
November 7 — November 13, 2016 | bloomberg.com
Bloomberg Businessweek
As the economy falters, a scandal swirls around Park Geun Hye
p22
Can South Korea's President Survive?


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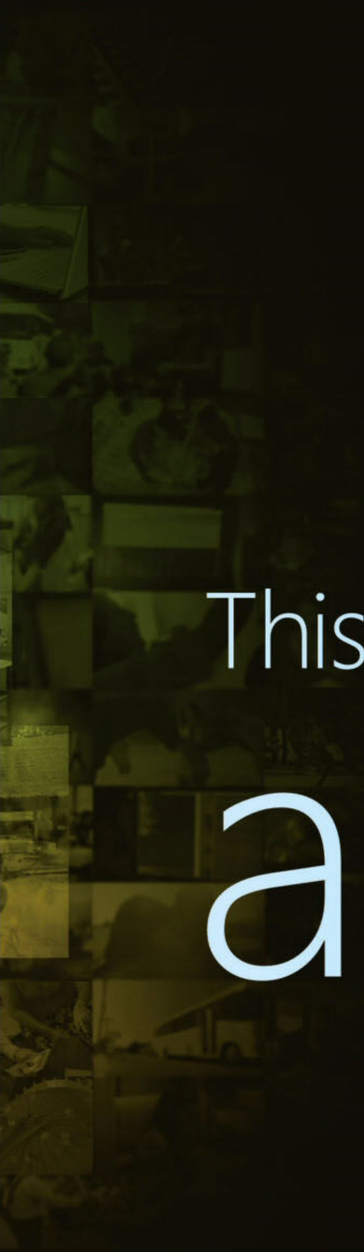
Partners
In Health



When Couples Need Financial Therapists

It's well known that money is one of the topics that couples fight about most. Increasingly, a new kind of financial advisor is helping couples deal with issues that bridge the interpersonal and financial spheres, according to Dr. Kristy Archuleta, a Human-Centric Insights Panelist, Program Director of Personal Financial Planning at Kansas State University and a past President of the Financial Therapy Association.

How common is it that couples who see a financial advisor have relationship issues that interfere with their financial planning?

Research indicates that about one-third of couples who see a financial professional report having marital issues, and about one-third of couples who see a marriage therapist report financial problems. So what that tells us is that couples may be confused when they are seeing a professional—whether it's a financial advisor or a therapist—about what their underlying problem is.

There is this third type of professional—neither a financial advisor nor a relationship therapist, but a financial therapist. What do they do that is different from the other two roles?

Traditionally, mental health professionals have zero training about money issues. It's not taught at all when studying to become a therapist. Likewise, financial advisors receive little to no training in interpersonal communications. A financial therapist brings these two disciplines together because they have training in both. A financial therapist works with the whole person, including their partner and/or family. By calling on the expertise of a therapist, a financial advisor can help couples solve their underlying communications issues, so that the advisor can help them reach their financial goals.

Are there limits on what a financial therapist can do for clients?

Yes. They can't make financial decisions for clients who are compromised. For instance, you can't ethically treat someone's depression and also make investments for them. But you can help them move down the road toward better financial planning.

How can financial advisors identify couples who could benefit from speaking to a financial therapist?

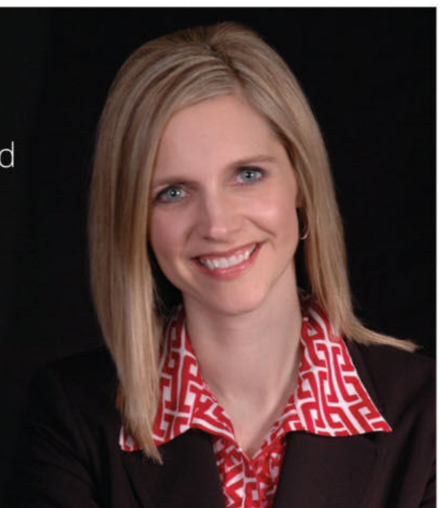
THERE ARE FOUR THINGS THEY SHOULD LOOK FOR:

1. The couple argues, but never resolves the issue. All couples argue, but it's worrisome when issues are never resolved, or when the way the couple argues is destructive to one another.
2. Only one partner contributes to the planning process. This could be a sign of a power and control dynamic in which one partner controls the other by not allowing them to participate.
3. The couple plays the blame game. When partners blame each other, they often fail to look at their own contributions to the problem, and what they can do differently in order to help resolve the issue.
4. One or both partners display uncontrollable worry, fear, anxiety or depressive symptoms around money.

How can financial advisors find a financial therapist for clients?

The Financial Therapy Association [FinancialTherapyAssociation.org], of which I'm a past President, has a nationwide network of providers who refer to themselves as financial therapists. FAs should also reach out to relationship therapists in their community, so they can be prepared to make a recommendation to someone they trust.

> Couples may be confused when they are seeing a professional about what their underlying problem is.



To learn more about investor psychology and how financial advisors can better communicate with their clients, go to the Hartford Funds' **HumanCentricInvesting.com**

REAL HEROES IN THE WORKPLACE

Veterans are eminently qualified to fill corporate leadership positions

Every year, poor performance means that organizations waste \$122 million for every \$1 billion spent on projects and programs. But that tide can be turned. According to the Project Management Institute (PMI), the leading membership association for the project management profession, organizations that invest in project management waste 13 times less money because their strategic initiatives are completed more successfully.

And when it comes to finding a project manager who can accomplish a highly complex task with a focus on teamwork, responsibility and accountability, it is difficult to top a veteran.

"At any given time, almost 8.5 million veterans are employable, and a high percentage of them have the background and capability to be project and program managers," says Craig Killough, a graduate of the United States Naval Academy and PMI's Vice President of Organization Markets. "The fact that there is a gap of capacity for project management skills in the country makes this a natural fit."

The best project managers share the same qualities: the ability to work in cross-functional teams, resolve conflicts and manage crises—all while keeping calm. "Veterans come to the table with all of these capabilities," Killough points out. "It's part of their DNA."

Still, the challenge remains to get the hiring organization—as well as the candidate—to recognize that what they've done in the military aligns with these critical competencies. And so PMI's nearly 300 global chapters—with about 150 in the U.S. alone—have stepped in to help bridge the gap.

The not-for-profit's program for Preparing U.S. Military for Project Management Careers focuses on the employment and education resource areas of the White House's Joining Forces Initiative. PMI also offers eight professional certifications—each of them recognized by the Department of Veterans Affairs and eligible for compensation as part of the veteran's benefit program.

"Our flagship certification is the Project Management Professional," Killough explains. "The PMP has proven to be highly transportable. It's not geographically or domain-specific." Then there's the Certified Associate in Project Management, an entry-level certification for project practitioners, designed for those with less experience.

"Veterans really do have a sense of team, and the ability to follow and lead, all of which matter in the workspace," attests Anne Marie Dougherty, Executive Director of the Bob Woodruff Foundation, which has touched the lives of 2.5 million veterans by investing more than \$33 million in innovative programs to support our injured heroes and their families. Earlier this month, the foundation's marquee event, the 10th annual Stand Up for Heroes benefit in New York City, was presented by the New York Comedy Festival, featuring celebrities including Bruce Springsteen, Louis C.K., Jim Gaffigan, Jerry Seinfeld and Jon Stewart.

> "Veterans really do have a sense of team, and the ability to follow and lead, all of which matter in the workspace."
>
> —Anne Marie Dougherty, Executive Director, Bob Woodruff Foundation

"The needs of our veterans are changing every day, and we must evolve with them," says Dougherty. "Beyond filling positions, it's important to provide opportunities for mentoring and professional growth to ensure that companies retain and view veterans as an asset to their continued success."

After 15 years of nonstop combat, organizations like PMI and the Bob Woodruff Foundation take pride in helping veterans and their families find success in this transition to civilian life. And if a veteran can assume a role that helps a business boost efficiency along the way, that's even better. ■

For a look through a veteran's eyes, visit PMI.org/ProjectsNeedVeterans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Bloomberg Businessweek

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"We were big Bernie supporters. The only reason I voted for Hillary Clinton is because we live in a swing state.… If I was to live in another state, I would have voted for Jill Stein." **Ismaeel Chartier**, 43, imam of the Clifton Mosque in Cincinnati

PHOTOGRAPH BY ANDREW SPEAR FOR BLOOMBERG BUSINESSWEEK

Bloomberg Businessweek
November 7 — November 13, 2016

Cover Trail

How the cover gets made

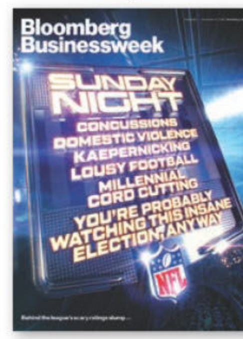
Domestic Cover

❶
"Story is on the reasons behind football's ratings slump."

"Football is the one where you have to run around a field with the intention of not getting touched by large men, right?"

"You're clearly one of the reasons behind the slump."

"What are the others?"



International Cover

❶
"South Korea's president is involved in a scandal that's interfering with her ability to govern."

"She'd fit nicely in the American political system."

COVER AND COVER TRAIL: DOMESTIC EDITION: ILLUSTRATION BY JUSTIN METZ FOR BLOOMBERG BUSINESSWEEK USING SHUTTERSTOCK (3); INTERNATIONAL EDITION: THIBAULT CAMUS/REUTERS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DOES IT FEEL LIKE THE CLOUD IS MANAGING YOU?

WE CAN TURN THE TABLES.

Opening Remarks

How Do You Say Déjà Vu in Chinese?

By Michael Schuman

Beijing is heading down a questionable path we've seen before: Japan's

China and Japan may seem to inhabit alternative economic universes. After more than two decades of stagnation, Japan is a fading global power that can't seem to revive its fortunes no matter what unorthodox gimmicks it tries. By contrast, China's ascent to superpower status appears relentless as it gains wealth, technology, and ambition.

Yet these Asian neighbors have a lot in common, and that doesn't bode well for China's economic future. The sad case of Japan should serve as a cautionary tale for China's policymakers. Beijing pursued almost identical economic policies to Tokyo's to generate its rapid development. Now China's leaders are repeating the missteps the Japanese made that tanked Japan's economy and thwarted its revival.

"Just like Japan, we believe China will eventually face a period of much slower growth," Goldman Sachs investment strategists said in a report earlier this year. Analysts at ratings agency Moody's, writing in May, warned that China could suffer "a prolonged period of sub-optimal economic growth and persistent deflationary pressures, or possibly even economic stagnation." James Chanos, founder of fund manager Kynikos Associates, has compared China's trajectory to Japan's "on steroids."

Some may disregard these warnings as the same predictions of doom that China has shrugged off time and again. But recall that 30 years ago, few foresaw the decline of Japan, either. Japan was the East Asian giant poised to overtake the U.S. as the world's top economy. Driving that ascent was an economic system that many considered superior to laissez-faire American capitalism. By fostering close, cooperative ties among the state, big corporations, and banks, Japan's policymakers encouraged investment and guided a national industrial strategy. Bureaucrats in Tokyo interfered with markets to a degree unthinkable in the U.S. by protecting nascent industries and directing financing to favored sectors and companies. Backed by such support, Japanese companies burst onto the world stage and pushed their American competitors to the wall.

But even as Japan appeared destined for greatness, its economy was, in reality, starting to rot. Those clubby ties among finance, business, and government misallocated capital and led to wasteful investments. Growth was given a boost by cheap credit in the second half of the 1980s, but that also helped inflate debt levels and stock and property prices. When this "bubble economy" burst in the early 1990s, the financial industry was flattened. Japan has yet to fully recover.

China could be hurtling down a similar path. The methods Beijing employed to generate rapid growth—directing finance, nurturing targeted industries, and promoting exports—are replicas of Japan's. And since the state in China's "state capitalism" plays an even larger economic role than Japan's officious bureaucracy does, the Chinese government interferes with markets to a greater degree.

In China, the chummy government-business-banking triumvirate has led to excess steel mills, cement plants, and apartment blocks on a staggering scale. And Beijing's policymakers have responded to overbuilding with a massive influx of easy cash to keep the old, sputtering growth engines spinning. The flood of yuan has fueled unstable spikes in asset prices, as it did in Japan. Last year stock markets in China escalated to nosebleed levels, only to deflate in a panicked crash. Now property prices in Shanghai, Shenzhen, and other major cities are rising so quickly that officials have stepped in to control them.

Perhaps more dangerously, China's loose money has also pumped up a mammoth increase in debt—like Japan's in the 1980s. Ratings company Fitch shows that total debt relative to national output in Japan jumped almost 80 percentage points, to 275 percent from 1980 to 1989, on the eve of the country's financial meltdown. The same ratio in China has risen steeply—more than 100 percentage points from 2007 to 2015, reaching 255 percent of its gross domestic product, according to the Bank for International Settlements.

There are economists who argue that China's mountain of debt isn't as risky as it appears. Since the debt consists to a great degree of loans made by state banks to state enterprises, the government is likely to step in and support the financial system. And because Chinese debt is almost entirely domestic and backed by massive savings, the financial sector is unlikely to fall prey to outside shocks.

The experience of Japan suggests otherwise. It, too, was a creditor nation with large trade surpluses and ample savings in the early 1990s, but that didn't prevent a financial crisis. If anything, Japan is proof that a bubble-prone, debt-obsessed economy is susceptible to failure, no matter the circumstances.

Japan can provide China with a model of exactly how not to handle such problems. Rather than allowing indebted, struggling companies to fail, the Japanese kept many afloat with continued credit, debt-for-equity swaps, and other tricks. Such "zombie" companies drag down the economy to this day. To sustain growth, the government turned to artificial stimulus—deficit-financed spending on infrastructure and unprecedented printing of yen by the central bank. That managed to swell Japan's total debt to almost four times its national output at the end of 2015 while failing to revive the economy. The meddlesome bureaucracy has never reduced regulation nor opened markets enough to spur competition, efficiency, and entrepreneurship.

Officially, China's president, Xi Jinping, has embarked on a different course. He's pledged to undertake a sweeping program of pro-market

Bubble-prone, debt-obsessed economies are likely to fail, no matter the circumstances

reforms that could shift the economy toward new sources of growth, scrub out excess and waste, and promote private enterprise. In practice, however, China is following in Japan's footsteps. Despite promises to eliminate zombie companies, Beijing has kept them alive by flooding the economy with credit and state stimulus. In October government planners announced the details of a debt-for-equity swap plan ostensibly aimed at rescuing "good" companies, but more likely perpetuating excess capacity.

Meanwhile, China's debt burden continues to get heavier, as the expansion of credit outpaces GDP growth. But that credit isn't stirring the economy. As in Japan, a kind of paralysis is setting in that renders all that cash less effective. There are indications that more and more new credit is being used just to pay off old debts. That means less and less money is going toward investment that could boost the economy.

China and Japan also share one long-term trend that hampers their economies—aging. Japan's working-age population decreased 0.4 percent per year from 1990 to 2015. That hurts growth because fewer productive, income-earning workers are supporting a larger army of retirees. As a result of China's decadeslong policy of limiting many couples to only one child—a restriction Beijing eased only over the past three years—the Chinese population is set to age even more quickly, with the workforce expected to shrink nearly 0.5 percent annually over the next 25 years, according to Goldman Sachs.

Fortunately for China, nothing in economics is inevitable. Xi and his policy team can still swerve off Japan's course if they more forcefully implement the reforms they've promised. Until then, the risks that China will become like Japan will only mount. Beijing and Tokyo have suffered from the same fatal flaw: a deep-seated unwillingness to alter a growth model that no longer delivers results. B

Schuman is a Beijing-based journalist and author of Confucius: And the World He Created.

Bloomberg View

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How Not to Regulate The Internet

The FCC's new privacy rules are shortsighted and likely to do more harm than good

On the internet, ads giveth and ads taketh away. They're the reason you can enjoy so many services for free and also why everything you do is relentlessly tracked. It's an awkward duality. But for consumers, it more or less works.

