an all-time high, and its leadership team recognizes the cloud’s strategic importance across Microsoft’s entire business. The company is slowly shaking its association with the Windows monopoly (nearly a third of new virtual machines on its servers are built on Linux) and has a sales organization and network of partners to go toe-to-toe with Amazon’s.

Microsoft will win out only if Amazon acts less like a Bezos-driven, ruthlessly effective operation. The cracks are there, if you look: AWS’ consistent 20% margins are creating a perception that its service is sometimes overpriced. And while plenty of companies across industries already fear the power of Google and Microsoft, Amazon is no different. Its dominance in retail makes AWS unpalatable to some. China’s e-commerce giant, Alibaba, has its own cloud division now; Walmart announced an open-source cloud project called OneOps earlier this year.

But bet against Bezos and his team at your own peril. If Amazon senses a threat from Microsoft in the coming months, expect AWS prices to drop precipitately while the quality of its tools continues to go up. “People have underestimated how fast Amazon is still innovating,” says Max Gazor, a venture capitalist who has invested in cloud companies. AWS engineers didn’t blink about working through Thanksgiving Day to make sure Kylie Jenner’s website was ready for the launch of her makeup line last Cyber Monday. “Are we a hard-charging organization?” Vogels asks. “Yes.” No one who has faced off against Bezos & Co. in retail doubts it.

Unless Amazon charges down the wrong path, it’s hard to see another company reaching $100 billion in revenue first. But if Google can show real traction and if Microsoft can narrow the gap somewhat, increasingly savvy companies will benefit from their fight to keep pace with Amazon. At Microsoft, Guthrie takes another stab at the question of whether Azure thinks it will ever take pole position in the cloud. “The real winner from all this competition is hopefully the customers,” he says.



CANNABIS

Scotts Miracle-Gro has been helping suburban gardeners keep their lawns green and pristine for decades. Now its unconventional, controversial CEO, **Jim Hagedorn,** with support from his billion-dollar family, is gambling $400 million to reach a burgeoning market of customers: pot growers.

BY DAN ALEXANDER

CAPITALIST

STEPHEN WEBSTER FOR FORBES

Strapped into the pilot's seat of his private jet, Scotts Miracle-Gro CEO Jim Hagedorn thrusts the throttle forward and hurtles down the runway, a typical start to the day for the former F-16 fighter pilot, who commutes 500 miles from his home on Long Island, N.Y. to his office outside Columbus, Ohio. For an hour and a half every morning and every afternoon, Hagedorn sits behind the control stick of his plane, pushes the seat back and lets his mind run wild.

His latest idea: "Invest, like, half a billion in the pot business," he yells over the roar of two engines powering his camouflaged Cessna Citation. "It is the biggest thing I've ever seen in lawn and garden."

No one has a better perspective on the lawn and garden business than Hagedorn, who, after watching his father build Miracle-Gro into a national brand, orchestrated its merger with Scotts in 1995 and took over as CEO of the combined company in 2001. Scotts Miracle-Gro, which makes almost all of its money selling grass seed, fertilizer, pesticide and dirt, boosted revenues 80% from 2001 to 2009, riding on the coattails of Home Depot, Lowe's and Wal-Mart as the retailers built more than 3,000 big boxes across the country. But then the Great Recession hit, and the rapid expansion stalled. Scotts Miracle-Gro's sales have been stagnant ever since. That hit home for Hagedorn and his family, who collectively own a 27% stake that makes up $1.1 billion of their nearly $1.5 billion fortune. Frustrated with the flatlining business, Hagedorn fired more than half his management, shook up his board and gambled heavily on pot growers.

That controversial decision was made one day in 2013 in Yakima, Wash., when Hagedorn wandered into a garden center. The store had hardly any Scotts merchandise, but there was a massive row of equipment for hydroponics, a method of growing that allows people to cultivate cannabis (or any other plant, for that matter) indoors, using targeted lighting and liquid solutions spiked with nutrients. Hagedorn asked to see the store owner, and out walked a short guy with wild hair and a lazy eye. He told Hagedorn that everyone called him an idiot when he first started selling hydroponics equipment, but the stuff was flying off the shelves, with an average receipt of $400—straight cash. It was a starkly different scene from what he'd just witnessed at a Home Depot across town, which had plenty of Scotts Miracle-Gro products but no hydroponics equipment. "Two worlds, same town. I came back, and I told everyone 'We're doing it,'" Hagedorn recalls. "If you don't like it, leave. We're doing it. It's beyond stopping. And we're not getting into pot growing. We're talking dirt, fertilizer, pesticides, growing systems, lights. You know it's a multibillion-dollar business, and we've got no growth in our core. Are you guys stupid?"

