SHARK TANK'S TOOTHLESS DEALS • ALASKA'S OIL FIASCO

THE ULTIMATE LUXURY GIFT GUIDE

Forbes

NOVEMBER 29, 2016

FINTECH 50

INNOVATORS CHANGING HOW YOU SAVE, SPEND AND INVEST

MAGIC LEAP VISIONARY RONY ABOVITZ

STRAIGHT OUT OF STAR TREK: HE CAN BEAM HOLOGRAMS ONTO YOUR RETINA.

DISRUPTION MACHINE

INSIDE MAGIC LEAP: THE SECRETIVE $4.5 BILLION STARTUP THAT AIMS TO OBLITERATE EVERY TV, PHONE AND COMPUTER ON THE PLANET.

(KISS YOUR SCREENS GOODBYE.)

KPMG Voice FINANCIAL SERVICES TAP INTO THE SHARING ECONOMY

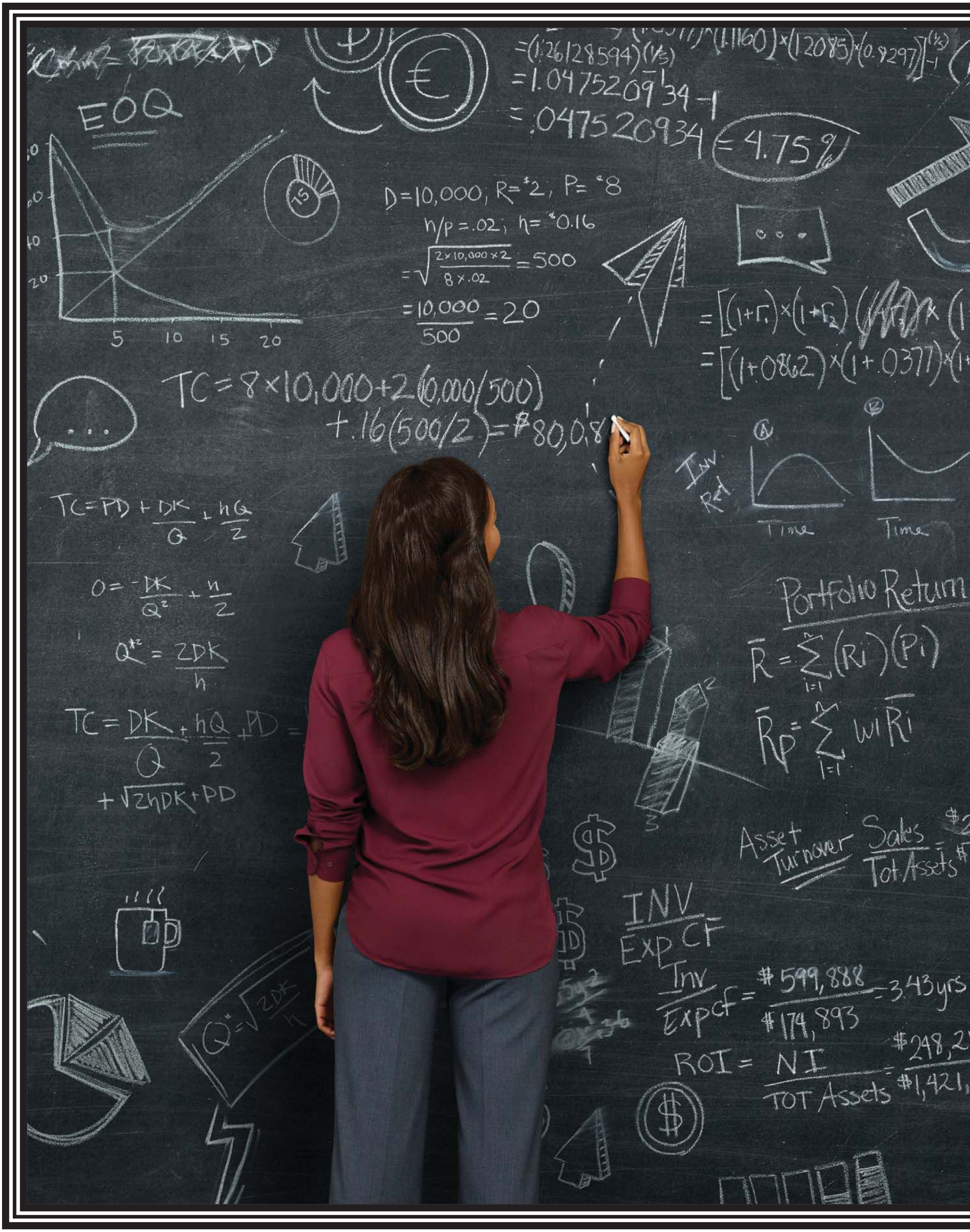
Forbes

DANIEL SCHREIBER
SHAI WININGER

COFOUNDERS, LEMONADE

THE GREAT REWRITE
FRESH-SQUEEZED INSURANCE

BrandVoice WITH KPMG MEET THE PEOPLE TRANSFORMING OUR FUTURE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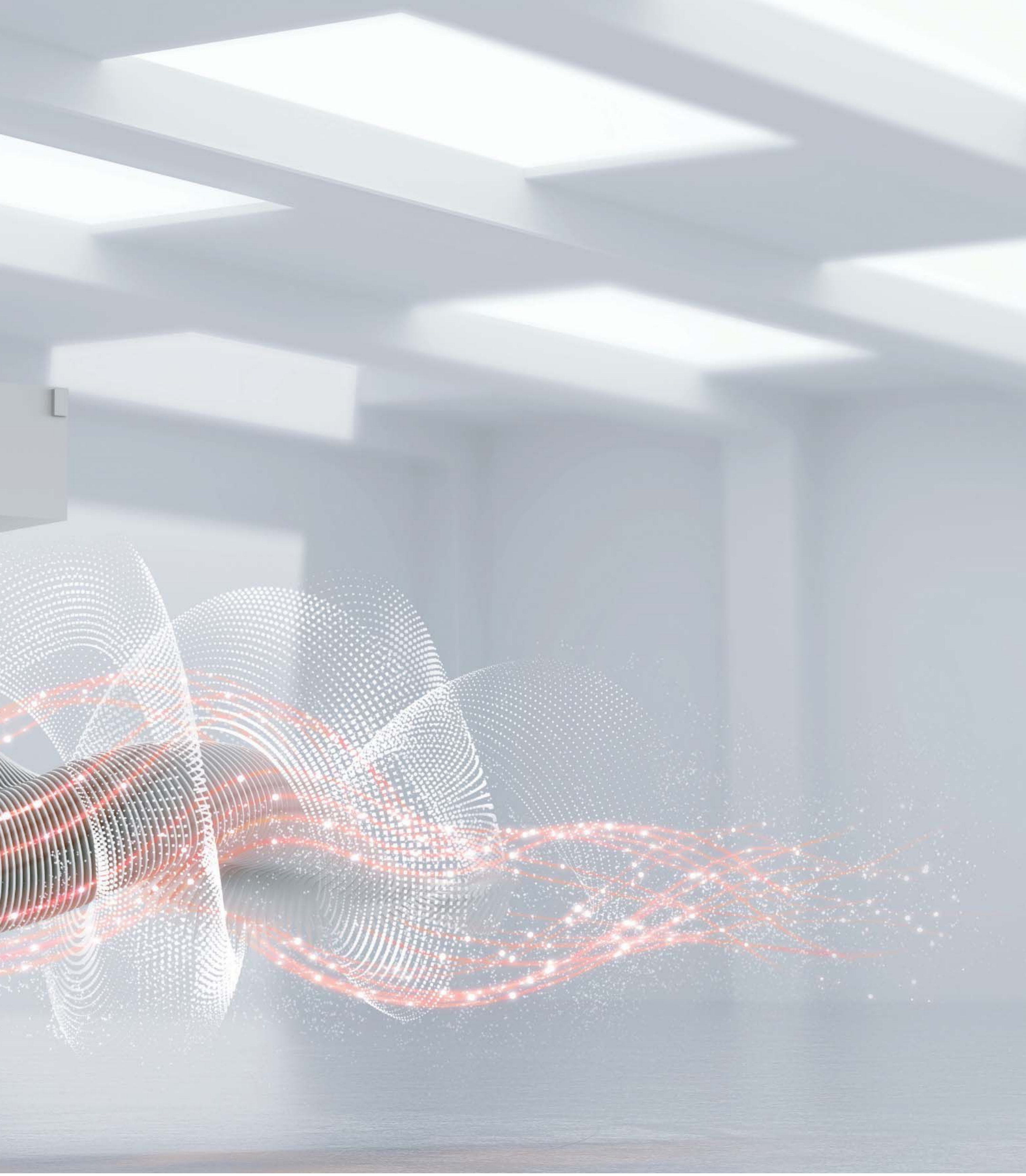

Forbes

ON THE COVER

COVER PHOTOGRAPH BY JAMEL TOPPIN. RONY ABOVITZ WEARS A SUEDE JACKET AND A COTTON BLEND TURTLENECK BY JOSEPH ABBOUD.

CREATIVE STYLE DIRECTOR: JOSEPH DEACETIS
GROOMING: SUZANA HALLILI


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Capital Creates the New City
Shared mobility is helping define – and improve – the future of our cities. It can enable more commerce, more recreation and more vibrant communities. Morgan Stanley helped Uber raise capital to advance this shift. Now, Uber can help take cars off the road with uberPOOL, its carpooling option that's already responsible for over 250 million shared trips taken worldwide[1]. Fewer cars on the road[2] and more thriving cities? We're on board. Capital creates change.
morganstanley.com/uber
1. Based on data from Uber posted September 15, 2016. For more information visit: https://newsroom.uber.com/uberpool-two- years
2. Based on data from Uber posted September 16, 2016. For more information visit: https://newsroom.uber.com/less-parking- more-city
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48
ARCTIC NATIONAL


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INVESTING

FORBES LIFE GIFT GUIDE

FEATURES


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INSIDE SCOOP

Seizing Our Brand's Destiny

BY LEWIS D'VORKIN

FROM WHERE I SIT, the news business is changing again—potentially in more seismic ways than it has over the past few years, impossible as that may sound. New opportunities and stress points arise every day. Consumers can't get enough news. That's good. More and more, they rely on nonjournalistic platforms (Facebook, Google and Snapchat) to find and consume it, making journalistic operations less integral to our lives. That's scary.

The rise of walled content gardens on technology platforms like these reminds me of my time at AOL. Back in the 2000s AOL's walled garden involved "anchor tenants." News brands and others bought into the idea that money could be made from AOL's tiny rectangular screens. Sometimes they bought space in hopes of driving visitors back to their own sites to generate ad revenue. Other times they agreed to cockamamie traffic deals. As the saying goes, the house always won.

My AOL experience taught me the importance of controlling your destiny. That's a big reason I left in 2008 to start True/Slant. To me, controlling one's destiny meant new content and ad models. At T/S, it was a contributor model (now 1,700 strong at FORBES) and what we called Ad/Slant (now BrandVoice at FORBES with 140 partners), or native advertising before it had a name.

Owning your destiny is again on my mind as FORBES stares into the face of technology platforms that want to be media companies whether they admit it or not. Moving forward, newsroom scalability—or owning your destiny—requires that content formats for social platforms and your own site must be largely the same. For our newsroom, that means using the formats of a mobile era—text bursts, photos, GIFs, charts and video.

Audience segmentation is also part of the destiny thing. It is at the core of the existential questions news organizations ask themselves as they grow: Who are we, and what do we do? As a print magazine, FORBES appealed to the C-suite crowd. With the addition of 15 million monthly Web visitors, we did that and more. Now, at 50 million monthly visitors, we've extended our brand to new audiences that relate to our entrepreneurial mission.

Journalism got a boost during the Watergate years, when I started my career. It's getting another during this nasty presidential race. This is the perfect time for newsrooms to aggressively do what's needed to control their destiny. F

Dear World,

We interact with hundreds of new people every year, and yet there are times we all feel alone. I believe that if we took the time to notice, we'd see we're infinitely more connected by our similarities than divided by our differences.

Hours after the SWAT team found my classmates and me huddled in a locked office in Columbine High School, I sat on my couch, feeling utterly alone - even though I was surrounded by loved ones. Years passed and tragedies kept happening. But I continued to feel alone, convinced that no one understood what I had experienced. Until one day the helpless feeling just became too much, and I realized that I did have something unique to offer others: experience. Experience fighting the personal battle that results from mass trauma. I never wanted another person to feel like I did for over 10 years. So now my efforts are to reach out and find others, talk to others, and make those vital connections so they never feel alone.

The truth is, none of us are alone. All we have to do is take notice.

So reach out. Be kind. And dont forget to notice our similarities instead of focusing on our differences.

Peace,

Heather

How a simple sheet of paper can be a powerful instrument of peace.

Putting thoughts on paper can be a powerful way to express feelings, heal and inspire. We asked five people whose lives have been touched by violence or cruelty to write Letters of Peace that reflect their enduring faith in humanity. Meet the authors, read their letters and learn more about the power of paper.

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THE COLLAPSE OF OBAMACARE WHAT TO DO NOW

BY STEVE FORBES, EDITOR-IN-CHIEF

WITH THE OBAMACARE exchanges collapsing and millions of people being battered by ghastly increases in health insurance premiums, what's to be done?

Forgetting that socialism doesn't work—never mind that it's deeply immoral—Democrats are addicted to the idea of government-dominated health care. They see ObamaCare's terminal crisis as the perfect opportunity to realize their age-old ambition of socialized medicine, hence the current mouthing of such slogans as "a single-payer system," "Medicare for all" and the offer to consumers of "a public option," i.e., subsidized policies from a health insurance company run by Uncle Sam.

Republicans should be ready with proposals that will help health care ultimately become a normal market, where patients are in charge, not such third-party payers as health insurers, Medicare and Medicaid. Currently, the patient isn't the "customer," which is why so many thousands of them die unnecessarily from infections received at hospitals or from medical errors. The current system works to make the patient as passive as possible. A consumer revolution won't be achieved overnight, but several ideas will help.

• **Nationwide shopping for health insurance.** Bust up the Balkanized, state-by-state arrangement we have today. We're one country, after all. There's no reason that a resident of, say, New Jersey shouldn't be allowed to buy a policy offered in Wisconsin. Let scores of companies compete for your business instead of the handful you now have.

• **Transparency for prices.** Require hospitals and clinics to post their prices for all treatments, medications and services. The disparity in pricing can be astonishing. An enterprising entrepreneur, Mark Galvin, who is also CEO of MyMedicalShopper in New Hampshire, found that the fee charged by hospitals and clinics in the region for a nuclear stress test for heart patients ranged from about $1,450 to $7,000. The third-party-payer system and the lack of pricing transparency is why health care doesn't experience the fast, relentless pressure of lowering costs that's routinely found in other markets. If wide-screen TVs had fallen under the auspices of today's medical system we'd still be paying $10,000 for them instead of a few hundred bucks.

• **Transparency of performance.** Require hospitals to post monthly statements on how many patients died from infections contracted *after* they were admitted.

• **Medicare transparency.** Reveal each year what Medicare recipients—hospitals, clinics, practitioners—receive in payments from the Medicare program. Such information would be hugely useful in ferreting out fraud, as suspicious patterns and practices would be quickly apparent.

• **Equalized tax treatment.** Employers and the self-employed can deduct their premiums. Individuals can't, which can immediately put them at a huge disadvantage regarding the effective price they get for insurance.

• **Freedom of choice.** Let people choose their own policies, not be required to accept what bureaucrats think they should have. (I shouldn't have to buy policies with pregnancy services.) Why congressional Republicans last year didn't pass such a bill and watch Obama squirm as he vetoed it is amazing. It would have made a great campaign issue.

• **No more buy-this-or-else mandates.** Forcing employers and individuals to purchase insurance is un-American and unconstitutional, Chief Justice John Roberts' farcically contorted reasoning notwithstanding.

These measures would be immensely effective *and* popular. They would go a long way toward giving the American health care market the attributes we take for granted in others: cost-reducing productivity and innovation, accountability and genuine choices, instead of the one-size-fits-all structure we're being squeezed into today, which will lead to more and more deadly rationing.

Other changes are needed, but we'll never get the free-market, pro-patient ball rolling if reformers try to do everything at once.

Republicans will have to deal with the issue of safety nets, and they should be readying legislation that will allow states to create high-risk pools for genuinely uninsurable individuals, as well as provide some of the funding. Otherwise, we'll continue to be stuck with the take-all-comers mandate for insurers that's led to an enormous gaming of the system: Don't buy coverage until you're sick.

The GOP should also leave alone the popular family-policy mandate that covers children until they reach the age of 26. Pick your battles carefully!

America's Best Banker

A.P. Giannini was one of the greatest bankers in history, a superb business leader whose name today is largely unknown. With bankers being in ill repute since the crisis of 2008–09—the latest black eye, of course, comes from Wells Fargo—it is perhaps salutary and indeed inspiring to look at a banker who did so many things right. Born in northern California in 1870, this son of Italian immigrants (at age 7, he witnessed his father's murder over a money dispute) went into the produce business as a broker and was so successful that he retired at 31. Soon after, Giannini took a seat on the board of a local bank and couldn't understand why it—and every other bank—refused to serve the rapidly growing population of immigrants. Banking services, he was repeatedly told, were for only the well-to-do. He left the bank and started his own, the Bank of Italy, which years later morphed into the Bank of America. Giannini made it the largest bank in the U.S. His life offers many lessons for would-be entrepreneurs.

• **Giannini broke all the rules.** His bank stayed open long hours to accommodate shift workers. As well as English, tellers spoke their customers' immigrant languages. They instructed customers in the ways of banking, from filling out deposit slips to managing checking accounts. Loans were made for as little as $25—ridiculously small levels in the eyes of traditional bankers—with low interest rates that were light-years away from those of the loan sharks immigrants had to go to before. Defaults were few. Having spent much of his early life on San Francisco's wharves, Giannini had learned how to size men up. He advertised, something banks never did. He and his colleagues knocked on countless doors to get depositors.

Giannini also opened new branches relentlessly and bought up smaller banks. He pioneered the bank holding company and expanded into other states. (Decades later Washington forced BofA to spin off its non-California banks and its insurance operations.)

It was not only in serving immigrants and pioneering consumer finance (new and used cars, mortgages and home appliances) that Giannini did the unconventional. He applied the same approach to whole industries, such as financing the new film industry sprouting up in Hollywood (including Columbia and MGM studios) and California's wineries.

In 1937, when Walt Disney was on the brink of financial ruin because of vast overruns in producing what was regarded as a piece of madness, the feature-length cartoon *Snow White and the Seven Dwarfs*, Giannini made a big, lifesaving loan, against the advice of all his colleagues.

In 1932 in the pit of the Great Depression, when the bank was under severe financial pressure, Giannini had the bank buy all of the bonds that enabled the construction of the Golden Gate Bridge.

Giannini financed William Hewlett and David Packard when their company was still housed in a garage.

After WWII Giannini had BofA aggressively lend to war-torn Europe and Japan. He financed the rebuilding of Fiat's ruined factories, for instance.

• **Crisis management.** In 1906 San Francisco was hit with an earthquake and subsequent fires that left the city in smoldering ruins. After the quake but before the fires swept the city, Giannini got a wagon, loaded it with the bank's cash and gold, covered the load with produce and drove it out of the city. He realized that the coming fires would melt the bank vaults, trapping the money therein. As the fires abated, Giannini returned to the city, threw a plank across two barrels, put the money on his makeshift table and sent out the word that any merchant who wanted a loan to begin reconstruction could come by and get it immediately.

It's no surprise that Giannini aroused intense competitive jealousies. When Franklin Roosevelt shut down all the banks in 1933—the famous Bank Holiday—to determine which banks were sound and would be allowed to reopen and which would be permanently closed, the traditional banks lobbied the Treasury Department to close down BofA. Giannini had to use every political chit he had and all his powers of persuasion to save his bank. By conventional measures many of his loans were troubled, but Giannini believed he knew the ultimate soundness of his borrowers better than any Washington bureaucrat.

• **Character.** Giannini inspired intense trust because he clearly was a man with a good mission, capably serving ignored customers.

• **Wealth isn't an end in itself.** Giannini died in 1949 with a lower net real worth than when he sold his produce business nearly a half-century before. He believed "no man actually owns a fortune; it owns him." He constantly gave money away to fund scholarships and medical research. He never paid himself more than $50,000 a year, very good money in his time but a pittance by today's big-company CEO standards. During the Depression he took no salary.

Sadly, the banking industry is so regulated now that anyone with Giannini's extraordinary entrepreneurial talents would probably become frustrated to the point of leaving.


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2020, Bringing Future into Reality
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5G Whiter Paper

LeaderBoard

November 29, 2016

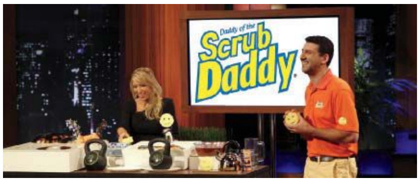
FORBES has been tracking the wealthiest people in China since 1999, when the country's richest man was worth $1 billion. How times have changed: Wang Jianlin, No. 1 this year, is worth $33 billion. The wealth explosion isn't limited to the top, either: Xu Shihui, shown here, debuts on this year's list after the IPO of his snack company, Dali Foods Group, propelled his net worth to $6.3 billion. A tasty sum—but good for just 20th place in today's China. **PAGE 28**

LeaderBoard

ENTERTAINMENT

Shark Tank's Toothless Deals

ON *SHARK TANK,* ABC's hit business-pitch reality show, some entrepreneurs walk away with life-changing deals. But more often than not, those on-air pacts don't stick. FORBES fact-checked 237 of the 319 deals that closed on the show in its first seven seasons. Some 73% of the entrepreneurs didn't get the agreement they made on TV, including 43% who didn't get a deal at all. For 30%, the deal terms changed. Considering only the 160 solo deals offered by the six main sharks, Mark Cuban stuck to his on-air promises the most. Worth $3.3 billion, he's vastly wealthier than the other sharks, none of whom appear to be even halfway to billionaire status (Robert Herjavec is likely the second richest). "The sharks are investing real money," says ABC's Marsha Smith. "In the real world there is a due diligence period after the initial agreement." None of the sharks commented.



SCRUB DADDY

$4 sponges in the shape of a smiley face

On air, October 2012: Lori Greiner offered $200,000 for a 20% stake.

Off air: She and founder Aaron Krause came to new terms. “The show is the beginning of a negotiation process,” Krause says, “the same as buying a house.”

Result: Revenue grew from just $30,000 before the show to just under $30 million expected in 2016.

RUGGED RACES

Obstacle course race events

On air, April 2014: Mark Cuban offered $1.75 million for a 25% stake.

Off air: Same deal. Says cofounder Rob Dickens: “Having a celebrity partner raises your brand image much more than money.”

Result: Revenue grew from $4.3 million in 2013 to an expected $10.1 million in 2016.

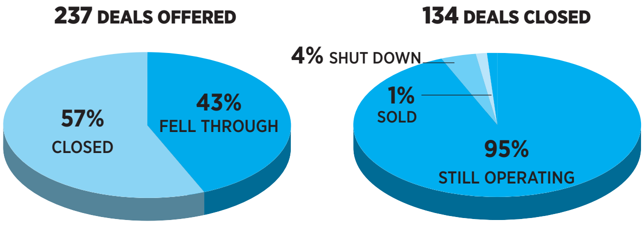
ZERO POLLUTION MOTORS

Car that runs on compressed air

On air, May 2015: Robert Herjavec offered $5 million for a 50% stake.

Off air: Herjavec canceled the deal. Says marketing vice president Ethan Tucker, “We were holding our breath for nine months with the potential for the largest *Shark Tank* deal in history.... He probably just got cold feet and wanted a way out.”

Result: Awaiting production.