On Oct. 27, the Federal Communications Commission tinkered with this delicate equation. It approved privacy rules that will require broadband providers to get permission from subscribers before they can collect certain personal data. That sounds great, but it's likely to do more harm than good.

Digital advertising is booming. From 2005 to 2015, revenue from internet ads grew at a rate of 17 percent a year in the U.S., reaching almost $60 billion. Numerous reports say these ads can deliver an impressive return on investment. And thanks to data collection, companies can parse consumer preferences and behavior as never before.

That's mostly a good thing. It makes businesses more efficient, productive, and attentive to potential customers. More powerfully, it's the reason you can read the news, send e-mail, consult maps, store data, find information, watch videos, and browse social media online without paying a dime.

The problem is that the terms of this trade-off aren't always clear to the customer. Web companies have devised cunning methods to track customers and invented elaborate euphemisms to obscure exactly what they do with all that data. Regulators tend to demand strong privacy protections but would prefer not to discuss the economic repercussions. As a result, internet users have been habituated to think they have an inherent right to free stuff and to privacy. They don't.

The FCC's approach won't improve this situation. For one thing, the most avid collectors of data, such as Google and Facebook, aren't under the FCC's purview and thus can still swoop up as much information as they like. For another, broadband providers can still get information about their customers to serve ads—by consulting data brokers, for instance. In raising transaction costs and curtailing a growing source of revenue for broadband providers, the rules are more likely to result in higher prices than in better privacy.

Is there a better way to resolve this dilemma? Making the trade-off more explicit would help. So-called pay-for-privacy policies, in which companies charge users more in exchange for not tracking them, is one promising approach. In putting a price on personal data, they make it easier to weigh costs and benefits. That's the right way to encourage transparency, which should be the goal for regulators.

The truth is few people want to see ads. But consumers will tolerate them and divulge their data so long as the benefits they receive are splendid. Regulators should ensure the choice is an informed one. Otherwise leave well enough alone.

Expand Heathrow— Or Move On

The British have spent years arguing over the airport. It's time to end the indecision

Because Brexit isn't risky enough, apparently, Britain's Conservative government has decided to embark on another project fraught with potential for failure. For years, the country has been arguing about the expansion of London's Heathrow Airport. Once opposed to the idea, the Tories say they're now in favor. Prime Minister Theresa May is right: Heathrow needs another runway. But even now, no sensible person would bet on this expansion ever going ahead.

By any standard, the project would be an enormous undertaking. The initial estimate is about $20 billion, more than the eventual cost of Boston's "Big Dig" highway project—and if building ever starts, that number would rise. The environmental impact would be serious, too, with hundreds of thousands of people subjected to more noise and tracts of property (including an 11th century church) either blighted or demolished.

Yet the economic case is clear. Demand for air travel continues to increase, and Heathrow is at full capacity—already constraining travel to, from, and around the U.K. Capacity could be added elsewhere, but the alternatives can't match Heathrow as a hub. If economic growth matters most, build a new runway at Heathrow and start right away.

It would be hard to quarrel with a prompt decision to, say, protect the environment or property values by adding new capacity at a different airport. The bigger problem is the protracted inability to make a decision of any kind. More than 10 years ago, a previous government declared its intention to start the project, then it was shelved. May's government now faces the same difficulties: little enthusiasm in Parliament, endless consultation and planning procedures, legal challenges at every turn. When it comes to essential infrastructure, endlessly arguing about what to do—then doing nothing—is a formula for stagnation.

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Movers

By Kyle Stock

Ups

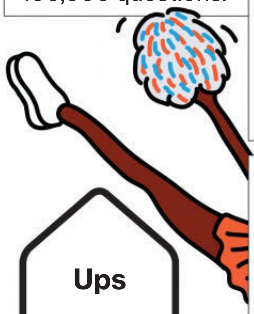
▲ Home cooks with kitchen emergencies during the upcoming Thanksgiving to Christmas holidays **will be able to call *and text*** Butterball's hotline for help. The turkey company added the mobile feature this year; 50 experts will field about 100,000 questions.

▲ Hulu took another step in building **a so-called skinny package of streaming TV**, locking up agreements with ABC, ESPN, and Fox News. The service is expected to start next year at a cost of about $40 a month.

▲ Alibaba posted

$5b

in sales for the quarter ended on Sept. 30, far exceeding analysts' expectations and reassuring the global economy that **Chinese consumers are still shopping.**



▲ Facebook reported revenue of

$7.01b

in the third quarter, **a 56 percent increase** from a year earlier. Returns were boosted by mobile video advertising. The company also said mobile-only monthly active users increased, surpassing 1 billion.

▲ Mobile and tablet devices **have finally overtaken desktop computers in web traffic,** according to StatCounter.

▲ Bono was among the honorees at *Glamour*'s Women of the Year awards **for advocating for gender equality in health care and income.**

"The clothes on the hanger do nothing. The clothes on the woman do everything."

▲ Supreme Court Justice Stephen Breyer during oral arguments on Oct. 31 in **a copyright dispute between designers of cheerleading uniforms**. Justice Elena Kagan said the description was "so romantic."

CenturyLink bought Level 3 Communications

$34b

Blackstone purchased TeamHealth

$6.1b

Giphy's valuation after the GIF search engine raised $72 million

$600m

Mad Men creator Matthew Weiner inked a deal with Amazon.com for an eight-episode series

$70m

The weekly rate for David Bowie's Caribbean mansion in Mustique, now available for rent

$40k

Downs

▼ AT&T and its DirecTV unit were **sued by the U.S. Department of Justice** for allegedly colluding with rival pay-TV services to gain leverage in negotiating to televise Los Angeles Dodgers baseball games. The suit comes on the heels of AT&T's planned $85.4 billion acquisition of Time Warner. AT&T's general counsel said the company disputes the Justice Department's allegations and looks forward to presenting its case in court. More ▷ p30

▼ Calls for **the resignation of South African President Jacob Zuma** grew louder as the nation's ombudsman released a 355-page report detailing widespread bribery allegations against him and some government officials. Critics allege Zuma may have let outsiders influence the appointment of cabinet members.

▼ Gas prices surged the most since 2008, after **an explosion and fire in Alabama** shut down the largest fuel pipeline in the U.S. Gas to be delivered in December was 15 percent more expensive.

▼ Drought has **decimated cashew crops in Vietnam**, the nut's largest exporter. Meanwhile, global demand is up

53%

since 2010.

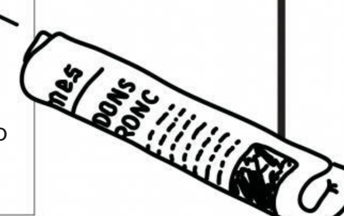
▼ Increasing competition is slowing sales growth at Fitbit. The wearable-device maker said **third-quarter revenue rose 23 percent**, to $504 million, in the three months ended on Oct. 1 from a year earlier. Analysts' average estimate was $508.7 million.

▼ Pfizer dropped a high-profile cholesterol drug, bococizumab, saying **its effectiveness waned over time**. Meanwhile, cholesterol pills from Amgen and Regeneron Pharmaceuticals have proved better than Pfizer's go-to treatment: Lipitor.

$31m

▼ Gawker Media reached a settlement in **the invasion-of-privacy lawsuit brought by Hulk Hogan**. According to court papers, Hogan will get $31 million, plus a share of the proceeds from Gawker's $135 million sale to Univision.

▼ Gannett **abandoned its plan to buy** tronc, the publisher of the *Los Angeles Times* and *Chicago Tribune*, after two of its lenders backed out of the deal. More ▷ p74



Wells Fargo settled a suit claiming it overcharged for home appraisals

$50m

Thomson Reuters said it would cut 4 percent of its workforce

2k

Nike shares slipped to their lowest level in more than a year

$49.10

Orange juice prices rose after citrus disease cut the fruit's U.S. harvest by

54%

U.S. new-car sales declined in October

-4.4%

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Park in Limbo

▶ A scandal involving an old friend is paralyzing South Korea's president

▶ "Neither her resignation nor impeachment is a desirable option"

The scandal engulfing South Korean President Park Geun Hye could hardly have come at a worse time for the country's economy. **Samsung Electronics**, the nation's biggest company, had to kill its flagship Note 7 smartphone after a global recall, at an estimated cost of more than $6 billion. **Hanjin Shipping**, its largest container shipper, went into receivership in August. And the head of its biggest retailer, **Lotte Group**, has been indicted on charges of embezzlement. Exports are slumping, and household debt is rising.

Now this. Just when the Asian industrial dynamo needs strong leadership, accusations that a close associate of Park used her position to enrich herself and her family have sparked calls for Park to step down. Her approval rating slid to a record low of 17 percent, according to a Gallup Korea poll released on Oct. 28, the same day Park ordered 10 of her senior aides to resign. Crowds demanding her removal filled the main streets of Seoul over the weekend of Oct. 29-30.

Government officials say that enacting reforms such as corporate restructuring requires a strong push from the presidential office. "Having no control tower for economic policies would not have mattered much during an economic boom, but it's worrying when policy coordination is needed," says Jun Sung In, a professor of economics

The Russian upstart dishing on Putin's pals 24

In Mexican grocery aisles, an American cornucopia 25

India intervenes in a corporate divorce 25

at Hongik University in Seoul.

The controversy stems from allegations that Park allowed her old friend Choi Soon Sil, a private citizen, to meddle in state affairs. In a hastily called briefing on Oct. 25, Park said Choi advised her on speeches during her presidential campaign in 2012 and gave Park her opinion on some documents after she became president. Prosecutors raided offices at the presidential Blue House over the last weekend in October. Choi appeared at the Seoul Central District Prosecutors' Office on Oct. 31 to answer accusations that she helped Park make budget and staff decisions and cajoled a business lobby group to donate money to two foundations Choi controls. Roh Seung Kwon, a spokesman for the prosecutor's office, said Choi has denied wrongdoing. The South Central District Court will question her before deciding whether to approve the prosecutor's request to arrest Choi, says Shin Jae Hwan, a spokesperson at the court.

Park's connection to Choi dates to the years when her father, Park Chung Hee, was president. Park's mother was killed during an assassination attempt on the president in 1974. After the tragedy, Choi's father, a religious leader named Choi Tae Min, befriended the young Park, eventually asking her to help run a Christian volunteer group he founded. Park has long been hounded by allegations that she allowed the Chois to take advantage of her position to extract money from businesses—claims she's denied in the past. The older Choi, whom some opposition politicians have described as the leader of a religious cult, died in 1994.

More than 40 percent of South Koreans in a late October poll said Park, whose term runs until February 2018, should resign or be impeached. While the two main opposition parties have criticized her, they haven't called on her to step down. If she did, it would trigger a presidential election in 60 days. "Neither her resignation nor impeachment is a desirable option," says Son Kum Ju, a spokesman for the second-largest opposition People's Party.

Even before the scandal, Park was struggling to push through reforms to deal with big structural economic problems, such as an aging population, restrictive labor rules, and rising competition from China. "As her popularity sinks to new lows, it seems even more unlikely that she will be able to pass these reforms," says Kent Boydston, research analyst at the Peterson Institute for International Economics in Washington. "Park will be in for an even more prolonged and weak lame-duck period."

17%

President Park's approval rating as of Oct. 28, a record low

DATA: GALLUP KOREA

The Park scandal has interfered with a more immediate task for Parliament: reviewing and approving the 400.7 trillion-won ($349 billion) budget proposal for 2017. Parliamentary hearings to review the budget in recent weeks served as a forum for opposition lawmakers to grill government officials for signs the budget would fund projects involving businesses linked to Choi.

South Korea's government is predicting the economy will improve next year, expanding almost 3 percent. Meeting that target may be difficult if the country has an extended period of political uncertainty, says Scott Snyder, senior fellow for Korea studies and director of the program on U.S.-Korea policy at the Council on Foreign Relations. Industrial production fell 2 percent in September from a year earlier, and exports contracted 3.2 percent in October from the previous year. Citibank Korea predicts the economy will grow only 0.1 percent in the fourth quarter, after expanding 0.7 percent in the third.

South Korean presidents have a history of weathering upheavals. In March 2004, lawmakers voted to impeach then-President Roh Moo Hyun for violating election laws. The benchmark Kospi stock market index slid in the week leading up to the vote but recovered within a month. The impeachment was rejected by the Constitutional Court a few months later. Former President Lee Myung Bak, Park's predecessor, apologized to the public in July 2012 for corruption scandals involving his older brother and former aides. He served his full five-year term.

The economy, too, has been resilient after shocks, including attacks from North Korea and a wave of national grief after the *Sewol* ferry disaster in 2014. In Park's case, some analysts say the scandal may have little long-term effect on the economy because her popularity and effectiveness have already faded. Says Boydston of the Peterson Institute: "Influence peddling and big money being passed around under the table haven't exactly been rarities in South Korean politics." —*Jiyeun Lee, Kanga Kong, and Natasha Khan*

The bottom line President Park's political woes are hampering her ability to deal with South Korea's faltering economy.

Labor

Middle-Aged Productivity Heroes

▶ **No one knows why, but fortysomething is a sweet spot**

▶ **"The drag is nearly done" as the workforce this age hits bottom**

Dartmouth College economist James Feyrer noticed something odd about a decade ago: Across a large set of countries, an economy's productivity seemed to be connected to the proportion of fortysomethings in its labor force. The higher the ratio of people age 40-49, the faster the economy tended ▶

◀ to increase its output per hour of work. To be precise, Feyrer wrote in a 2005 working paper, "a 5 percent increase in the size of this cohort over a ten year period is associated with a 1-2 percent higher productivity growth in each year of the decade."

The finding was bad news when Feyrer's paper came out, because the sweet-spot age group was shrinking as a share of the U.S. labor force. Now, though, fortysomethings' share is close to bottoming out—which means one substantial negative for productivity growth is going away. "The drag is nearly done," Jay Shambaugh, a member of President Obama's Council of Economic Advisers, said in a September speech.

The notion that people in their 40s make a special contribution to a nation's productivity seems strange to a lot of people (presumably even some who are in their 40s). In 2012 the National Research Council's Committee on the Long-Run Macroeconomic Effects of the Aging U.S. Population called Feyrer's calculations "implausible" and said that the effect of age composition of the workforce over the next two decades would probably be "negligible."

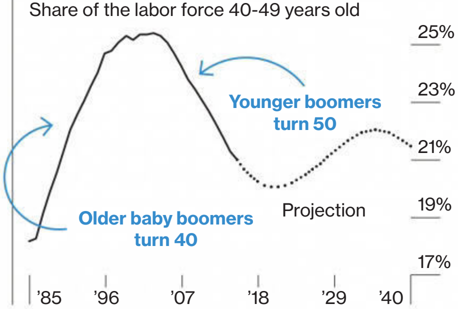
But Jason Furman, who's chairman of the Council of Economic Advisers and just happens to be 46, says research done in the U.S. and several other countries since the National Research Council's report had supported Feyrer's original result. Why it should be so is less clear, but Furman says workers in their 40s seem to have "a good balance of experience and creativity." He emphasizes that he isn't denigrating younger or older age groups.

The proportion of fortysomethings in the labor force has been all about the Baby Boom. When boomers began reaching 40 in the mid-1980s and early '90s, the share grew; it fell as boomers aged starting around 2005. The International Labor Organization, a United Nations agency, sees fortysomethings' share of the labor force hitting a low of 20 percent in 2020, then drifting up to 22 percent around 2035 as the bulge of boomers' children begins to reach the big 4-0. —*Peter Coy*

The bottom line Productivity has been growing weakly for the past decade. A drop in the share of workers in their 40s coincides with that trend.