Hagedorn is backing up his big talk with serious cash. He shelled out $135 million last year on two California-based businesses that sell fertilizers, soils and accessories to pot growers, recently spent another $120 million on a still-undisclosed lighting and hydroponics equipment company in Amsterdam and promises to invest about another $150 million by the end of 2016. Altogether, the deals are bigger than the largest single acquisition in the history of Scotts Miracle-Gro, which takes in $160 million of profit on $3 billion in sales annually.

"For a lot of conventional companies, I don't think they'd want to take the risk," says Hagedorn, a short, bald 60-year-old with sharp blue eyes. "I mean I've talked to some other friends and CEOs who basically shake their head."

Among the dissenters is Carl Kohrt, one of six Scotts Miracle-Gro board members to step down in the past three years. "I'm not personally a supporter of the marijuana business," says Kohrt. "Things change. Laws have changed. Interests have changed. Some personal values have not changed—mine included."

Values aside, the drug industry is a legal minefield.

The federal government still labels cannabis as a Schedule I drug under the Controlled Substances Act, in the same class as heroin and LSD. But 25 states now allow medical marijuana, and 4 (plus the District of Columbia) have passed laws permitting recreational use. In 2013 the Obama Administration issued a memo deferring marijuana regulation to states, while at the same time reserving the federal government's right to prosecute offenders in the future and challenge the states at any time (perhaps, say, if a new president is elected).

GROWING UP, Jim Hagedorn thought business was boring. His father, Horace, a onetime Madison Avenue adman, cofounded Miracle-Gro in 1951 and spent much of his time on the telephone talking about numbers and marketing plans. Jim was a horrible student who didn't care about his schoolwork but spent study halls going through encyclopedias cover to cover.

His older sister Susan joined the Weathermen, a left-wing terror organization that bombed the Pentagon and the U.S. Capitol (she was not involved in either). After she was arrested for conspiracy to commit arson during a riot in Massachusetts, Horace Hagedorn headed north from Long Island to try to get his daughter off the hook. (She ended up serving two years' probation.) While Horace was gone, Jim, then 15, threw a massive "pot party," as he terms it, inviting over hordes of young people to get high. His father returned earlier than expected, walked into the ongoing party and burst into a fit of rage. Fearing for his safety, Jim called the police. ("As bad a kid as I was, he never hit me. I thought he was going to kill me this day," he recalls.) The cops arrived at the door, and when Horace went down to answer it, Jim walked out of the house. He didn't return for another two years.

Hagedorn lived on radical communes, surrounded by guns and drugs. He and his gang of friends stole anything they wanted as their lives spiraled out of control. "Did I do drugs?" Hagedorn asks rhetorically. "I didn't do heroin—I viewed heroin as a drug that poor addicts use—but when it came to hallucinogenics and speed and marijuana, cocaine. Hell, yes."

After a girlfriend broke his heart, he stumbled home to try to piece his life back together. His father made a donation to a boarding school in Vermont, and the school admitted Jim, by then 17, to its freshman class. Not long after, Hagedorn decided he wanted to be a professional pilot and headed to Embry-Riddle Aeronautical University in Daytona Beach, Fla. After enrolling he took the Air Force Officer Qualifying Test, a military version of the SAT. To his surprise, he nearly aced the exam and the school offered him a full ride. Hagedorn's father had promised all his children that if they earned scholarships, he would give them half of what they saved him. Hagedorn took the money and bought a BMW 5 Series.

Six months into flight training an Air Force major stared down 30 students. "I want everybody who wants to kill people to sit on one side," Hagedorn recalls him saying. "And I want everybody who is going to fly the killer's toilet paper around to sit on the other side." The major walked up to him and asked him to choose his fate. Hagedorn wanted only to be an airline pilot; he was certain the aerobatics of flying fighter jets would make him sick. But so did the idea of

FORMER F-16 FIGHTER PILOT HAGEDORN OFTEN FLIES HIMSELF 500 MILES BY PLANE AND 30 MILES BY HELICOPTER FROM LONG ISLAND TO HIS OFFICE IN OHIO.