BEHIND THE TANK

40,000
APPLICATIONS FOR SEASON 7

158
PITCHES

116
PITCHES AIRED

45 MINUTES
AVERAGE PITCH

7–13 MINUTES
PITCH AIRTIME

2.5 HOURS
LONGEST TAPED PITCH (FOR PLATE TOPPER, SEASON 4)

10 HOURS
TYPICAL SHOOTING DAY

7.5 MILLION
VIEWERS PER EPISODE, SEASON 7

BY EMILY CANAL, JEFF KAUFLIN AND SUSAN ADAMS

MJT/ADMEDIA/NEWSCOM; JACKIE BROWN/SPLASH NEWS/NEWSCOM; MICHAEL LOCCISANO/GETTY IMAGES FOR DCP; MICHAEL STEWART/WIREIMAGE/GETTY IMAGES; PRISCILLA GRANT/EVERETT COLLECTION/NEWSCOM; JASON MERRITT/GETTY IMAGES; MICHAEL ANSELL/ABC VIA GETTY IMAGES; MICHAEL DESMOND/ABC VIA GETTY IMAGES

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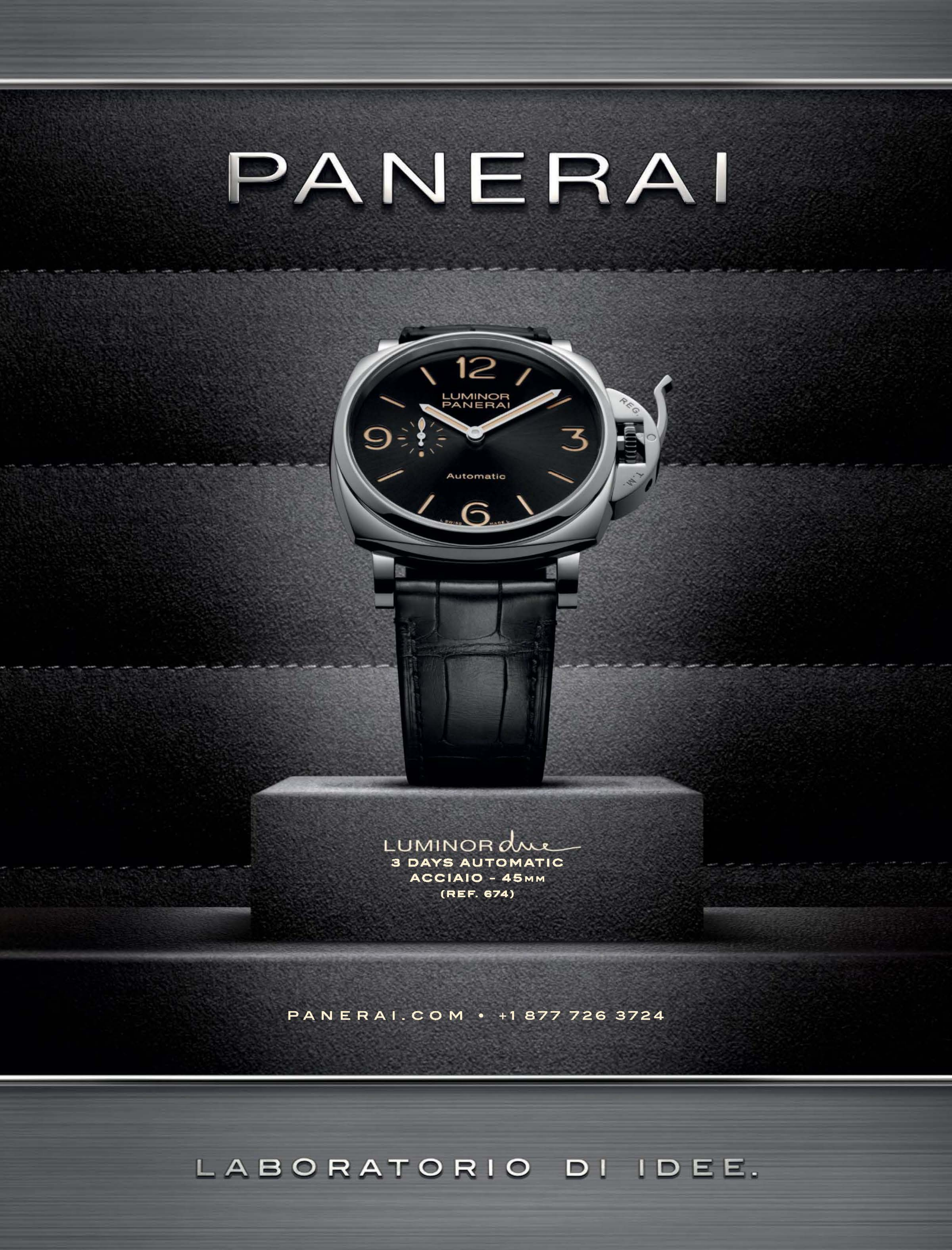
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BILLIONAIRES

China's Richest

GROWTH IS slowing in the Middle Kingdom, but the decelerating economy hasn't yet hit the country's superrich. The 400 wealthiest Chinese are worth a combined $947 billion, up 14% from a year ago. For the first time everyone on the list, which includes family fortunes, is worth $1 billion or more; last year just 84% were. Sixty-eight newcomers joined the ranks. For the full list of 400, please visit forbes.com/china-billionaires.

TEN-FIGURE HOMETOWNS

The 100 richest Chinese are concentrated in Beijing (where 18 live), Shanghai (12) and cities just outside Hong Kong, such as Shenzhen (11) and Guangzhou (8).

1 Wang Jianlin ▲
$33.0 BIL
REAL ESTATE

2 Jack Ma ▲
$28.2 BIL
ALIBABA

3 Ma Huateng ▲
$24.5 BIL
INTERNET SERVICES

4 Wang Wei ▲
$18.5 BIL
PACKAGE DELIVERY

5 William Ding ▲
$15.2 BIL
ONLINE GAMES

6 Wang Wenyin ▲
$13.8 BIL
MINING, COPPER PRODUCTS

7 Robin Li ▲
$12.6 BIL
INTERNET SEARCH

8 He Xiangjian ▲
$11.4 BIL
HOME APPLIANCES

9 Hui Ka Yan ▲
$9.8 BIL
REAL ESTATE

10 Yao Zhenhua ▲
$9.5 BIL
CONGLOMERATE

SCORECARD

JAMES PACKER
–$660 MILLION

NET WORTH: $3.4 BILLION

Australian playboy loses his shirt after his casino company, Crown Resorts, reveals that Chinese authorities detained 18 of its employees without explanation. Shares plummet by nearly a fifth.

30 UNDER 30

Sartorialists

Fashion-forward with the Forbes 30 Under 30, in 30 words or less.

NARIE FOSTER

MM.LAFLEUR | 27

The Bain & Co. alum heads up operations at New York's MM.LaFleur, an e-commerce company that ships "bento boxes" of apparel options for professional women.

STEPHANIE KOREY

AWAY | 29

Away makes sleek, tough suitcases with built-in device chargers. Stores opened in New York, London and L.A. this year, with projected sales of $10 million.

MILES PENN, RAFI WITTEN

MTAILOR | 27, 25

MTailor makes custom clothing for the rising young exec on a budget—dress shirts start at $69—using one's smartphone camera as a tailor.

CHINA'S RICHEST BY KERRY A. DOLAN; 30 UNDER 30 BY KATHRYN DILL
TAYLOR HILL/GETTY IMAGES (BOTTOM); ILLUSTRATIONS BY PATRICK WELSH; ALEX HOFFORD/EPA/NEWSCOM; VCG/VCG VIA GETTY IMAGES; CHINAFOTOPRESS/CHINAFOTOPRESS VIA GETTY IMAGES; IMAGINECHINA (5); QILAI SHEN/BLOOMBERG; JUSTIN CHIN/BLOOMBERG

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† Commission comparison based on published website commission schedules, as of 10/1/2015, for E*Trade, Schwab, and TD Ameritrade for online U.S. equity trades. For E*Trade: $9.99 per trade for 0 to 149 trades, $7.99 per trade for 150 to 1,499 trades, and $6.99 per trade for 1,500 or more trades per quarter. For Schwab: $8.95 for up to 999,999 shares per trade, though orders of 10,000 or more shares or greater than $500,000 may be eligible for special pricing. For TD Ameritrade: $9.99 per market or limit order trade for an unlimited amount of shares.

Images are for illustrative purposes only.

LeaderBoard

ON THE BLOCK

Regal Rides

WANT TO ROLL like a royal? Cars belonging to Queen Elizabeth II and Princess Diana are up for sale this month at Silverstone Auctions. Estimated at more than $260,000, Her Majesty's 2012 Bentley Mulsanne *(above)* was a gift for her Diamond Jubilee that year and used as the official state limousine. The queen's 2001 Daimler Super V8 is also up for auction with a presale estimate of $60,000 to $75,000.

In a similar price range is a 1994 Audi Cabriolet that Princess Diana bought after separating from Prince Charles. She was once photographed driving Princes William and Harry in the car, which has 21,000 miles on it. If the British aren't your cup of Earl Grey, Silverstone will also auction a 1984 Rolls-Royce Corniche Convertible that was once the property of the emir of Qatar (estimated at $125,000) and a 1988 Mercedes-Benz 560 SEL (estimated at $30,000) formerly owned by King Hussein of Jordan.

RICHEST BY STATE

Oregon

POPULATION: **4 MILLION**

2015 GROSS STATE PRODUCT: **$215.8 BILLION** (4.1% GROWTH)

GSP PER CAPITA: **$53,446** (RANKS NO. 24 NATIONWIDE)

RICHEST: **PHIL KNIGHT AND FAMILY, $24.4 BILLION**

NO ONE HAS donated more to higher education in the past year than Phil Knight. The Nike cofounder last month pledged $500 million to his alma mater, the University of Oregon, for a new science complex. Back in February he agreed to give his other alma mater, Stanford (where he got an M.B.A. in 1962), $400 million to endow an annual scholarship for 100 graduate students selected for their commitment to solving the world's toughest challenges.

Knight, 78, who cofounded Nike in 1964 and paid a graphic-design student $35 to design its iconic Swoosh logo seven years later, is no stranger to high-priced philanthropy. He has already given more than $200 million to Stanford and the University of Oregon over the past decade, and he pledged $500 million to Oregon Health & Science University for cancer research in 2013.

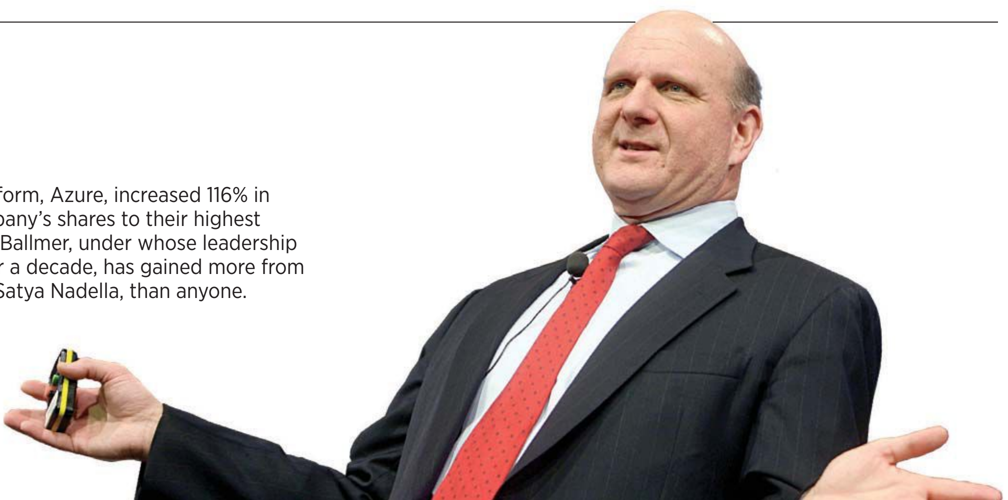
ON THE BLOCK BY MICHAEL SOLOMON; RICHEST BY STATE BY CHASE PETERSON-WITHORN
ILLUSTRATION BY CHRIS LYONS; KAY NIETFELD/DPA/NEWSCOM (BOTTOM)

SCORECARD

STEVE BALLMER
+$1.1 BILLION

NET WORTH: $28.7 BILLION

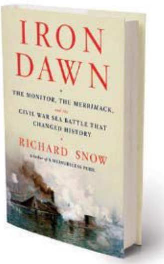
Revenues of Microsoft's cloud platform, Azure, increased 116% in the last quarter, boosting the company's shares to their highest level in 17 years. Ironically, ex-CEO Ballmer, under whose leadership Microsoft stock languished for over a decade, has gained more from the performance of his successor, Satya Nadella, than anyone.



BUSINESS LIBRARY

Closing the Book on 2016

Naval scrums, central-bank follies and ordinary heroes: Editor-in-Chief Steve Forbes picks his books of the year.



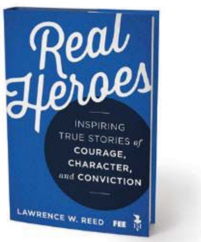
Iron Dawn: The Monitor, the Merrimack, and the Civil War Sea Battle That Changed History

BY RICHARD SNOW

Scribner, $30

An utterly absorbing account of one of history's most momentous battles and the fascinating events and personalities that brought it about. "Many naval battles—Trafalgar, Midway—have bent the course of history in hours or even minutes," Snow writes. "But none has fomented in a short day's work a whole new kind of warfare."

The battle that took place at Hampton Roads, Virginia, in March 1862 was technically a draw, but it saved the American Navy. The day before, the *Merrimack* had inflicted "the worst disaster the US Navy had ever suffered, one that would not be surpassed until a December Sunday 80 years in the future."

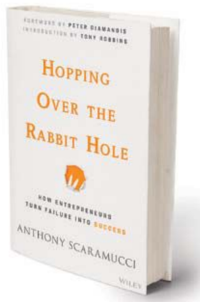


Real Heroes: Inspiring True Stories of Courage, Character, and Conviction

BY LAWRENCE W. REED

ISI Books, $18

This compendium of excellently etched portraits of remarkable individuals ranging from Cicero to reformed criminal Larry Cooper offers an uplifting contrast to a dispiriting election year. Most of the people profiled here aren't household names. *Real Heroes* also has a chapter extolling parents who homeschool their children.



Hopping Over the Rabbit Hole: How Entrepreneurs Turn Failure Into Success

BY ANTHONY SCARAMUCCI

Wiley, $28

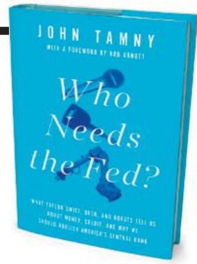
Essential real-world advice, such as dealing with unforeseen events, for those starting businesses or wishing to take on major responsibilities in their careers. Scaramucci, a serial entrepreneur, is the founder and comanaging partner of major alternative investment firm SkyBridge Capital. He recently resurrected the legendary *Wall Street Week* on Fox Business Network.

The Real Costs of American Health Care

BY DAVID GOLDHILL

E-book: Penguin Random House, $0.99

This superb essay offers a succinct and on-target summary of the misunderstood causes of our health care mess. It's crucial reading for next year's megadebate over how to respond to the collapse of President Obama's "signature achievement."



Who Needs the Fed? What Taylor Swift, Uber, and Robots Tell Us About Money, Credit, and Why We Should Abolish America's Central Bank

BY JOHN TAMNY

Encounter Books, $26

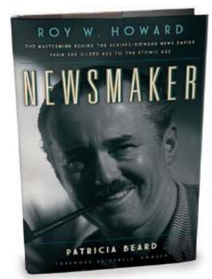
Refreshingly free of jargon and entertainingly written, this book is the perfect primer for a quick understanding of the simple truths of money, credit and monetary policy. It couldn't be more timely. Central banks, misguided by destructive theories, are doing enormous damage to economies everywhere.

Newsmaker: Roy W. Howard, the Mastermind Behind the Scripps-Howard News Empire From the Gilded Age to the Atomic Age

BY PATRICIA BEARD

Lyons Press, $27

Along with William Randolph Hearst (the inspiration for Orson Welles' *Citizen Kane*), Roy W. Howard dominated the American newspaper world during the first half of the 20th century. This first-rate biography tells how Howard, who came from modest circumstances, became a crackerjack reporter and then a superb business leader.

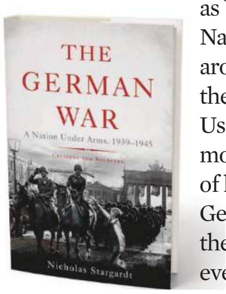


The German War: A Nation Under Arms, 1939–1945

BY NICHOLAS STARGARDT

Basic Books, $35

How could the most educated and cultured nation on earth unleash such a murderous, barbarous and genocidal conflagration as World War II? Why did most Germans—Nazis and non-Nazis alike—close ranks around Hitler, even when it became clear the war was going to end disastrously? Using countless diaries and the letters of more than a score of Germans from all walks of life, the author vividly depicts wartime Germany, showing how its citizens lost their moral mooring to acquiesce to, or even support, unspeakable atrocities.

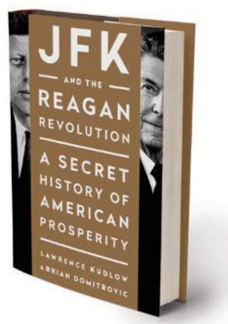


JFK and the Reagan Revolution: A Secret History of American Prosperity

BY LAWRENCE KUDLOW AND BRIAN DOMITROVIC

Portfolio, $29

A fascinating account of the internal battles within John F. Kennedy's administration over cutting taxes and keeping the dollar linked to gold. The tax-cutters and sound-dollar faction won, which led to the great 1960s boom. Ronald Reagan was deeply influenced by the JFK growth model and followed it when he took office. Result: a 1960s-like wave of prosperity.




#haveKINDLEwillTRAVEL
CUSCO, PERU
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@AMAZONKINDLE
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LeaderBoard

FORBES @ 100

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

February 1, 1935: America's Secret Strength

FAST-FORWARD

Best Cities for Business

1935: The top five were Chicago (left), Philadelphia, Jersey City, Denver and Dayton. **2016:** *La plus ça change. …* We're still ranking the top metros for business and careers. Denver (above) once again places highly (it's No. 1 this year), followed by Provo, Utah; Raleigh, North Carolina; Seattle; and Portland, Oregon.

AT THE START of 1935 America was five years into the Great Depression. Ten million people, roughly 20% of the workforce, were unemployed. The stock market was down about 70% from its 1929 peak; GDP had contracted by roughly 35%.

B.C. Forbes hated Franklin Delano Roosevelt's New Deal and doubted that the government could solve the country's economic problems. He placed his faith instead in America's entrepreneurial spirit. "This nation is so fundamentally sound, so virile, so resourceful, so enterprising, so rich in natural resources and so blessed with inventive, enterprising, practical business brains that, despite everything, it will triumph over every political and other obstacle, and achieve in the not-distant future a more bountiful and widespread measure of prosperity."

AMAZING ADS

Art Deco Auto

This Auburn Automobile Co. masterpiece sold for just $695 (about $12,000 today).

SIGN OF THE TIMES

The Big Chill

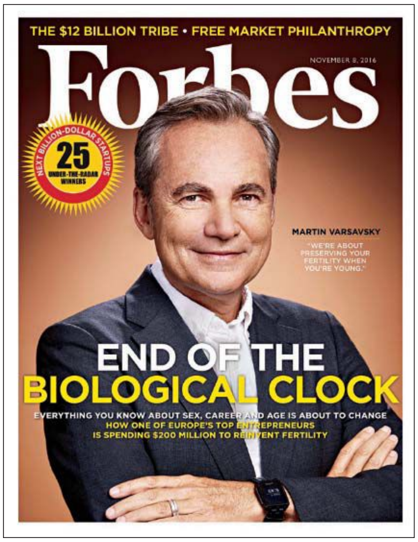
One thing Depression-weary consumers were willing to buy: in-home electric refrigerators, which had been introduced in 1927 and were a dramatic improvement over traditional iceboxes. The industry expected to move a record 1.5 million units in 1935, a 10% increase in one year.

BY ABRAM BROWN

MUSEUM OF SCIENCE AND INDUSTRY/CHICAGO/GETTY IMAGES; GEORGE RINHART/CORBIS/GETTY IMAGES; CHARLES KNOWLES/ALAMY

LeaderBoard

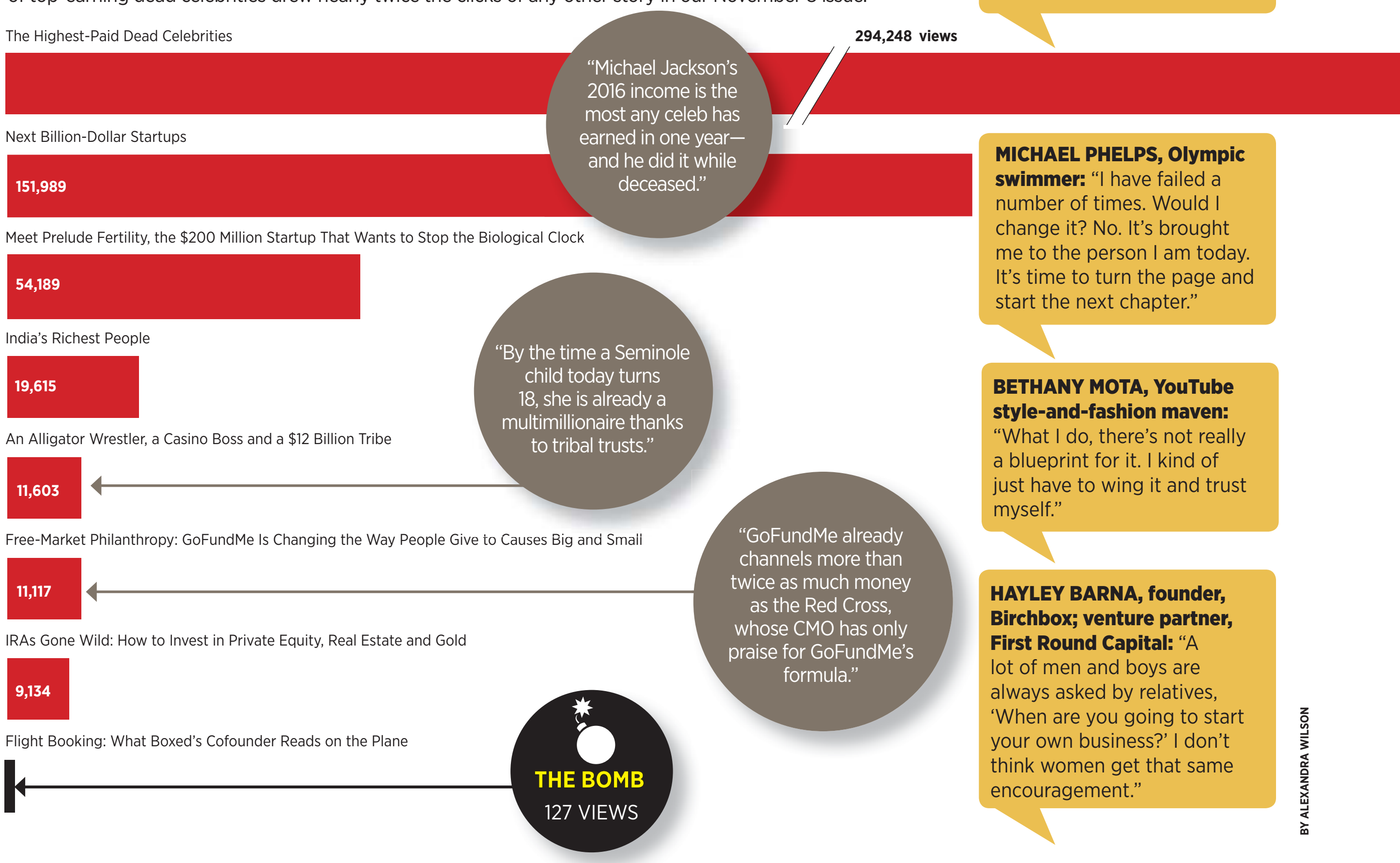
CONVERSATION



MIGUEL HELFT'S November 8 cover exclusive on Martin Varsavsky's Prelude Fertility—which aims, through egg cryogenics and in vitro fertilization, to hit permanent snooze on a woman's biological clock—gave conflicted readers a pregnant pause. "I'll enjoy these two minutes of quiet while everyone figures out where they stand on the ethics of fertility preservation," tweeted Rebecca Slatkin. On Facebook, Jay Jardin scored Prelude's aspirations a win for freedom: "Imagine women not having to choose between studying/furthering their career and having children." Others left ethical considerations for another day and focused on the profit motive. "This is brilliant," wrote Arjun Sethi on Facebook. "I don't want to comment on 'should one or shouldn't,' but as a business it's an idea I'd bet on."

THE INTEREST GRAPH

Famous people attract attention, even when they've long since assumed room temperature. Our annual list of top-earning dead celebrities drew nearly twice the clicks of any other story in our November 8 issue.



ROARING TWENTIES

At FORBES' Under 30 Summit in Boston, panelists and attendees swapped knowledge about success. It was, naturally, wicked awesome.

HALSEY, musician: "You don't know what it means to have a respectable magazine say you matter. When you tell someone you were named Forbes Under 30, they start to take you seriously."

SARAH KUNST, founder and CEO, Proday; venture capitalist: "The biggest challenge we have is if we're only investing in men, we're leaving 50% of the world's innovation on the table."

BRENDAN DOHERTY, cofounder, Inward Point: "We're in a moment where the nerd is a hero, the entrepreneur is sexy."

MICHAEL PHELPS, Olympic swimmer: "I have failed a number of times. Would I change it? No. It's brought me to the person I am today. It's time to turn the page and start the next chapter."

BETHANY MOTA, YouTube style-and-fashion maven: "What I do, there's not really a blueprint for it. I kind of just have to wing it and trust myself."

HAYLEY BARNA, founder, Birchbox; venture partner, First Round Capital: "A lot of men and boys are always asked by relatives, 'When are you going to start your own business?' I don't think women get that same encouragement."

BY ALEXANDRA WILSON

CITIES ARE THE FUTURE

IN MID-OCTOBER I spoke at a conference in Adelaide, Australia. The multiday event was about economic change and growth. Every city in the world is asking these questions: Where do we play in a rapidly changing economy? What heritage should we carry forward? What habits must we toss aside? How do we evolve without wrecking what we have?

These are especially acute questions for medium-size cities like Adelaide, which are regionally prominent within their own countries but are tiny blips in the global economy. A state capital and coastal city of 1.3 million, Adelaide isn't on par with Sydney or Melbourne, but in size and vibe it is with Austin, Texas and Portland, Oregon.

But Adelaide has no globally recognized flagship, as Portland and Austin do with Nike and Dell, respectively. Adelaide is simply a lovely, livable city with a Mediterranean climate, well-designed streets and parks, ample universities and accessible health care. It's an economic all-around city, with one foot in Australia's agricultural and commodities heritage, the other stepping toward a technology future. Think Columbus, Ohio, or a smaller Minneapolis.