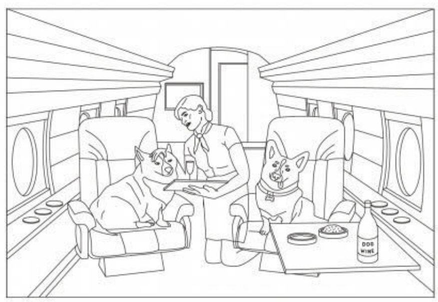
Fortysomething and Working It

Share of the labor force 40-49 years old



Graft

Moscow Confidential: Private Jets for Dogs



▶ **A dissident dishes dirt with the help of tipsters in high places**

▶ **"Everyone in this arena is in a state of conflict"**

Feuding among members of Vladimir Putin's inner circle has led to disclosures over the past few months that shine a harsh light on the private lives of the elite. As Putin gears up for what may be his last reelection bid, in March 2018, antigraft crusader and opposition politician Alexei Navalny has emerged as the conduit of choice for rival factions who want to sling mud at each other as they jostle. On one side is the oil baron Igor Sechin. On the other side in a loose alliance is Premier Dmitry Medvedev and First Deputy Premier Igor Shuvalov.

The Russian president has been largely spared. However, anonymous tips and research by Navalny's staff of 30 have led to a string of revelations on his website about the extravagance of some of Putin's closest allies, including a new luxury home for his premier, army contracts for his personal chef, and private jet travel for the show dogs of a top official.

Navalny's critics contend he's a pawn in a bigger game, but the lawyer says it doesn't matter where the leaks come from as long as they expose official misconduct—and he doesn't take sides in the inevitable conflicts that follow. "They're starting to devour one another," Navalny says at the Moscow office of his Anti-Corruption Foundation, which is funded by public donations. And even when the scoops aren't his, Navalny serves as an amplifier by tweeting them to his 1.7 million Twitter followers.

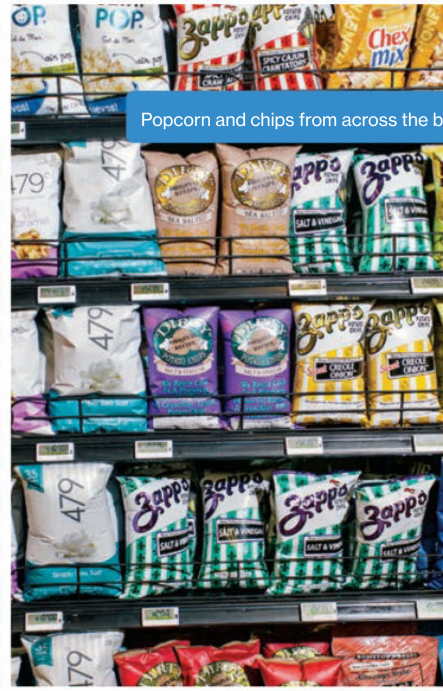
The feuding picked up in July during the largest asset sale of the year: a controlling stake in **Bashneft**, a crude oil producer with more than $10 billion in annual sales. Sechin, who runs state oil behemoth **Rosneft** and has worked with Putin since the 1990s, clinched the acquisition in October, but only after fending off an attempt by Medvedev and Shuvalov to exclude Rosneft from the sale and open the way for rival bids.

As the debate intensified last summer, Navalny published stories on his website alleging that Shuvalov had acquired 10 adjoining apartments in a coveted Moscow skyscraper and spent millions to shuttle his dogs around Europe in a private jet. Shuvalov's wife has confirmed the dogs' trips and is quoted on Navalny's website saying that the corgis—Queen Elizabeth II's favorite breed—participate in shows abroad "to defend Russia's honor."

Those disclosures were countered with blasts in newspapers detailing Sechin's construction of a villa near Moscow costing some $60 million and the antics of his young wife, Olga, aboard his 280-foot yacht—the *St. Princess Olga*—as it sailed the Mediterranean. Sechin won an invasion-of-privacy lawsuit over the villa story, with the publisher ordered to destroy copies of the newspaper and scrub the article from its website. By then, Navalny had run a video report saying Sechin's nemesis Medvedev was building a luxury home of his own with funds from a billionaire friend's charity. That story got 3.8 million YouTube views.

Medvedev's spokeswoman, Natalya Timakova, says the property is owned by the state. "All Navalny does is collect rubbish," says Mikhail Leontyev, a spokesman for Rosneft and Sechin.

Sales of U.S.-made condiments are booming



Popcorn and chips from across the border

Naucalpan, Mexico Donald Trump likes to say our global trading partners are "eating our lunch." What he says may be true—just not the way he meant it. In Mexico, supermarkets such as Selecto are full of American foods such as Cap'n Crunch cereal, Oreo cookies, and U.S. beef. —*Nacha Cattan*

Up to
15%
Share of Selecto sales that are imports, almost all from the U.S.

Produce
Red Delicious apples and other U.S. fruits and vegetables fill the fresh produce aisle

Putin's spokesman, Dmitry Peskov, says the Kremlin has "no opinion" about Navalny. A spokesman for Shuvalov declined to comment.

Gleb Pavlovsky, a former Putin adviser who now runs an independent political research group, says the muckraking shows the government's vocal campaign against corruption is little more than a diversion from the main event: the fight to survive and thrive among rival groups, a struggle in which Navalny, among the country's most prominent political dissidents, is considered useful. "Everyone in this arena is in a state of conflict," Pavlovsky says.

Since 2011, when Navalny tried to forge a political career out of his popularity as a litigious stockholder in state-run giants such as **Gazprom** and **Transneft**, he's been detained numerous times, held for a year under house arrest, and twice convicted of fraud. He says the charges were trumped up to bar him from running for office, as he did in 2013, when he almost forced a runoff in the Moscow mayor's race against an incumbent backed by Putin. Navalny says suspended sentences spared him from jail time but that his brother, also convicted of fraud, is serving two years "like a hostage."

Navalny is praised by fans as a Russian Julian Assange, the WikiLeaks founder who's bedeviling Hillary Clinton's campaign. But he says he has no ties to the anti-secrecy group and that his work is different because it relies on open sources and citizen researchers, not hacked data. He's also rejected accusations that he works on behalf of U.S. interests, as Transneft Chief Executive Officer Nikolay Tokarev said in spring 2011. That was after Navalny completed a fellowship at Yale. Six months later he helped bring tens of thousands onto Moscow's streets for anti-Putin protests.

Navalny says he's happy being a thorn in Putin's side. On Oct. 18 he published a report on a taboo subject for Russian media: the president's family. It documented the flow of millions of dollars from state companies into a foundation run by Putin's youngest daughter, Katerina Tikhonova. Reports like that may not show wrongdoing, but they're embarrassing for a privileged class accustomed to operating out of the limelight, says Vladimir Rimsky, who studies corruption at Indem, an independent research group in Moscow. "Everyone," he adds, "would like Navalny to shut up." —*Henry Meyer and Irina Reznik, with Ilya Arkhipov*

The bottom line Navalny is chipping away at the Kremlin's legitimacy with revelations of mansions, yachts, and dogs traveling on private jets.

Alliance

The Prenup That Didn't Stick

▶ **Docomo wants to be paid by Tata for a partnership gone bad**

▶ **Investors "are still begging for a level playing field"**

It seemed like the perfect marriage: the dominant mobile operator in Japan and the premier conglomerate in India operating a cellular service in one of the world's hottest markets. In 2009, **NTT Docomo** and the ▶

◀ holding company of **Tata Group** formed **Tata Teleservices**, with the Japanese company paying 260 billion yen ($2.5 billion) for 26.5 percent of the carrier.

Docomo arranged a prenup providing the option of selling its shares back to Tata for at least half the purchase price, in case things didn't work out. As it turned out, the business struggled as competition in India intensified. By 2014, Docomo had had enough and said it wanted 50 percent of its money back. Tata sought permission from India's central bank, the Reserve Bank of India (RBI). The bank said commitments such as the one Tata made to Docomo violated a law passed in 2014 allowing foreign investors to exit deals only at prevailing fair value, not at a predetermined exit price.

The messy divorce adds to Tata's problems. On Oct. 24, Ratan Tata, the septuagenarian patriarch who was chairman at the time of the Docomo deal, came out of retirement to replace his successor, Cyrus Mistry, because of what the company called a growing "trust deficit." Mistry accused directors of wrongfully dismissing him and warning that the $104 billion tea-to-software giant may face 1.18 trillion rupees ($17.6 billion) in writedowns because of unprofitable businesses. Mistry on Nov. 1 released a statement saying that any suggestion that he acted contrary to "Tata values" in the Docomo case "is as false as it is mischievous."

All of this adds to the pressure to resolve the Docomo debacle, which puts the spotlight on the challenges Prime Minister Narendra Modi faces as he tries to make India an alternative to China as an engine for global growth. Since winning office in 2014 on a pro-business platform, Modi has often traveled abroad to sell the idea of India being open for business. In June he eased restrictions on foreign investment in broadcasting, defense, pharmaceuticals, and civil aviation.

Quoted

> "Clearly, 2017 is a critical year as we continue to assess the long-term viability of our exchange footprint."

Anthem Chief Executive **Joseph Swedish** on the chances his company will go on offering health insurance under the Affordable Care Act

Foreign direct investment climbed 23 percent in the 12 months through March 2016, to $55 billion, according to government data. The economy expanded 7.6 percent in the fiscal year ended in March and is on track to grow 7.7 percent in 2017 and 7.8 percent in 2018, according to data compiled by Bloomberg. "India is going through a Goldilocks scenario" of lower interest rates and strong growth, says Manishi Raychaudhuri, a strategist in Hong Kong with BNP Paribas Securities. "It's a rare combination."

Tata's largest public companies
Market cap, Oct. 30

❶ TCS	$70.7b
❷ Tata Motors*	$23.0b
❸ Tata Steel	$5.9b
❹ Titan	$5.1b
❺ Tata Power	$3.2b
❻ Tata Comm.	$2.7b
❼ Tata Chem.	$2.7b

In June a London arbitration court sided with the Japanese company, ordering Tata to pay about $1.2 billion for breach of the agreement. In July the RBI again refused to allow the Docomo payment. "Regulation in India changes with dramatic speed, so long-term business planning can be tricky," says Richard Rossow, Wadhwani Chair in U.S. India Policy Studies at the Center for Strategic and International Studies in Washington.

Despite reforms, India remains a difficult place to do business. In many states, laws limit land purchases for factories and other investments. Investors are also wary of labor laws restricting companies' ability to lay off workers during downturns.

A sore point is tax policy. "In most countries, if you have a tax dispute, you try and settle it," says Dinesh Kanabar, Mumbai-based chief executive officer of Dhruva Advisors, who works with multinationals on tax disputes. In India, "it gets litigated all the way to the very top." Cases can drag on for 15 years.

Vodafone has been fighting against India's tax collectors since 2007, when the British company bought an Indian mobile operator held in a Cayman Islands-based company controlled by Hong Kong's **Hutchison Whampoa**. Arguing that the deal involved the sale of a company with business assets in India, the government socked Vodafone with a $2.2 billion tax bill. After India's Supreme Court ruled there was no legal basis to the tax demand, the government quickly changed the law and made the rules retroactive. Vodafone has rejected a settlement offer from Modi's government and is seeking a ruling from an arbitration panel. "Foreign investors are still stuck with a tax framework that would put the most corrupt regimes to shame," says Andre Jerome, former general counsel for Vodafone India. They "are still begging for a level playing field."

Docomo is trying to get a Delhi court to enforce the London ruling and filed papers in federal court in New York on Oct. 6 to enforce the London verdict. It says it will seek enforcement globally to get what it's owed. "To solve this problem," Docomo CEO Kazuhiro Yoshizawa told reporters on Oct. 28, "we need the Indian government's action." *—Bruce Einhorn, Iain Marlow, and Grace Huang*

The bottom line The conflict between the telecom and the conglomerate illustrates the bureaucratic trouble of doing business in India.

Edited by Christopher Power
Bloomberg.com

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November 7 — November 13, 2016

China's High-End Retail Emporium

QILAI SHEN/BLOOMBERG

▶ **Walmart is remaking its Sam's Clubs to offer foreign goods aimed at aspirational consumers**

▶ **"To Chinese shoppers, 'imported' is a badge for premium"**

In the U.S., **Walmart Stores**' members-only warehouse chain, Sam's Club, offers a wide array of products, from bulk groceries to patio furniture, at discounted prices in cavernous, no-frills stores where goods are stacked on metal shelves. Walmart is doing the same thing in China but with some pricey twists, including $3,200 Zojirushi rice cookers and $295,000 diamond rings.

Over the past two years, the retailer has repositioned the 14 Sam's Clubs in the country to offer more expensive products. Shoppers can pick up $500 Dyson hair dryers, $1,700 bottles of 1995 Château Lafite Rothschild red wine, and $7,000 high-tech massage chairs, in addition to imported pistachios and desserts conjured up by Michelin-rated chefs. There's even a $4,100 Laurastar ironing system that comes with four hours of in-home instruction. Unlike its small business focus in America, Sam's Club on the mainland is all about catering to the whims and preferences of an emerging middle and upper class willing to spend more for premium items.

"Our member is a very aspirational shopper," says Andrew Miles, chief operating officer of Sam's Club in China. "Their desire is for a better life and to show their wealth to their family and friends, to show that they are a smart, savvy shopper. That's the ambition we want to fill."

Walmart sees big potential in China: Its Sam's Club in Shenzhen, a fast-growing urban center in the southeast, is the chain's best-performing outlet globally. Walmart, which posted $482 billion in revenue for its fiscal year ended Jan. 31, doesn't break out China sales, but it says the growth of clubs there is among its fastest globally. Chinese memberships now number 1.8 million and are growing 10 percent to 12 percent annually.

In addition to rolling out a premium product lineup, the retailer almost doubled its annual membership fee in April, to 260 yuan ($40), to attract more upscale shoppers, those earning at least $25,000 in yearly household income, roughly three times the nation's average in 2014. Miles says members remaining after the fee increase spent 8 percent more on average per visit.

"Sam's Club's potential in China is greater than anywhere," says Walmart Chief Executive Officer Doug McMillon. Members "want a fine bottle of ▶

◀ wine, they want a great fresh-food experience, they want a 4k television," he says, referring to the latest high-resolution technology. "Even a $15,000 price point can be a great value for what you are getting."

That upmarket tack—from a Samsung curved TV for $26,000 to a 61-bottle collection of Médoc wines, complete with its own cooler, for $14,472—capitalizes on a Chinese bias toward imports. They see them as higher-quality and safer after domestic suppliers experienced some recent well-publicized food-safety concerns. "I don't have to go through online channels to get foreign brands now," says He Lihui, a 35-year-old sales executive who was shopping at the Shenzhen Sam's Club for Wonderful brand pistachios from the U.S. and waffles made with European ingredients.

Sam's Club's own brands, such as its Member's Mark private-label oatmeal and kitchen towels, or the Asda brand developed for Walmart stores in Britain, aren't perceived as high-end in their home markets, according to Jack Chuang, OC&C Strategy Consultants' Greater China partner. But Sam's Club has been pitching the foreign provenance of its house-branded items and selling them for less than what imports generally cost in China. "What they've done in China is a rebranding exercise using the fact that to Chinese shoppers, 'imported' is a badge for premium," he says.

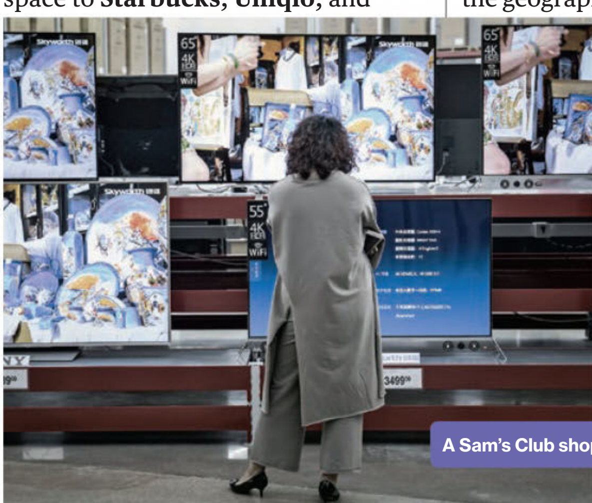
Walmart aims to more than double the number of Sam's Clubs there to 35 in three years, and it's built an entire mall with a 1,900-car parking lot for a 5,000-square-meter (54,000-square-foot) store in Zhuhai, near the casino island of Macau. The investment in the new mall, which has leased space to **Starbucks**, **Uniqlo**, and other big brands, became necessary because other potential retail sites lacked adequate parking. Similar projects with malls anchored by Sam's Clubs are planned in Jiangxi and Guizhou provinces.