STEPHEN WEBSTER FOR FORBES

LATEST ON GMO GRASS

Scientists inside Scotts Miracle-Gro are developing a genetically modified version of one of the most common plants in the world: grass. If and when it actually hits the market, it will help gardeners grow ever greener lawns with less fertilizer and less maintenance.

It has been a long time coming. Back in 1997 Scotts partnered with GMO giant Monsanto to create a Roundup-ready grass for golf courses. But Scotts botched an early seed-harvesting operation, allowing its lab grass to spread beyond a contained area and mate with traditional varieties of turf before it had been approved by the U.S. Department of Agriculture. Despite extensive efforts to kill off all the escaped grass, new generations keep popping up near the site, 12 years after the accident.

"There is no getting it back," says Scotts Miracle-Gro CEO Jim Hagedorn. "You have 1,000 kids, 1 million kids. You can't get them all. Our stuff is in the wild."

Monsanto stopped working on the original project after a 2006 *New York Times* story exposed the seed-harvesting debacle. But now Hagedorn and his team are leveraging unpatented gene research to create new kinds of turf. Using technology previously developed by a scientist at Cornell, Scotts is mechanically implanting genes into crop varieties, instead of using agrobacterium. That means Scotts scientists can now develop new grasses without going through the standard USDA regulatory process.

being subservient to anyone. "Kill people, sir," he answered. He flew fighters for seven years during the Cold War. In 1987 Hagedorn left the Air Force as a captain and interviewed at his family's business, where his father asked him what role he saw himself taking at the company. He responded by saying there was only one job that he wanted—his father's. Hagedorn was willing to learn the ropes for a few years, as long as he didn't have to work in sales. His dad hired him and immediately threw him in the sales department.

In 1994 SC Johnson offered the Hagedorn family $400 million in cash to buy Miracle-Gro, and Jim, by that time an executive, came up with a countermove. What if, instead of selling to the consumer products giant, he proposed a merger with Scotts, a sleepy Ohio business that was six times the size of Miracle-Gro but had slim profits and a market capitalization of only $300 million. On Jan. 26, 1995 Scotts, run by professional management and owned by institutional shareholders, and much smaller Miracle-Gro merged in a deal that valued Hagedorn's company at $195 million. It was less than half the price SC Johnson offered, but there was potential upside. In this deal Jim and his family took their entire payment in equity and warrants, giving them a 41% stake in the merged company. Soon after the agreement closed, the Hagedorns learned that Scotts' management team had been inflating sales figures. The company had to restate its earnings in 1996, and the Hagedorns moved to boot the old management team, replacing them with Miracle-Gro folks, including Jim. Five years later he took the top role himself.

The Hagedorns kept looking for ways to take down competitors or, if that was not possible, to ally with them. In 1998 Scotts Miracle-Gro struck a $32 million deal to sell Monsanto's herbicide Roundup and a $300 million agreement for pest-killer Ortho. (Today Ortho does nearly $300 million in revenue, and Roundup brings in $70 million in net profit annually.) The next year Hagedorn shelled out another $350 million to acquire lawn and garden companies in the United Kingdom and new markets like France, Germany and the Netherlands. By 2009 Scotts Miracle-Gro controlled more than half of the market in consumer pesticides, fertilizers, soils and grass seeds.

Without a hint of irony in his voice, Hagedorn compares the lawn and garden business to warfare. "Oh, dude, in a lot of ways, I think it's better," he says. "Today the way wars happen, you don't get to keep all the stuff. To me this is one where in commercial combat you kind of rape and pillage, and you keep all of the stuff."

THAT'S HAGEDORN. Wildly offensive, hard-charging and, as even those who detest him admit, deceptively smart. He flies a plane named *F-Bomb*, draws business lessons from Osama bin Laden ("a massive piece of crap" but "a visionary") and compares himself to the protagonist in the Showtime series *Billions* ("so focused on winning that he's a little bit of an animal").