The 2016 elections were about a lot of things, but at the center was where the U.S. wants to play in the global economy. American cities and regions that thrive in a global economy voted for an Obama third term, i.e., for Clinton. Ideological conservatives and libertarians who live and prosper in booming Silicon Valley and Seattle had the tough choice: Vote for a candidate who loathes business but happens to tolerate yours (Clinton) or for the guy generally more in favor of growth yet oddly hostile to technology companies and trade (Trump).

ALL ECONOMIES ARE LOCAL—AND GLOBAL

Here's a thought. Politicians and voters should stop trying to figure out where the U.S. as a whole plays in the global economy. They should think about where their cities, states and regions play. Houston isn't the U.S. economy, any more than Atlanta, Pittsburgh or Palo Alto is. Houston is the Houston economy, which trades with the rest of the U.S. and the world. The same goes for every city everywhere. A city's job is to figure out where it competes relative to other cities in the state, nationally and around the globe. The job of federal government is to not get in the way.

Trump's slogan—Make America Great Again—was brilliant, certainly better than Clinton's mealy Stronger Together. But Trump utterly blew it on the fine points. The way to make America great again isn't by throwing rocks at other countries that want to trade with us. Instead, you make America great by making it a magnet for talent, capital and risk-takers—in all industries. Then get out of the way. The greatness will take care of itself—city by city, region by region. Silicon Valley knows how to be great—and is allowed to be great. It's not overregulated (mainly because it moves too fast for regulators). Detroit knows how to be great, too. But its products are tangible things, and even the dullest regulators can figure out what Detroit makes. Thus, Detroit has to negotiate regulatory and labor roadblocks every step of the way.

The federal government's job should be to let Detroit be the best Detroit it can be and Silicon Valley the best Silicon Valley.

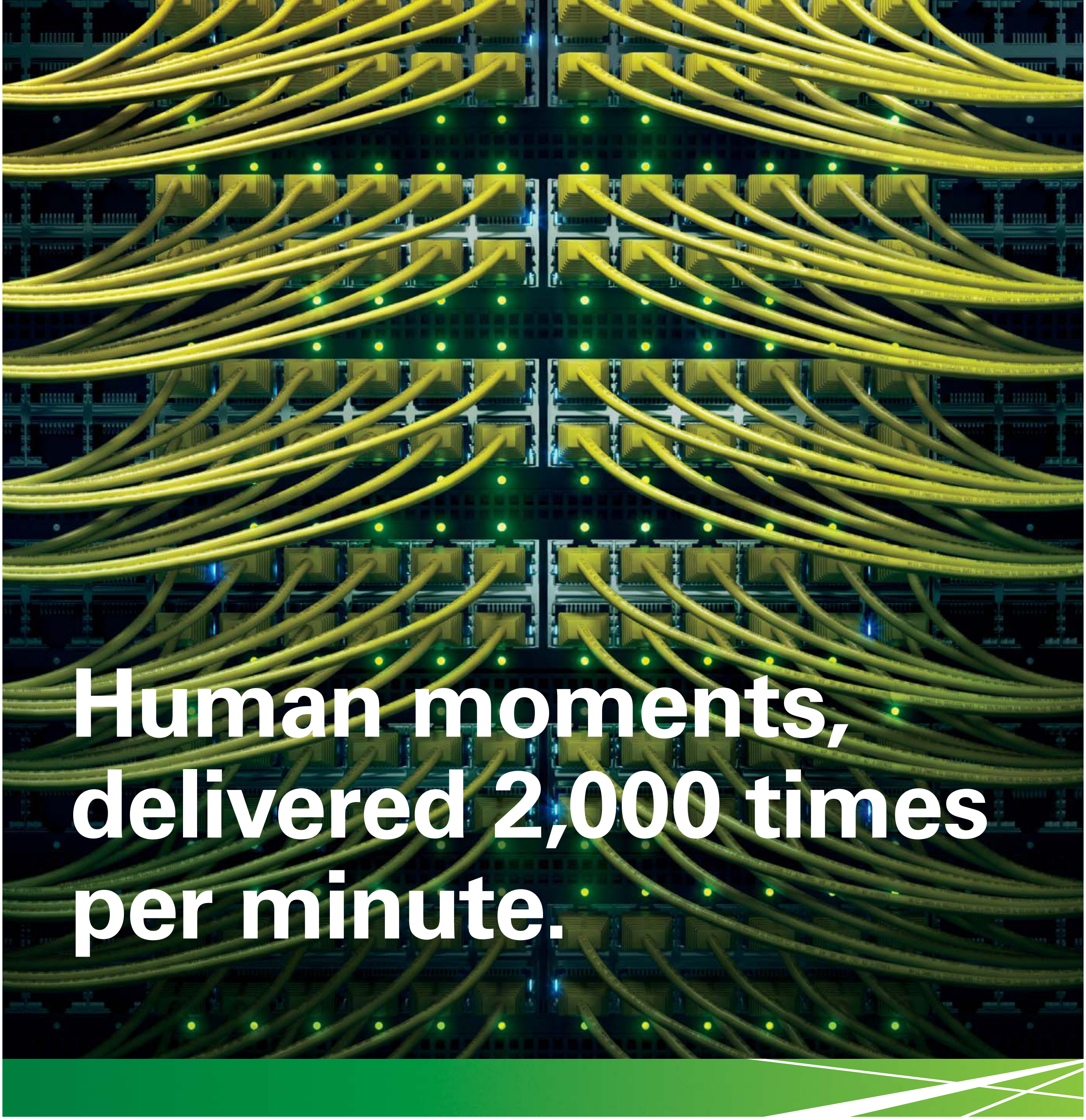
Given a lack of federal barriers, cities and their entrepreneurs will figure things out just fine. The mild U.S. recession in 1970 hit Seattle like a tsunami, crushing everything from timber to Boeing. Amid unemployment rates in the teens, families poured out of the city. A billboard asked: "Will the last person leaving Seattle—turn out the lights?" But Seattle healed just fine. Today its metro area is home to Microsoft, Amazon and Starbucks. None of those companies existed in 1970.

Cambridge, England, was a sleepy town that had its nation's second-best-known university. Oxford was tops, and Cambridge had a bit of a chip on its shoulder. But unlike Oxford, Cambridge allowed entrepreneurship to blossom in its environs. Acorn, a local PC maker in the 1980s, led to a processor spinoff called ARM. In the early 1990s Apple picked ARM to make processors for its Newton handheld. Newton didn't succeed, but ARM did. Today it supplies chips for the Apple iPhone.

Cambridge, with only 140,000 people, is now Europe's hub for artificial intelligence and machine learning—ascendant industries. Cambridge has a glorious future. All it took on Cambridge's part to make this happen was asking a simple question: What will it take for grads to stay here and start companies, the way Stanford's grads start companies in Silicon Valley and MIT's in Boston? That's not central planning, that's central cheerleading.

THOMAS KUHLENBECK FOR FORBES

RICH KARLGAARD IS EDITOR-AT-LARGE / GLOBAL FUTURIST 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.


Human moments,
delivered 2,000 times
per minute.

MADE IN CHINA 2025 DEMONSTRATION ZONE -- PRESENTED BY BEIJING E-TOWN

Others see a sketch; we see a groundbreaking idea
Others see a business; we see a disruptive revolution
Others see you for who you are; we see you for who you can be
We foster the crazy new ideas
We harness our industrial depth to help you realise your dreams
Join us in China, and connect with 1.3bn people
at the centre of the booming Asia-Pacific region
Your future will be brighter here
with endless possibilities

TRUMP-CLINTON 9.0 EARTHQUAKE

THOMAS KUHLENBECK FOR FORBES

AS THE ELECTION aftershocks are absorbed in coming weeks, the country's attention is likely to turn to the economy. The urgency of economic change was overshadowed during the campaign by FBI disclosures, secret e-mails, scandal and vitriol, but economic problems will be front and center in 2017.

The Congressional Budget Office expects the national debt to quickly climb above $20 trillion, with no process in place to slow the buildup. The so-called debt limit, which was suspended in late 2015 to avoid election-year embarrassment, will resume in March 2017, but it doesn't control spending or debt. Mandatory spending (in which appropriations grow automatically, without requiring congressional approval) is already surging, with the peak of the Baby Boom and the necessary rebuilding of our depleted military still ahead.

Low growth has already been holding down animal spirits, causing low business investment. Bad policies and weak official growth forecasts would further discourage risk-taking and growth. The Federal Reserve has lowered its medium-term growth forecast to 1.8%, and the CBO thinks U.S. growth will be only 2% annually through 2026. It expects the labor participation rate—already low at 63%—to fall to 60.2%, as millions more drop out of the labor force.

In the final presidential debate candidate Clinton blamed the weak economic performance of the current recovery on the 2008 crisis, though research by Robert Barro has shown that deeper crises tend to have faster recoveries. In an Oct. 17 speech Federal Reserve Vice Chairman Stanley Fischer rationalized slow growth, citing aging demographics, weak productivity growth, a dearth of major technological innovation and weak business investment—though not the Fed's misallocation of capital to issuers of ultralow-yielding bonds.

This column has urged three major reforms to break out of the malaise.

• **Strengthen the debt limit so that it requires the President and Congress to restrain spending when debt goes above the debt limit.** Federal restraint is critical to private-sector confidence on future taxation. And rebuilding checks and balances is necessary to comply with the Tenth Amendment and improve the allocation of federal spending.

• **Simplify the tax system and reduce tax rates, especially the 35% corporate rate.** This would improve U.S. competitiveness, encourage economic growth and create a more attractive investment climate. An added benefit: Corporate earnings held abroad could be brought home, and fewer U.S. companies and jobs would leave.

• **Urge the Federal Reserve to wind down its manipulation of interest rates and bond yields.** While the Fed needs independence from politicians, it should not be oblivious to its poor economic performance nor should it synchronize its interest-rate decisions with the political cycle. As part of its dual mandate (price stability and maximum employment), the Fed needs to make clear its responsibility for monetary integrity regardless of politics.

FED REFORMS A HIGH PRIORITY

The Fed's policies have subtracted materially from growth by favoring bond issuers over savers and small businesses. More than 72% of new credit over the last five years has been raised through bonds, usually by companies that already have ample access to credit. This reduces credit to other borrowers, including small business and mortgages. The Fed is an expensive middleman, paying too much for bank loans that it uses to bid up the price of long-term government bonds. This helps wealthy Americans at the expense of those of average income, savers and the elderly.

Excess capacity has been sustained longer than the markets would ordinarily have allowed, contributing to deflation and a misallocation of resources.

Perhaps most harmful from a social standpoint is the fact that the Fed's policies have caused a shift of wealth and income from the middle class to the wealthy. This compounds the drain on middle-class prosperity from ObamaCare, rising medical costs, increasing Social Security taxation and very low prospective returns on savings.

The solutions to the Fed's portion of the malaise are clear. It should taper its bond portfolio in order to reduce its liabilities to banks and encourage small-business lending and borrowing.

Hillary Clinton ran on the promise of policy continuity and higher tax rates on income, capital gains and estates. This inertia comforted the system's defenders while energizing those seeking change. For its part the Fed has signaled its desire to maintain very high levels of bank debt for as long as five years, which reinforces the low CBO and Fed growth forecasts. The goal of many Americans is to make a better life. That will require a full federal reset. F

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.

IS THE WORLD TOO PROSPEROUS?

ALTHOUGH THE GLOBE is scarred by violence, a world war is less likely now than at any other time within living memory. Attention has been centered on Syria, where several different armies or quasi-armies are engaged and where air strikes hit humanitarian-aid convoys and UN columns. But Syria isn't a seedbed for world war. It's of importance to Saudi Arabia and Iran because of the religious issues at stake. But the so-called caliphate of the Islamic State has failed to establish itself, and as a guerrilla force, ISIS is in manifest disorder.

Russia is active in Syria because it's a cheap and easy way to play power politics and employ its military muscle without any serious risk.

President Obama wants to be part of the Syrian equation—but at minimal military cost—and without jeopardizing his presidential legacy.

No European power intends to get roped in, either. A generation ago France was a mandatory power in Syria and Lebanon, but it's now too weak. The other major EU nations are completely absorbed in dealing with the refugees that the violence in Syria has decanted into Europe.

One thing to be grateful for is China's refusal to get involved. Its rulers aren't adventurers like Putin; they believe in solid, long-term, practical gains: consolidating and improving China's naval position in the South China Sea, enlarging its diplomatic presence and export markets in almost every part of Africa, and selling its new high-tech capabilities, notably in nuclear power stations, to countries like Britain that face future energy shortages. For the present these things make China a fairly peaceable neighbor.

China seems determined not to get into difficulties, especially military ones, with India. These are the two superpowers of the future, both with populations of around 1.3 billion. India is still underrated. It doesn't, for instance, have a permanent seat on the UN Security Council, nor has the world grasped the significance of its long-term planning. Whereas China has pledged its future to such traditional symbols of economic power as steel production, concrete, shipbuilding and basic exports, India has set its sights on current and future high tech, nurturing an ultraskilled workforce familiar with the latest computers—and capable of inventing new ones.

Within the next 20 years or so this investment will begin to produce material advantages, and India will begin to seem rich. It's at this point that China will start feeling threatened. By midcentury India and China will be direct competitors in their home markets and abroad.

India is a vibrant democracy, but China has yet to find its way out of the totalitarian trap in which it imprisoned itself. A Cold War between these two countries is conceivable, with each recruiting followers in Africa, Asia, South America and, possibly, Europe, as by then both will have economic colonies, like Greece, Italy and Spain. There will also be fierce competition for resource-rich but demographically undernourished territories like Australasia.

WILLING TO RISK ALL

Much will depend on the government the American voters elect. The U.S. is still by far the richest and most powerful nation on earth and is likely to remain so for the foreseeable future. In recent years its importance has been underestimated because the White House has been under the control of a man unwilling to exert the government's full authority. The U.S. has been punching below its weight or, at times, has given the impression it's not punching at all. The consequences are that Mr. Putin has been made to seem more important—and his political and military decisions more critical—than is justified by his economic and military power. He has taken full advantage of this and given the impression that he controls not just a superpower but the globe's dominant superpower.

Needless to say, this situation cannot last. The new American government will rapidly begin to exert itself, and as it does, the illusion of Putin's status will fade. Other factors will start to carry weight, notably population growth in Africa and Asia. High birth rates are not, in and of themselves, dangerous, but combined with low and falling infant mortality they could become a detonator. Syria has shown that population movements prompted by panic or overenthusiasm among the do-gooder minority (as in Germany) can be the most difficult of all political events to control or moderate.

We haven't seen the end of the crisis caused by 2015's dramatic surge of people fleeing into Europe. But it isn't the stuff of which world wars are made. These are hungry and homeless people seeking a better life and willing to take terrible risks to get it. They can see prosperity just out of reach, and they're straining to grab it. This isn't a matter for despair; it's a problem of prosperity. Let us all hope. F

THOMAS KUHLENBECK FOR FORBES

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

Verticals

November 29, 2016

Winter temperatures average 20 below zero near the aptly named Point Lonely, on Alaska's North Slope. There, far above the Arctic Circle, Caelus Energy spent $120 million drilling two mile-deep wells and discovered 2 billion barrels of oil. And there the oil will likely sit, thanks to Alaska's feckless politicians.

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Biting the Hand That Feeds You

Jim Musselman and Caelus Energy would be happy to help Alaska solve its fiscal crisis. If it would only let him.

BY CHRISTOPHER HELMAN

There's no road to Smith Bay, Alaska. No people live there. The nearest town is Barrow, 70 miles away. Deadhorse is a bit farther. To protect delicate tundra where the North Slope meets the Beaufort Sea, oil drilling is allowed only in the dead of winter, when the average temperature is 20 below and the ice 3 feet thick. Last winter Caelus Energy drilled two wildcat wells at Smith Bay that led to the discovery of an estimated 2 billion barrels of recoverable oil. The find could someday provide an overdue slug of crude for the Trans-Alaska Pipeline, which currently transports just 500,000 barrels a day, down from a peak of 2 million in 1988. "That [strike is] just the start," says Jim Musselman, CEO of Dallas-based Caelus. "There's so much oil yet to be found."

But instead of celebrating his new find, Musselman is wondering whether he'll ever be able to get the oil out at all. The problem? Alaska's governor, Bill Walker. In June Walker vetoed a bill that would have paid the $100 million that Alaska currently owes Caelus (which claims the state will owe an additional $100 million in 2017). That's a lot of loot for any company, especially a privately held startup that has sunk $700 million into Alaska.

It turns out that Musselman's case for investing in Alaska was based on a misguided notion: that the state's oil-tax policies had become less schizoid. Sure, Alaska had changed its oil laws six times in the past decade, but in 2013, when oil was trading at upwards of $90 a barrel, it looked as if lawmakers had finally agreed on a package of incentives designed to spur much-needed exploration by enabling companies to earn big tax credits. Musselman particularly liked the fact that small companies with no taxable income

Dreams deferred: CEO Jim Musselman laments Alaska's fiscal follies more than he does low oil prices.

SCOGIN MAYO FOR FORBES

could redeem their tax credits to the state for cash. Critics said the incentives were too kind to oil companies, but the law survived a referendum, so Musselman, like most oilmen, figured it was settled.

With backing from Apollo Global Management, Caelus acquired the Oooguruk field and other North Slope assets from Pioneer Natural Resources for $550 million. Then it assembled 350,000 acres adjacent to Prudhoe Bay and bought leases 150 miles west at Smith Bay. "Caelus is the poster child," says Musselman, 68. "We were exactly what they wanted to happen."

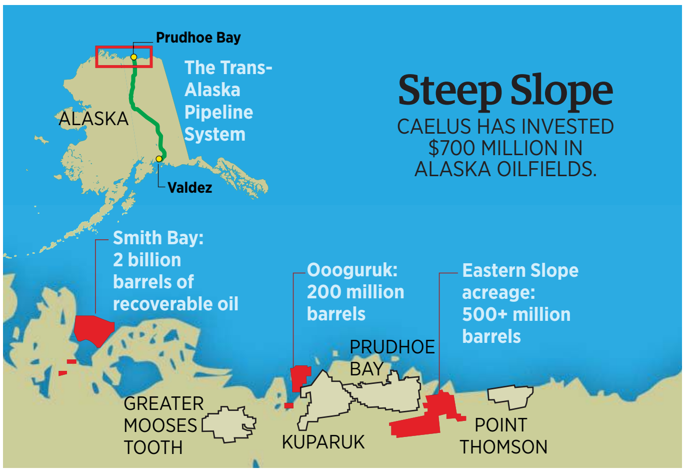
So imagine his fury when Governor Walker this year vetoed a spending bill that would have paid out $400 million to small oil explorers, as required by law. Walker, an independent politician, is unapologetic. Plunging oil prices chopped state revenues by 83% to $1.7 billion. Alaska has so far cut spending 45% and tapped $12.6 billion in rainy-day funds. Walker cut in half—to $1,000—the annual payouts every Alaskan receives from the state's $55 billion Permanent Fund, which is bankrolled by oil money. Raising taxes is an obvious move; Alaskans pay only $500 per capita in state taxes, by far the lowest in the nation. But it's easier for politicians like Walker to raise taxes on oil companies than on voters. "The oil tax credit program was not well put together," says Walker, who intends to overhaul the entire law.

"What the governor has done is the opposite of what Alaska needs," says Dave Harbour, former chairman of the state regulatory commission. "Why would anyone invest in a state that has one foot over the edge of a precipice and the other standing on a banana peel? What we need to show investors is that in Alaska a deal is a deal."

"[Alaska] competes for capital with projects around the world," says Joe Marushack, president of Alaska operations for ConocoPhillips, which is investing billions in the state. "Increasing our costs decreases our ability to invest."

Their importance to Alaska gives the oil companies some leverage in dealing with Walker. "He's kind of stuck his shiv in us," Musselman says. "But he needs us to bail him out." Musselman is not about to back down. He learned long ago that it's worth navigating the political minefield if there's the prospect of a big prize. He has worked in Colombia and Malaysia, and in the late 1990s he led Triton Energy to its discovery of the 500-million-barrel Ceiba field in Equatorial Guinea. After Hess Corp. bought Triton for $3.2 billion in 2001, Musselman formed Kosmos Energy and went exploring off the shore of Ghana. In 2007 Kosmos made the first oil discovery in Ghanaian history, the Jubilee field, which now produces 100,000 bpd. Musselman still holds a big chunk of shares in Kosmos (market cap: $2.2 billion).

Musselman has seen firsthand that amazing amounts of oil can be coaxed out of politically complicated regimes, although it's no compliment to Governor Walker to compare Alaska to Equatorial Guinea and Ghana. He sees the potential for Caelus and its peers to add 400,000 bpd to North Slope output over the next decade. "We can help the state of Alaska solve its fiscal problem for the next three or four generations, if they'll let us." His message to Walker: "Don't spook the money. If you spook the money, they stay spooked." *



FINAL THOUGHT

* *"We call bad one who rejects the fruit he is given for the fruit he is expecting or the fruit he was given last time."* —C.S. LEWIS

BY THE NUMBERS

SPECULATION DESTINATIONS

PROPERTY INVESTMENT WORLDWIDE ROSE 0.5% TO $1.4 TRILLION IN THE 12 MONTHS TO THIS JUNE. THREE CHEERS FOR THE ACELA CORRIDOR: NEW YORK REMAINED THE CROWN JEWEL FOR REAL ESTATE INVESTORS, AND BOSTON AND D.C. ALSO NOTCHED BIG GAINS.

City	Total Investment	Change
1. NEW YORK	$82.6 bil	+8.5%
2. LOS ANGELES	$40.8 bil	+9.8%
3. LONDON	$39.4 bil	–31.2%
4. SAN FRANCISCO	$30.5 bil	–5.7%
5. PARIS	$25.7 bil	+9.0%
6. TOKYO	$25.5 bil	–35.8%
7. WASHINGTON, D.C.	$20.5 bil	+9.1%
8. CHICAGO	$19.0 bil	–2.9%
9. DALLAS	$18.0 bil	+8.7%
10. BOSTON	$17.8 bil	+16.3%

Figures encompass each city's metropolitan area from Q3 2015 through Q2 2016 and exclude sites under development. *Source: Cushman & Wakefield.*

NAEEM JAFFER/GETTY IMAGES

Oh, the Places You'll Go!

Like most Bay Area founders, Amy Norman and Stella Ma desperately wanted venture funding, so they pitched their kids'-travel-kit startup to dozens of investors. Luckily, they got zero offers.

BY SUSAN ADAMS

At a January 2009 investor conference in Cambria, California, Amy Norman and Stella Ma pitched their startup to 75 potential funders, mostly men. Little Passports would deliver subscription-based, geography-themed activity kits via snail mail to 6-to-10-year-olds for $10.95 a month. They were looking for $500,000 to spend on marketing, product development and inventory. The feedback was harsh. "One of the founders is pregnant with a second child, and the other has a child already," said one investor to a colleague who passed the message to Norman and Ma. "There is no way these two can do this." It was just one of more than 50 failed pitches.

Nearly eight years later Norman and Ma have built Little Passports into a business beloved by its fans, with four product lines and expected 2016 revenue of $30 million, double what it grossed in 2015. They also expect to be cash-flow-positive for the first time this year. Though they've raised some $5 million in angel money along the way, their failure to attract venture capital has had distinct benefits. They have grown carefully and sustainably, without squandering cash on marketing experiments that didn't work, on offices with more space than required or on employees who they weren't certain would add value and fit into their mom-friendly culture. "We had to stand on our own two feet early on," Norman says. "We've had to use a lot of financial discipline."

Norman, 42, and Ma, 44, became best friends while working at eBay in San Jose, where they cooked up the idea for an educational toy that would teach kids about world geography. Norman's mother is from England, and her family moved between the U.K. and the U.S. every three years. Ma, whose parents are from Guangzhou, China, has a degree in East Asian studies from Harvard and speaks Cantonese and Japanese. Initially, they were seduced by the Silicon Valley notion that to run a successful startup, one

Toy story: Amy Norman says she and Stella Ma struggled early. "There were nights when I was in the bathroom, throwing up from stress."

ERIC MILLETTE FOR FORBES


Capital One
START PUTTING
THOUSANDS OF DOLLARS
BACK INTO YOUR BUSINESS.
Capital One
SPARK
BUSINESS
FIRE SHIELD TEXTILES
UNLIMITED 2% CASH BACK ON ALL YOUR BUSINESS PURCHASING
With the Spark® Cash Card, every expense could be an opportunity to boost your bottom line and put thousands back into your business. Earn cash back on equipment, inventory, advertising and everything in between.
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needs venture backing. "There's so much cachet in venture capital," says Norman, who earned an M.B.A. from Wharton and worked as a CPA at KPMG and a consultant at McKinsey before joining eBay in 2004. "I have my Wharton degree and my McKinsey pedigree—having venture capital [would be] another bragging right."

Instead, after all the rejections, they scraped together $25,000 each of their own money. Though neither Norman nor Ma had any background in developing educational materials, they brainstormed about the topics they thought kids would consider fun, such as music, sports, games and food. They created kits that include cardboard mini-suitcases, stickers, souvenirs like paper made from South African elephant dung and one-page letters from imaginary child travelers Sam and Sofia, and they tested them with 50 families they found on Craigslist. They learned that kids still get excited about receiving packages in the mail and wanted the stuff to keep coming beyond the trial. Just before their April 2009 launch, Norman and Ma got a $175,000 commitment from a handful of angel investors, including Jeff Weiner, the soon-to-be CEO of LinkedIn. "I thought Little Passports would help children understand people different from themselves," he says.