Sam's Club's success is in sharp contrast to the performance at the 412 Walmart-branded stores on the mainland, where McMillon says sales are flat. Big brick-and-mortar retailers such as Walmart and France's **Carrefour** have struggled as Chinese consumers increasingly turn to e-commerce platforms for electronics and other nonperishable goods, both of which are high-margin categories at Walmart's large stores in China, says Wai-Chan Chan, a senior partner in the Asia-Pacific retail and consumer practice at consultant Oliver Wyman.

In an attempt to remedy that, Walmart on Oct. 20 announced a distribution partnership with **JD.com**, China's second-largest e-commerce company after **Alibaba Group**. Customers can now order Walmart items from around the world through a store on JD.com; they're delivered using the e-commerce company's sprawling fulfillment system, which reaches homes in 90 percent of the country. Already, customers living near 20 Walmarts can get purchases delivered within two hours; more stores will be added later.

Sam's Club has also opened a flashy online storefront on JD.com, making its items available to nonmembers for the first time, albeit at a 10 percent premium. "We're indifferent as to the format," McMillon says. "Our job is to make sure that we are there to serve customers however they want to be served." One bonus from boosting online access: Sam's Club can use the geographic data from e-commerce sales to identify where it should set up warehouses next, says Walmart China's senior vice president for e-commerce, Ben Hassing.

Sam's Club has no major club rivals in China. Its biggest American competitor, **Costco Wholesale**, doesn't operate brick-and-mortar stores there. That could change: Costco opened a store on Alibaba's Tmall online platform last year, a move OC&C's Chuang describes as "dipping their toes into the water." For now, Sam's Club has the pool—and the growth—to itself. —*Bloomberg News*



A Sam's Club shopper in Tianjin

The bottom line Sam's Club in China, whose membership is growing at 10 percent to 12 percent annually, is repositioning itself to sell pricier goods.

Media

Is AT&T Buying a Big Dog to Get a Fancy Tail?

▶ **Mobile video is growing fast, but users mostly watch short clips**

▶ **"You buy this enormous company and only ... utilize a small slice of it"**

For **AT&T** Chief Executive Officer Randall Stephenson, grabbing ownership of great video content that his company could offer through its mobile services was a key reason for his $85.4 billion deal to buy **Time Warner**. "Premium content always wins," he said in October after the deal was announced. "It has been true on the big screen, the TV screen, and now it's proving true on the mobile screen."

Just how successfully that maxim can be applied to the cell phone universe remains to be seen. User-generated and social-media-shared content—think cat videos or clips of James Corden's *Carpool Karaoke*—are among the big drivers of mobile video. Getting smartphone users, who tend to watch shorter pieces, to consume much of Time Warner's long-form content on their tiny screens won't be easy.

"That's one of the big challenges—you buy this enormous company and only try to utilize a small slice of it," says Jan Dawson, an analyst at Jackdaw Research. "The good thing is, it's a good business in its own right."

Companies like AT&T are embracing mobile video for a simple reason: It's the fastest-growing video type by consumption, according to the Interactive Advertising Bureau. Already, 14- to 25-year-olds watch more video on computers, tablets, and smartphones than on traditional TV, Deloitte says. In the second quarter, streaming-video plays

FROM LEFT: QILAI SHEN/BLOOMBERG; CHESNOT/GETTY IMAGES on smartphones rose 10 percent from a year earlier, while tablet plays increased 51 percent, according to Ooyala, which tracks millions of viewers.

Advertising should bolster mobile-video revenue, which globally will reach $25 billion by 2021, up from $12 billion today, as the number of mobile-video users more than doubles to 2 billion by the end of 2022, says researcher Strategy Analytics. With more than 60 percent of mobile-data traffic already coming from video, a figure that's still growing, "mobile video is at the center of a lot of operator strategies," says Chetan Sharma, an independent wireless analyst.

AT&T has already been offering video via mobile apps, one of which lets phone users stream their DirecTV channels so the video doesn't count against their wireless data allowance when the services are bundled. And in November the company will launch DirecTV Now, a service offering more than 100 channels for $35 a month over wireless or traditional wired Internet connections to any smartphone, tablet, smart TV, or other device. "If you fast forward—2020 plus—mobile video is central to a TV viewership," Sharma says. "AT&T is looking to offer access-and-content bundles and compete head-on with **Comcast** and the like."

It's uncertain how suited many marquee Time Warner properties—such as the Warner Bros. *Harry Potter* film franchise and HBO's *Game of Thrones*—may be for the small screen. According to Ooyala, in the second quarter, videos 5 minutes or shorter accounted for 55 percent of all viewing time on smartphones; mobile video 5 minutes to 20 minutes long accounted for about 20 percent of viewing time on smartphones, tablets, and computers. Longer-form video, though it's becoming more popular, was mostly watched on home TVs and tablets. That means most users may watch only snippets of CNN or sports highlights from Time Warner on their phone—but not 90-minute shows.

Besides, many people who consume mobile video don't pay for premium content. A typical U.S. user spent 13 minutes more watching **YouTube** than watching **Netflix** on a smartphone this year, according to research from Strategy Analytics. Over the past year the time a typical American spent watching YouTube on a phone jumped 37 percent, while Netflix-watching time remained constant. "YouTube is a classic example of how consumers consume mobile video," says analyst Wei Shi of Strategy Analytics.

Making money on video services could be tough. At the expected rate of $35 a month for DirecTV Now, AT&T might end up providing content at a loss, says Craig Moffett, a senior analyst at MoffettNathanson. He figures that content costs alone will add up to $34 per viewer a month. "By the time you add in the cost of hosting and transport, customer service, customer acquisition—you'll be losing money," he says. "That's why everybody is scratching their heads over this transaction." But AT&T may be able to make money selling ads around mobile video content, which currently is experiencing red-hot demand from advertisers, says Cathy Boyle, an analyst at researcher EMarketer.

AT&T executives are undeterred by the skeptics. "Think about the mobile devices really just becoming secondary televisions in people's home," says Tony Goncalves, senior vice president for strategy and business development at AT&T Entertainment Group. "What do people watch on their televisions? Premium content. They watch *Harry Potter*, *Game of Thrones*, news. We think that's where monetization really lies." —*Olga Kharif*

The bottom line Mobile video accounts for more than 60 percent of mobile-data traffic. AT&T wants Time Warner content to feed that growing segment.

Sports

Baseball Wants A Home Run in China

▶ **MLB sponsors training camps to develop interest on the mainland**

▶ **"It's necessary to have a Chinese superstar" to build a business**

Xu Guiyuan, a wiry 20-year-old from Puning, is trying to become the first mainland-born Chinese player to reach baseball's major leagues. Xu wasn't introduced to the sport until age 8; he played at first with bags filled with ▶

Breakdown

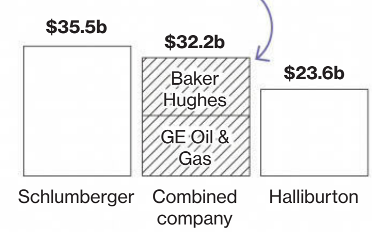
Oil Shake-Up

GE's unexpected deal is a wager on the future of U.S. fracking and shale.

❶ The Plan

▷ General Electric wants to combine its oil and gas unit with Baker Hughes to create a new public energy company.

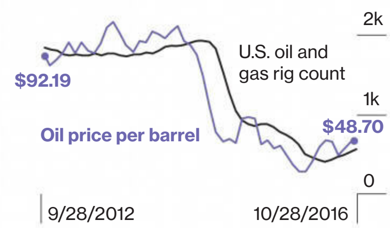
▷ It would be one of the oil-services industry's largest, by 2015 revenue.



▷ GE will own 62.5 percent of the business.

❷ The Environment

Oil and gas rig counts have fallen with oil prices; revenue growth at GE's oil unit has been slowing for almost two years.



❸ The Winners

▷ Investors Dodge & Cox and ValueAct will each make $500 million or more from a special dividend to Baker Hughes stockholders.

Why it matters Approved or not, the deal signals optimism about an energy comeback.
—*Mark Glassman*

"This is a company that goes from molecules to megawatts." —*GE CEO Jeff Immelt*

$7.4b

The Chinese government's target value for annual baseball-related activities within a decade

◀ sand and didn't compete with a real baseball until he was 11. He learned the game at one of three **Major League Baseball** Development Centers in China. He's just completed his first season playing for the Baltimore Orioles' minor league organization.

There's a lot riding on the late bloomer. MLB says it's spending hundreds of millions of dollars building baseball diamonds and academies in a nation where the sport was once banned for being too decadent. The state-run China Baseball Association estimates the industry generates about 3 billion yuan ($443 million) annually. But if Xu makes it in the majors, his success could give a boost to the Chinese government's plan to transform baseball into a 50 billion-yuan ($7.4 billion) industry within a decade—and to MLB's hopes to capitalize on those ticket sales, sponsorships, merchandise, and media deals. "If I play badly, it's my own problem and affects only myself," Xu says. "But if I play well, the effect could be enormous."

Just ask the **National Basketball Association**. China Central Television has shown NBA games since the 1980s, but the league's popularity in the country skyrocketed after Shanghai native Yao Ming was drafted in 2002 and went on to a Hall of Fame career with the Houston Rockets. The NBA now has annual revenue in China of $250 million from merchandise sales and broadcasting games, according to state-run media, and last year signed a $700 million contract with **Tencent** for digital streaming rights. The Chinese Basketball Association estimates that 300 million Chinese now play the sport.

"Yao created an explosion of popularity and a fan base in China that's more passionate about the game than ever before," says NBA China Chief Executive Officer David Shoemaker, who declined to comment on league revenue in the country.

MLB needs its own Yao to be in the same league when it comes to buzz, media saturation, and merchandising. There are only about 3,000 professional and amateur baseball players in a nation of almost 1.4 billion people, and just 50 baseball stadiums, according to a December report by China's General Administration of Sport. About 500 schools of all levels have baseball teams; the highest level of play is the professional Chinese Baseball League, which has teams in Beijing, Chengdu, Guangzhou, Shanghai, Tianjin, and Wuxi. "Baseball development in China is slow," the report said. "The foundations are weak, the industry is at the developing stage, and games are not influential."

China has exported several players to MLB organizations, starting with Chao Wang, who joined a Seattle Mariners farm club in 2001, according to Baseball-Reference.com. None of them made it to the majors. "It's necessary to have a Chinese superstar," says Leon Xie, managing director of MLB China. "For the sport to be a local sport without a local star, it's impossible. The market ignites when there's a superstar."

The history is there—newspaper reports from the 1870s describe Chinese baseball players in the U.S. Even Babe Ruth came to China with a barnstorming team that played a squad of locals in Shanghai. But when the Cultural Revolution started in the 1960s, baseball was condemned for being too Western, according to *Baseball Without Borders: The International Pastime*, edited by George Gmelch. It wasn't welcomed back until 1975.

Since then, MLB has been working on China. It's provided coaches for its teams in international tournaments and the Olympics. In 2008 it also staged exhibition games between the San Diego Padres and the Los Angeles Dodgers, who built a stadium in Tianjin in 1986.

In January the league signed its first national media deal, giving **LeSports**—a company backed by Jack Ma, founder of Alibaba and China's richest person—exclusive rights for three years to livestream games, including this year's World Series, in China.

"The real opportunity is for MLB to be able to sell internet and broadcast media rights in China," says Jonathan Jensen, an assistant professor of sport administration at the University of North Carolina at Chapel Hill. About 710 million Chinese actively use the internet, according to the government.

The country is home to the league's biggest investment outside the U.S., says Xie of MLB China. It comes amid a 10-year national plan by the General Administration of Sport that includes quadrupling the number of professional-level baseball stadiums to 200, establishing at least 5,000 players, and generating more than 20 million viewers.

Besides building its own diamonds, MLB has opened development

QILAI SHEN/CORBIS/GETTY IMAGES

centers at high schools in Changzhou, Nanjing, and Wuxi. There, promising athletes work on their hitting, fielding, and throwing after they finish their reading, writing, and arithmetic—and English lessons. “Everything we’ve done is incremental,” says Rick Dell, MLB’s director of baseball development in Asia. “We’re trying to leave a footprint.”

Players usually come to MLB’s attention through what Dell calls “independent pockets”—schools or businesses where a teacher or entrepreneur who loves baseball has introduced it to local kids. MLB has paid for the education and living expenses of 92 players since it opened the centers in 2009. “What the NBA’s experience showed is not a time frame, but a truth: This is a longtime commitment,” Xie says. —*Bloomberg News*

The bottom line Major League Baseball wants to mimic the success in China of the NBA, which earns $250 million a year there.

Aerospace

Private Jets Aren’t So Private Anymore

▶ **Services that share planes are hurting sales**

▶ **“The democratization of private aviation is ... here to stay”**

Private jets are taking in other customers besides privileged business titans and the extremely wealthy. The non-airline industry, known as general aviation, has soared as new membership companies, ride-sharing programs, on-demand charter providers, and startups claiming to be the Uber of private aviation have expanded the availability and affordability of flights. But there’s been a downside for private aircraft manufacturers such as **Bombardier** and **Textron**’s Cessna Aircraft unit: They’re selling fewer planes.

“Unfortunately for airplane manufacturers, these new programs aren’t out buying a lot of new jets,” says Brian Foley, a business aircraft consultant who spent 20 years as director for marketing at the North American jet unit of France’s **Dassault Aviation**. “They’re just trying to use existing assets out there and get more utilization out of those parked airplanes.”

To adjust to weaker demand, manufacturers have throttled back production of some models of private aircraft. Global private jet deliveries are expected to drop 6.4 percent this year, to 645, and an additional 3.1 percent next year, to 625, according to JPMorgan Chase. Those declines contrast with increases of more than 5 percent in flight hours for the charter market in the October-to-September period for the past three years, says aviation researcher Argus International.

> **“Unfortunately for airplane manufacturers, these new programs aren’t out buying a lot of new jets.” —*Consultant Brian Foley***

The increased charter activity is resulting partly from new flying options that have expanded the market beyond the superrich, says Brad Stewart, chief executive officer of **XOJet**, which operates a fleet of 41 preowned aircraft for hire. “The democratization of private aviation is a huge theme, and it’s here to stay,” he says. “That’s really taking an access point of private aviation and bringing it from the top 10 percent of the 1 percent down to the merely rich.”

His company has linked up with **JetSmarter**, a membership service that owns no planes. JetSmarter buys flight hours from XOJet and other operators, allowing it to guarantee flights. Its members pay an annual fee—$15,000 for the first year. The setup results in more passengers flying on the same number of private planes.

It typically costs about $12,000 to charter a four-seat jet from New Jersey’s Teterboro Airport to Miami Executive Airport on a weekday, according to PrivateFly, a flight-search website. By contrast, a JetSmarter member pays just $2,000 to book a seat on a business jet at a time of her choosing. But it’s free to hitch a ride on a flight already booked by another member if an extra seat is open.

When business jets first appeared in the early 1960s with the Lockheed JetStar, the only way to fly in a private plane was to own one. Charter operators began to pop up to manage those jets and offer flights to nonowners. The 1990s brought a major industry change with the fractional jet model, now dominated by Warren Buffett’s **NetJets**. Fractional operators sell shares of new planes to several owners, promising each the right to fly a set amount of hours per year. That model, which fueled the purchase of new jets, was a boon to manufacturers.