There is a softer side. Just ask him about his family. From 1995

The company's new, unregulated GMO grass requires less fertilizer, grows at half the speed of standard turf and is resistant to the primary chemical agent in Roundup, the weed killer made by Monsanto and sold by Scotts. That means gardeners can spray weed killers without worrying about it destroying their lawns. Trials are already running today. Scotts hopes the new types of grass will hit the market within three years. *—D.A.*

STEPHEN WEBSTER FOR FORBES

to 2007 Hagedorn flew back to Long Island every weekend to see his wife and three kids but spent most of his time in Ohio. After his daughter died in 2007, he started commuting back and forth every day so that he could be home for dinner every night. He typically flies with no one but his German shepherd, Scout, who rides on a built-in dog bed next to Hagedorn's seat in the cockpit.

"There's not another Scotts, and there's not another Jim Hagedorn," says Mark Baker, a former president of the company. "He is intense. He's very smart. He's sometimes exuberant, sometimes brutal—all in the same sentence, same day, same minute."

Hagedorn's temperament has gotten him in trouble before. In 2011 he told a *Wall Street Journal* reporter off the cuff that he wanted to target the medical marijuana market. When the story hit the press, Scotts board members were shocked—both by the idea (which they immediately shot down) and the fact that Hagedorn had told a reporter about it before telling them.

Two years later the board was in turmoil for a different reason. On June 3, 2013 Scotts Miracle-Gro announced the resignation of three directors and explained the departures in an awkwardly worded SEC filing. All three had resigned "following a unanimously-support-

TWENTY-SEVEN YEARS AFTER DAD HORACE (IN PORTRAIT) GAVE HIM A JOB AT MIRACLE-GRO, JIM INSTALLED SON CHRIS AS HEAD OF HIS OWN SUBSIDIARY.

ed reprimand of Hagedorn that stemmed from the use of inappropriate language," the statement said, but none of the departures were "related to any disagreement relating to the company's operations, policies, practices or financial reporting."

Although the details of what exactly occurred remained secret for years, even to Scotts' employees, the abrupt resignations of three board members certainly raised eyebrows. "They were the three strongest and the three most willing to challenge Jim," says one former senior executive.

In reporting this story, FORBES uncovered publicly for the first time what actually happened. While discussing the movie *Django Unchained* with a newly hired African-American employee, Hagedorn repeatedly said the N-word, which is frequently used in the film. After receiving a complaint, the board of directors launched an investigation into the incident. The inquiry quickly expanded into a larger review of the "tone at the top" of the organization, sparking a war among board members. In the end the board issued Hagedorn a unanimous reprimand, but he remained CEO. The African-American employee at the center of the episode left Scotts Miracle-Gro and was paid undisclosed millions as part of a severance package that included nondisclosure covenants. Contacted by FORBES, she declined to comment.

"The catalyst for this whole problem was me," Hagedorn says. "I get that. I'm not super-apologetic about what happened. I wouldn't do it again."

The incident left the board less independent than it had been. Altogether 6 board members have left since 2013. Meanwhile only 4 new directors have joined Scotts, shrinking the board from 12 people to 10, including Hagedorn, who serves as chairman, and his twin sister, Katherine Hagedorn Littlefield, who is vice chairman.

"Listen, I want to respect the board," Hagedorn says. "I don't really feel like I have to get a lot of s--- from the board."

BACK ON LONG ISLAND, just minutes from the Hagedorn family compound, sits the command center for Scotts' marijuana mission, set up in a nondescript white block building. The only sign that anyone of consequence is inside is the 1967 pastel-yellow Alfa Romeo convertible sitting outside. It belongs to Jim's 31-year-old son, Chris, who is charged with turning his father's wild idea into a reality.

If the Hagedorn family didn't own 27% of Scotts Miracle-Gro, Chris would not have his current job as president of subsidiary Hawthorne Gardening. When he was a teenager, he read an article explaining how the first generation typically creates a family business, the second generation expands it, and the third ruins it. So he decided to stay away from Scotts Miracle-Gro. He studied history at Bowdoin College, where he was admitted with help from his father, who knew the president. After graduation he spent three years in advertising, writing commercials for fast-food hamburgers, then quit to write a novel. He ended up playing a lot of videogames instead. Eventually he got married and, while riding in the cockpit on the way back from his wedding, gave in and asked his father about joining the company. Jim put him in the marketing department (which Chris didn't like), then eventually switched him over to the unit that oversees hydroponics (which he found more interesting).

"As far as I was concerned, it was just a toe in the water, but [Jim] may have had other ideas," says Alan Barry, who served on the Scotts board of directors from 2009 until his retirement in 2015. "This was Jim's way of creating a job opportunity for

his son. And it was small, and it would have no measurable impact on the company."