Then, days before the launch, the bottom fell out of Norman's world. She was eight months pregnant with her second child when her marriage ended unexpectedly. After she gave birth, she came down with a case of Bell's palsy. Two months later her father was diagnosed with cancer and told he had four months to live. "It was an absolutely horrific time in my life," she says. Friends encouraged her to look for a job with a steady paycheck. Instead, she stuck with the business. "I needed something to pull me out of this horrible place," Norman says. "Little Passports was that for me."

Ma recruited her mother and sister to pack and ship the first deliveries from Ma's Oakland dining room. She and Norman agreed not to take paychecks and worked from home for almost a year before renting a cramped, raw space south of Market Street in San Francisco. Since they sourced most of the items in the kits from China, they had to wait up to six months for deliveries, which made it tough to manage cash flow. "There were nights when I was in the bathroom throwing up from stress," Norman says.

If they'd had VC money, she says, they might have spent big on marketing, with TV and print ads produced by an agency. Instead they hired a freelancer to take product shots and stuck to strategies that required no cash up front, like affiliate marketing through mommy blogs and discounting through coupon sites like Groupon. Business grew, but slowly. Then in 2013 Norman followed a hunch and gambled $30,000 on Facebook Lookalike Audience ads, which use contact info from existing customers to target people who have similar interests and demographics. Norman also ran ads in the Facebook feeds of groups she thought would like her product, such as fans of Disney and mothers who drive Volvos. In six months their customer base tripled.

Norman and Ma still had little margin for error and continued to build their 31-person staff deliberately. "Every hire has to boost our revenue or help our cost structure," Norman says. Employees also have to fit in. The office, which has moved to a roomy seventh-floor space in downtown San Francisco, goes dark on Tuesdays and Fridays, when everyone is expected to work from home. On days when she's in the office, Ma often leaves at 4 p.m., picking up work from home after her two boys go to bed. More than half of Little Passports' employees are women, and more than half are non-Caucasian. "They definitely lead by example," says operations head Michelle Chun, who sometimes worked until 3 a.m. at her previous job. That, she says, would never happen at Little Passports.

Still, Norman and Ma wavered last year on funding. In hopes of expanding their marketing budget, they made another bid for venture money. But after several fruitless meetings, they remembered why they'd given up the VC route the first time. "If you rely on venture capital, it's almost like being on drugs," Norman says. "You're waiting for your next fix to come."

Instead, she and Ma plan to finance growth with the cash they're generating and to explore bank loans and private equity. On deck: a plan to produce video programming for Netflix or Amazon. They haven't completely ruled out venture funding, especially if it comes from someone they think can help them turn Little Passports into the next Disney. Says Ma, "We see ourselves as the next great children's brand." *

FINAL THOUGHT

* *"Fast takes longer when you hurry. Keep calm and saunter on."* —**MIKE DOOLEY**

MARGIN PROPHET

COSTCO FOR MILLENNIALS

IN 2013 CHIEH HUANG, 35, AND A FEW FRIENDS FOUNDED BOXED TO OFFER BULK ORDERS WITH THE CONVENIENCE OF MOBILE SHOPPING. THE COMPANY EXPECTS $100 MILLION-PLUS IN REVENUE THIS YEAR.

What's behind the concept?
I grew up in the burbs and would go to Price Club. Then I [moved] to the city and didn't have a car anymore. Am I just supposed to get ripped off?

So Boxed users tend to be Millennials?
We're 81% between ages 25 and 44. When you look at the mainstream warehouse clubs, they're Boomers and seniors.

At what point did you realize what you had built?
Mid-2014. By that time it was spreading, and we were barely keeping up.

What's Boxed's potential?
Consumer packaged goods is one of the biggest drivers of the economy, and it's only 1.5% online. How crazy is that? The three warehouse clubs will generate $200 billion combined, 2% of it online and 0% on mobile. I cannot find a larger consumer-facing industry with zero mobile.

Do you want to go public?
I would love to. A big investor told me, "If you guys aren't doing a few billion by the time 2020 rolls around, you really messed this up."

—Amy Feldman

Body Parts on Demand

With cheap 3-D bioprinters and free software, BioBots wants to democratize tissue-printing and spur a medical revolution.

BY KATHRYN DILL

At the Philadelphia headquarters of the biotech startup BioBots, alongside some warm beer bottles and a tangle of laptop cords, is a 12-by-12-inch white metal cube that just might be the future of drug development.

The highly specialized 3-D printer builds living tissue—skin, bone, lung and even an entire human ear. Other 3-D bioprinters do too, but at $10,000, the cost of the BioBot 1 is a 20th of that of offerings from established industry players like EnvisionTEC. Cofounders Danny Cabrera, 24, and Ricky Solorzano, 27, aim to put a BioBot on every lab bench, making research faster, cheaper and more democratic. Think Keurig for kidney tissue.

Flesh presses are niche now but are projected to be a $9 billion global business by 2025, according to the market research firm Accuray. That's largely because the technology is expected to replace many human test subjects in pharma trials. Churning out live bone and complete organs for human transplant remains firmly in the realm of science fiction, at least for now.

Today researchers looking to experiment on an artery can print their own test tissue by calling up an open-source design and placing cells and a gel into one of the BioBot's two extruders and a molding material in the other.

BioBots' cofounders met at the University of Pennsylvania in 2013, when Cabrera was a senior studying computer science and biology and Solorzano was working in a university bio lab. They quickly began building a prototype, which took first place in the university's annual Pennvention innovation competition, leading the two to abandon their plans for medical and graduate school.

BioBots sold the prototype, which cost $1,000 to build, for $400 to a lab at Penn. Seeking customers, they began targeting recipients of National Science Foundation grants. In 2015 they raised $1.5 million in seed funding from a group of investors, including FundersClub and 500 Startups, in exchange for convertible debt. Just over a year after releasing the BioBot 1, more than 100 have been snapped up by labs around the world, generating an estimated $1 million in revenue.

Speed to market has been crucial. "They were shipping their 3-D printer, and people were actually paying money for it, and for a hard-sciences-based company that's unusual," says FundersClub cofounder Alex Mittal. "Usually it takes years of development."

The key to the BioBot's affordability is that it uses off-the-shelf electronic components. Only the mechanical components—like the plate that holds petri dishes level during printing—are precision manufactured.

That strength could also be BioBots' greatest weakness, as competitors like Sweden's Cellink have been able to enter the market quickly. But BioBots hopes to maintain its advantage through a combination of low-cost hardware and free, lab-friendly software.

"In 10 to 15 years, when you walk into a lab, it's going to be like walking into a server room," Cabrera says. ✱

BioBots cofounders Danny Cabrera (left) and Ricky Solorzano: "We're building the new infrastructure for doing biology."

DAVID YELLEN FOR FORBES

FINAL THOUGHT

✱ *"We are biology. We are reminded of this at the beginning and the end, at birth and at death. In between we do what we can to forget."* **—MARY ROACH**

The Retail Whisperer

Want a lesson on the future of shopping? Spend a day with Forerunner Ventures' indomitable founder, Kirsten Green.

BY CLARE O'CONNOR

Kirsten Green's all-female Forerunner Ventures is proving that success is the best way to crash Sand Hill Road's glass ceiling.

Scattered around Kirsten Green's office at Forerunner Ventures are tokens from some of her most promising portfolio companies. On her desk there's the puffy pink makeup pouch that's become synonymous with cool-girl cosmetics brand Glossier. Slung over her chair is a silver bomber jacket by Rockets of Awesome, a personalized kids'-clothing startup. In the corner there's a blue baseball cap by much-hyped athletic apparel company Outdoor Voices. These three businesses, like many in Forerunner's portfolio, have young women at the helm.

Behind Green's office wall is the unmistakable banging of a jackhammer. She's expanding Forerunner's San Francisco Civic Center area digs to make room for new employees. The early-stage venture capital firm she started as a one-woman band in 2003 is having its best year to date. In June Forerunner closed a $122 million fund, its third and largest, bringing its total raised to $242 million. In July and August two early investments—e-tailer Jet.com and razor-delivery startup Dollar Shave Club—became the two biggest and highest-profile e-commerce exits in recent years. Forerunner was the only firm to invest in both.

The $1 billion acquisition of Dollar Shave Club in particular has propelled Green out from under the radar and cemented her reputation as one of the industry's canniest investors in all things consumer. She led the startup's $1 million seed round in 2012. The sale yielded a return of almost 50 times Forerunner's initial investment, far and away its biggest score.

The firm's current roster—Green, partner Eurie Kim, a principal and an associate—will no longer cut it, so she's been fielding résumés and pondering Forerunner's next move.

"Until you're somebody who's had top-tier returns for three funds, you're trying to prove to people that you're responsible, that you care about their money, that you take it really seriously," she says, leaning forward in her chair. "That you're not just a punk trying to make some cool investments and get lucky. I'm still doing that."

Green, 45, is a founder and managing partner in a venture capital world with only 7% female leadership, according to Crunchbase. Hers is one of a small cohort of all-women VC firms that includes Cowboy Ventures, founded by Kleiner Perkins alum Aileen Lee, and Rivet Ventures.

Green is an industry outsider in other ways, too: She skipped business school, and she's never worked for any of the Sand Hill Road giants that fill FORBES' Midas List each year. What she did have was an obsession with retailing. Fresh out of UCLA with a degree in business economics, she joined Deloitte as an accountant auditing big-name stores, including Gym-

TIMOTHY ARCHIBALD FOR FORBES

boree, Sharper Image and Safeway, where she once got locked in a meat freezer while counting ribs. In 1998 Green started a five-year stint as a retail stock analyst at Montgomery Securities just as Amazon.com and eBay went public. "The prevailing thought was 'This is going to take over the world,'" Green says.

She wasn't convinced. While Amazon would win on price and convenience, she thought there was a place for brands selling a story or experience as much as a product. She remembers being excited by Coach, which was revitalizing itself from fusty to preppy chic, and Deckers Brands, parent of that early-'00s staple UGG boots. "What I really noticed in covering those stocks was just how much of it was about an emotional connection," she says.

Green left Montgomery in 2003 without a job, intent on becoming an investor. For three years she took countless meetings, built up an enviable Rolodex and worked research projects. Soon enough she was leading investment syndicates, collecting $25,000 checks from peers and friends, including an early mentor, Sandy Colen, whose offer of a job in 1997 at Apex Capital, his then-nascent hedge fund, she'd turned down.

Colen wanted in on anything Green was pitching. "She combines a savvy for consumer products and retail and is solid analytically," he says. In the next three years Green used her flash-mob-backed financing model to fund seven early-stage consumer companies, ranging from a line of pregnancy creams sold at Bath & Body Works to eco-friendly outdoor clothier Nau, which cost Green and her investors $10 million when it was forced into a fire sale during the 2008 financial crisis.

Nau's demise was a shock. "I was truly worried my career was over before it had really taken off," she says. "I was just a mess." So Green put fundraising on hold and had her first child, working as a consultant part-time for the private equity firm TSG Consumer Partners.

Then, in early 2010, Green met two groups of bright M.B.A.s who were shopping their startups, cosmetics sample subscription service Birchbox and eyeglass retailer Warby Parker, to seed-stage investors. Both were digitally native, direct-to-consumer brands exploiting changes in distribution networks. Both recognized the new ways shoppers decide what to buy. And both involved the collection of data—an element of every Forerunner investment today. In Birchbox and Warby, Green finally found her sweet spot. "This was the culmination of an 'aha' moment that was all of these things I had been looking for," she says. "The path to purchase is so different."

Birchbox cofounder Hayley Barna, now a venture partner herself at First Round Capital, remembers meeting Green for brunch in New York City's Chelsea neighborhood. "We had a shared worldview. Kirsten understood the incumbents—what the challenges were with the old beauty model."

In 2010 Green persuaded her mentor Colen to invest $5 million. It was Forerunner's first fund and backed hits like menswear startup Bonobos. Green raised $40 million from institutional investors in 2012 and $75 million for another fund in 2014. This summer's $122 million fund closed just before the Dollar Shave Club acquisition hit headlines.

Forerunner's deal flow has ballooned with its success. Green says her team looks at 150 startups a month. So far in 2016 they have backed just three, including Ritual, a women's multivitamin subscription service. That brings the firm's running total to 55 investments worth $72.7 million. Of those, Forerunner has exited 10.

While the giants of retailing—from Neiman Marcus to J. Crew—continue to struggle amid a sea of newcomers, Green remains disciplined, backing data-savvy seedlings with great stories and novel distribution approaches.

To Green a company like Glossier represents the future: a cosmetics and skin-care brand for Generation Instagram (where it has 317,000 followers). Founder Emily Weiss built the company using the insights and momentum from her popular beauty blog, Into the Gloss.

Glossier has no brick-and-mortar presence, save for the occasional pop-up or collaboration; its cheerfully packaged serums, brow gels and skin tints are sold exclusively online with smartphone-friendly marketing, allowing for the collection of real-time data, which in turn informs production. Fans share shots of its products obsessively on Instagram and Snapchat.

"It's not just about what any one retailer puts up there as a catalog of their inventory," Green says. "There are all these different ways it comes to life." ✱

FINAL THOUGHT

✱ *"My courage always rises at any attempt to intimidate me."* —**JANE AUSTEN**

TRENDING

WHAT THE 50 MILLION FORBES.COM USERS ARE TALKING ABOUT. FOR A DEEPER DIVE GO TO **FORBES.COM/INVESTING**

JUSTIN SULLIVAN/GETTY IMAGES

COMPANY
UNDER ARMOUR

Bad move in the growth game made by billionaire founder Kevin Plank: warning that sales aren't going to measure up to your forecasts.

PERSON
JEFF BEWKES

After rebuffing Rupert Murdoch, Time Warner chief seals $85 billion sale to AT&T—if it can get over a bipartisan wall of opposition in Washington, anyway.

IDEA
THE YOUNG AND THE CLUELESS

A survey by investment firm Franklin Templeton finds that two-fifths of Millennials don't have a strategy for retirement saving.


Independent advisors are accountable.
How do you measure accountability? Investors trust independent advisors with over $4 trillion of their money. The reason is simple. Independent Registered Investment Advisors are professionals held to a fiduciary standard. They exist to serve, not sell. That's why we support independent advisors. And why we think it's worth your time to learn more.
FindYourIndependentAdvisor.com
Damon W. | Independent financial advisor since 2009

Four Questions To Ask Your Financial Advisor

Financial advisors come in all shapes and sizes and can offer different types of financial planning and investment advice. Not sure how to best evaluate and choose an advisor? Consider asking them the following four questions before you engage:

#1 WHAT CAN YOU TELL ME ABOUT YOUR SUCCESS WITH OTHER CLIENTS?

Ask your financial advisor how they work with clients. What have their past relationships with customers been like, both good and bad? What lessons have they learned and what goals did they help others accomplish? Everyone defines success differently, but two factors stand out:

75% of investors are satisfied when their advisor is readily available to field questions, and

71% are satisfied when they feel their advisor has their best interests at heart.

Your advisor may define success differently, but knowing more about their previous experiences will give you insight into how successful your relationship will be.

#2 WHAT CREDENTIALS AND CERTIFICATIONS DO YOU HAVE?

More than a third of investors do not know their advisor's credentials, but understanding your advisor's background and expertise will help you find the best fit. While there are several certifications out there, the most common are the following:

- **Series 6 or 7**
- **CFP® (Certified Financial Planner)**
- **CPA (Certified Public Accountant)**
- **PFS™ (Personal Financial Specialist)**
- **ChFC® (Chartered Financial Consultant)**

Another factor to consider is whether your advisor is a fiduciary, or someone who is legally bound to act in your best financial interests.

#3 HOW DO YOU MAKE MONEY?

29% of investors say it's not always clear how their advisors charge for services, but how an advisor is compensated can greatly shape your relationship, the recommendations they offer, and the decisions they ultimately make.

There are different types of advisors, such as stock brokers, Registered Investment Advisors, etc., and all are paid differently. When vetting an advisor, be sure to get clarity on their fee structure. One way to do so is to start by asking the below:

1. Are you a fee-only or fee-based advisor? Aside from fees, what other charges will I incur?

2. Aside from me, are you compensated by any other source?

3. How are you compensated when you recommend investment products?

> "How you are compensated is one question clients don't always ask, but it's one of the most important. To create a successful relationship, and one that's built on trust, there has to be transparency and a mutual understanding of fee structures.
>
> **Damon W.,**
> Chief Operating Officer and Co-Founder of a Registered Investment Advisor firm

#4 WHAT IS YOUR INVESTING PHILOSOPHY, AND HOW DO YOU ADJUST IT TO MEET MY NEEDS?

78% of investors say they are satisfied with their advisors when they understand their goals. Are you aiming for early retirement, looking to build wealth or hoping to get out of debt? It's critical that your advisor tailor their planning to align with your objectives. Your advisor should be able to clearly explain how they're allocating your money and why their plan will specifically get you where you'd like to be.

Charles Schwab Advisor *Voice:* To learn more visit **www.forbes.com/sites/charlesschwabadvisor**

Based on a 2016 survey of 328 U.S.-based individual investors, including high net worth individuals, conducted by Forbes Insights in partnership with Charles Schwab.

HERE ARE FIVE STOCKS— TO BE HOPEFUL FOR

THOMAS KUHLENBECK FOR FORBES

AS WE APPROACH Thanksgiving, we have much to be grateful for now and hopeful for in 2017. Grateful that all the election noise and nonsense is fading away. And that America's stocks hit new highs as this joyless bull market trudged on. And our global economy grew, albeit slowly and despite the endless stupid policies and regulations that governments and central banks keep spewing. And that once again China didn't implode, as so many feared.

In terms of hope as we look ahead, I hope our Fed raises short-term rates several times—so we can overcome our fears of just that. The hikes will hurt less than the gains from killing the misconception that we've only survived the past few years due to central banks (instead of despite them).

I hope that Uncle Sam lengthens average debt maturity by rolling short-term debt into 20-year bonds, locking in today's überlow rates for decades, reducing our crisis worries (they're doing just the reverse, stupidly).

I hope that global firms lobby Brexit negotiations largely into oblivion—allowing euro trade to continue about as is. And that ObamaCare

STOCKS I HOPE YOU'LL BE THANKFUL FOR COME NEXT YEAR

gasps its last in 2017 (replaced by something better than single-payer!). Drug stocks have lagged but should lead as the Big O's end is nigh.

I hope that with the energy earnings decline behind us, overall earnings growth hits about 13%-plus, as I expect it to. That our heretofore near-stagnant M4 global money supply keeps growing at its newly emerged roughly 5% annual pace, providing enough inflation-adjusted lending for quality borrowers of all types to feed at the trough. And that no big, bad, unforeseen, fast-growing governmental cancer materializes, so our bull market can keep grinding through skepticism toward becoming the longest ever.

Finally, I naturally hope my stock picks do well and that, with or without them, you do exceptionally well. Here are five I like and for which I hope you're thankful come next Thanksgiving.

Toronto-based **MANULIFE FINANCIAL (MFC, 15)** specializes in life, health and disability insurance—plus, increasingly, asset and wealth management—in Canada, Asia and America, where you know it as John Hancock. Overall I expect moderate growth. Yet it's dirt cheap at 60% of annual revenue and at book value and nine times my 2017 earnings estimate with a 3.7% dividend yield.

Diapers? A growth business? Soon enough! Millennials' birthing era is phasing in while Boomers are starting to embarrass themselves—a coming bulk-of-the-population barbell shift. **KIMBERLY-CLARK (KMB, 114)**, number two for babies and tied for tops for adults, is the logical beneficiary. Its prospects exceed its P/E of 18 times my 2017 earnings goal or its 3.2% dividend yield. (It also owns Kleenex brand tissue and Scott napkins, towels and wipes.)

Banking has been tough. Pacific Rim, mining and commodities, too! That's hurt **WESTPAC BANKING (WBK, 23)**, Australia's number two bank by assets and number one by branches. But the pain will pass. It's well managed, as shown by slightly rising earnings throughout this pall. It's great for cash flow, inclined with a 4.3% dividend yield while at 13 times my September 2017 earnings guesstimate.

The last two years were tough, too, on Britain's drug giant, **ASTRAZENECA (AZN, 29)**, but it's focused on cutting costs, and its cancer lineup has huge prospects. I see modest growth above my $2.00 2017 earnings forecast. It likely generates a 2017 2.8% dividend yield. Generally, I'm not keen on big drugs, but AZN's time should be now.

What to do about a stock like Coca-Cola, which has gone nowhere for three years while sales slip and governments globally urge people to avoid soda? Yet it sells at lofty valuations and is 35% above its 2007 peak price. Buy **CISCO SYSTEMS (CSCO, 30)**, the world's leading networking firm, instead. It grows modestly and will—but hasn't—hit its 2007 peak yet and sells at 14 times my July 2017 earnings estimate with a 3.3% dividend yield. F

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

T MINUS ZERO FOR INVESTING IN MARS

THOMAS KUHLENBECK FOR FORBES

PENTAGON CONTRACTORS HAVE created some of the most important technology of the past hundred years in the pursuit of death, destruction and defense. Now there's a rush to use some of that expertise to find us another planet to live on in case their customers go a little too far.

Scanning the horizon for an inhabitable candidate, thought leaders ranging from President Obama to entrepreneur Elon Musk have settled on a temperate chunk of the solar system 140 million miles away as humanity's next hideaway. Suddenly Mars is no longer just the red planet but the hot planet.

You have to love the sheer audacity of the idea. But from the standpoint of an investor, you don't need a radio telescope to see that it has billion-dollar boondoggle written all over it.

Let's think about it a second. Mars is at least five orders of magnitude farther away than the space station. Getting there will require new ways to store volatile fuel and a deep rethinking of what engineers know about data science, extraterrestrial communication and solar propulsion. And they will also have to build the Space Launch System, the most powerful propulsion system ever, just to get it off the ground.

THIS IDEA HAS BILLION-DOLLAR BOONDOGGLE WRITTEN ALL OVER IT

Basically, it's going to be very expensive. But contractors are really into this now that defense budgets are shrinking—Americans are tired of spending billions to occupy foreign lands just to blow them up. The technology of space travel (and its close cousin cyberwarfare) is on track to provide small but incremental new growth to a sector that might otherwise face secular decline.

LOCKHEED MARTIN (LMT, 249) is starting with the Mars Base Camp, which is like the current International Space Station, only much bigger. It will consist of two Orion command and control capsules, a habitat for crew, two large sets of fuel tanks and four massive solar arrays that will generate all the power for operations and propulsion. The project is set to begin in 2018, after the Space Launch System and Orion spacecraft are certified for human deep-space exploration.

BOEING (BA, 143) is focused on building the SLS, which includes the largest rocket ever made. As a test of logistics needed for the journey to Mars, NASA plans to land astronauts on an asteroid by 2025.

This year **NORTHROP GRUMMAN (NOC, 225)** celebrated the tenth anniversary of *Opportunity,* its amazing Mars rover. In July the company was awarded a contract to develop a conceptual study for one of several new Mars orbiters.

These are relatively modest projects that will grow much larger and should have widespread positive effects in the broad economy. Defense contractors missed the development of new technologies like 3-D printing, autonomous vehicles and information technology because they were focused on missiles, jets and destroyers. Mars is the refocus they need to innovate again and help mankind.

Some space technology is being combined with the contractors' traditional business. DARPA, the Pentagon branch responsible for developing new technologies, said earlier this year it was working with Lockheed Martin to develop small aerial drones capable of "swarming" in large packs. The killer bots will use advanced guidance systems to disperse from cargo planes, complete their mission and then return to their mother ship. It's kind of awesome in a macabre way, merging the intergalactic warfare of tomorrow with the need to fight terrorists today.

This space technology lifeline is dangling in front of the aerospace contractors at a very opportune time. Their shares have been under pressure since August as fears emerged that a new administration would slash defense spending in favor of social programs. I think the concerns are overblown and investors will return as the Mars mission's potential becomes more evident.

Lockheed and Northrop each trade at 18.5 times forward earnings, while Boeing trades at 14 times—not terribly expensive. Moreover, dividend yields of 1.5% to 2.9% lend some protection. In the past, periods of weakness like the one we're seeing now have proved to be good buying opportunities. These stocks won't just be taking up space. F

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ForbesLife

HOLIDAY ON ICE

RARE WHISKY,
ARTFUL WATCHES
AND OTHER
COOL GIFT IDEAS

THE ART OF THE DIAL

One can always admire a timepiece's inner beauty—the craft of a complication, the mechanics of precision—but sometimes you fall for a beautiful face. A watch with an artful dial may be an automaton (like the hypnotic Bird Repeater by Jaquet Droz), have intricate marquetry (like the Blossom Velvet Blue by Roger Dubuis) or simply use a unique fabric (like the Big Bang Linen by Hublot), but each will make it a pleasure to see the minutes go by.

PHOTOGRAPH BY **DAVID ARKY** • CREATIVE STYLE DIRECTOR: **JOSEPH DEACETIS** • STYLE ASSOCIATE: **JUAN BENSON**

Clockwise from opposite page: Lady Arpels Ronde des Papillons in white gold with diamonds by VAN CLEEF & ARPELS ($123,000). Dior VIII Montaigne Ligne Corolle in stainless steel by CHRISTIAN DIOR COUTURE ($7,900). Blossom Velvet Blue in white gold with diamonds by ROGER DUBUIS ($80,900). Bird Repeater Openwork by JAQUET DROZ ($472,500). Fabergé Lady Compliquée Peacock Ruby in white gold with diamonds by FABERGÉ ($26,500). Big Bang Blue Linen in composite resin and linen by HUBLOT ($16,700). Métiers d'Art Elégance Sartoriale Prince of Wales in white gold by VACHERON CONSTANTIN ($53,600). Happy Diamonds in rose gold with diamonds by CHOPARD ($48,500).