NetJets and **Flexjet**, the second-largest fractional operator, are still two of the industry’s largest plane buyers. NetJets in 2012 announced the purchase of as many as 425 Cessna and Bombardier aircraft in a transaction valued at $9.6 billion.

Last year, Flexjet increased its order of Bombardier Challenger 350s to 40 from 20 after agreeing to purchase 50 **Gulfstream Aerospace** jets in 2014.

During the Great Recession, plane values plummeted, and many fractional owners were disappointed to find the value of their share had declined when they tried to upgrade to a new plane or cash out, consultant Foley says. Many fractional operators sold out or went bust. “Since then, there’s been a virtual explosion of [business] models out there,” he says. “One thing that helped this along is the Digital Age, where we can pull up things on our smartphones and laptops.”

Wheels Up, founded by industry veteran Kenny Dichter, is gaining passengers with a membership model that offers guaranteed availability of entire planes at reduced rates. The company operates its own fleet of preowned Cessna Excel/XLS jets and newly purchased King Air 350i turboprop aircraft.

Even though many of the private plane programs aren’t translating into aircraft orders, some manufacturers say they’re introducing the efficiency of flying privately to people who may become future buyers of their own jets, says Textron Aviation CEO Scott Ernest. “It’s good for us. I actually look at it as a way to bring new customers into the market.” —*Thomas Black*

The bottom line Private jet charter flight hours have risen 5 percent annually recently. But new jet deliveries are forecast to fall 6.4 percent this year.

Edited by James E. Ellis
Bloomberg.com

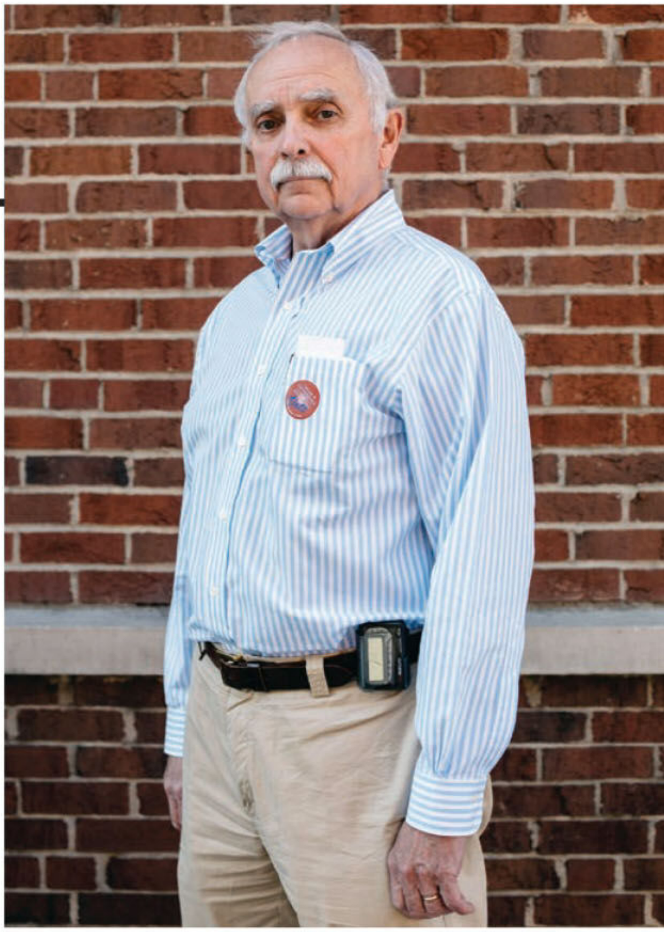
The Polls Are Open

▶ In 37 states and the District of Columbia, eager voters get a head start

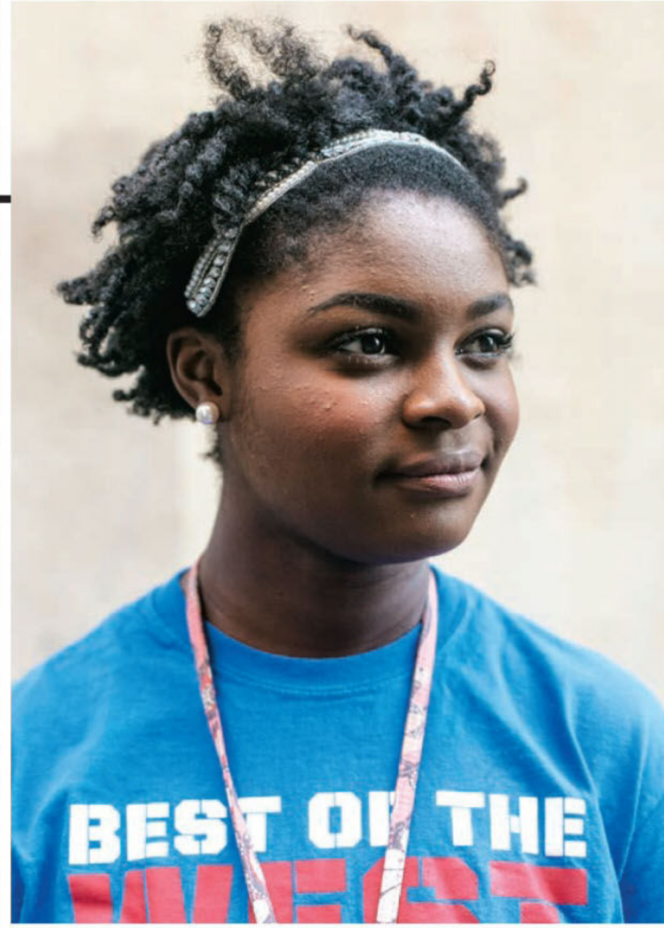
▶ "I wanted to exercise my right to vote, and I did not want to wait a minute longer"

Cincinnati

With Nov. 8 approaching, we sent photographers to states where the presidential election is closely contested. They interviewed early voters doing their part for Hillary Clinton, Donald Trump, independent conservative Evan McMullin, Libertarian Gary Johnson, or Green Party nominee Jill Stein. The longest lines were in **Ohio**, where Hamilton County voters converged on a single location: the Board of Elections office in downtown Cincinnati. Photographs and interviews by Andrew Spear

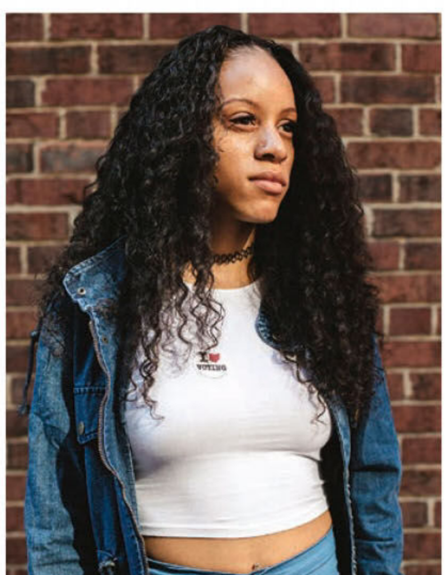


"I think that everyone is taken advantage of by these dot-com people who are billionaires. I don't think anybody should be paid more than, say, $1 million to run a major corporation. And the fact that they get away with $70 million or $100 million and golden parachutes, that's baloney. I would tax the heck out of those people." Clinton voter **Joseph Palascak**, 74, a physician at the University of Cincinnati College of Medicine



"I was excited to vote. It was my first time, and I have waited so long." Clinton voter **Kamilah Williams**, 18

"We were big Bernie supporters. The only reason I voted for Hillary Clinton is because we live in a swing state. If I was to live in another state, I would have voted for Jill Stein." **Ismaeel Chartier**, 43, imam of the Clifton Mosque



"Honestly, really honestly, I don't like neither one of them. I know you can write in, but it's really between those two when it comes down to it. I don't think anyone's going to win by write-in." Clinton voter **Diera Taylor**, 23

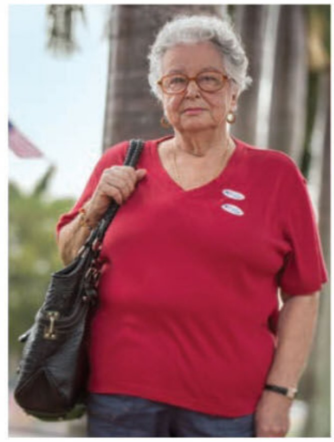
"If you are on the fence, that's the same thing as being on the couch. Come tell us your point of view. Staying out of the electoral process only weakens it. I mean, where would we be today if Martin Luther King had sat on the couch, or Abraham Lincoln?" Clinton voter **Alvertis Bishop**, 62, attorney and Hamilton County judicial candidate

Both Clinton and Trump are trying to win over Latinos in **Florida**, about 16 percent of all registered voters. Democrats have an advantage of 284,000 among them.

Photographs and interviews by Erika Larsen, with Jorge Vidal

"I cannot believe that with 330 million people in the U.S., we have these two bad candidates. I agree with neither one. I chose one just because I need to choose, or I couldn't vote." **Jacquelin Bianchi**, 55, raised in Ecuador, declined to disclose her pick ▷ Palm Beach County

"As I tell everyone, I voted for Pence." Ecuadorean-born **Raúl Puente**, 41, who works in health care ▷ Palm Beach County



"Mr. Trump has made people see the reality of what's going on. He says what he feels, and he's opened people's eyes. Sometimes he blurts things out, but you have to understand where he's coming from." Trump voter **Blanca Rafart**, 76, who emigrated from Cuba 47 years ago ▷ Broward County

"I was very excited, because it's my first time voting in America. I became a citizen two years ago, and this was one of the reasons." Clinton voter **Elizabeth San Martín Kroll**, 55, originally from Peru ▷ Broward County

Palm Beach County

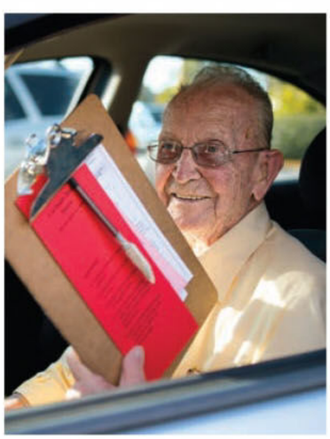
Black churches in **North Carolina** have responded to cutbacks in early voting by the Republican legislature by organizing "Souls to the Polls" marches after services.

Photographs and interviews by Johnathon Kelso

Charlotte

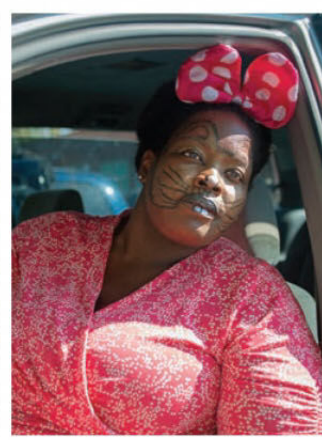
"I take the time during the months of September, October, and November to talk about the importance of voting. African Americans have suffered and endured a lot just for the privilege given to all human beings in America—the right to vote." Clinton voter **Clifford Jones Sr.** (front right), the pastor at Friendship Missionary Baptist Church

"Clinton is the candidate who's going to make sure that the president's programs are carried forward. My daughter has MS, and we're saving about $400 a month because of the affordable health care plan." Clinton voter **Rosemary Lawrence**, 72, a retired revenue manager for the City of Charlotte



"I didn't like the debates that Hillary Clinton and Donald Trump had. I don't like for a man to treat a woman like that whether she's a housewife or trying to be president." Clinton voter **G.R. Warren**, 89

"I wanted to exercise my right to vote, and I did not want to wait a minute longer." Clinton voter **Juvonna Martin**, a 27-year veteran at American Airlines



"I know that Hillary is pegged to win, but I will not be a part of it. I will not, because I don't feel as though she represents me and mine to any capacity." Stein voter **Kelle Pressley**, 42, a mother of nine, mom blogger, and doula, dressed up for Halloween

In **Utah**, McMullin, a Mormon, is appealing to #NeverTrump voters, while Clinton is hoping a split GOP vote can give her a surprise win in a reliably red state.

Photographs and interviews by Michael Friberg

“More so than ever before, I think a Democrat has a chance to win the state, just because of the anti-Trump sentiment that a lot of Mormons here have. I feel like for once my vote counts more here than it would otherwise.” Clinton voter **Sage Pearson**, 33

McMullin is “running to take electoral votes away from the other two, so possibly neither one could win, and then it would go to Congress. So that’s what I’m hoping.” **Sandra Dixon**, 72, who voted for McMullin. “I think a vote for him is a vote for Hillary. Otherwise I’d have voted for him.” Husband **Richard Dixon**, 77, who chose Trump

“I’m Chinese American. My ancestors have been the victims of racial laws that have been passed, so I’m quite sensitive to the kind of inflammatory rhetoric that goes on about immigration against racial groups.” Retired State Department employee **Anthony King**, 63, a registered Republican who voted for Clinton

“He’s not a bad person. He might have done bad things. You know, there’s a lot of people that are in prison that have made mistakes. But when they get out, they’ll have a chance to make decisions again, and hopefully they’re better decisions. Trump is the same way. We’ve all made mistakes.” Trump voter **Craig Hassapakis**, 56

Provo

Nevada voted twice for President Obama, but Republicans have spent millions trying to win its U.S. Senate seat—and perhaps the state.

Photographs and interviews by Isaac Brekken

Las Vegas

"We need to get the Republicans out of the Congress and out of the Senate so we can get something done, because they don't want to do nothing. They're drawing $174,000 a year to sit on their ass and do nothing." Clinton voter **Edward Vavricka**, 64 ▷ Las Vegas

"I actually voted for Ronald Reagan for president. I voted a few times for Republican people, because I felt that they were better. But this time, no way." Clinton voter **Marilyn Haas**, 82 ▷Las Vegas

"Hillary wants to open the door to refugees to come to America. In my opinion, FBI agents can't positively say who is a good guy and who is a bad guy 100 percent. So this is the reason I am voting for Trump." Travel agent **Iris Zhang**, 43 ▷ Las Vegas

"I wanted Hillary to be our first lady president." First-time voter **Lee Chapple**, 64, who cast his ballot for Clinton ▷ North Las Vegas

Edited by Allison Hoffman and Karen Weise
Bloomberg.com


Portfolio Details
Portfolio Updates
84%
My Retirement
Value
$27,996.37
Rate of return
+7.2%
Gain/loss
+$1,880.37
Target (per month)
$4,000.00
2034 Target
$581,108.00
Account Value and Growth
Historical
Projected
84% probability of reaching target
Outcome falls below target
Outcome exceeds target
My performance

November 7 — November 13, 2016

A License to Print Plastic

▶ Innovia dominates the growing market for polymer cash

▶ "There's a lot of science behind bank notes"

Mark Robertshaw is walking around a printing plant in Wigton, England, about 10 miles from the Scottish border, with a wad of cash. He lays out a Mexican 50, a Canadian 20, an Australian 5, and a fiver from the U.K. Unlike euros or U.S. dollars, these notes have a slight sheen and the feel of wax paper. That's because they entered the 10-story plant as popcorn-size kernels of plastic.

Robertshaw is the chief executive officer of **Innovia**, the world's leading maker of plastic money. If that sounds like faint praise–such bills account for only 3 percent of the world's money–there's plenty of reason to believe Innovia will become a bigger force in the $1.3 billion bank note industry. The £5 note makes the U.K. the latest of about 30 countries to start shifting toward plastic cash, a more durable and secure alternative to the cotton in your Andrew Jacksons. Of the 50 billion-plus plastic notes now in circulation, Innovia made more than 99 percent. "There is a received wisdom out there that cash is disappearing," Robertshaw says. "Statistics don't support that."