Chris' role expanded quickly. Last year he helped lead the $120 million acquisition of General Hydroponics, which proved to be a tumultuous deal. The day before the agreement was to be finalized, Scotts' outside lawyers refused to sign off. Their problem: Even though General Hydroponics did not sell marijuana, its founder had been growing cannabis as part of a side R&D operation. Jim Hagedorn wanted to pay the founder a consulting fee to continue working on his research for Scotts Miracle-Gro. But the lawyers refused to go along with it. Seeing no other option, Hagedorn agreed to leave the research out altogether and wrapped up the deal. That legal team has not worked on any Scotts' hydroponics deals since. Undeterred, Hagedorn recently paid $120 million for a 75% stake in an Amsterdam-based lighting and hydroponics equipment outfit.

HAGEDORN COMPARES THE LAWN AND GARDEN BUSINESS TO WARFARE: "THE WAY WARS HAPPEN, YOU DON'T GET TO KEEP ALL THE STUFF. ... IN COMMERCIAL COMBAT YOU KIND OF RAPE AND PILLAGE, AND YOU KEEP ALL OF THE STUFF."

If Hagedorn's antics don't get in the way, his pot strategy may prove to be a success. General Hydroponics and its sister company, Vermicrop, brought in just $50 million in revenues when Scotts bought them in 2015. Now part of Chris' subsidiary, the two companies have already increased sales by more than 20%, roughly four times the growth rate of the rest of Scotts, and operating margins are on track to be about 30% higher than the company average this year. The core business has been performing better lately as well, with profits up 50% since Hagedorn fired more than half of his management team in the last four years. Scotts Miracle-Gro shares have increased 13% in the past year (versus –1% for the S&P 500).

This spring Miracle-Gro took its pot plan on the road. It began selling a new line of hydroponics equipment and soils called Black Magic (created by a scientist at the General Hydroponics office) in 141 Home Depot stores across Colorado and Washington (states where recreational pot is legal) and Michigan (where medical marijuana is legal). A bag of Black Magic costs $16, more than twice as much as typical potting soil. Vegetable growers may not notice much of a difference, and most wouldn't bother paying the higher price. But one pound of cannabis is worth more than $2,000, meaning the calculus for growing weed is much different than it is for growing tomatoes. With that sort of math on his side, Chris predicts his division will someday be a billion-dollar business. The TV spot that launched Black Magic features tattooed growers working under neon lamps late at night to cultivate leafy greens. It first aired on Apr. 20, the unofficial holiday for weed smokers everywhere.

There are plenty of other opportunities, too. Take pesticides. Since marijuana is still a Schedule I drug, the federal government has not approved any pesticides for use on the plant, so growers are using corn pesticides as a substitute. But production at marijuana facilities keeps getting shut down by authorities, who are fine with businesses selling weed in certain states but don't want people smoking dangerous chemicals. Scotts Miracle-Gro is now working with state governments to secure federal registrations that will indicate which pesticides can be used safely on cannabis. The ultimate plan: roll out a line of branded pesticides specifically designed for pot.

Hagedorn has not given up on growing his own marijuana, either. He is already looking into foreign markets like Israel, Canada and Jamaica, where Scotts might be able to legally set up labs to test its products and conduct cannabis research. Hagedorn's most eye-opening idea: someday expanding the company's research on genetics into cannabis to create GMO marijuana. Showing an ounce of restraint, he says he is not ready to run that idea by the company's directors—yet.

Still he's got his hand firmly on the throttle. "I'm pretty dominant and forceful here," he says. "I admit, I'm an acquired taste. There are certain people who would say, 'I wouldn't want Hagedorn going out with my daughter. I don't like how he runs the business.'" None of that deters him. F

Life in the Fastest Lane

Ever dreamed of going 200mph at the Indianapolis Motor Speedway or other legendary tracks? Indy Racing Experience can make you Andretti for a day.

BY JIM CLASH

The day after the 100th running of the Indy 500 in May, 33 lucky fans got a once-in-a-lifetime opportunity: the chance to roar down the front straight at the Indianapolis Motor Speedway in excess of 200mph in a two-seat, open-wheel car with Mario Andretti for a chauffeur.