PAGE 65 (clockwise from top): Drop-diamond lariat necklace in platinum by HARRY WINSTON (price upon request). Luminosity paisley-shaped earrings with diamonds in 18kt white gold by COOMI ($110,000). Marquise Diamond Cluster bracelet in platinum by TIFFANY & CO. ($125,000). Tango ring in 18kt rose gold with white diamonds by POMELLATO ($46,800). Bonnelle Rivergod earrings with white topaz set in 18kt white gold with diamond pavé by MISH NEW YORK ($21,000). Princess Flower Link bracelet in 18kt white gold with diamonds by ROBERTO COIN ($8,900).

PHOTOGRAPH BY
DAVID ARKY FOR FORBES
Style associate: Barry Samaha

ICE SCULPTURE: OKAMOTO STUDIO

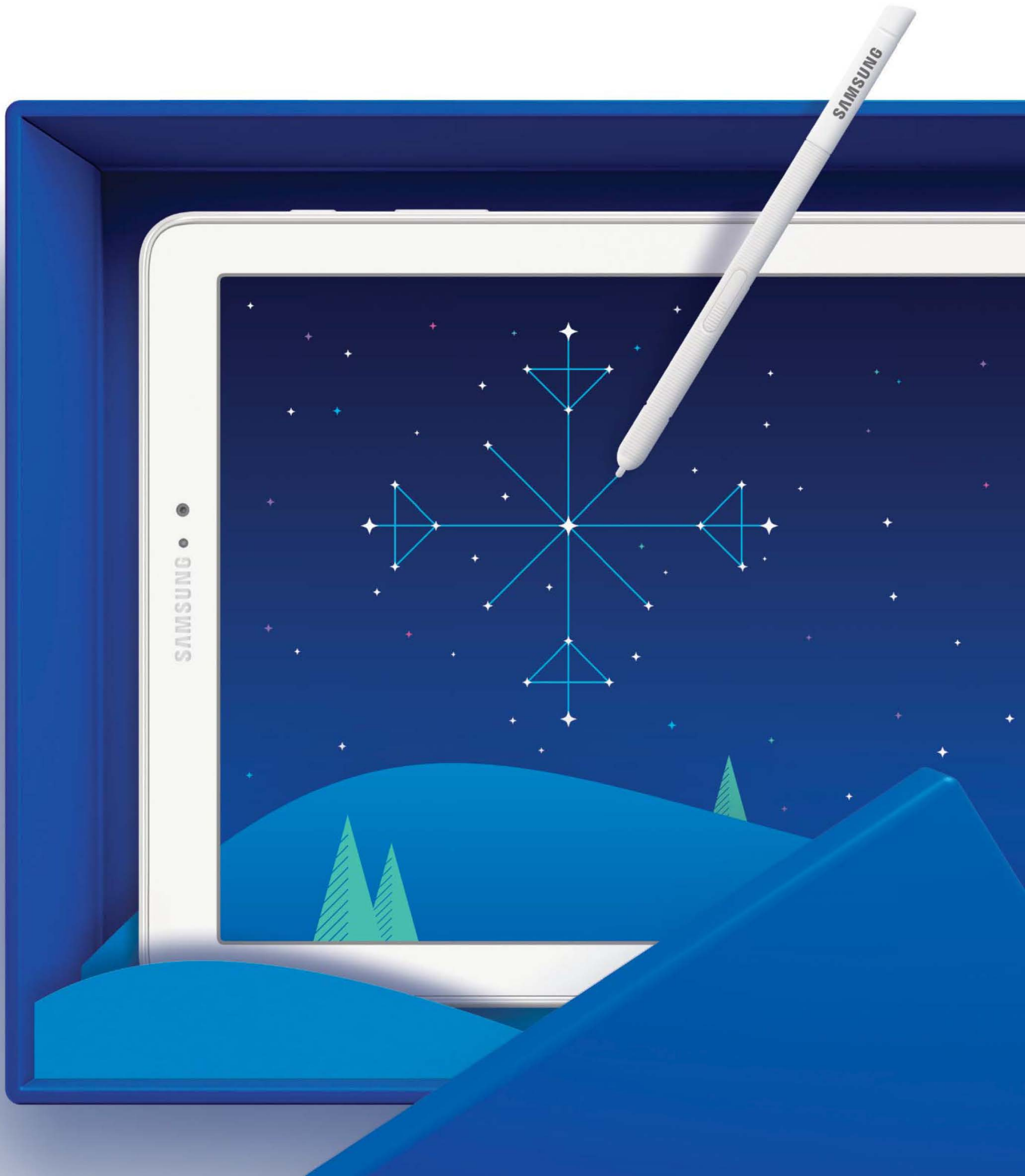
TECH THE HALLS

A sensorial satori occurs when high tech meets high design. Whether it's a Brancusi-like speaker, a platterless turntable or a state-of-the-artfulness integrated amplifier, form and function are united on a new plane, wrapping inspiration around innovation.

Clockwise from top left: BeoLab 90 speaker by BANG & OLUFSEN ($85,000 a pair). Atmo Sfera platterless turntable by AUDIO DEVA ($1,650). Ikarus integrated amplifier by METAXAS AUDIO SYSTEMS ($32,500). PS1000e headphones by GRADO LABS ($1,695). X1D camera by HASSELBLAD ($8,995, body only).

SAMSUNG

Galaxy Tab A with S Pen



INTO THE WOODS

Among the many pleasures for single malt fans are distilleries that double down (and even triple down) on cask finishes. Macallan recently debuted a 12-year Double Cask that marries sherry-seasoned American and European oak, while Auchentoshan Three Wood moves from American bourbon barrels to Spanish Oloroso sherry and then Pedro Ximénez sherry casks. Meanwhile, Glenfiddich got experimental with a whisky finished in India pale ale casks. And all of these whiskies have one thing in common—they're dram good.

LAPHROAIG Cairdeas Madeira Cask ($75). **KNAPPOGUE CASTLE** 16-year-old Twin Wood Irish Whiskey ($100). **MACALLAN** Double Cask 12 years old ($65). **BALVENIE** Double Wood 17 years old ($150). **AUCHENTOSHAN** Three Wood ($70). **GLENFIDDICH** India Pale Ale Cask ($70).

PHOTOGRAPH BY DAVID ARKY

Clockwise from top: Petite Malle in crocodile skin by **LOUIS VUITTON** ($34,000). Mini Kelly II in Epsom leather by **HERMÈS** ($8,150). Small Flap Bag in lambskin by **CHANEL** ($4,700). Micro Peekaboo in Nappa leather by **FENDI** ($1,550). Sac de Jour Nano in leather by **SAINT LAURENT** ($2,750).

SMALL WONDERS

When it comes to handbags, little is now a big sign of power. Mini- and microbags have replaced oversize satchels and totes, conveying that a woman has everything under control. From Chanel's Mini Flap to Fendi's Micro Peekaboo, these little beauties are meant to hold just the essentials—a phone, some credit cards, keys—but they still make a huge style statement.

From left: Valentino Garavani Rockstud Spike small bag in lambskin by **VALENTINO** ($2,195). GucciGhost shoulder bag in leather by **GUCCI** ($1,890). Serpenti Viper in calfskin by **BULGARI** ($2,100).

PHOTOGRAPH BY DAVID ARKY
CREATIVE STYLE DIRECTOR: JOSEPH DEACETIS; STYLE ASSOCIATE: JUAN BENSON

Features

November 29, 2016

Whales are a recurring theme for Magic Leap, the "mixed reality" startup that will soon commercialize eyeglasses that promise to flawlessly integrate digital images with the real world. Its secretive founder, Rony Abovitz, once created a sci-fi universe in which whales fly, and the megafauna feature prominently in the firm's limited marketing material. **PAGE 76**

Top-secret startup Magic Leap has raised a record-breaking amount of money in pursuit of a radical concept: blending the digital and the physical. “Mixed reality” will transform the way we work, play, shop and see—and entire industries will be changed forever.

BY DAVID M. EWALT

DISRUPTION MACHINE

Magic Leap founder Rony Abovitz: making the unreal real.

PHOTOGRAPH BY JAMEL TOPPIN FOR FORBES
GROOMING BY SUZANA HALILI FOR TEMPTU @ORIBE

The hottest ticket in tech is an invitation to a banal South Florida business park, indistinguishable on the outside from countless other office buildings that dot America's suburban landscape. Inside, it's a whole different story. A different reality, in fact. Humanoid robots walk down the halls, and green reptilian monsters hang out in the lounge. Cartoon fairies turn the lights on and off. War machines, 75 feet tall, patrol the parking lot.

Even the office equipment does the impossible. The high-definition television hanging on the wall seems perfectly normal. Until it vanishes. A moment later it reappears in the middle of the room. Incredibly, it is now levitating in midair. Get as close as you'd like, check it out from different angles. It's 80 inches diagonal, tuned to ESPN—and there is nothing holding it up.

The TV looks real, but it is not. All these wonders are illusions, conjured into being through the lenses of a "mixed reality" headset—the arcane invention of the startup called Magic Leap.

Like any good magician, founder and CEO Rony Abovitz, 45, keeps his cards close to his chest. Magic Leap has operated in extreme secrecy since it was founded in 2011. Only a few people got to see its technology, even fewer knew how it worked, and all of them were buried under so many nondisclosure agreements that they could barely admit the company existed.

Yet massive amounts of money were flowing down to Dania Beach, Florida, a town of 30,000 just south of Fort Lauderdale. To date, Magic Leap has raised nearly $1.4 billion in venture capital, including $794 million this past February, reportedly the largest C round in history. Seemingly every blue-chip tech investor has a chunk, including Andreessen Horowitz, Kleiner Perkins, Google, JPMorgan, Fidelity and Alibaba, plus there's backing from less conventional sources such as Warner Bros. and Legendary Entertainment, the maker of films like *Godzilla* and *Jurassic World*. Magic Leap was valued at $4.5 billion in its latest round of financing. If Abovitz has held on to just 22% of the company—which he denies—he's a billionaire.

That cascade of money sparked strange rumors within tech circles: Magic Leap was doing something with holograms, or with lasers, or had invented some reality-warping machine the size of a building that would never, could never, be commercialized. The lack of hard information further fueled the whispers. Magic Leap, after all, has never released a product. It has never given a public demonstration of a product, never announced a product, never explained the proprietary "lightfield" technology *(see box, p. 86)* that powers its product.

But now the company is coming out of the shadows. In a rare interview Abovitz says Magic Leap has spent a billion dollars perfecting a prototype and has begun constructing manufacturing lines in Florida, ahead of a release of a consumer version of its technology. When it arrives—best guess is within the next 18 months—it could usher in a new era of computing, a next-generation interface we'll use for decades to come. "We are building a new kind of contextual computer," Abovitz says. "We're doing something really, really different."

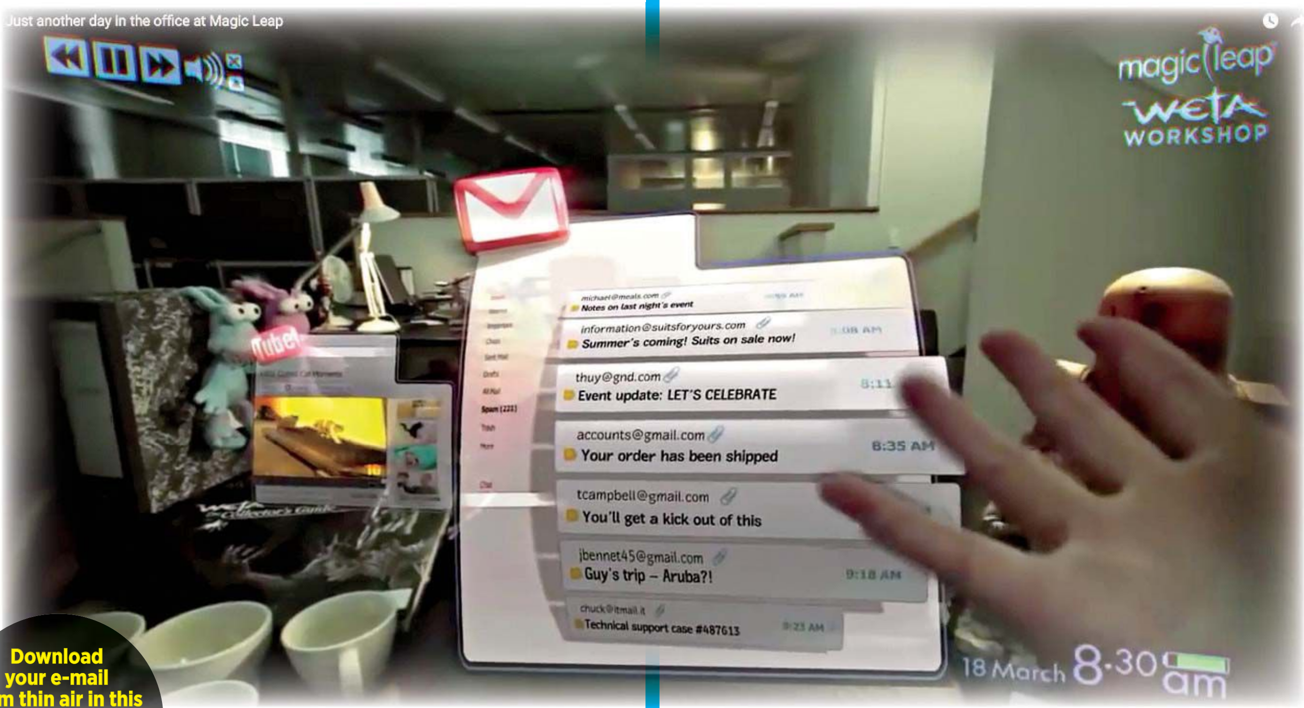
Magic Leap's innovation isn't just a high-tech display—it's a disruption machine. This technology could affect every business that uses screens or computers and many that don't. It could kill the $120 billion market for flat-panel displays and shake the $1 trillion global consumer-electronics business to its core. The applications are profound. Throw out your PC, your laptop and your mobile phone, because the computing power you need will be in your glasses, and they can make a display appear anywhere, at any size you like.

For that matter, they can make anything appear, like directions to your next meeting, drawn in bright yellow arrows along the roads of your town. You'll be able to see what that new couch you're thinking of buying looks like in your living room, from every conceivable angle, under every lighting condition, without leaving your home. Even the least mechanically inclined will be able to repair their automobiles, with an interactive program highlighting exactly which part needs to be replaced and alerting you if you're doing it wrong. And Magic Leap is positioned to profit from every interaction: not just from the hardware and software it will sell but also, one imagines, from the torrent of data it could collect, analyze—and resell.

"It's hard to think of an area that doesn't completely change," Abovitz says.

YOU HAVE LIKELY TRIED virtual reality—Sony, Google, Samsung and Facebook have all debuted VR products in the past 12 months. VR is an immersive computer-generated simulation, now used mostly for videogames, whereby VR headsets mask and replace the real world.

You may have also tried augmented reality, in which digital content is overlaid on a physical environment. One of the biggest digital fads of 2016 made AR mainstream: In July mobile app developer Niantic released Pokémon Go, a game that uses smartphone cameras to



Download your e-mail from thin air in this image shot directly through Magic Leap's prototype headset.

make animated monsters appear to exist in the real world—or at least on your phone's screen.

Neither a VR game nor Pokémon Go can do what Magic Leap's "mixed reality" does. VR takes you to another place. AR can make a Pikachu appear in your living room. Mixed reality keeps you where you are—and makes that Pikachu come to life.

How does it do it? The centerpiece of Magic Leap's technology is a head-mounted display, but the final product should fit into a pair of spectacles. When you're wearing the device, it doesn't block your view of the world; the hardware projects an image directly onto your retina through an optics system built into a piece of semitransparent glass (the product won't fry your eyeballs; it's replicating the way we naturally observe the world instead of forcing you to stare at a screen). The hardware also constantly gathers information, scanning the room for obstacles, listening for voices, tracking eye movements and watching hands.

As a result, mixed-reality objects are aware of their environment and have the ability to interact with the real world. On Magic Leap's hardware a Pokémon might escape capture by ducking behind your couch or, assuming you live in a "smart" home, turning off your lights and hiding in the dark.

In one of its demos the Magic Leap team shows off a computer-generated "virtual interactive human," life-size and surprisingly realistic. Abovitz and his team imagine virtual people (or animals or anything else) as digital assistants—think Siri on steroids, except with a physical presence that makes her easier to work with and harder to ignore. Ask your virtual assistant to deliver a message to a coworker and it might walk out of your office, reappear beside your colleague's desk via his or her own MR headset and deliver the message in person.

In a mixed reality world, computing power isn't confined to a gadget on your desk. It's something that you can link to any object, real or virtual, giving it awareness of its location, intelligence about its purpose and insight on how you might want to use it. "Think of it as the future state of computing," Abovitz says, "where the world is your desktop." First we had mainframes, then PCs, then mobile devices. If Magic Leap has its way, the next generation will be virtual.

"This is not about entertainment or just playing videogames," says Thomas Tull, the billionaire founder of Legendary Entertainment. "This is a different way of interacting with the world, a new generation of computers. I think this will end up being a very, very important company."

RONY ABOVITZ HAS always surrounded himself with visions of a high-tech future. Born in 1971 to Israeli immigrants living in Cleveland, he grew up fascinated with computers and science fiction. "My generation are the children of Steve Jobs and George Lucas," he says. "We grew up on that, and our brains all got scrambled. . . . My friends and I all wanted to be Luke Skywalker and defeat the Death Star and build C-3PO."

When he was 11, the family moved to South Florida; he started high school at 13, a year early. After graduation he was accepted at MIT but chose the University of Miami, staying close to home. He received a bachelor's degree in mechanical engineering in 1994 and a master's in biomedical engineering two years later—and then he started thinking about *Star Wars* again.

Abovitz cofounded his first company, Z-KAT, in 1997. "I decided to build the medical droid from *Star Wars* because I thought—I mean, this was the genuine impulse—I couldn't build an X-wing fighter, because that wasn't something I could explain to my parents after graduating," he says. In 2004 Abovitz and several of his cofounders spun out Z-KAT's robotics group into a new company, Mako Surgical, that made robotic arms to assist doctors in orthopedic surgeries. Demand for the droids was high, and in 2008 the company went public, raising $51 million.

Working full-time at Mako and married with a young daughter, Abovitz found an outlet for his creative side in a project he called Hour Blue—his own fictional fantasy world, an alien planet full of fantastic creatures like talking robots and flying whales. In 2010 he started a new company, Magic Leap Studios, to develop the project as a graphic novel series and a feature film franchise.

"I was the only employee, and it was literally in my garage," Abovitz says. "My mom made a piece of canvas with some colored letters on it that said, 'Magic Leap Studios.'" For help on the project, he used some of the cash he'd banked from Mako to hire Weta Workshop, the New Zealand-based special effects and creative-development shop best known for its work on the *Lord of the Rings* film trilogy, to develop imagery based on his story ideas and flesh out the world. Meanwhile, inspired by sci-fi novels like William Gibson's *Neuromancer* and Vernor Vinge's *Rainbows End,* Abovitz became frustrated that the augmented and virtual reality he'd read about in fiction wasn't available in the real world and began thinking about how to make it so.

"It was a unique moment. . . . Reality and science fiction began to merge," says Richard Taylor, CEO of Weta Workshop and a member of Magic Leap's board. "The fictitious technologies that we were creating for Hour Blue were developing in parallel to the real-world applications of augmented technology that Rony was beginning to explore."

In 2011 Magic Leap Studios changed focus and became Magic Leap Inc., with Abovitz hiring a small team to help him develop this idea of mixed reality. Before long the company had working prototypes.

"The first time we had a single pixel in space, where we could move it around the room, we were so excited," Abovitz says. "Other people were like, 'What is that? That's just a dot.' But we knew. I knew at that point this was going to work."

He also knew he was going to need a lot more money. Abovitz had initially funded the company with his proceeds from Mako's IPO. After Mako was acquired in 2013 by medical device manufacturer Stryker Corp. for $1.7 billion, he invested some of those proceeds as well. Abovitz won't reveal the exact amount he spent to get the company running ("in the millions" is all he'll say), but he knew it wouldn't be nearly enough.

Fortunately, the technology sold itself. "When we'd talk to people about what we were doing, they didn't

R2-D2 and C-3PO appear in a short video made by ILMxLAB and Magic Leap.

believe us," Abovitz says. "Then they'd fly in and go, 'Oh . . . you've actually made these things happen.' That was the dynamic of everyone who invested; [they went from] 'This is impossible' to 'We want in.'"

In February 2014 Magic Leap announced it had raised more than $50 million in seed funding from private investors. Eight months later the company closed a Google-led $542 million series B funding round.

"We invested in Magic Leap because we believe their lightfield technology is the next big inflection point in technology after the PC, the Web and the smartphone," says James Joaquin of Obvious Ventures, a San Francisco-based venture capital fund he cofounded with Twitter's Evan Williams and a third partner. "It has the potential to transform multiple global economic categories, including entertainment, education and productivity."

Forbes INSIGHTS

WHEN CLOUDS CONNECT: HOW HYBRID IT IS TRANSFORMING ENTERPRISES

WHAT DOES A WELL-BALANCED CLOUD STRATEGY LOOK LIKE? AND HOW CAN YOUR COMPANY ENSURE THAT YOU ARE GETTING THE BEST VALUE FROM MULTIPLE CLOUDS?

Let's imagine a consumer products company that moves seamlessly among different cloud realms. To start, customers access product information and place orders via a cloud-based web interface. Then, transactions are sent to an on-premises application with real-time links to on-site financial, inventory and production systems. Data from those transactions is processed and stored through third-party software-as-a-service-based applications. This can include customer relationship management, credit verification and shipping services.

Behind the scenes, important processes support this smooth interoperability. During holidays and special sales, for example, loads are "burst" to cloud-based processing and data storage services. And innovation is ongoing. New applications and capabilities are developed through an in-house platform-as-a-service environment that supports the latest development tools and databases. Developers and product managers also work together to spin up cloud-based servers to test new product ideas.

In short, our model consumer products company is able to activate resources from multiple places, including an on-premises data center, on-premises private cloud, and public cloud services. Such a balance among separate cloud realms will be increasingly critical for all companies—that is, if they want to remain competitive and adapt to ever-changing business requirements.

A new survey of 302 top IT executives conducted by Forbes Insights in partnership with Cisco found that there is no such thing as a static cloud arrangement. In reality, few companies are either all on-premises or all public cloud. Rather, they employ a mix of services that evolve with their businesses.

Consider this: a majority of enterprises (65%) have, at some point over the past two years, adopted a public cloud service for an application or function, then moved it back to on-premises. In some cases, this involved a large bloc of services. Why? Concerns about the security of online services provided by public cloud providers are a primary reason, but often, the public cloud service was viewed as a "temporary" implementation intended to get new applications or functionality off the ground.

When deciding between a third-party cloud or an on-premises location (be it private cloud or traditional data-center architecture), executives need to balance a range of requirements. Costs, of course, are extremely important, but additional factors need to be weighed as well, from security to any enhanced flexibility the arrangement will provide.

Here are some key questions to bear in mind:

Is the cloud strategy cost effective in the long run? A majority of executives (87%) say their public cloud met initial expectations in terms of costs. However, as time goes on and the meter keeps running, they may want to rebalance their mix of public versus on-premises resources. A majority (58%) say that as they have added new applications or workloads to their public cloud infrastructure, their costs per transaction have increased. In addition, 27% of those making the shift back to on-premises cited uncertainty about costs, since usage patterns change and subscription costs may be unpredictable from month to month. At the same time, a majority agree that a shift back to on-premises would take time to recoup expenses.

Can applications be easily moved to another provider, or back on-premises? A cloud engagement—be it public, private or a combination of both—should be based on open standards and protocols, so that it can easily be hosted and shifted to another platform. One of the leading concerns about public cloud expressed in the survey—cited by 43%—is vendor "lock-in." This results when an organization subscribes to online services and creates data associated with transactions against that service. But the data and applications are almost impossible to replicate or move elsewhere due to the vendor's proprietary processes and standards. Making the shift between clouds, or between public clouds and on-premises environments, can take time. A majority (83%) say it would take a month or more to move an application to another platform.

Is security assured? A majority of executives (88%) believe their public cloud provider's security policies meet the standards of their organization. At the same time, however, two in five are not highly confident that their data is in good hands with public cloud providers. So, despite growing comfort with the security of public cloud, enterprises still feel they need to hedge their bets. Security and compliance are the leading drivers of hybrid cloud adoption, as indicated by 82% of executives.

By asking the right questions, executives can help achieve the right cloud balance. And by seamlessly blending services from both on-premises and third-party cloud providers, they will serve the ever-changing needs of their organizations.

CISCO

DONOR-ADVISED FUNDS SOAR ALONG WITH MARKETS

By Elizabeth Wine

There is a better, more tax-efficient way for donors to help their favorite charities than writing a check or pulling out their credit card. Individuals can donate assets with unrealized gains that they have held for more than a year, and they generally receive a tax deduction for the full market value. Donor-advised funds (DAFs) make this process simple, and as word has spread, they have soared in popularity. Four of the ten largest U.S. charities are currently DAFs, according to *The Chronicle of Philanthropy*.