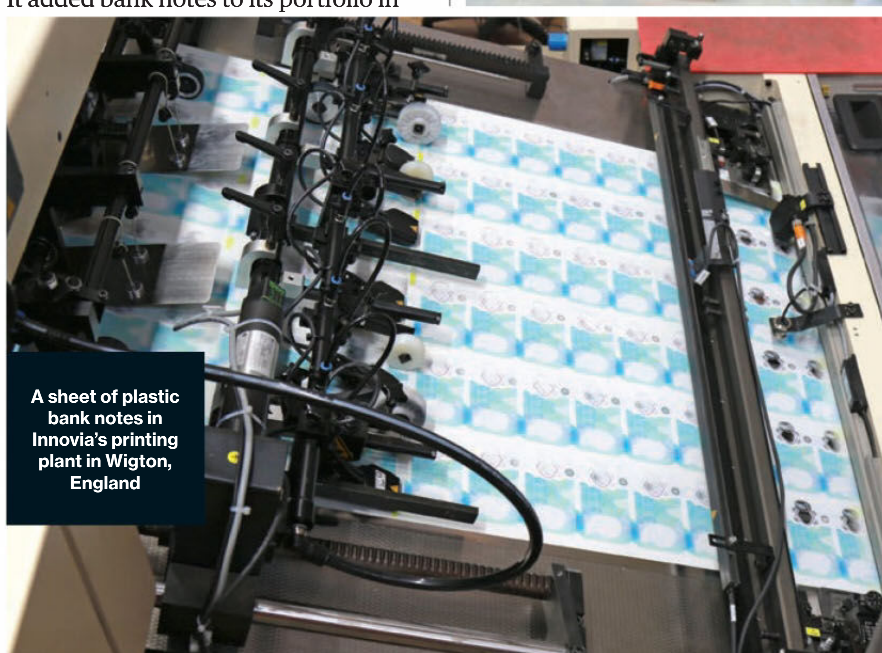
The number of bank notes in circulation grows by about 3 percent a year. Making the bills is a lot more technical than it was under the Tang or Song dynasties more than a millennium ago, or in the 13th century, when explorer Marco Polo first brought Asia's cotton money back to Europe. (Before that, currencies tended toward metals, shells, and salt.) Materials have to resist rips and stains, as well as incorporate ever-more-complex security measures to discourage forgers.

"There's a lot of science behind bank notes that people probably don't appreciate is there," says Victoria Cleland, the chief cashier at the Bank of England. Before awarding Innovia the contract for the U.K.'s plastic pounds, her team spent more than five years studying potential materials for the new notes, examining whether, for example, holograms verifying a bill's authenticity could be easily incorporated into a particular polymer. The U.K. put the first of 440 million plastic £5 notes into circulation in September; it will introduce a £10 bill in June made by Innovia. The company is bidding on the contract for the £20 note to follow.

Innovia has come a long way from its start making cellophane in the 1930s and a midcentury expansion into cigarette packaging and shampoo bottle labels, which the company still makes. It added bank notes to its portfolio in the 1980s, when Australia's central bank was looking for bills that could better withstand the heat Down Under. Now they account for about one-third of the company's £380 million ($468 million) in annual revenue, Robertshaw says.

Plastic bills cost a few cents each to make, about twice the cost of paper, but they last five times as long, according to Robertshaw. "They can go through your washing machine," he says. "You can dip them in your wine." YouTube videos show the new £5 notes being used as a needle to play a vinyl record; others have shown that fire will melt them. "We don't claim they are indestructible," Robertshaw says.

On the 10th floor of the sweltering Wigton factory, Innovia's team starts the assembly process by melting small beads of plastic in a 482F furnace. By blowing in air, the machinery creates a bubble large enough to fit a couple ▶



A sheet of plastic bank notes in Innovia's printing plant in Wigton, England

FROM TOP: COURTESY INNOVIA; BANK OF ENGLAND

◀ of people inside, stretching out the plastic into a thin film. Rollers then smooth and stretch the material to 65 times its original length. Holograms and other security features are printed onto the plastic along with special inks, and the plastic is cut into 60-bill sheets. Innovia then sends the sheets to bank note maker **De La Rue**, which adds the bills' designs (the Queen, Winston Churchill).

Innovia's plastic carries a unique chemical signature, so a keychain-size scanner used by retailers and banks can identify if a bill is real. While no hard currency is fake-proof, the goal is to make forgery tough enough to be unappealing, says De La Rue designer Steve Matthews. Canada's government says since it moved to plastic money, it's seen counterfeiting drop from 400 bills per million to 1 per million.

Cleland says the Bank of England chose Innovia after trying to counterfeit the bills. "It was much more difficult in terms of the raw material needed, the printing machinery you would need, and the time that it took," she says. Since the U.K. introduced the bill, several central banks have reached out to her to learn more about the production process.

The priority should be eliminating some cash entirely, says Kenneth Rogoff, former chief economist for the World Bank. In a new book, *The Curse of Cash*, Rogoff argues that central banks should remove large-denomination bills from the system: They're mainly used for crime and tax avoidance. "A significant share of the demand for cash comes from the underground economy and is almost completely because of its anonymity," he says.

In September the U.K. put the first of 440 million plastic £5 notes into circulation

Rogoff predicts that future cash registers will include scanners that log purchases with plastic bills, blending elements of digital and physical currencies. Robertshaw says the technology exists to track their travel. That's the kind of technology that may help combat crime, but it would surely unsettle privacy advocates.

The Bank of England is among those studying ways to introduce a government-backed digital currency, like a bitcoin issued by the central bank. For now, Cleland says, "it's a long way off. Polymer is in the street much earlier." —*Adam Satariano*

The bottom line The U.K. has joined the ranks of countries with plastic currency—good news for Innovia, which controls 99 percent of the market.

Virtual Reality

When League Pass Takes You Courtside

▶ **The NBA is the first sports league to commit to regular VR streaming**

▶ **"We want... people with VR gear to be motivated to get League Pass"**

On the last Thursday night in October, David Cole, chief executive officer of **NextVR**, sits in a small room beneath the stands at Golden 1 Center, the home of the **NBA**'s Sacramento Kings. Through the cinder-block walls come the muffled sounds of the crowd as the Kings and the San Antonio Spurs begin the first regular-season game at the new arena. Under the circumstances, Cole seems pretty calm. He and his company are streaming the game live in virtual reality, one of the biggest tests yet for his equipment and personnel. "Tonight, we rolled out everything," he says.

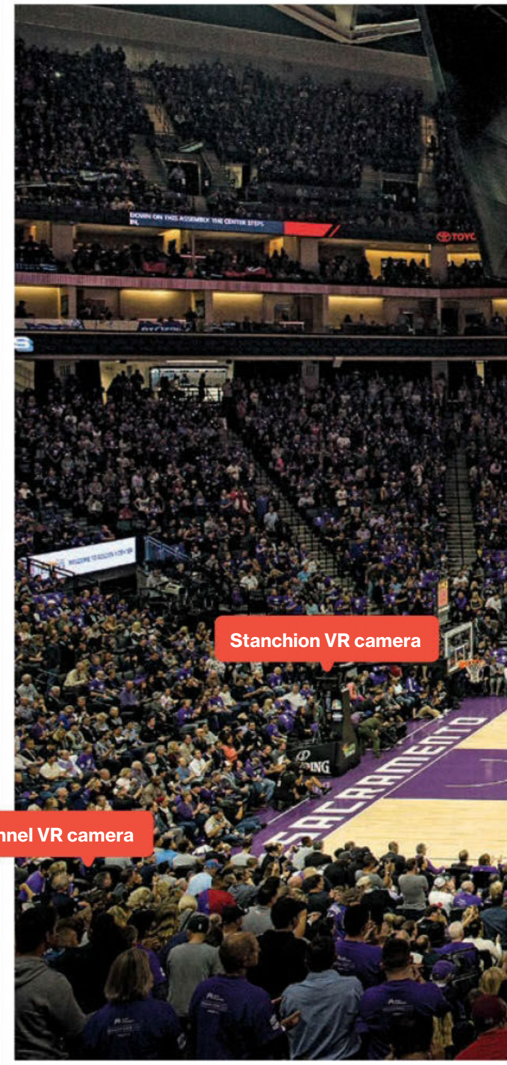
Earlier in the month, the NBA said it would give viewers a VR streaming option for one game in each of the 25 weeks of the 2016-17 season. It's the first sports league to commit to a regular VR schedule. The NBA chose NextVR, a California startup specializing in live streaming, as its producer.

The broadcasts will be available at no additional cost to people who pay the $200 a year for League Pass, the NBA's subscription package for live, out-of-market games. For now, they'll also need a $99 Samsung Gear VR headset and a compatible Samsung phone. The NBA says it's likely that by the end of the season League Pass will be compatible with other VR headsets.

For past VR experiments with NBA games, including last season's home opener for the Golden State Warriors, ▶

Sacramento

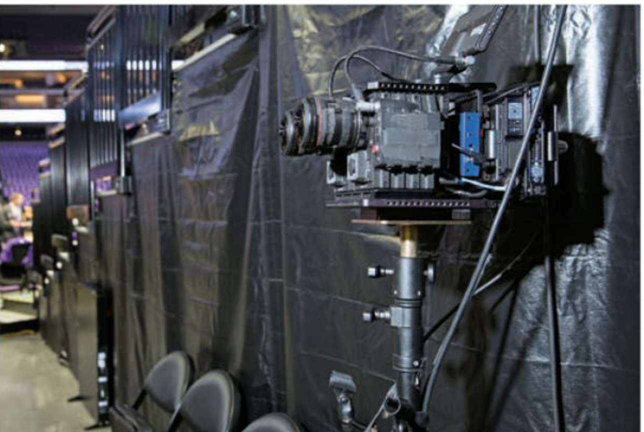
▼ As the Kings face the San Antonio Spurs at the Golden 1 Center on Oct. 27, VR cameras capture every move



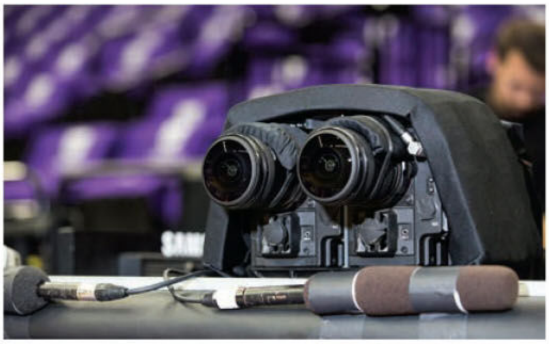
FROM LEFT: BANK OF ENGLAND; PHOTOGRAPHS BY GABRIELA HASBUN FOR BLOOMBERG BUSINESSWEEK (6)

◀ Play-by-play man Jonathan Yardley and color commentator Julianne Viani (both real) give pregame analysis to VR viewers

▶ A screen in the on-site trailer, where a production crew stitches together the broadcast, shows the left- and right-eye views from NextVR's eight cameras



◀ A NextVR dual-lens, 180-degree camera rig waits in the tunnel for players on their way from the locker room to the court



▶ A VR camera stationed on the scorers' table provides a courtside view that no ticket can

◀ NextVR stationed three rigs in the arena but mostly left viewers courtside. This season, it's aiming for TV-style productions with multiple cameras, graphics, replays, and play-by-play commentary. In a semitrailer parked inside the bowels of Golden 1 Center, NextVR's director and live producer sit in front of a screen showing fisheye views from eight unmanned, dual-lens, 180-degree camera rigs: one courtside at the scorers' table, one mounted on each stanchion under the baskets, one next to the TV camera in the stands, one in each tunnel where the players come and go, and two roving mobile units.

So with the nonvirtual game a few hundred feet away, I strap on a Gear VR to try the virtual experience. Inside the headset, I hear play-by-play announcer Jonathan Yardley tell me to look down to see the score. Below me, or so it seems, a graphic shows the Kings are up 16-9 in the first quarter. I turn my head left and see Kings coach Dave Joerger pacing the sideline a few feet away. Then I'm watching from a perch above the baseline. "I hope you whipped your head across," Yardley says after a crosscourt pass by the Kings. At a break in the action, a referee walks toward me and stands unnervingly close.

The NBA won't say how many other people were twisting their heads back and forth that night. Jeff Marsilio, the NBA's vice president for global media distribution, says the VR audience is "modest." It's a small subset of the population that might have used a League Pass login to access the game in the NextVR app on a Wi-Fi-connected Samsung phone and then dropped it into a Gear VR headset. (Total subscribers, app downloads, and headset sales are undisclosed.) "We want people with League Pass to be motivated to get VR gear and people with VR gear to be motivated to get League Pass," says Marsilio.

> "We think that NBA basketball is some of the most valuable virtual-reality content on the planet."
> *—David Cole, CEO of NextVR*

NBA Digital, which manages the league's digital assets in a partnership with **Turner Sports**, has a multiyear deal with NextVR. "We think that NBA basketball is some of the most valuable virtual-reality content on the planet," says NextVR's Cole. He wouldn't disclose production costs. Mark Alamares, co-founder of the video-streaming production company Mobeon, estimates production costs are at least $250,000 per game.

For now, the only advertising in the VR broadcasts is for other NextVR events. The NBA's Marsilio imagines a future where, during timeouts, viewers go skiing down a mountain courtesy of Mountain Dew.

Founded in 2009, NextVR grew out of the wreckage of 3D TV, an expensive technology briefly championed and since abandoned by ESPN and most TV manufacturers. Until 2014, NextVR was called Next3D. When 3D TV "had a heart attack and died," as Cole puts it, from lack of consumer interest, the company changed focus, using its proprietary software for capturing, compressing, and rendering stereoscopic video to make VR productions. By that point, the displays on mobile phones had become good enough to deliver VR via headsets that magnify their pixels.

Over the past few years, NextVR has produced dozens of live events, including college football, Nascar races, soccer matches, the Masters, boxing, MLB's Home Run Derby, and the Kentucky Derby. It also has a deal with Live Nation to produce concerts. The company has raised more than $115 million from investors including **Time Warner**, **Comcast**, and Golden State Warriors co-owner Peter Guber.

VR is still in its infancy. Later this year, Cole says, NextVR will pass the 500-hour mark for live VR productions, more than was ever broadcast live on 3D TV. During the Kings game, the action on the far edges of the court is fuzzy and the jumps between cameras sometimes disorienting. But at moments it delivers on the promise of a fully immersive, visceral experience. As I watch DeMarcus Cousins of the Kings and Pau Gasol of the Spurs jostle for position under the basket, seemingly a few feet away, I gape, mouth half open, and forget that I'm sitting in a small, crowded room. *—Ira Boudway*

The bottom line One NBA game a week is available in streaming VR, if you pay the $200 a year for a League Pass subscription.

Digits

$600m

The funds from new and previous investors would give six-year-old Ola enough capital for at least 18 months, the person says

The funding that **Ola**, India's largest ride-hailing company, is in talks to raise by yearend as it tries to fend off Uber, according to a person familiar with the matter. Chief Executive Officer Bhavish Aggarwal didn't respond to a request for comment.

Hardware

LG Sees an Opening In the Smart Home

▶ **The company is trying to outwow Samsung's appliances**

▶ **"You have to claim the high end of the market"**

The Note 7 isn't the only **Samsung** product with problems. The U.S. Consumer Product Safety Commission is also working with the Korean company to address safety issues with its washing machines. Customers who bought certain top-load Samsung washers should use only the delicate cycle for bulky items such as sheets to reduce the risk of "impact injuries or property damage," the CPSC warned in late September following a series of consumer complaints, including a class action contending that Samsung's machines "explode during normal use." The company declined to comment.

What's bad for Samsung may be good for homegrown rival **LG**, which has been promoting appliances loaded with the latest technology. In September the company unveiled a fridge with a 29-inch touchscreen powered by **Intel** equipment and running Windows 10; an onboard computer can store recipes and send alerts about needed ingredients to a mobile app. A few weeks later, LG set up an exhibition in New York's Rockefeller Center to show off its current slate of high-end appliances, including a Signature fridge with doors that open when you wave a foot near a floor sensor. Tap the door twice, and a glass panel goes from opaque to transparent, revealing what's inside.