The 76-year-old Andretti is a legend, of course. In addition to his 1978 Formula One World Drivers' Championship, he has victories in the Daytona 500, Indianapolis 500 and 12 Hours of Sebring. He has also started the Indy 500 29 times, so he knows his way around the Brickyard.

Two-seat rides at Indy have been offered since 2001, when the Indy Racing Experience (IRE) debuted. Though stunningly fast, clocking 180mph, the runs were kept at about 75% of Indy 500 pole-qualifying speeds for safety. But the goal from the beginning, says Scott Jasek, an ex–Budget Rental Car executive and one of three partners at IRE, was to provide customers a true 200mph experience. Now that the group has a 15-year record of safety, insurance companies and sponsors agreed that the time was finally right.

Like many small businesses, IRE started over a few beers. One night Jasek, Jeff Sinden and Joe Kennedy were blowing off steam when Jasek naively asked his two friends, part-owners of a race team, whether he could drive their Indy car. He was told that the machine was too delicate, that he could easily damage it if he over-revved the engine or didn't shift correctly. So Jasek wondered aloud: What if we stretch the car, put in a second seat and allow a pro racer to handle the driving chores while a passenger just goes along for the ride?

After taking out a $1 million loan secured by the three men's houses, IRE bought liability insurance, built a pair of custom two-seaters with Italian chassis manufacturer Dallara and secured Firestone as a sponsor. Since then the company has provided more than 50,000 thrill rides for media, celebrities and fans in real Indy cars—and generated more than $25 million in revenue.

After operations began in 2001 with 500 customers at $1,000 per ride, internal research showed that $500 was a better "tipping point" price—anything over $500

Welcome to the 200mph Club: After hot laps with Mario Andretti, participants receive a commemorative ring.

JAMES FARRELL FOR FORBES

Phoenix International Raceway. And two-seat IndyCar drivers other than Andretti include Martin Plowman and Zach Veach.

But the most famous track is Indianapolis, and that's the one IRE chose to inaugurate its 200mph Club. The company also test-drove the concept in a humorous Honda ad, "Fastest Seat in Sports," featuring Andretti behind the wheel with a terrified *Wonder Years* star Fred Savage in the backseat.

From an engineering perspective, to hit the 200mph magic number the heavier two-seater needs to average a lap in the 190mph range, or get around the 2.5-mile oval in about 47 seconds. This being so, IRE has switched out its standard V-8 engine for the lighter turbocharged 6-cylinder Honda. The new engine allows Andretti to goose speeds enough on the straights while ensuring maximum safety in the corners by using a Dallara chassis with downforce similar to what is required for a short track.

Following their 200mph experiences, each of the 33 ride-along participants, myself included, received a commemorative ring, video and certificate signed by Andretti. "If I ever walked on the moon, I'd want a ring that said that," Jasek says. "The same will apply to the 200mph experience. People will want bragging rights."

cuts into "vacation money"—and when Jim Beam and Menards home improvement stores came on as sponsors, IRE was able to reduce ride costs. The business took off. In 2005 some 2,700 experiences generated $1.5 million in revenue. Last year customer ranks had jumped to 5,500 and annual revenue to $3 million. IRE now has six two-seaters in rotation at more than a dozen U.S. tracks to handle the demand.

The programs run almost year-round, depending on the location; tracks include Indianapolis Motor Speedway, Pocono Raceway, Texas Motor Speedway, Iowa Speedway and

For his part, Andretti is excited too. "I embrace opportunities to do the two-seater program," he says. "I need a business reason to be at the track. I also think it's important to give fans a real taste of what drivers experience."

To put the experience in perspective, 200mph is faster than any Nascar vehicle has traveled around the Indy track. The pole position for last year's stock car race there, the Brickyard 400, was about 183mph. As Jasek jokes, "Maybe Dale Earnhardt Jr. can come take a ride with us and see what it's like to go 200mph at Indianapolis." *

FINAL THOUGHT

"Auto racing began five minutes after the second car was built." —**HENRY FORD**

TRENDING

WHAT THE 75 MILLION FORBES.COM USERS ARE TALKING ABOUT. FOR A DEEPER DIVE GO TO **FORBESLIFE.COM**

PERSON

KATE UNSWORTH

The 28-year-old founder of Vinaya recently introduced Zenta, the world's first biometric wristband for emotional well-being. Whether you're stressed, depressed or just need a rest, this bracelet knows.