DAFs are part of a long history of American generosity. America gives a higher percentage of GDP to nonprofit organizations than any other nation, according to the Charities Aid Foundation. However, philanthropy still has room to grow in this country. In the last five years, the S&P 500 index has nearly doubled, and according to Boston Consulting Group, the number of millionaires has jumped 40%. Despite this, Giving USA reports that U.S. households continue to donate only about 2% of disposable income, on average, as they have for the last 40 years.

Mindfulness: Driving the Needle Past 2%

The question for the charitable sector is how to move the needle beyond that 2%. Schwab Charitable, a leading national donor-advised fund and provider of other philanthropic services, believes that mindfulness is the key. "Just how do we get donors to think about how much they are giving to charity?" asks Kim Laughton, president of Schwab Charitable.

The first step is to correct mistaken impressions. Three-quarters of donors believe that they give more than the average amount to charity. But the reality is that nearly as many—some 73%—actually give *less* than the average, according to the Camber Collective.

Thanks to a convenient web interface, Schwab Charitable account holders see the amounts they have given to charities all in one place and graphically presented over various time periods. Laughton points out that the visual aids really help donors better plan their philanthropy. "Some portion of giving happens spur of the moment, and people have trouble keeping track of it," notes Laughton. "When you can manage your entire giving history in one place, it is much easier to be thoughtful about how you support your favorite causes."

It's Almost Year's End: Do You Know Where Your Charity Dollars Are Going?

The effort to help donors give more appears to be working, since 65% of Schwab Charitable's clients say they give more because of their DAF accounts. Schwab Charitable reported that donor grants grew by 12% to $1.2 billion in fiscal year 2016, which ended June 30.

DAFs are easy to open, and at Schwab Charitable, existing Schwab clients see their DAF accounts right next to their Schwab bank and investment accounts. This makes contributing cash or investments even more simple and efficient. "That gives you tremendous opportunities, because it makes charitable giving part of your everyday financial planning and life," says Laughton.

Donors can also typically avoid capital gains taxes if they contribute appreciated assets or investments that they have held for more than one year to their DAF account. In fiscal year 2016, 59% of contributions to Schwab Charitable were non-cash investments or assets. Schwab Charitable also handles the liquidation, relieving the charities of the administrative burden.

After several buoyant years in the markets, many investors and business owners face both the prospect of higher tax bills and the desire to give back. For some, donor-advised funds can tackle both issues and help them make the most of their charitable dollars.

How a Donor-Advised Fund Works

But I know
I can make a
difference.

A Schwab Charitable™ donor-advised fund account is a tax-smart, efficient way to help meet your charitable giving goals. To learn more or to open an account, call us at **800-746-6216** or visit **www.schwabcharitable.org/forbes**.

Giving is good. Giving wisely is great.

SCHWAB CHARITABLE®

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Magic Leap's record-breaking $794 million series C round, announced in February 2016, was led by Alibaba and included follow-on investments from Google and Qualcomm Ventures, plus new money from Fidelity Investments, JPMorgan, Morgan Stanley and T. Rowe Price. "I don't think it would be mischaracterizing it to say there was a frenzy," Thomas Tull says. "This company has had absolutely no problem attracting blue-chip investors, and it's extraordinarily well capitalized at this point."

RONY ABOVITZ DOESN'T SEEM THE captain-of-industry type—unless your model mogul is Willy Wonka. Abovitz lights up like Roald Dahl's genius chocolatier as he leads a tour through Magic Leap's new headquarters in Plantation, Florida, a campus more befitting his vision than the nondescript offices 15 minutes away in Dania Beach that he's vacating. He points out "cool" machines, admires tools and invites guests to climb ladders to check out high-end air filters in the ductwork. He's friendly and cheery, very casual in speech and attire (often jeans and sweatshirts). People comment on what a nice guy he is as often as they mention his intellect.

Evil robots invade your office in Weta Workshop's Dr. Grordbort game.

He's also liable to get lost in his work. On a recent Friday afternoon he was missing in action half an hour after a tour of the new HQ was scheduled to start—a not uncommon delay but a problematic one, since Abovitz comes from an Orthodox Jewish background and was planning to leave work early to observe the Sabbath. Eventually one of his executives discovered he had been on-site the whole time, sitting in his car in the parking lot, absentmindedly engrossed in a telephone call.

Magic Leap broke ground on the new, 259,000-square-foot campus in October 2015 and expects the majority of its current 850 employees to move in before the end of this year. The rest of the workers are scattered in nine offices around the globe, not just in tech hot spots like Silicon Valley and Austin but also in far-flung outposts like Wellington, New Zealand, and Tel Aviv. Some groups are already in place at the new site, including a machine shop and several engineering teams. It's important to Abovitz to keep critical development teams together as part of an "agile hardware" model, which has allowed the company to produce "literally many hundreds of iterations" of its headset prototype. "Part of why Magic Leap can iterate so fast is because we have all the right people in the right places," Abovitz says.

The company is also building manufacturing facilities on the Plantation campus. "This is the most spaceshippy part of Magic Leap," Abovitz says as he leads a group into the production line areas: a series of long, self-contained, modular bays lined up like submarines in a port. Each line can be activated as needed, ramping up production from thousands of units a year to more than a million.

Abovitz wants Magic Leap to stay in Florida; one of the benefits of manufacturing there is that it allows the company to keep its secrets. If it were headquartered in Northern California, that would be nearly impossible, given Silicon Valley's job-hopping culture and well-lubricated rumor mill. Of course, he would also have an easier time hiring, but Magic Leap's technology has been a strong draw, pulling people in from the Valley and other tech hubs. "We're bringing a crazy amount of very capable high-end engineering and manufacturing tech talent into Florida," he says.

NATURALLY, ABOVITZ ISN'T THE ONLY entrepreneur who sees opportunity in this field. In just the past 12 months, $2.3 billion has been invested in virtual reality and augmented reality as venture firms follow the money. According to International Data Corp., worldwide revenues for the augmented and virtual reality market will grow from $5.2 billion this year to more than $162 billion in 2020.

With that kind of growth, all the big names are scrambling to get a piece of the action. Google already dipped its toes into AR in 2013 with its ill-fated Google Glass, a pair of spectacles that made a virtual computer screen appear to float in front of the user. The project stalled in beta amid privacy and safety concerns, but Google's investment in Magic Leap

indicates its ongoing interest. "We knew from some of our earliest discussions with Rony and the team that we wanted to help them accelerate their vision into reality," says Don Harrison, vice president of corporate development at Google.

Apple is working on AR as well, but it's unclear whether it is developing its own headset or adding capabilities to the iPhone. Silicon Valley startups like Meta (which has raised $73 million) and Atheer (a reported $23 million) are working on their own AR headsets and would presumably be natural acquisition candidates if they are successful.

For now, however, Magic Leap's biggest competitor is Microsoft, which announced an augmented reality headset called HoloLens in 2014. A preproduction version, the HoloLens Development Edition, shipped to an unspecified number of Microsoft hardware and software developers in March of this year, and a consumer version could be released sometime in 2017. "Microsoft has a big advantage in business because of their relationships," says Gartner research analyst Brian Blau. "They're deep into business, and that's exactly where they positioned HoloLens."

So now that it has a production line, what's Magic Leap's timing for entering the market? "Soon-ish," says Abovitz, coyly. He's also reticent about what the headset will cost. "Not a luxury product," he finally offers.

Still, with Microsoft expected to release the consumer version of its HoloLens augmented reality headset sometime next year, it's clear that Magic Leap's gear must get onto shelves in the same window or it will risk losing ground to its biggest competitor. And with preorders for Meta's headset priced around $1,000, expect Magic Leap's new goggles to be in the same ballpark.

MAKING THE MAGIC

THE "PHOTONIC LIGHTFIELD CHIP" is Magic Leap's most proprietary and secret technology, so the company won't say exactly how it works. But an analysis based on publicly available patent filings and papers suggests the basic idea is kind of like an old-fashioned TV. In a cathode-ray tube a stream of electrons scan across coated glass, excite phosphors that emit light and draw a picture on the screen. In Magic Leap's system, a stream of photons scan across the lightfield chip, bounce off nano-scale structures that reflect light and draw a picture directly on your retina.

"The idea is that we are simulating a signal that your brain has evolved to process," Abovitz says. "What Magic Leap is doing is trying to get out of the way." Instead of creating an image on a screen, the photon chip feeds your eyes information and lets your brain create the picture, he says.

The result is incredibly realistic virtual images. Since the photonic chip sends light directly into a viewer's eye, it can display images at a much higher resolution than a physical screen can; it isn't limited by the size of components like light-emitting diodes. The chip also eliminates many of the comfort issues associated with 3-D displays: With Magic Leap's system, your eyes focus on the point where an object appears to be, not on the screen where it's actually displayed. That will make 3-D simulations less taxing on your eyes—and more convincing to your brain. *—D.M.E.*

The soul of a new reality: Magic Leap's photonic lightfield chip.

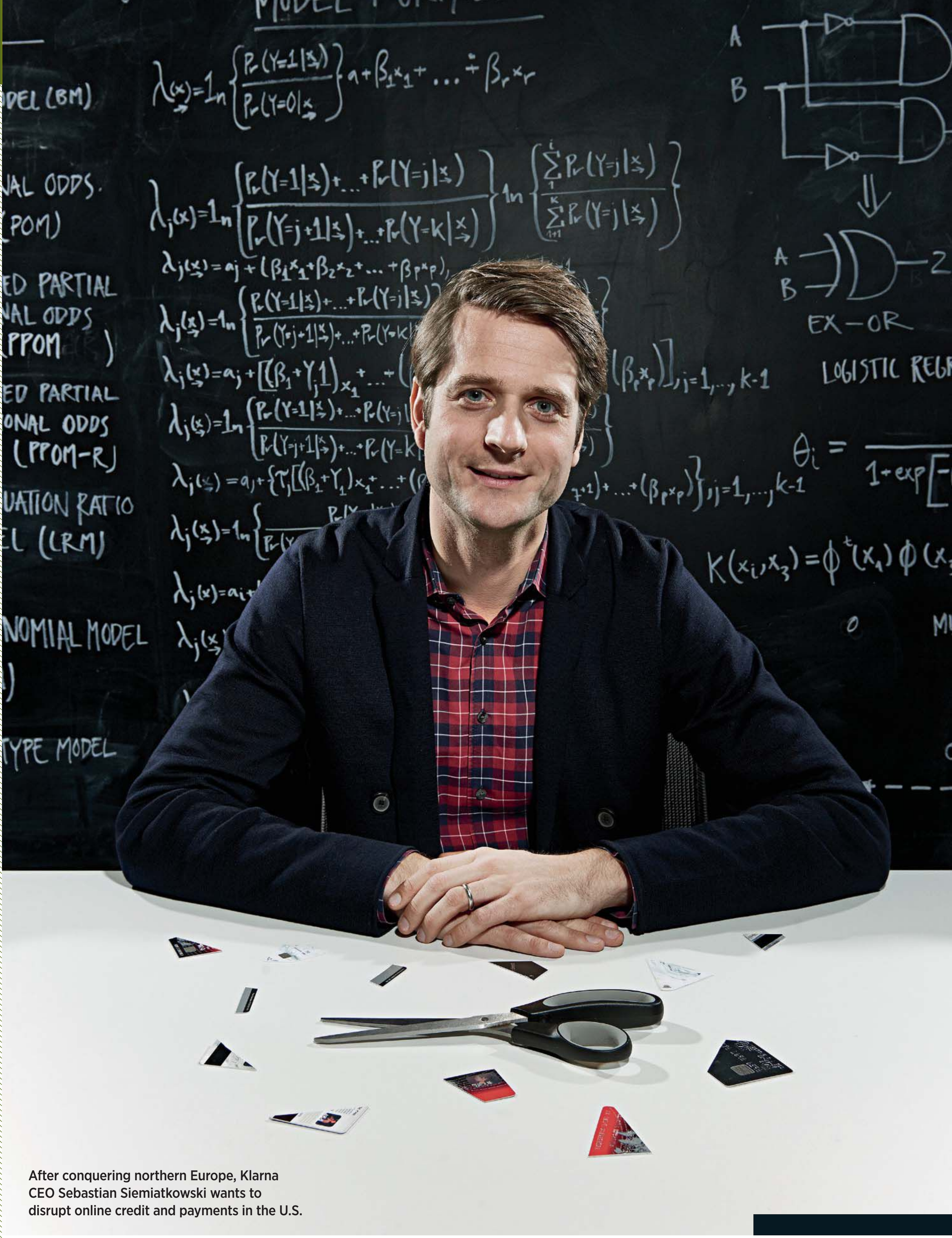
Eventually Magic Leap sees its greatest impact in business applications, especially medical imaging and retail (imagine "trying on" garments at home, seamlessly). But as with most technologies, entertainment offerings will lead the way. Magic Leap is developing much of its content in-house and has already hired several well-known videogame designers, cartoonists, artists and writers. Neal Stephenson, author of *Snow Crash,* a seminal 1992 novel about virtual reality, is Magic Leap's chief futurist, working out of the company's Seattle office on an undisclosed game.

Other content is coming from Abovitz's allies at Weta Workshop, which operates a 25-person lab with Magic Leap in New Zealand. Its first project, Dr. Grordbort's Invaders, is an action-oriented game set in a steampunk alternate universe: The player wields a ray gun and fights off evil robots that seem to break through the walls of his or her living room and fly around the house.

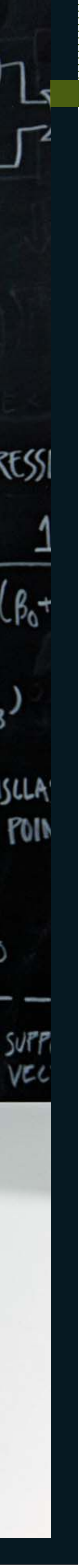
In June Magic Leap also announced a strategic partnership with ILMxLAB, the immersive entertainment division of Lucasfilm, and opened a joint research lab on Lucasfilm's San Francisco campus. "It's like being in the earliest days of cinema," says Vicki Dobbs Beck, the head of ILMxLAB.

The collaboration has already produced several mixed-reality experiences set in the *Star Wars* universe, including one revealed at the time of the announcement that features the droids C-3P0 and R2-D2, and another, as-yet-unrevealed action sequence set in *The Empire Strikes Back*'s iconic opening Battle of Hoth. And it has brought Rony Abovitz full circle. The man who became an entrepreneur because he secretly wanted to build X-wing fighters is now actually doing it. F

PETER YANG/AUGUST



After conquering northern Europe, Klarna CEO Sebastian Siemiatkowski wants to disrupt online credit and payments in the U.S.



LEVON BISS FOR FORBES

Buy Now, Pay Later

AFTER FLAT-PACKED FURNITURE AND STREAMED MUSIC, SWEDEN'S LATEST BIG EXPORT COULD BE AN ALTERNATIVE TO YOUR CREDIT CARD.

BY PARMY OLSON

A faint smile lights up Sebastian Siemiatkowski's face as he recounts how his humble online-payments startup bagged the Warren Buffett of venture capitalists as a board member. It was 2009, and his company, Stockholm-based Klarna, was flying under the radar in an industry dominated by PayPal and credit card giants. But Klarna had been profitable from early on, and VCs like the venerated Silicon Valley firm Sequoia Capital were starting to take note of its increasing domination of digital payments in Scandinavia. Sequoia sent a young partner, Chris Olsen, to Sweden to court Siemiatkowski and his two cofounders with an investment pitch and a bit of flattery, going so far as comparing the trio to the founders of Google and Apple.

"We were smiling like, 'Oh, that's nice,'" Siemiatkowski says. But as Olsen, his job done, was getting ready to leave, Siemiatkowski piped up with a high-stakes gambit. "Just tell me one more thing," he remembers saying. "If we're going to be the Google of banks, would you really just send you? Wouldn't the whole of Sequoia come here?" Siemiatkowski's colleagues looked at him aghast, but a chastised Olsen walked out of the room and immediately got on the phone with Mike Moritz, the legendary Sequoia partner whose bets on companies like Google, LinkedIn, Yahoo and Zappos earned him a spot in the top echelon of the VC world. When Moritz called back he proceeded to apologize for not coming to Stockholm. Perhaps to make up for the slight, he agreed then and there to join the startup's board. (Moritz remains on the board and flies to Sweden frequently for meetings). "Sometimes it's good to be a little cocky," Siemiatkowski says.

Today Klarna's ambitions go beyond cocky. It's gunning for the $93 billion U.S. market for credit card issuing, an industry that's dominated by giants such as American Express and Capital One, with PayPal and ambitious startups in close pursuit. Like PayPal, Klarna is an online-payments platform with an emphasis on "buy-now-pay-later" financing. "We're a bank," Siemiatkowski says from a stark conference room in Klarna's head office. Klarna lent millions of dollars to its customers last year and has about $1 billion on its balance sheet. His dream is that enough merchants embrace Klarna as a free-floating credit issuer so that millions of shoppers will no longer see credit cards as a first choice for financed payments.

Klarna's main competition: PayPal, whose financing business, PayPal Credit, formerly known as Bill Me Later, has been steadily growing since 2008, albeit with an embarrassing blip. Last year the Consumer Finance Protection Bureau forced PayPal to pay a $25 million fine for sneakily signing people up for credit. Yet today "it's one of our fastest-growing businesses," PayPal spokesman Josh Criscoe says, increasing at a 27% annual clip. PayPal Credit has $4.5 billion out in loans to customers around the world, and in September its subsidiary Braintree made financing available to merchants like Airbnb and HotelTonight.

Even more similar to Klarna is Affirm, a San Francisco startup launched by Max Levchin, a PayPal cofounder. Affirm is also racing to partner with merchants (it has 800 so far) to offer payment options, including financing, as an alternative to credit cards. The company has raised $425 million from a passel of Silicon Valley VC giants and counts Expedia and Shopify among its merchant partners.

Siemiatkowski, who is 35 and wears the hipster's livery of red plaid shirt and youthful, side-swept hair, is sanguine about these competitive threats. While

Affirm came on the scene only in 2013, Siemiatkowski has spent the past 11 years quietly turning Klarna into his home country's biggest digital-payments platform. Klarna processes 40% of all Swedish online payments. Klarna's big selling point is ease and simplicity. It lets you skip paying for an item up front—no more squinting at a credit card, typing in numbers and remembering a password. You simply enter your e-mail and delivery addresses. That information, plus your activity on an e-commerce site—time of day, the product you're buying and any Web cookies that can be picked up from your visit—is enough for Klarna to decide whether you're a creditworthy human. Siemiatkowski calls this a "one click" experience. Sound familiar? Amazon has a U.S. patent on "one click" shopping, which has contributed to its enormous growth and kept rivals from designing similar systems. Siemiatkowski says Klarna got around Amazon's patent by designing its own system. "A lot of merchants get so nervous about this patent infringement that they didn't build one-click," he says.

Once you check out, Klarna pays your bill and e-mails you an invoice. The startup's foray into financing—and beyond plain-vanilla payments processing—is what got investors like Sequoia so excited. Its latest investment round, in December 2015, brought its valuation to $2.3 billion. The company said it earned $20 million on sales of $325 million in fiscal 2015. Revenue is expected to rise 42% to $463 million in fiscal 2016, according to PitchBook. In Sweden about 10% of Klarna's transactions use financing, typically for products that cost $400 or more. For the remaining 90%, users either opt for the 30-day grace period, pay after delivery or use a separate feature called Klarna Direkt to pay immediately. (Siemiatkowski won't reveal how Americans use Klarna's financing feature.)

Perhaps Klarna's boldest innovation is its e-mail-and-address method

The Fintech 50

THE FUTURE OF YOUR MONEY

EDITED BY JANET NOVACK AND MATT SCHIFRIN

REPORTED BY SAMANTHA SHARF, LAURA SHIN, ANTOINE GARA, LAUREN GENSLER AND MAGGIE MCGRATH

The $1.7 trillion U.S. financial services industry is being fundamentally reordered as a tsunami of technology disrupts the way we save, invest, spend and borrow. Worldwide, $18.9 billion poured into fintech startups during the first nine months of 2016, up from $17.6 billion in the same period last year, according to Accenture. With so much action, it's no surprise that 22 companies are new to our second annual Fintech 50 list, which was culled from an initial list of 300 startups. Candidates had to have operations, but not necessarily headquarters, in the U.S. Our list excludes publicly traded companies and their subsidiaries, as well as established financial players that are privately held.

Activehours Palo Alto, CA

App essentially allows workers to get paid in "real time" for hours worked, with the fee for the paycheck advance set by the user.

BONA FIDES: Users from more than 10,000 companies, including Apple, Wal-Mart and Starbucks

FUNDING: $4.1 million from Felicis Ventures, Ribbit Capital

THREAT TO: Payday lenders, loan sharks, bank overdraft fees

Addepar Mountain View, CA

Cloud-based software allows wealth managers to track and analyze all of a client's holdings and automates bringing new ones on board.

BONA FIDES: More than $500 billion in assets managed on platform. Recently struck an integration deal with Salesforce's CRM platform

COFOUNDER & CHAIRMAN: Joe Lonsdale, 34, partner at 8VC and cofounder of Palantir Technologies

FUNDING: $75 million from billionaires Peter Thiel, Stanley Druckenmiller and others

THREAT TO: Envestnet and SS&C Advent

Affirm San Francisco

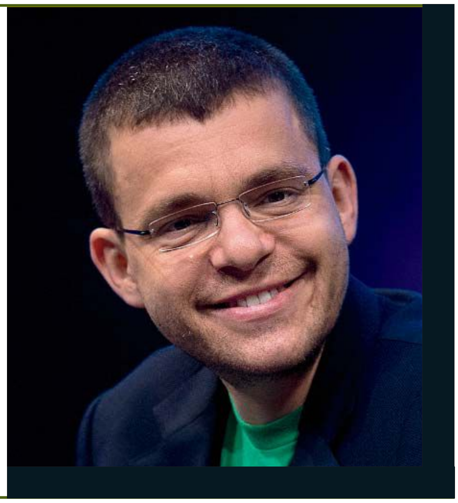
Makes instant point-of-sale loans for online purchases at annual interest rates of 10% to 30%. Some merchants subsidize 0% loans. To help Millennial customers build credit histories, it recently started reporting loan-repayment history to credit bureaus.

BONA FIDES: More than 800 "partner" merchants, including Expedia, Eventbrite

COFOUNDER & CEO: Max Levchin, 41, a cofounder of PayPal, former chairman of Yelp

FUNDING: $425 million, partly debt, from Founders Fund, Spark Capital, Jefferies, Andreessen Horowitz and others

THREAT TO: Credit cards, Klarna's U.S. entry



NOAH BERGER/BLOOMBERG

INVESTING | SMALL BUSINESS | TRADING | BLOCKCHAIN & BITCOIN | PAYMENTS | ANALYTICS | PERSONAL FINANCE | LENDING | CROWD-SOURCING

AlphaSense San Francisco

Contextualized algorithms give investors the ability to search across millions of documents with a few clicks, dramatically reducing research times.

BONA FIDES: 500,000 clients, including JPMorgan, Jana Partners and Oracle

FUNDING: $35 million from Tribeca Venture Partners, Triangle Peak Partners, Quantum Strategic Partners and others

THREAT TO: Bloomberg, Thomson Reuters, FactSet

Aztec Exchange Dublin

Finances receivables for developing-world suppliers based on strength of their U.S. corporate buyers.

BONA FIDES: Caterpillar, Kimberly-Clark and L'Oréal are working with Aztec

FUNDING: $15 million from Maya Capital, Eton Street and Hirsch Family Fund

THREAT TO: Traditional factoring companies

Betterment New York City

Robo-advisor manages ETF portfolios to fit investors' goals and risk tolerance, for a sliding fee, usually 0.25% of assets a year. Recently launched managed 401(k) product.

BONA FIDES: Largest independent robo-advisor, managing $6 billion for 200,000 customers

FUNDING: $205 million from Bessemer Venture Partners, Citi Ventures, Northwestern Mutual and others

THREAT TO: Traditional financial advisors, other robos

C2FO Fairway, KS

Uses algorithms and bids to match retailers sitting on extra cash with suppliers ready to accept discounts for payment within 48 hours.

BONA FIDES: Bids received on $68 billion in invoices

FUNDING: $99 million from Union Square Ventures and others

THREAT TO: Traditional factoring industry, business credit cards

Chain San Francisco

Blockchain infrastructure provider. Helped develop first-ever blockchain-based product with a financial services incumbent, Nasdaq Linq, for trading shares in private companies. Visa is using Chain's blockchain infrastructure for B2B Connect, an international payments system for business set to launch in 2017.

BONA FIDES: Works with Capital One, Citigroup, Fidelity, First Data, Fiserv and State Street

COFOUNDER & CEO: Adam Ludwin, 35, former venture capitalist with fintech-focused RRE Ventures

FUNDING: $41.3 million from Khosla Ventures, RRE, Visa, Nasdaq, Citi Ventures, Capital One Growth Ventures, Fiserv, Orange Digital Ventures and others

CircleUp San Francisco

Crowdfunding site connects entrepreneurs behind new consumer products with potential distributors and financial backers. Recently launched a new "Classifier" tool that uses 90,000 data points to help investors evaluate a company.

BONA FIDES: Has helped 200-plus companies raise $280 million in capital

FOUNDERS: Ryan Caldbeck, 37, and Rory Eakin, 37, both Stanford M.B.A.s

FUNDING: $53 million from Union Square Ventures, Google Ventures, Clayton Christensen's Rose Park Advisors and others

THREAT TO: Venture capital, *Shark Tank*

Coinbase San Francisco

A rare cryptocurrency firm that is fully compliant with government regulations and has top-notch security, Coinbase operates both a professional trading platform, Global Digital Asset Exchange, and a retail operation that maintains cryptocurrency "wallets" for 4.7 million customers from 33 countries, who use these accounts to spend (or simply hold) bitcoin and "ether," another digital currency.