At $8,500, the Signature fridge is a statement piece, part of LG's growing effort to stake out the high-tech slice of the $381 billion global appliance market with new products. A $1,700 air purifier carries a sensor the company says can detect particles 1 micron in diameter, assessed on the device's air-quality monitor. A $2,100 gas dryer can be programmed from a distance, using a phone and Wi-Fi. A two-unit washer ($2,880 total) can simultaneously handle two loads with different needs—whites and colors, for example.

"This is just a start," says William Cho, the company's U.S. president. LG engineers are working to connect the smart appliances, along with motion sensors and the like, to a controller app called SmartThinQ. In September the company announced a version of the app that works with **Amazon.com**'s virtual assistant, Alexa, to manage appliances via voice commands. "In the next couple of years, you will see much stronger products combining technology and design," Cho says.

Samsung has the early lead. Its $5,800 Wi-Fi-enabled refrigerator, introduced in January, lets users browse the internet, display photos, create grocery lists, and stream music from **Pandora** and other apps through built-in speakers. Samsung said in an e-mailed statement that its customers want connected appliances and it's committed to them.

LG has a lot more at stake. TVs and appliances are just rounding errors in Samsung's portfolio, which, despite the smartphone recall, has been buoyed by its chipmaking business. LG's smartphone division has lost money for six straight quarters, and home appliances are its biggest bright spot, accounting for 35 percent of revenue last quarter.

It's not clear that enough people want smart appliances to make the market a long-term strategy, says Jason Low, an analyst with researcher Canalys. Even if the high-tech equipment becomes more affordable, only so many consumers want a micron-sensitive air purifier or a fridge that plays music, he says. "They might think it's complicating stuff, rather than making it easier."

Still, LG and Samsung have to think long term. Chinese brands are gaining ground in the higher-end smartphone and TV businesses, and margins are shrinking. For now, next-gen appliances seem safer, says Mark Newman, a Sanford C. Bernstein analyst. "You have to claim the high end of the market," he says. "They've got no choice." —*Bruce Einhorn and Jungah Lee*

The bottom line LG is pushing harder into pricey, gee-whiz appliances as its other businesses struggle to turn a profit.

E-Commerce

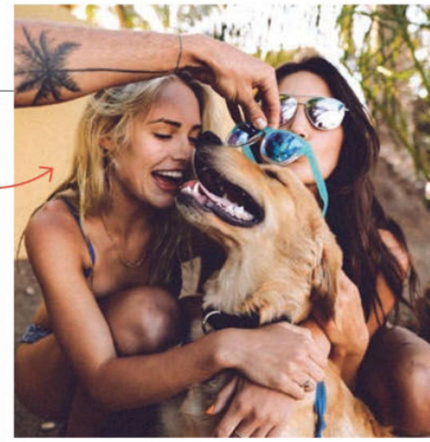
Hey Guys, Watch This

▶ How a sunglasses brand became a Facebook and Twitter case study

▶ "You don't need lots of money to spread the word"

In September two young women approached Hawkers, a Spanish sunglasses brand, with an unusual proposition: If the company paid for each of them to get the iPhone 7, they'd help hijack the hype on the phone's first day on sale at the giant Apple store in Madrid's Puerta del Sol. Their idea was

Electronic musician Steve Aoki wears Hawkers shades in a promo



Hawkers' Instagram account has more than 455k followers

to get there early enough to be first in line, then let Hawkers promote their wait to generate almost-free publicity. It may sound dumb, but it worked.

The women waited in line for 38 hours. While they stood there, Hawkers amped up the stunt by hiring them a masseuse and a violinist, plus a professional Instagrammer to document everything. The brand launched an online raffle to give away one of the iPhones, promoting it repeatedly to more than 4 million fans on **Facebook** and 174,000 followers on **Twitter**. Participants had to fill out an online form and tweet a video and a hashtag. Some 6,000 submitted, and the promotion became a top trending topic inside and outside Spain. Hawkers says about 30 million people saw it on Twitter and Facebook. Each.

"If you can do it in a creative way, you don't need lots of money to spread the word," says David Moreno, co-founder and creative director of **Saldum Ventures**, Hawkers' Spanish parent company. "We can hack a famous brand, or we can hack the whole system." The iPhone stunt fit the formula he's used to sell about 3.5 million pairs of sunglasses in three years: Use big brands and celebrities to make a lot of noise on the cheap, amplify it on social media, then invest heavily in targeting online ads at the crowd that gathers. This spring the startup bought a rival that has sold an additional 500,000 pairs.

Other ventures included a video of a phony yeti sighting in the Pyrenees that made headlines around the world in February, helping to promote a ski resort, and its sponsorship of the Los Angeles Lakers last year. Saldum attracted local attention as the first Spanish company to sponsor an NBA team, and it maintains its support primarily for daily Hawkers mentions on the Lakers' social media feeds. ▶

Innovation

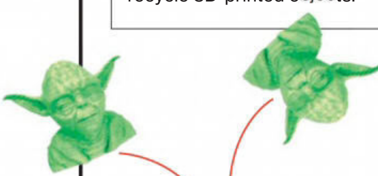
3D-Printing Recycler

Form and function
The ProtoCycler is a desktop machine that can turn almost any postconsumer plastic, including water bottles and coffee cup lids, into raw material for a 3D printer. It can also recycle 3D-printed objects.

Innovators Alex Kay and Dennon Oosterman

Ages 23 and 25

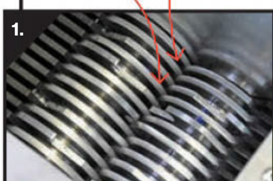
Co-founders of six-person startup ReDeTec in Toronto



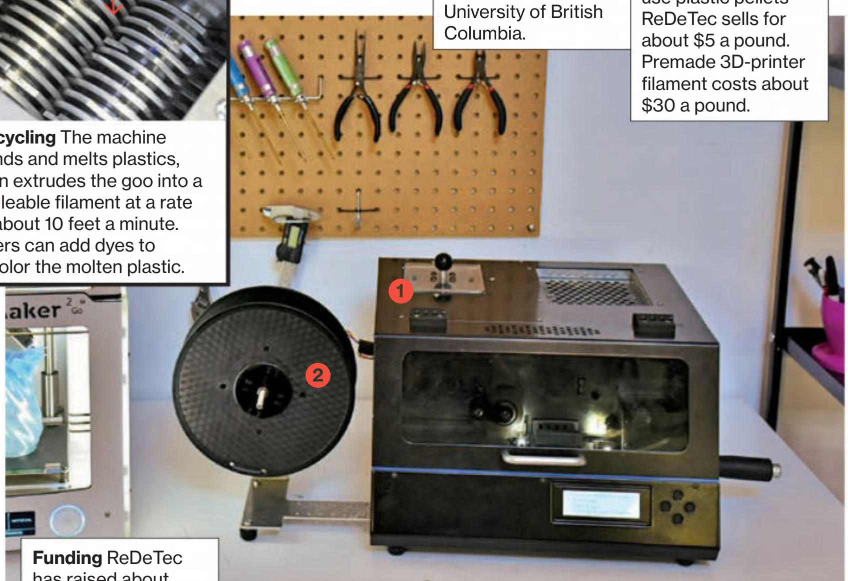
Origin Frustrated by how much plastic they wasted making prototypes for robotics classes, Kay and Oosterman began working on a recycler in 2012 as seniors at the University of British Columbia.

Fuel Along with waste, the ProtoCycler can use plastic pellets ReDeTec sells for about $5 a pound. Premade 3D-printer filament costs about $30 a pound.

1.



Recycling The machine grinds and melts plastics, then extrudes the goo into a malleable filament at a rate of about 10 feet a minute. Users can add dyes to recolor the molten plastic.



Funding ReDeTec has raised about $500,000 from angel investors and crowdfunding.

Cost Crowdfunding backers paid $700 for preorders; ReDeTec says the mass-production price will be from $800 to $1,000.

2.

Printing Once the goo has hardened into filament, it's ready for use in a printer. The ProtoCycler can repurpose most plastics 3 to 30 times, depending on quality.

Next Steps
ReDeTec says it will finish its 600 preorders—for early supporters, mostly architects, hobbyists, and schools—by the end of March. While there are municipal- or industrial-scale recyclers for plastics, the ProtoCycler could fill a consumer niche, says Dawn Danby, a program manager at engineering software maker Autodesk who focuses on sustainable design. "Now let them figure out how to make it take plastic bags," she says. Oosterman says he's working on that. —*Miranda Purves*

◀ Saldum, which has three other sunglasses lines, sold €40 million ($44 million) in shades last year and expects to move €70 million this year, with about 60 percent of sales from Facebook. Moreno says the projection for next year is €150 million. Facebook, Twitter, and the e-commerce platform **Shopify** have used the company as a case study when convincing others of the value of their platforms.

In early October, Saldum said investors had paid €50 million for a minority stake in the 120-employee company. Moreno wouldn't disclose the valuation, but Spanish media estimate it at €200 million to €250 million. Moreno says he'll use the funding to reach more online shoppers outside Spain, who make up about one-third of sales, and experiment more with selling offline.

Abroad, Moreno will have more competition. With the global sunglasses market topping $18 billion, dozens of startups are selling their own low-cost brands online, says Adam Moyer, a former art student who in 2005 launched one of the first such companies, **Knockaround**, in San Diego. Knockaround sells hundreds of thousands of pairs of sunglasses online each year and turns a profit, says Moyer, who previously used Saldum's founders as distributors in Spain. Fast-fashion brands such as **H&M** and **Zara** are also pushing into the market, says Jasmine Seng, an analyst at researcher Euromonitor International.

The Hawkers strategy won't change too much, Moreno says. Last year he spent more than half his €6 million digital ad budget to put thousands of different ads on Facebook; this summer alone, sometimes €40,000 a day. Andreas Klein, Saldum's head of international sales, says the team constantly monitors each ad's effectiveness and swaps out photos and copy that don't attract clicks. Moreno says he's not worried about social media imitators, because Facebook's ad tools are like an artist's pencil: What a merchant can get from them, he says, "depends if you're Picasso or you're me." —*Nick Leiber*

The bottom line Saldum has sold 3.5 million pairs of sunglasses in three years with guerrilla marketing and heavy promotion on social media.

Edited by Jeff Muskus
Bloomberg.com


HITACHI
Inspire the Next
Analytics
25
50
75
100
125
150
THE FUTURE IS OPEN
TO SUGGESTIONS
Today, we're surrounded by unimaginable amounts of data. More than we know what to do with. But what if we could give all of this a greater purpose? Combining artificial intelligence and advanced analytics, we're using big data to find deeper insights and to co-create innovative solutions in the age of the Internet of Things. It's part of our commitment to accelerate Social Innovation for a better future.
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▶ Do you like bargain stocks? Or the idea of momentum? How about small caps? Why choose?

▶ "You come up with a result that could be a fluke"

Mutual fund companies want to sell you the income of a dividend, the zip of momentum, and the good night's sleep of a low-volatility stock all at once. And they really hope you buy it, because **BlackRock**, **Franklin Templeton Investments**, **Goldman Sachs**, and other big asset managers are pinning their hopes for growth on the concept.

It's called multifactor investing, and it might sound like the latest Wall Street snake oil—a complex strategy hidden behind finance jargon like "beta" and "factor tilt," then stuffed into exchange-traded funds for the mass market. But some serious people are convinced multifactor funds can replicate everything a talented stock-picker brings to the table, without the fickle emotions and high fees.

Multifactor starts with the familiar idea of indexing. Because the market is hard to beat and fund expenses eat into returns, index funds and ETFs that replicate benchmarks such as the S&P 500 at a low cost have outperformed active managers over time. But some money managers think there are ways to build better indexes. Instead of weighting stocks by market value, as normal indexes do, they bunch companies into groups based on some factor that's been shown to beat the market in the past: a low price-earnings ratio, say, or less-than-average volatility. They don't pick these stocks one by one but hold hundreds based on the results of a computerized screening process.

The marketing label for the strategy is "smart beta"—a coinage meant to evoke a souped-up version of the market's return, which pros call beta. Multifactor combines several smart-beta strategies into one. The premise is that if you like low-volatility stocks, then you'll love them combined with value, smaller size, high dividends, or other factors.

Fund researcher Morningstar counts almost 300 multifactor ETFs with total assets of $251 billion. More multifactor ETFs have been created this year than funds using any other strategy, data compiled by Bloomberg show, including traditional market-value-based index funds.

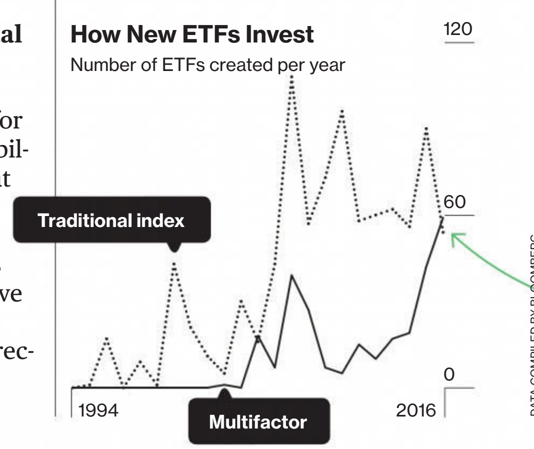
Quantitatively-driven money managers Cliff Asness of **AQR Capital Management** and David Booth of **Dimensional Fund Advisors** have been applying the multifactor idea for years. What's new is the easy availability of the strategy in ETFs, funds that can be bought and sold like stocks. "The industry is creating more transparent and lower-cost versions of the same quant management we've seen over the last couple of years," says Lance Humphrey, executive director of global multiassets at **USAA Asset Management**. His company has been the biggest investor in the Goldman Sachs ActiveBeta U.S. Large Cap Equity Index, with 12 percent of the shares outstanding. The Goldman ETF has an annual expense ratio of 0.09 percent of assets, comparable to the cost of a plain-vanilla index fund.

To get the benefits of a multifactor strategy, you have to hold an investment long term, through up markets and down. But packaging them as ETFs makes the funds easy to trade. Some wonder how many individuals will resist the temptation to push the sell button on their investing app when times get tough.

"We're not creating trading vehicles. We're creating core exposures," says Patrick O'Connor, head of global ETFs at

How New ETFs Invest

Number of ETFs created per year



DATA COMPILED BY BLOOMBERG

Are bondholders losing their interest? 50

Actuaries: Retirement won't last forever 51

Hottest New Investment

Franklin Templeton. "It's still relatively new. There's definitely folks getting into it, but I think we're all working on education, which is a good thing."

Investors may need a lengthy seminar to figure out what they're getting. No two funds use the same mix of factors or weightings. **JPMorgan Chase**'s JPMorgan Diversified Return U.S. Equity ETF emphasizes value, momentum—stocks that have already been going up—and companies with a high return on equity. As of Nov. 1, it's returned 8.7 percent in 2016, compared with 5.2 percent for the S&P 500. The Goldman Sachs U.S. large-cap ETF uses similar factors but also looks for low volatility in prices. It's posted a 3.1 percent return this year.

59
Number of multifactor ETFs launched this year

Since most multifactor ETFs were created within the past three years, their track record is thin. Providers can only cite backtests, or hypothetical results based on historical data. For its 1-year-old iShares Edge MSCI Multifactor U.S. ETF, BlackRock advertises a 10-year annualized return of 6.9 percent, compared with 5.9 percent for the S&P 500 using historical index data.

"A lot of this is so new, but if we waited until all indexes had a live track record of seven years, product development would stop," says Rob Nestor, head of iShares U.S. smart beta at BlackRock. "So investors should be discerning when they're looking at backtests and should examine closely the methodology and make sure the factors are captured and backed by empirical evidence."

Hypothetical histories can be tricky. A fund manager might use complicated parameters to dig up a strategy that would have looked great in the past, but making money on it in the present is another question. This is sometimes called the "monkey portfolio" problem. Get enough monkeys throwing darts at the stock pages, and some of them will pick a winning portfolio by chance. Similarly, if you test enough factors and mixes of factors, you're sure to find some that beat the market.