COMPANY

LILIUM

The German startup unveiled plans for the first electric jet that can take off and land vertically. The two-person craft, intended for personal use, has a top speed of 250mph and is expected to be released in 2018.

IDEA

THE $2.8 MILLION SANDWICH

Michelin-starred chef Heston Blumenthal created a bacon sandwich for British astronaut Tim Peake. The meal doesn't come with a side of diamonds, but the fuel costs to reach the International Space Station are astronomical. Consider it very expensive takeout.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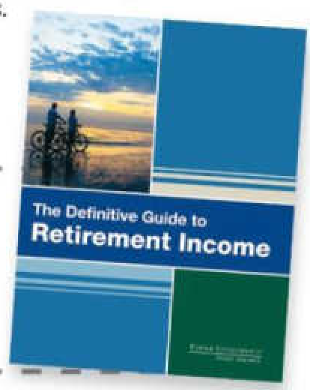

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"Every technology, every science that tells us more about ourselves is scary at the time."

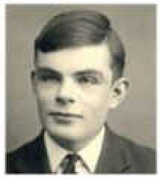
—RODNEY A. BROOKS

"A machine is more blameless, more sinless even than any animal. It has no intentions whatsoever but our own."

—URSULA K. LE GUIN

"Will AI someday really think? That's like asking if submarines swim. If you call it swimming, then robots will think, yes."

—NOAM CHOMSKY

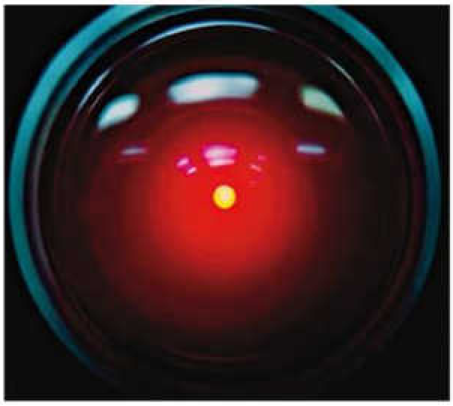


"IT SEEMS PROBABLE THAT ONCE THE MACHINE THINKING METHOD HAD STARTED, IT WOULD NOT TAKE LONG TO OUTSTRIP OUR FEEBLE POWERS."

—ALAN TURING

"WESTERN MAN IS EXTERNALIZING HIMSELF IN THE FORM OF GADGETS."

—WILLIAM S. BURROUGHS



"DAVE, STOP. STOP, WILL YOU? STOP, DAVE. WILL YOU STOP, DAVE? DAVE, MY MIND IS GOING. I CAN FEEL IT. I CAN FEEL IT."

—HAL

"The real question is not whether machines think, but whether men do. The mystery which surrounds a thinking machine already surrounds a thinking man."

—B.F. SKINNER

"WHETHER WE ARE BASED ON CARBON OR ON SILICON MAKES NO FUNDAMENTAL DIFFERENCE. WE SHOULD EACH BE TREATED WITH RESPECT."

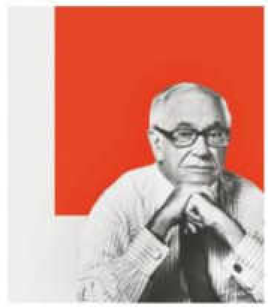
—ARTHUR C. CLARKE

"The Zeroth Law: A robot may not harm humanity or, by inaction, allow humanity to come to harm."

—ISAAC ASIMOV

"The danger from computers is not that they will eventually get as smart as men, but we will meanwhile agree to meet them halfway."

—BERNARD AVISHAI



FINAL THOUGHT

"Does one really think a robot could have written Shakespeare? That the creative arts can be done by computers? Who the hell creates the robots?"