BONA FIDES: Stores almost 10% of the world's bitcoin on its servers

COFOUNDERS: CEO Brian Armstrong, 33, was previously a software engineer at Airbnb helping to prevent fraud as money moved to 190 countries around the world; president Fred Ehrsam, 28, is a former forex trader at Goldman Sachs

FUNDING: $117 million from Andreessen Horowitz, Union Square Ventures, Draper Fisher Jurvetson, NYSE, Mitsubishi UFJ Financial Group, BBVA, USAA, Ribbit Capital, Sozo Ventures and others

THREAT TO: Darknet users of cryptocurrencies, would-be hackers

Credit Karma San Francisco

Offers consumers free credit scores and monitoring plus recommendations for credit cards and loans, providing streamlined applications for them. Site will soon add access to mortgage comparison and Goldman Sachs' new consumer-lending platform.

BONA FIDES: 60 million users, up from 45 million last year. Valued at $3.5 billion

FUNDING: $368.5 million from Google Capital, Tiger Global Management, Ribbit Capital and others

THREAT TO: Equifax, TransUnion, Experian, Fair Isaac

Dataminr New York City

Uses machine learning to sift through Twitter and other public data to identify, and send alerts on, market-moving events.

BONA FIDES: 10,000 paying users, including CNN, Marriott International and energy traders

FUNDING: $180 million from Fidelity, Venrock, Wellington Management, Credit Suisse, Goldman Sachs and others

THREAT TO: Google, Bloomberg, Thomson Reuters

Cadre New York City

Invitation-only platform that cuts out middlemen and lowers fees for high-net-worth and institutional buyers of shares of commercial and multifamily properties.

BONA FIDES: Investment committee chair is a former Vornado CEO and former head of Goldman Sachs' real estate practice

COFOUNDER & CEO: Ryan Williams, 28, ex-Goldman Sachs, Blackstone. (Trump son-in-law Jared Kushner is a cofounder.)

FUNDING: $68.3 million from Goldman Sachs, Founders Fund, Alibaba founder Jack Ma, billionaire Yuri Milner and others

THREAT TO: Real estate investment funds, commercial real estate brokers

Digital Reasoning Nashville

Originally sold machine-learning software to the U.S. Army so it could scan text communications in Afghanistan for intelligence and threats to troops. Now Digital Reasoning's Synthesys technology is used by top financial firms to screen their employees' e-mail, instant messages and phone conversations for signs of insider trading and other misconduct.

BONA FIDES: Used by Goldman Sachs, UBS and Steven A. Cohen's Point72 Asset Management

FOUNDER & CEO: Tim Estes, 37, started firm while a 20-year-old University of Virginia philosophy major. "We are in the unstructured data area in compliance because people talk before they act," he says

FUNDING: $70 million from Goldman Sachs, Credit Suisse, Nasdaq and others

THREAT TO: Behavox, Palantir, HP Autonomy

THE GREAT REWRITE

Fresh-Squeezed Insurance

BY LEONARD BRODY

Lemonade is a startup that offers crowdfunded, "peer-to-peer" property insurance via a smartphone app. When people hear about it, they often have two reactions — which can come like a one-two punch, says CEO and cofounder Daniel Schreiber.

The first response is the sort of "wow" that can arise when a new idea jolts the entrenched way of doing business — the kind of wow that greeted Amazon, eBay, Kickstarter, Uber. Peer-to-peer insurance — what a novel concept!

Then comes the second thought: Wait a minute. Insurance always has been crowdfunded. Benjamin Franklin formed America's oldest mutual insurance company in 1752. Everyone would pay money into a pool, and if your house caught on fire, you were covered. Both reactions are legitimate, Schreiber says.

"We talk about Lemonade being the oldest new idea in insurance. In the time of Benjamin Franklin, insurance was spiritually along the lines of what we're doing. Now there's a lot of technology, a lot of behavioral sciences, that were not available to them."

DANIEL SCHREIBER
Cofounder and CEO of Lemonade

"We talk about Lemonade being the oldest new idea in insurance," he said. "Insurance in the time of Benjamin Franklin was spiritually along the lines of what we're doing. Now there's a lot of technology, a lot of behavioral sciences, that were not available to them."

In our series called "The Great Rewrite" we've been examining elemental shifts in business and society. The rules of how we thrive and interact are being rewritten in ways that transcend traditional business innovation.

One fundamental rewrite in many markets really is a rediscovery: the revival of community as an economic force. The sharing economy that brought eBay, Kickstarter, Uber and Airbnb is enabled by technology but driven by the essential human impulse to connect. In Franklin's day, Schreiber points out, it may not have been unusual for a homeowner to take in a stranger as a guest. Hotels made that tradition feel antiquated and risky. Technology has allowed it to return.

"Airbnb is using technology to re-facilitate a social mode of interaction that once prevailed and had been lost," Schreiber said.

Lemonade is trying to bring the communal economy to financial services, as other startups are hoping to do in areas such as peer-to-peer lending and investing. The company, which received an eye-opening $13 million round of seed funding in 2015, has begun selling home owner's and renter's insurance policies in New York, where it received state regulatory approval this year.

Schreiber cofounded Lemonade with Shai Wininger, a fellow tech entrepreneur who had cofounded Fiverr, an online marketplace for services.

"Insurance was not the low-hanging fruit," Schreiber said, but they were intrigued by the sheer size of the market and how ripe it seemed for a technology play that could cater to phone-dependent millennials. (The company name is a play on "when life gives you lemons...")

There are no brokers or agents, just a phone app. Signing up is quick and paperwork-free. Rates are comparable to those from established insurers, though entry-level premiums for renters can be lower (starting at $5 a month, as compared to a national average of about $20-$25 per month), because there's near zero incremental overhead to the company for each new customer.

To make a claim, a policyholder speaks into the phone's camera to describe a property loss, fills in some information, and uploads the video. The company says it tries to settle and pay most claims in minutes rather than weeks. In effect it's like conventional property insurance. But the proposition to customers is quite different.

Insurance never has been an especially appealing product to consumers. A customer pays month after month, getting nothing in return, when things are going well. If a payout is needed, it's associated with hardship and loss. Lemonade further makes the case that conventional property insurers have an adversarial relationship with policyholders: They have a profit motive to minimize payouts.

By contrast, Lemonade's revenue is a flat 20 percent fee it takes on all premium payments. Policyholders designate that

Daniel Schreiber cofounded Lemonade with Shai Wininger to offer "peer-to-peer" property insurance via a smartphone app. They started with coverage in New York state and have plans to expand to other states soon.

their payments go into pools of peers, built around charitable causes that they choose. Any money that isn't paid out to the peer group in claims goes to the charity, not to Lemonade.

"We tell you we're never going to make money by denying your claim," Schreiber said. "We're not pitted against you."

The company's founders suggest Lemonade's community values and transparency about where all the money goes could reduce the sort of fraud that can be unique to the insurance industry.

"Many industries suffer from fraud. Typically it's the hacker in Ukraine that's going to steal credit cards," Schreiber said. "In insurance, the risk is you and me. Upstanding citizens who suddenly think it's OK to embellish claims." If you don't think of your insurer as a faceless corporation, "you will think twice before embellishing it, because you know that any leftover money is going to your local charity or your kid's computer lab."

Fraud may not be the insurance industry's biggest worry these days. Many insurers are being punished by their long-standing business model — based on investing their assets — due to the long run of very low interest rates. Really, what Lemonade is trying to rewrite is perception.

By hitching itself to the sharing economy, Lemonade is able to tap into the kind of goodwill among tech-savvy consumers that has propelled multimillion-dollar product campaigns on Kickstarter, the funding of causes on GoFundMe, and microloans to the needy via Kiva.com. Studies show that many consumers consider insurance a necessary evil rather than social good. That's surely the opposite of how Franklin would have viewed it, Schreiber says. Peer-to-peer power might actually make insurance feel cool.

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

of establishing the creditworthiness of its customers. No other online-payments company takes such risk on both the consumer and the merchant, the company claims. Siemiatkowski is blithe about fraud and risk, calling it a "dynamic problem." Static solutions like passwords fail because they assume the same level of risk for everyone. "But 99% of customers aren't fraudulent," Siemiatkowski says.

Remarkably, Klarna's bold bet on people's honesty and solvency has worked. Its default rates are under 1%. Credit card default rates in the U.S. have averaged 2.2% for 2016. "We have among the lowest industry default rates in all the countries that we work with," Siemiatkowski says. It has 45 million users, mostly in Scandinavia, with 2 million in the U.S. and 1.5 million in the U.K. In August 2016 Topshop, the trendy British clothing chain, began advertising Klarna on all its product pages and adding a Klarna financing button to all shopping carts that total £40 or more. Wish, a hugely popular e-commerce site that lets you buy cheap products direct from China, also has a "pay after delivery button" from Klarna, which has boosted the site's sales. "Taking the increased conversion and higher order value into consideration, Klarna's checkout increased our sales by 40%," Wish cofounder Danny Zhang is quoted as saying on Klarna's website.

Siemiatkowski, along with cofounders Niklas Adalberth and Victor Jacobsson, started Klarna in 2005 during his third year of a four-year master's program at the Stockholm School of Economics. When they entered Klarna into the college's 2005 entrepreneurship contest, a prominent board of businesspeople shot it down. Sending invoices over the Internet was a terrible idea, they said. "That made them want to do it, to prove them wrong," says Erik Törnberg, who led Investment AB Öresund's first investment in the firm, a 26% stake for around $4.6 million. (Törnberg exited in 2013 for a return of $144 million.)

DV01 New York City

Allows investors to track performance of peer-to-peer loans from nine originators, down to the loan level, in a matter of clicks. *See story, p. 98.*

BONA FIDES: Recently named loan-data agent on $451 million of Lending Club securitizations

FUNDING: $7.5 million from Leucadia National, Pivot Investment Partners and Quantum Strategic Partners

THREAT TO: Bloomberg, PeerIQ, Intex Solutions, Orchard Platform

Earnest San Francisco

Has made more than $1 billion in personal loans and student loans, thanks to novel underwriting (it crunches up to 100,000 data points) and a feature allowing users to set repayment schedules to match their budgets.

FUNDING: $106.5 million from Maveron, Battery Ventures, Andreessen Horowitz, Collaborative Fund and others

THREAT TO: Fair Isaac, banks, SoFi

Ellevest New York City

Second-generation robo-advisor site designed for, and largely by, women. For a 0.5% of assets annual fee (twice what Betterment typically charges), clients get personalized portfolios of ETFs, with automatic contributions, rebalancing and asset allocation based on goals. Elegantly simple site design excludes traditional risk-tolerance questionnaires, which Ellevest argues don't provide useful results.

FOUNDER & CEO: Sallie Krawcheck, 52, held top jobs at Merrill Lynch, Smith Barney and Citi Wealth Management

FUNDING: $19 million from Morningstar, Khosla Ventures and angels, including tennis great Venus Williams and former Pimco chief Mohamed El-Erian

THREAT TO: Financial advisors

EarnUp San Francisco

Service links to customers' bank accounts and tracks income and expenses, making micropayments toward debt whenever the customer can afford it. EarnUp figures it will save users an average of $22,000 in interest over the life of a mortgage and $4,000 on student loans. Company changed its name from APAsave after research conducted with famed behavioral economist Dan Ariely found that people prefer "earning" to "saving." The product is free to borrowers; loan servicers pay EarnUp, since it cuts their cost of dealing with late and missed payments.

BONA FIDES: Just launched this year, but so far 94% of customers have been able to accelerate debt-principal repayment.

COFOUNDERS: Matthew Cooper, 34 and Nadim Homsany, 39, who met working in private equity

FUNDING: $3 million from Blumberg Capital and other seed investors

THREAT TO: Traditional bank bill-pay, credit counselors

Fundbox San Francisco

Helps small businesses deal with cash-flow problems created by the typical 90-day terms by linking to their Quickbooks or Freshbooks accounts and providing advances of up to $100,000 against invoices of their choosing.

BONA FIDES: Has advanced money to 50,000 businesses

FUNDING: $112.5 million from Khosla Ventures, General Catalyst Partners, Jeff Bezos, Ashton Kutcher's Sound Ventures and others

THREAT TO: Traditional factoring companies, small business lenders and credit cards

Fundera New York City

Helps small-business owners compare and apply for everything from term loans to business credit cards.

BONA FIDES: Has facilitated $250 million in credit to entrepreneurs

COFOUNDER & CEO: Jared Hecht, 29, whose first startup, GroupMe, sold to Skype for $80 million

FUNDING: $15 million from Khosla Ventures, First Round Capital, QED Investors and others

THREAT TO: Loan brokers and predatory lenders

Funding Circle
London

International marketplace small-business lender automates much of the application process, but unlike some competitors, still relies on humans to make final underwriting decision. About 25% of its new loans are made to U.S. borrowers, at rates of 5.5% to 28%.

BONA FIDES: Has made $2.5 billion in loans over six years; first marketplace lender to launch its own publicly traded trust holding its loans

FUNDING: $273 million from Accel Partners, BlackRock, Union Square Ventures and others

THREAT TO: Banks, other marketplace lenders

CHRISTOPHER GOODNEY/BLOOMBERG

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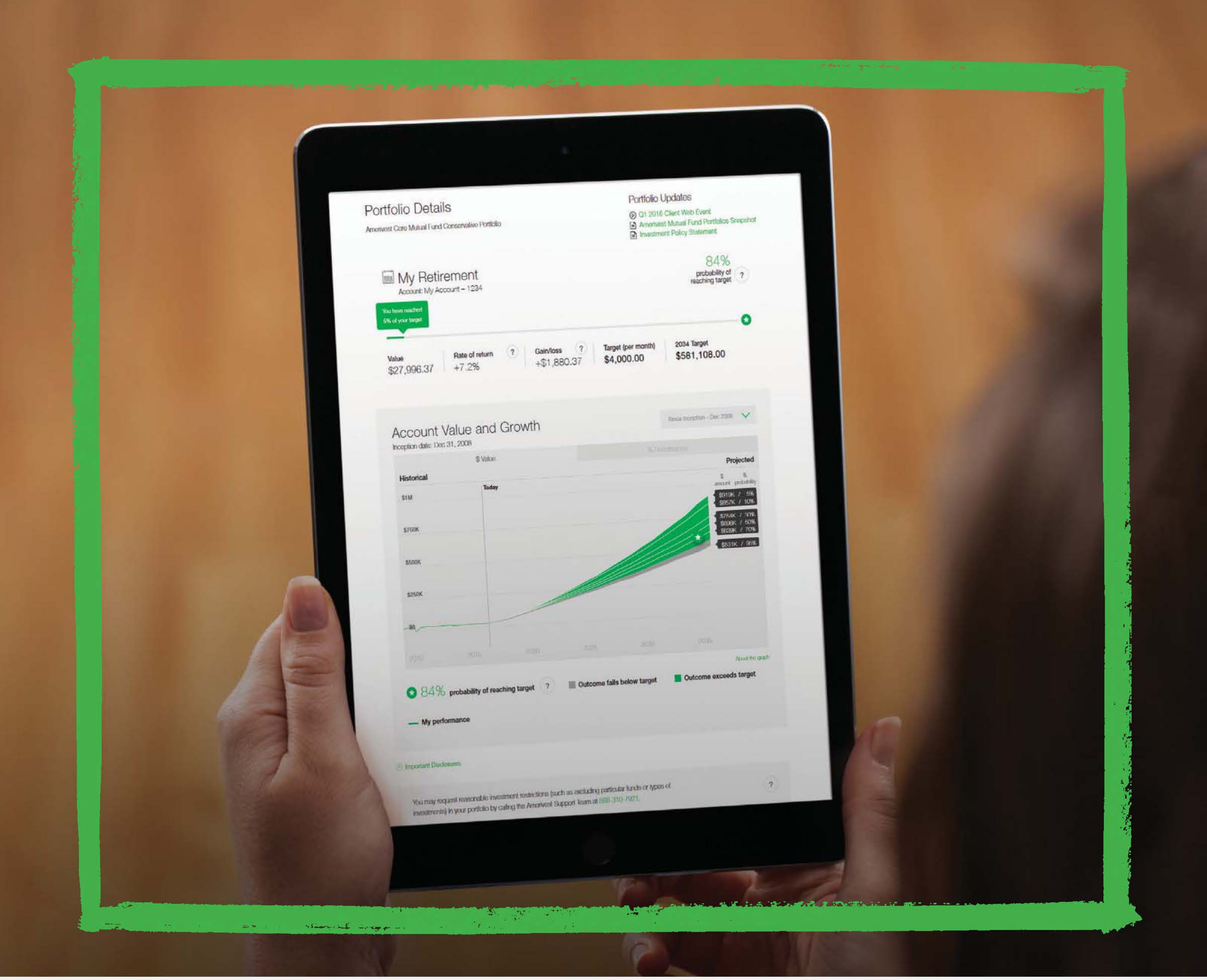

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Klarna started signing up merchants such as WebHallen and Siba, Swedish retailers that sell consumer electronics like digital cameras and headphones. Suddenly invoicing for online payments made sense. “People were afraid to hand out their credit details on the Internet,” Törnberg remembers.

Klarna’s obsession with trusting consumers was partly a Scandinavian thing. Trust is essential to the Swedes and other Nordic peoples. Sweden has some of the world’s highest levels of social trust, according to a 2008 global survey by Pew. Siemiatkowski would rather trust his customers than see them walk away at a checkout: 69% of online shoppers in the U.S. abandon their shopping carts, often because they’re asked to create an account or the process takes too long. That’s around $260 billion in lost orders.

Klarna’s geography is relevant for another reason: Scandinavians are bored of cash, and Sweden in particular is on track to become one of the first countries that are truly cashless. Homeless magazine peddlers carry card readers, and churches take their tithes through SMS. Half the branches of Sweden’s biggest banks don’t even have cash on hand or take cash deposits. Americans aren’t ditching cash as quickly, but to Klarna’s benefit right now, they’re bigger on digital payments. The U.S. ranked third in Citigroup’s Digital Money index, which assesses 90 countries in their progress in adopting digital payments. Sweden fell three places in the last year to No. 7.

Klarna has plenty of competition in PayPal and Affirm, not to mention Apple and Google, which are expanding their own payment platforms. But investor Hans Otterling of Northzone says Klarna’s obsessive focus on consumers should help it to hold its own against deeper-pocketed rivals. “It’s also a huge market, and there won’t be one winner-takes-all,” he says. “There will be multiple players, and Klarna will be one of them.” With prospects like these, Siemiatkowski’s cockiness can easily be excused. F

Metromile San Francisco

Offers novel pricing that combines a low, flat monthly fee with a charge per mile driven, tracked by a device plugged into a car’s diagnostic system. Metromile says this saves city dwellers, retirees and others who drive little an average of $500 a year. After acquiring a traditional insurer, the company is now underwriting and processing claims in house and plotting expansion beyond its current seven states.

BONA FIDES: Partnership with Uber offers per mile coverage to drivers

FOUNDER AND CHAIRMAN: David Friedberg, 36, who started The Climate Corp., a weather-insurance company for farmers sold to Monsanto for $930 million in 2013

FUNDING: $205.5 million from Friedberg, Mark Cuban, New Enterprise Associates, Index Ventures and others

THREAT TO: Progressive, Geico, traditional auto insurers

Fundrise Washington, D.C.

While most real estate crowdfunding sites require clients to be wealthier “accredited” investors, Fundrise exploits a 2015 SEC rule to form “eReits” available to anyone ready to plunk down $1,000. So far, 10,000-plus investors have put $99 million into five eReits.

BONA FIDES: 117,000 registered users of site, almost double the number a year ago

COFOUNDER & CEO: Ben Miller, 40, the son of top Washington, D.C., developer Herbert S. Miller. He also runs Popularise, dedicated to community input on development

FUNDING: $35 million from Chinese social media giant Renren, Guggenheim Partners and others

THREAT TO: Other real estate crowdfunding sites, traditional REITs

Gusto San Francisco

Cloud-based software helps smaller businesses, most with under 100 employees, administer payroll and payroll taxes, health insurance and 401(k) plans.

BONA FIDES: Has grown to more than 40,000 clients and a $1.1 billion valuation

FUNDING: $161.1 million from Google Capital, General Catalyst, Kleiner Perkins Caufield & Byers, Ribbit Capital and others

THREAT TO: Traditional benefits administrators and Zenefits, a troubled unicorn

IEX New York City

Stock-trading venue uses 38 miles of cable, coiled up in a box, to create “speed bump” that levels playing field between high-frequency traders and other investors.

BONA FIDES: Granted exchange status in June; approaching 2% share of U.S. equity trading volume

COFOUNDER & CEO: Brad Katsuyama, 38, hero of Michael Lewis book *Flash Boys*

FUNDING: $100 million from Steve Wynn, Spark Capital, Bain Capital Ventures, Franklin Resources, Greenlight Capital and others

THREAT TO: New York Stock Exchange, Nasdaq, BATS Global Markets, Citadel Securities, dark pools

Kabbage Atlanta

Automated lending platform offers lines of credit for small businesses—at a stiff price. Daily underwriting means line limits and rates can change monthly. Platform now being licensed to banks, too.

BONA FIDES: Has lent to 90,000 borrowers

FUNDING: $260 million from Reverence Capital Partners, SoftBank Capital, ING, Santander and others

THREAT TO: Business credit card providers

Kensho Cambridge, MA

Uses huge historic database and machine learning to analyze how a specific event—from a natural disaster to an election result—might affect markets, presenting results in an easy-to-digest knowledge graph.

BONA FIDES: Used by Goldman Sachs, JPMorgan Chase and Bank of America Merrill Lynch. Predicted medium-term selloff in British pound after Brexit vote

COFOUNDER & CEO: Daniel Nadler, 33, wrote thesis for Harvard economics Ph.D. on sovereign credit risk

FUNDING: $90 million from Goldman Sachs, Google Ventures, Fidelity, CNBC, Soros Fund Management, the CIA’s venture arm and others

THREAT TO: Human analysts, investors who benefit from information arbitrage

Klarna Stockholm

Allows shoppers (mostly in Europe) to check out at 65,000 merchants with just an e-mail and address and pay after delivery—pay within a grace period and it’s interest-free. *See story, p. 88.*

BONA FIDES: 45 million people worldwide have shopped with Klarna

FOUNDER & CEO: Sebastian Siemiatkowski, 35

FUNDING: $291.3 million from Sequoia Capital, General Atlantic, Wellington Management and others

THREAT TO: Credit cards, Affirm

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Peering Into Peer-to-Peer Loans

MORTGAGE TRADER PERRY RAHBAR HAD A FRONT-ROW SEAT DURING BEAR STEARNS' COLLAPSE. NOW HE WANTS TO HELP INVESTORS AVOID THE SAME DISASTER WITH MARKETPLACE LOANS.

BY ANTOINE GARA

On Friday, March 14, 2008, the fateful day Bear Stearns announced it would need a lifeline from JPMorgan Chase and the Federal Reserve Bank of New York, its stock plummeted, its bonds were downgraded to near-junk status, and an exodus of traders from the storied firm headed down the street to Connolly's for goodbye drinks. One budding mortgage-bond trader named Perry Rahbar, then 25, missed out on the farewell party. Rahbar was hunkered down at his desk and would remain there until 4 a.m., combing through dozens of IT systems and thousands of rows in spreadsheets in an effort to quantify the firm's mortgage exposure for a potential buyer. The figures were different in the U.S., Europe and Asia, and uncertainty abounded, underlining the hodgepodge of habits and dated technology that were endemic to the booming mortgage-backed-securities market.

"Everyone was fine with Bear Stearns when it was a bull market," Rahbar says, "but when things got hot and no one could understand how much exposure they had, it became a problem."

Rahbar's all-nighter gave him

Perry Rahbar's DV01 software untangles gaggles of consumer loans with just a few clicks.

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OPERATION MENTORSHIP

Helping America's Heroes Realize Their Professional Dreams

By Michael Roney

Brandi (left) and Kris at the Harvard Art Museums

"Kris has been focused on my creative goals, and that's not something that we come across very often in transition assistance, so it is very valuable."

— Captain Brandi Hamilton, U.S. Air Force

Captain Brandi Hamilton, a 20-year veteran of the U.S. Air Force scheduled to retire next spring, has an uncommon civilian career dream that is well on its way to becoming reality, thanks to a special mentor supplied by American Corporate Partners (ACP). This national nonprofit connects transitioning military personnel with business leaders for free, yearlong mentorships.

"Most people retiring from the service tend to go into some type of military contracting work, but I'm interested in entering a creative field: fine art photography," Hamilton explains. Support for her kind of career transition isn't as common as it is for vets pursuing more conventional business paths. But after she applied for a mentorship through ACP's website, Hamilton was put in touch with mentor Kris Kouyaté, an experienced video production pro who for the past 11 years has worked in the Media Services department at Harvard University.

How did Kouyaté get involved? "I had already mentored for some time with Year Up, a program designed to empower and prepare low-income young adults for professional careers," she explains. "Although this is a bit different, when I saw an article about ACP mentorship on an internal Harvard employee website, it really resonated with me."