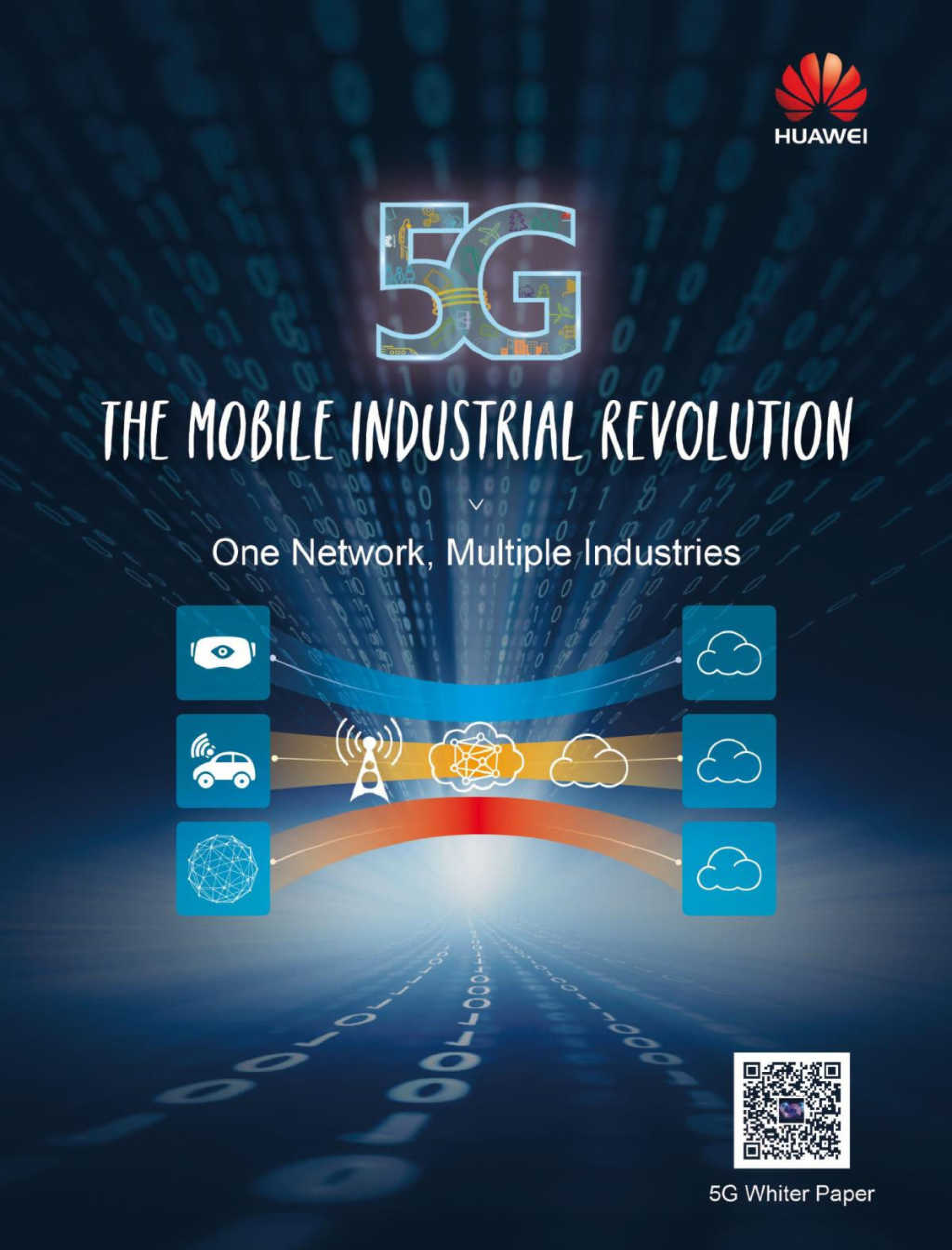
—MALCOLM FORBES

"The machine threatens all achievement."

—RAINER MARIA RILKE

SOURCES: THE SONNETS TO ORPHEUS, BY RAINER MARIA RILKE; THE TIMES BOOK OF QUOTATIONS; 2010: ODYSSEY TWO, BY ARTHUR C. CLARKE; I, ROBOT, BY ISAAC ASIMOV; GOODREADS.COM; CONTINGENCIES OF REINFORCEMENT: A THEORETICAL ANALYSIS, BY B.F. SKINNER; THE LATHE OF HEAVEN, BY URSULA K. LE GUIN; NAKED LUNCH, BY WILLIAM S. BURROUGHS.

CLOCKWISE FROM TOP LEFT: JOHN B. CARNETT/BONNIER CORP/GETTY IMAGES; DAN TUFFS/GETTY IMAGES; FINE ART IMAGES/HERITAGE/GETTY IMAGES; MONDADORI PORTFOLIO/GETTY IMAGES; NEWSCOM; ULLSTEIN BILD/GETTY IMAGES; ROLF SCHULTEN/ULLSTEIN BILD/GETTY IMAGES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