Reflecting the Dream

Mentor and protégé settled into their productive relationship easily. "Kris and I started talking on the phone and then Skyping," Hamilton recalls. "I took a trip to Boston, where we had lunch and really connected as I explained to her the nuances of fine art photography. Since then, she has provided great guidance, connections and ideas. Kris reminds me why I'm pursuing this path, and because of her background as a mentor and creative professional, she brings a lot of ideas to the table—new things for me to think about and incorporate into my work."

Says Kouyaté, "I'm reflecting her dream back to her, while holding her accountable for what it is that she wants to do and supplying the resources that can help."

"Kris has been focused on my creative goals, and that's not something that we come across very often in transition assistance, so it is very valuable," Hamilton adds. "She is my cheerleader. Sometimes when I'm in doubt, she's there to tell me, 'Definitely you can do it!'"

ACP

www.acp-usa.org

Veterans Enhance Allstate's Success Strategy

John O'Donnell, senior vice president at Allstate Insurance Company and a former Marine, is focused on the market-leading edge veterans can give his company, both within corporate leadership and as entrepreneurial Allstate agency owners. "In the service, you have to think independently and be adaptable and flexible, with a strong commitment to a mission and vision," he explains. "It adds up to a level of talent and leadership skills we can use at Allstate."

So what is the formula for tapping this unique resource? "You have to change how you think as an organization," O'Donnell suggests. "It may take some translation to better understand how and where veterans fit, but once you do that, you can get some impressive people."

This strategy is working for Allstate—and O'Donnell. "When I left the military, I was concerned I wasn't going to be able to find something with that same sense of mission," he says. "I found that at Allstate, we can truly make a difference in people's lives. I think that's important to veterans, and it's part of our core values."

Allstate. You're in good hands. Auto Home Life Retirement

John O'Donnell
Senior Vice President,
Allstate Insurance Company

"The military prepared me for a career where I'm the boss."
~ OMAR ZAKI
Allstate Agency Owner since 2007
Omar Zaki had a successful career in the military, then worked his way up in the corporate world. But for Omar, something was still missing. A lifelong dream of owning his own business. He decided to chase after that dream and became an Allstate Agency Owner.
Today he has six employees and two locations. Omar attributes his success to the self-confidence and work ethic he developed while in the military.
Omar went after what he wanted and became his own boss. If you're interested in making a career change and becoming an Allstate Agency Owner call an executive recruiter today at 877-875-3466.
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an insight that would serve him well nearly a decade later. His two-year-old New York City firm, DV01, offers analytics and reporting software for the burgeoning peer-to-peer market, giving investors the ability to track the performance of thousands of loans in a few clicks. Named after a formula traders use to calculate their exposure to interest rate changes, DV01 also automates the laborious financial gymnastics that are needed to model loan performance, and it is on its way to becoming a fixture in the industry's biggest deals as firms like Lending Club, Prosper and SoFi issue securities to finance their loan pools.

These peer-to-peer platforms, now called marketplace lenders, are part of a sea change in finance made possible by big data, machine learning and cloud computing. The new lenders use sophisticated algorithms to lend money at lower rates than banks. Two platforms, Lending Club and OnDeck Capital, are now publicly traded. Prosper, SoFi, CommonBond and Avant are becoming go-to brand names for Millennial borrowers. Collectively, the industry has raised more than $12 billion in venture funding since 2011, according to PitchBook, and lent out roughly $50 billion.

A Long Island native with Iranian roots and an economics degree from Emory University, Rahbar, 35, has spent the past two years at his startup in New York City's Flatiron District rebuilding what he says is the industry's antiquated plumbing.

Peer-to-peer lenders originally connected borrowers directly with individual investors, but rising loan demand forced them to turn to Wall Street-style securitization—the packaging of thousands of individual loans into tradable securities. Three years ago Lending Club was the first to market with such a securitization, and Prosper, SoFi and OnDeck Capital quickly followed. As of the end of September roughly $11 billion of these loans, according to PeerIQ, has been bundled into securities since 2015.

Motif Investing San Mateo, CA

Allows individual investors to design, share and buy baskets (Motifs) of up to 30 stocks for $9.95 a transaction. In nod to robo-craze, recently launched auto-investment service Motif Blue.

BONA FIDES: 300,000 retail customers, up 50% from a year ago

FUNDING: $126 million from Goldman Sachs, JPMorgan, China's Renren and others

THREAT TO: Discount brokers, mutual funds, robo-advisors

Numer.ai San Francisco

Next-generation hedge fund runs online competition in which anonymous data scientists (using encrypted data sets) create machine-learning models to predict stock market moves. Hedge fund uses top models, paying winners in bitcoin.

BONA FIDES: 3,225 new models submitted a day

FUNDING: $1.5 million from Howard Morgan of Renaissance Technologies, and Bill Trenchard and Josh Kopelman of First Round Capital

THREAT TO: Traditional hedge funds

Orchard Platform
New York City

Aims to create secondary marketplace for peer-to-peer loans; already validates performance data from the sector's biggest originators.

BONA FIDES: Orchard Data Partner Program tracks $35 billion in marketplace loans

COFOUNDER & CEO: Matt Burton, 32, former executive at Admeld and LiveRail

FUNDING: $44.7 million from Thrive Capital, Spark Capital, Canaan Partners and others

THREAT TO: MonJa, PeerIQ, DV01, banks

Plaid San Francisco

Its tools connect other firms to users' bank-account information, making it possible to transfer funds, track spending and detect fraud.

BONA FIDES: Used by Betterment, TransferWise and Robinhood. Has partnership with Stripe

FUNDING: $60 million from Goldman Sachs, NEA, Google Ventures, Spark Capital and others

THREAT TO: Yodlee, Quovo and other account-information aggregators

Point Palo Alto, CA

Liquidity provider for homeowners. Invests in their equity, sharing in profit (or loss) when house is sold. Sells the equity to institutional investors looking for real estate exposure.

COFOUNDERS: Eddie Lim, 36, and Eoin Matthews, 39

FUNDING: $15.4 million from Andreessen Horowitz, Bloomberg Beta, Airbnb CFO Laurence Tosi and others

THREAT TO: Home-equity lenders, reverse mortgages

Qapital New York City

App helps Millennial users curb spending and squirrel away an average of $160 a month with personal triggers, e.g., transfers $5 to savings after every "guilty pleasure" charge for GrubHub or Uber.

BONA FIDES: Duke prof Dan Ariely is an investor

COFOUNDER & CEO: George Friedman, 36, a Swedish national with an M.B.A. in information technology from University at Albany, SUNY

FUNDING: $5.3 million from Northzone, Industrifonden, Tribeca Angels, Entree Capital and others

THREAT TO: Other savings apps, bad saving habits

Personal Capital
San Carlos, CA

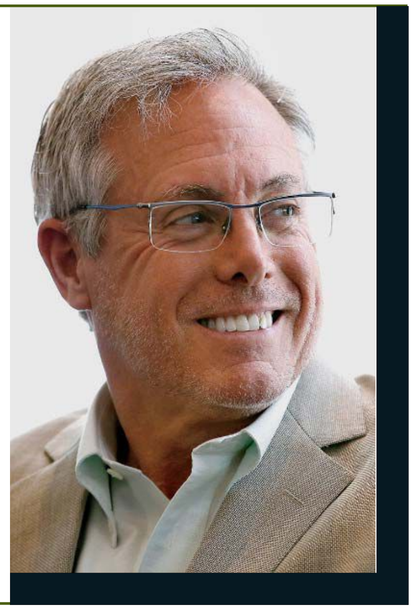
A "robo-hybrid" advisor offering 10,000 paying customers a combination of computerized portfolio management and human financial advice (available by phone, e-mail and video) for 0.89% of assets a year on the first $1 million, with a minimum investment of $25,000. For larger taxable accounts it creates portfolios of individual stocks that mimic an index fund, thus maximizing tax-loss harvesting opportunities. Personal Capital has a pipeline of prospects: 1.2 million people use its free tools to track investment returns on $270 billion in wealth.

BONA FIDES: More than $3 billion in assets under management, up nearly 60% since the end of 2015

FOUNDER & CEO: Bill Harris, 60, who has served as CEO of both Intuit and PayPal

FUNDING: $175.3 million from IGM Financial, BlackRock, BBVA, USAA and others

THREAT TO: Financial advisors, robo-advisors



TONY AVELAR/BLOOMBERG

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AVENGER
URRICANE

But during the mortgage boom, record keeping, transparency and financial discipline took a backseat to market growth, and the new marketplace-financing rush has already shown similar flaws. In late 2015 Citigroup rushed the sale of a pool of Prosper's loans, which tanked in the market, and in May Lending Club said it improperly sold $22 million in securities to an investor. A crisis of confidence ensued, the stocks of marketplace lenders plummeted, and investors were left to sift through scattered Excel files and PDF pages of trustee reports aggregating the performance of thousands of loans in order to track the securities' risks.

Enter DV01, which was tapped to participate in Lending Club's securitizations. In a sparsely decorated conference room, Rahbar hooks a projector to his laptop and with one click loads 1,119,181 Lending Club loans, originally worth $16.6 billion. The loans are neatly sorted in DV01's interface by each borrower's grade on an A-to-G scale, FICO score and debt-to-income ratio as well as the remaining life and balance of the loan and other variables. With a few more clicks DV01 shows that 17,358 Lending Club loans, originally worth $276 million, are delinquent.

The vivid, colorful graphics make it apparent that loans made during the second quarter of 2015 have been some of Lending Club's worst-performing. At 14 months into the pool, 3.74% of loans were in default. Loans made in early 2014, by contrast, did far better, with a 2.81% default rate. On another screen DV01 data show that, as expected, grade-D Lending Club borrowers (with an average debt-to-income ratio of 21.42%) performed worse than higher-rated grade-C borrowers (with a ratio of 19.94%).

"DV01 helps people get a transparent view of what's going on, what's causing problems and what's performing well. Historically, you couldn't do this in an easy fashion," Rahbar says, noting how inves-

Quantopian Boston

Crowdsourced quantitative-investing platform. DIY quants create investing algorithms using site's data and research. Best performers are licensed for a 10% cut of profits.

BONA FIDES: Hedge fund billionaire Steven A. Cohen will invest up to $250 million in top strategies

FUNDING: $25.8 million from Bessemer Venture Partners, Spark Capital, Khosla Ventures, Cohen's Point72 Asset Management and others

THREAT TO: Hedge funds, index funds and mutual funds

Ripple San Francisco

Aims to establish a global financial-settlements network, with cross-border payments available instantly, built on a digital-currency platform.

BONA FIDES: Top global bank partners, including UBS, Mizuho Financial Group, Santander and UniCredit

COFOUNDER & CEO: Chris Larsen, 55, cofounder of Prosper and E-loan

FUNDING: $93.6 million from Andreessen Horowitz, Lightspeed Venture Partners, Vast Ventures, Google Ventures and others

THREAT TO: Payment-settlement system SWIFT and the correspondent banking system

Riskalyze Auburn, CA

Software helps financial advisors analyze clients' risk exposure and construct suitable portfolios; also offers a new robo-platform for advisors who prefer to leave asset allocation to the computers.

BONA FIDES: $121 billion in client assets from LPL Financial, AssetMark and others tracked on platform

FUNDING: $25 million from FTV Capital and angels

Robinhood Palo Alto, CA

Mobile app offering free basic stock trading, or $10 a month "Gold" service with margin loans, extended trading hours and quicker access to stock-sale proceeds.

BONA FIDES: More than one million customers, $12 billion in trades

FUNDING: $66 million from New Enterprise Associates, Index Ventures, actors Jared Leto and Ashton Kutcher, musicians Snoop Dogg and John Legend and others

THREAT TO: Discount brokers

Signifyd San Jose, CA

For under 1% up to 4% of an online merchant's sales, Signifyd and its algorithms take over fraud protection, assuming liability for any bogus charges that slip through.

BONAFIDES: In use by 5,000-plus sites, including Jet.com, Wayfair and Peet's Coffee

COFOUNDER & CEO: Rajesh Ramanand, 37, former risk exec at PayPal and FedEx

FUNDING: $50 million from Andreessen Horowitz, American Express Ventures, Menlo Ventures and others

SoFi San Francisco

SoFi (short for Social Finance) started as a student-loan refinancer. Now also offering jumbo mortgages, robo-investing and a service that enables employers to help pay workers' student debt.

BONA FIDES: Has originated $12.5 billion in loans and has a valuation of $4 billion

FUNDING: $1.4 billion from SoftBank, Third Point Ventures, Renren and others

THREAT TO: Banks

Stripe San Francisco

Its plug-ins make taking online payments easier.

BONA FIDES: $5 billion valuation. Processes an estimated $20 billion in transactions annually, generating $450 million in revenue. Partnerships with Visa, Apple, Alipay

FOUNDERS: Irish brothers Patrick, 28, and John, 26, Collison

FUNDING: $300 million from Sequoia Capital, Andreessen Horowitz, PayPal cofounders Peter Thiel, Max Levchin and Elon Musk and others

THREAT TO: PayPal, traditional credit card processors

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tors can make comparisons across originators and borrowers in seconds. Originators of securities pools also feed performance to DV01, giving investors the ability to track loan-level performance daily. "DV01's product provides such tools to allow us to value risk efficiently in the marketplace-lending sector," says Jordan Milman, the trading boss at the $2.5 billion hedge fund LibreMax Capital.

Rahbar's startup currently tracks the loans of Lending Club and eight other originators and counts 55 institutions as clients. All told it has logged in some $34 billion in loans. DV01 is backed by $7.5 million in capital from Leucadia National (Jefferies' parent), Pivot Investment Partners and a fund controlled by George Soros.

DV01 is paid two basis points on the principal amount for its services as a loan data agent, and buy-side investors pay a bit more for access to its analytics platform. Demand is brisk. Rahbar expects DV01 will serve as a data agent on three more deals by the end of the year. "When an investor tells a marketplace that they won't invest without the data going to DV01, there's no decision to be made," says Ron Suber, president of Prosper.

So far DV01 has been employed on two big Lending Club securitizations, which totaled $451 million and went to market in August and October. "DV01 can become a standard to allow investors to easily compare and contrast loan-level detail from each platform and make informed decisions about risk," say Brian McGrath, a managing director at Jefferies, which underwrote Lending Club's $137 million deal in August.

Of course, given the current frenzy of fintech startups, DV01 isn't alone. It competes with firms like Orchard Platform, PeerIQ and MonJa. For Rahbar, the tiny $50 billion marketplace-lending market is just the beginning. "There are transparency issues in all mortgage and consumer lending," he says. "That's a $12 trillion pie, not a $50 billion pie." F

Symphony Palo Alto, CA

For $15 a month per user this "Bloomberg killer" provides a secure environment for messaging, apps and video-conferencing, as well as connection to Selerity Context, Money.Net, FactSet, Dow Jones and other apps.

BONA FIDES: Has signed up 116,000 paying users from 104 financial institutions

FOUNDER & CEO: David Gurle, 50, veteran of Thomson Reuters, Skype and Microsoft

FUNDING: $170 million from Goldman Sachs, JPMorgan, BlackRock, Citadel, Maverick Capital, Google and others

THREAT TO: Bloomberg, Thomson Reuters, Microsoft's Skype for Business and Citrix

Tala Santa Monica, CA

Microlender and mobile app that crunches 10,000 data points gleaned from an applicant's smartphone, including purchases, Web searches and social media use, to approve $10 to $500 loans for developing-world borrowers who lack credit scores.

BONA FIDES: Has made 650,000 loans, and more than 90% have been repaid

FOUNDER & CEO: Shivani Siroya, 33, former bank analyst with a master's in public health who also worked at the UN Population Fund

FUNDING: $14.8 million from Lowercase Capital, Google Ventures, Collaborative Fund, Data Collective, Female Founders Fund and others

THREAT TO: Loan sharks

TransferWise London

Peer-to-peer app for moving money around the world has software that matches unrelated customers' orders to limit how much currency actually crosses borders. Aims to undercut bank charges by 80%. Just launched service for business transfers, too.

BONA FIDES: Doing $1 billion in transfers a month

COFOUNDERS: Estonians Taavet Hinrikus, 35, and Kristo Käärmann, 36

FUNDING: $117 million from Andreessen Horowitz, Peter Thiel, Richard Branson and others

THREAT TO: Big banks' money-transfer profits, Western Union

TrueAccord San Francisco

Employs machine-learning algorithms to collect bad debts using texts, e-mails and fewer but friendlier phone calls than traditional collection agencies.

BONA FIDES: Growing roster of 60 clients. Yield per dollar of bad debt is 30% to 300% higher than those from lower-tech approaches, TrueAccord says

COFOUNDER & CEO: Ohad Samet, 37, formerly chief risk officer at payments company Klarna

FUNDING: $12.7 million from Khosla Ventures, Caffeinated Capital, Nyca Partners, Max Levchin, Bryan Johnson, Felicis Ventures and others

THREAT TO: Traditional, low-tech debt collectors

Trumid New York City

Alternative electronic-trading platform enables bond trading at a fraction of the cost of traditional banks, while allowing users to negotiate trades anonymously.

BONA FIDES: 280 institutions, including 40 broker-dealers, are already on platform. Since Trumid Market Center launched in July, more than $3 billion in trades have crossed the platform

FOUNDER & CEO: Ronnie Mateo, 42, previously at Trinity Brokers, Citigroup, Quix Capital

FUNDING: $44.3 million from Soros Fund Management, Peter Thiel, Shumway Capital and others

THREAT TO: Wall Street bond dealers, MarketAxess, Electronifie, Tradeweb

Xapo Palo Alto, CA

Stores Bitcoin on offline servers for wealthy Western investors; processes mobile bitcoin transactions for consumers in developing world.

BONA FIDES: Bitcoin custodian for publicly quoted Bitcoin Investment Trust

FOUNDER: Wences Casares, 42, who built Latin America's first online stock brokerage

FUNDING: $41 million from Benchmark, Greylock Partners, Ribbit Capital, Index Ventures, Fortress, Emergence Capital Partners and others

Xignite San Mateo, CA

Supplier of real-time market data.

BONA FIDES: A thousand financial firms, including BlackRock, Charles Schwab, SoFi and Motif, are clients. Gets more than 250 billion hits on its data per month

FOUNDER: Stephane Dubois, 52, previously with Advent Software

FUNDING: $37 million from QUICK Corp., StarVest Partners, Altos Ventures and Startup Capital Ventures

THREAT TO: Thomson Reuters and Interactive Data

ZestFinance Los Angeles

Uses big data—100,000 signals, many unconventional—to underwrite loans to borrowers with thin credit histories or low credit scores.

BONA FIDES: Underwriting partner for Chinese Web giants JD.com and Baidu

FOUNDER: Douglas Merrill, 46, formerly Google's chief information officer

FUNDING: $60 million from Lightspeed Venture, Matrix Partners, Upfront Ventures, Flybridge Capital Partners and others

THREAT TO: Credit bureaus and FICO score producer Fair Isaac

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Insight leads to opportunity.
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- *Forbes* "Portfolio Strategy" columnist for over 30 years
- Author of more than 10 financial books, including 4 *New York Times* bestsellers

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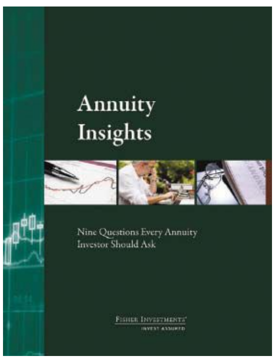

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THOUGHTS ON

Currency

"IT'S AMAZING: THE MOMENT YOU SHOW CASH, EVERYONE KNOWS YOUR LANGUAGE."

—ARAVIND ADIGA

"One of the most fascinating things about Bitcoin is that it entrances financial conspiracy theorists, clear-eyed pragmatists and die-hard skeptics alike."

—NATHANIEL POPPER

"THE PEOPLE RECOGNIZE THEMSELVES IN THEIR COMMODITIES."

—HERBERT MARCUSE

"USING BITCOIN IS AN EFFETE ACT OF REBELLION, LIKE WEARING A HOODIE OR GETTING A TATTOO THAT'S WELL-COVERED BY YOUR WORK CLOTHES."

—W. BEN HUNT

"Money has only a different value in the eyes of each."

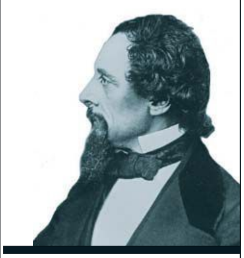
—WILLIAM MAKEPEACE THACKERAY

"THE MEEK SHALL INHERIT THE EARTH, BUT NOT THE MINERAL RIGHTS."

—J. PAUL GETTY

"Gold conjures up a mist about a man, more destructive of all his old senses and lulling to his feelings than the fumes of charcoal."

—CHARLES DICKENS



"Underpinning the value of gold is that if all else fails you can use it to make pretty things."

—BRAD DELONG

"The U.S. government has a technology called a printing press … that allows it to produce as many U.S. dollars as it wishes at essentially no cost."

—BEN BERNANKE

"The people of Nebraska are for free silver and I am for free silver. I will look up the arguments later."

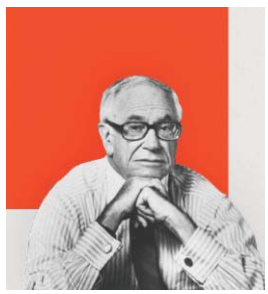
—WILLIAM JENNINGS BRYAN

"UNTIL THE DAY BREAKS AND THE SHADOWS FLEE, I WILL GO TO THE MOUNTAIN OF MYRRH AND TO THE HILL OF INCENSE."

—SONG OF SOLOMON 4:6

"PAPER IS POVERTY. IT IS ONLY THE GHOST OF MONEY, AND NOT MONEY ITSELF."

—THOMAS JEFFERSON



FINAL THOUGHT

"If the price of gold keeps climbing, maybe we ought to think about selling our pile of this sterile stuff."

—MALCOLM FORBES

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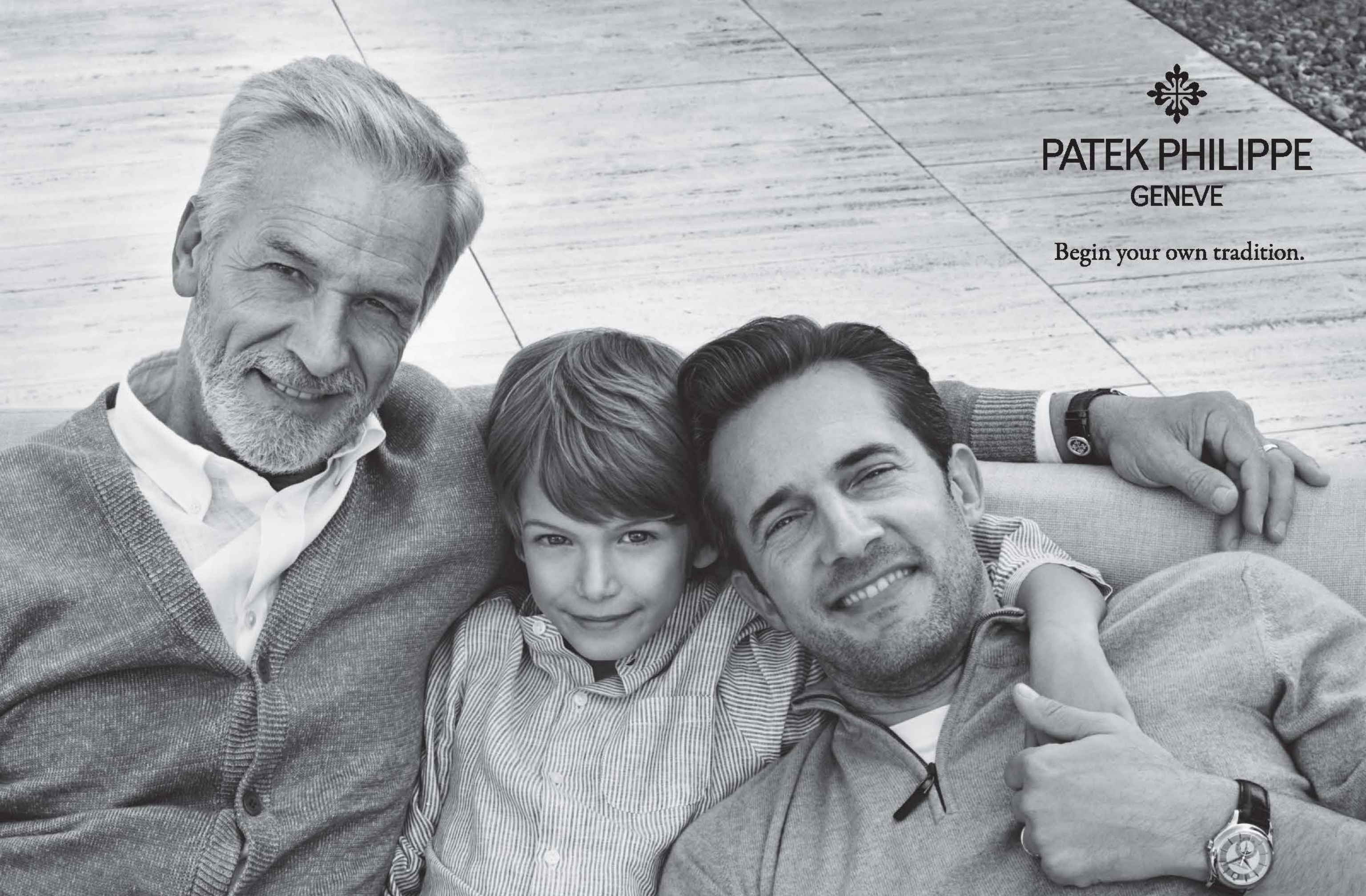
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