"Very often, providers come up with complex factor definitions that are original and different from the academic work, with several adjustments," says Felix Goltz of EDHEC-Risk Institute, which researches and develops indexes. "You come up with a result that could be a fluke." But he says some factors do work—they tend to be the simple ones with a clear economic rationale.

Looking for companies trading at bargain prices, or stocks with the market's wind at their back, or a combination of both, is a common strategy for stockpickers. The proponents of multifactor investing say they're just codifying what many managers may have been doing in an ad hoc way—and often for a generous annual fee of 1 percent or more of assets. Computer-driven funds take humans out of the equation. Instead, investors just get the factors that would normally explain most of a fund's performance at a much lower cost. It remains to be seen if the funds can outdo conventional indexes. But maybe it's the professional stockpickers who really need to worry. —*Dani Burger*

The bottom line The fund industry's new big idea is a mix of index investing and stockpicking. Don't get carried away by its hypothetical track record.

Trading

Maybe the Flash Boys Are the Good Guys

▶ **High-speed trading spooks investors but not academics**

▶ **"What did the research find and was it conducted properly?"**

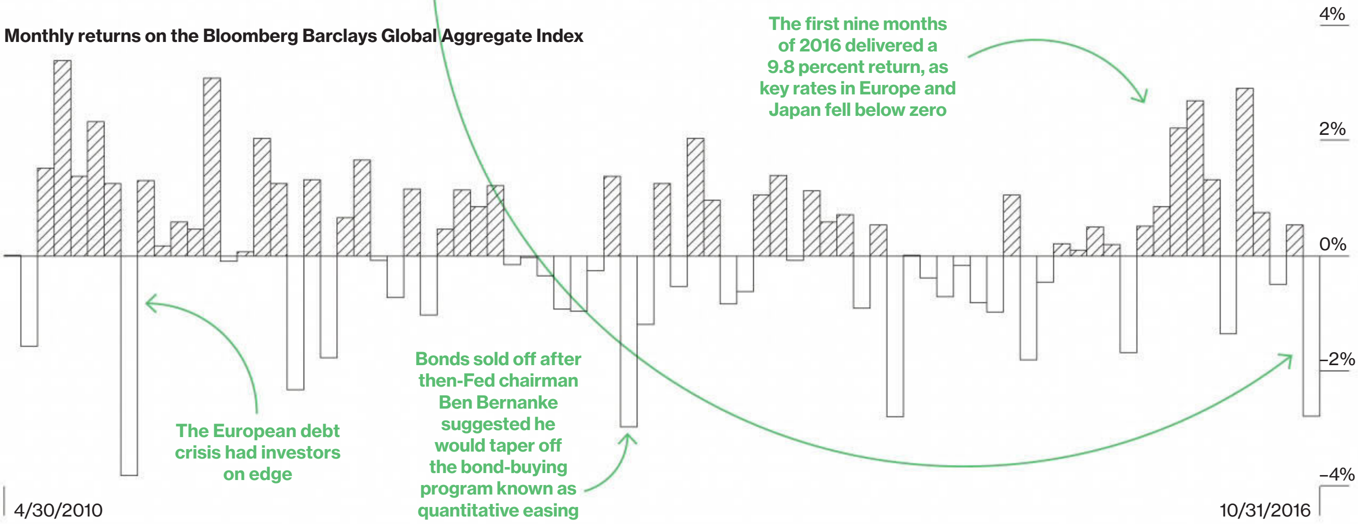
Across the wider world, Wall Street's high-frequency traders are often cast as the villains of the stock market. Computerized trading firms have become the dominant buyers and sellers of equities, executing thousands of trades per second. They've been accused of profiting at the expense of everyday investors and were famously portrayed by Michael Lewis in *Flash Boys* as part of a rigged system. Germany's Bundesbank has warned ▶

GETTY IMAGES (4)

Bonds A Tough Month for Safety-Minded Investors

Bondholders around the world lost about 2.8 percent in October, as signs of economic growth fueled speculation about an interest rate hike by the Federal Reserve and less aggressive monetary stimulus from other central banks. ——*Eliza Ronalds-Hannon*

Monthly returns on the Bloomberg Barclays Global Aggregate Index



DATA COMPILED BY BLOOMBERG

◀ that they can help trigger flash crashes, and Hillary Clinton has made policing them an election issue.

In academic circles, high-frequency traders are more often treated like heroes. Since 2013, positive studies have outnumbered negative ones by a 2-to-1 margin, according to a search of the 30 most-cited papers on HFTs. Researchers found firms reduced trading costs and improved market stability and liquidity—that is, the ability of investors to trade a stock without moving its price too much in the process. It's a turnaround from the previous three years, when most studies were inconclusive or negative. The results were compiled using Microsoft's search engine for academic research.

"As a whole, the literature strongly supports HFTs being a net positive," says Jonathan Brogaard, an assistant professor at the University of Washington and co-author with Terrence Hendershott and Ryan Riordan of 2014's "High-Frequency Trading and Price Discovery." It's the most commonly cited paper on the subject, and it contradicts a frequent claim that HFTs make markets more fragile. The researchers concluded that even when volatility increases, high-speed traders quickly bring prices back into line.

> "Years ago, somebody said 'high-frequency trading,' and you immediately associated it with detrimental aspects and implications." ——*Ryan Larson*

The second-most cited study, 2013's "Low-Latency Trading," by Joel Hasbrouck of NYU and Gideon Saar of Cornell, takes on another persistent criticism of HFTs: They profit at other investors' expense by using superior technology to race ahead of ordinary orders. The paper analyzed orders and executions on **Nasdaq** and found the presence of HFTs helped narrow bid-ask spreads, the difference between the price at which one trader wants to buy and the price at which another is willing to sell. If so, long-term investors are in effect benefiting from a lower cost of trading. If investors were getting ripped off, the cost of trading would be increasing.

Research to be published soon by Albert Menkveld, a professor at VU University Amsterdam, indicates trading costs have plunged more than 50 percent as electronic markets and HFTs emerged in the past decade. "Years ago, somebody said 'high-frequency trading,' and you immediately associated it with detrimental aspects and implications," says Ryan Larson, head of U.S. equity trading at RBC Global Asset Management. That's considered "a naive viewpoint now," he says.

Some say the conclusions should be taken with a grain of salt. Academia has been dogged by worries that its research can be tainted by cozy relationships with industry. Finance is no exception.

In mid-2012 the chief executive officer of the computerized trading company then called **Knight Capital Group** warned Congress against too much regulation, citing research that showed HFTs helped the market. The study was commissioned by Knight, and earlier that year, its lead author joined the board of a stock exchange operator partly owned by the company. Just months after the testimony, Knight almost collapsed when some automated trades went haywire.

It's not unusual to see researchers on HFTs collaborating with the finance industry, especially for access to data. Brogaard says in his paper that Nasdaq freely provided data after he signed a nondisclosure agreement. A disclaimer in Hasbrouck's paper notes that he was paid to teach at an undisclosed high-frequency trading firm while doing research, but the study wasn't "specifically supported or funded by any organization." Nasdaq says it actively supports academic studies, and its data is widely used for market research. "If there's stuff going wrong, we want to know about it," says Frank Hatheway, Nasdaq's chief economist.

Conflicts of interest are still a concern, says Hendershott, a professor at the University of California at Berkeley. "This is something we should worry about," he says. "What should really matter is, what did the research find and was it conducted properly?"

Not all research on HFTs is positive. Some studies show that faster trading doesn't lead to tighter spreads or more liquidity, but it increases volatility. A bigger concern is that even if HFTs make everyday trading more efficient, they also create a more complex market driven by systems that may interact in unpredictable ways if something goes wrong.

In a paper called *Moore's Law vs. Murphy's Law*, Andrei Kirilenko and Andrew Lo of the Sloan School of Management at MIT argue that HFTs contributed to the market drop that briefly wiped out almost $1 trillion from U.S. stocks in May 2010. "A chainsaw allows us to clear brush much faster than a handsaw," they write, "but chainsaw accidents are much more severe than handsaw accidents."

Hendershott says it's important to keep in mind the possible drawbacks of the emerging trading technology. Debate on HFTs "has gotten more thoughtful," he says. "People try to talk about it in a more nuanced way." —*Camila Russo and John Detrixhe*

The bottom line Academics who study high-frequency trading tend to think it improves markets, but it may add risks that aren't well understood.

Planning

Retirement's Scariest Question: How Long?

▶ **The numbers on life expectancy aren't as rosy as they used to be**

▶ **"Year-over-year changes in mortality are very volatile"**

Death awaits all of us, but how patiently? Setting aside spiritual questions, having an estimate of how long you'll live is increasingly important. The shift from the traditional pension—which sent a regular check for life—to an individual 401(k) account means workers must do their own retirement math. When you die has become the crucial variable, helping to determine how much you need to save so your money lasts as long as you do. Make it to 95, and your retirement could cost twice what it would if you die at 80.

To unlock the mystery of your remaining days on earth, start with an actuary. Specializing in the study of risk and uncertainty, members of this 200-year-old profession pore over data on death to create estimates of the length of life for use by insurance companies and pension plans. The latest, best guesses for U.S. life spans come from a study released in October by the Society of Actuaries. The average 65-year-old American man should die a few months short of his 86th birthday, while the average 65-year-old woman will likely get an additional two years, almost reaching 88.

These new figures turn out to be a disappointment. Americans' longevity had been improving at a rapid clip from 2001 to 2009, but the pace has slowed in the last few years. The actuaries' projections of how long a person is likely to live take that slowdown into account, meaning the latest life-expectancy estimate for a 65-year-old is about six months shorter than in 2015. Projections for young people are down, too. A 25-year-old woman last year had a life expectancy of 90. This year, she's projected to fall about six months short of that. When millennials reach the traditional retirement age of 65, they'll probably be able to look forward to just a few more years of life than baby boomers did.

A slower rise in longevity is bad news for almost everyone but pension fund managers, who worry about having enough assets to cover workers' retirements. That said, "year-over-year changes in mortality are very volatile," says Dale Hall, managing director of research at the Society of Actuaries. All it takes is a bad flu season to make for a bad year. An effective new heart drug could produce several excellent years.

ILLUSTRATION BY 731

Actuaries say longevity will eventually get back to its long-term increases. Other studies, including one from Princeton University in December, have found evidence that health is actually deteriorating for some Americans—middle-aged, non-Hispanic whites. Among the culprits are drug overdose, suicide, alcohol poisoning, and liver disease.

Some of the most commonly cited estimates of longevity may be misleading for anyone putting together a retirement plan. The life expectancy for Americans at birth is 76 for men and 81 for women, according to the Centers for Disease Control and Prevention. But if you survive to middle age, you have a good chance of living much longer. The Society of Actuaries offers a life-expectancy estimator, available at longevityillustrator.org, that takes both age and health into account. It's based on last year's data but still provides a good general view, which can be useful when plugging numbers into an online retirement-planning calculator.

One thing the longevity estimator demonstrates is that you want to plan financially for a longer life than what's typical for your age group and gender. A life expectancy of 85 for a 65-year-old man means he's got a 50 percent chance of dying before that—and a 50 percent chance of living longer. A moderately healthy nonsmoker has a 25 percent chance of hitting 92 and a 10 percent chance of getting to 97.

Rising inequality also affects how you should think about the averages. According to research published earlier this year in the *Journal of the American Medical Association*, a 40-year-old man in the top 1 percent of income can expect to live 14 years longer than his counterpart in the bottom 1 percent. Education likewise makes a difference: A college-educated 25-year-old can expect to live a decade longer than a high school dropout of the same age, according to the Population Reference Bureau. Great health care and good fortune aren't evenly distributed, and neither is a healthy old age. —*Ben Steverman*

The bottom line A man retiring at 65 this year likely has about 20 years ahead of him, but he should aim to make his money last even longer.

Edited by Pat Regnier
Bloomberg.com

Elsie Will Text You When She's in Heat

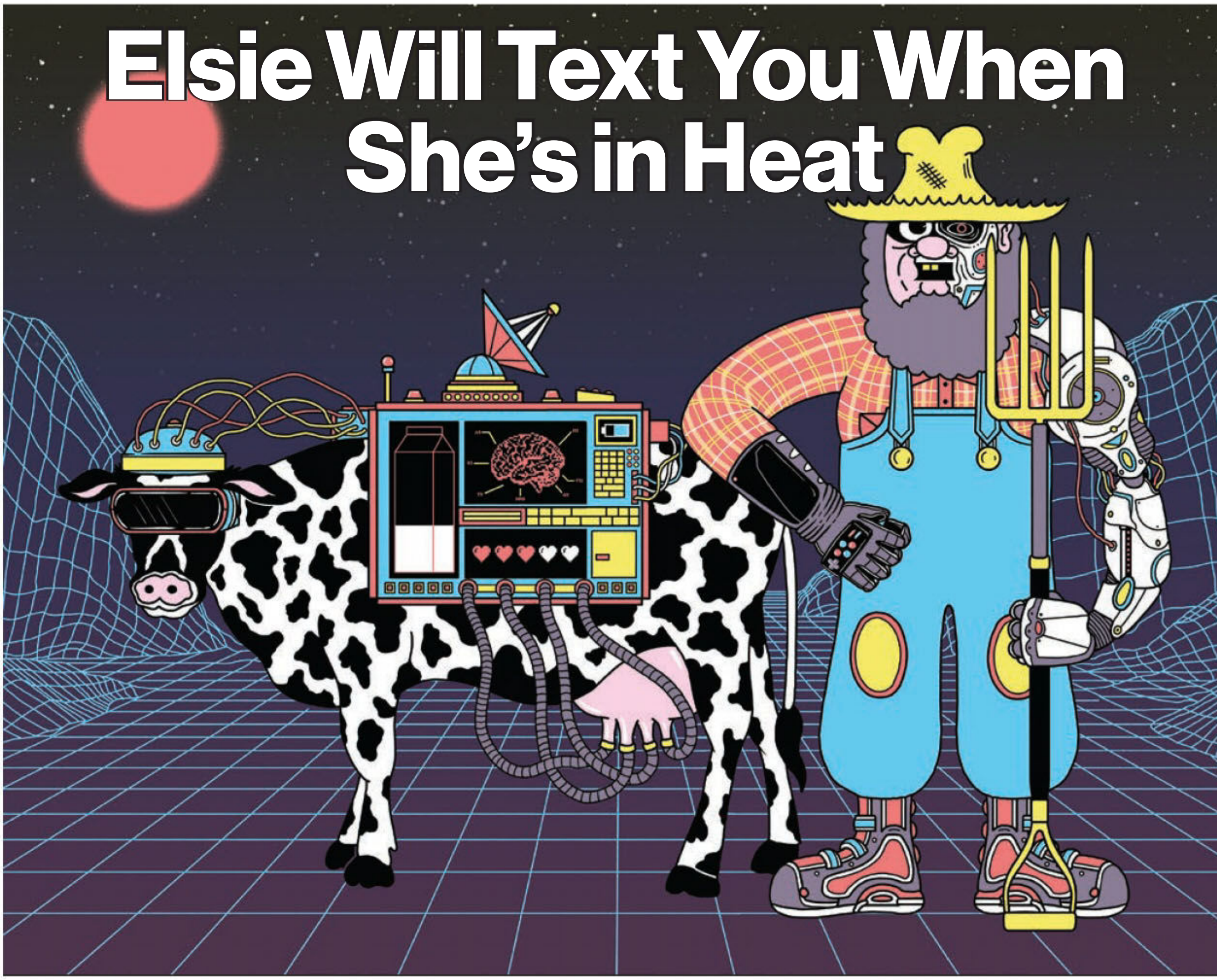


ILLUSTRATION BY JOSH FREYDKIS; COURTESY OF SMAXTEC

▶ **Dairy farmers are using sensors in cows' stomachs to track the health of the herd**

▶ **"It's easier, after all, to look at the situation from inside the cow"**

Every morning, Austin Knowles pulls on his rubber boots, dodges the manure in his farmyard, and opens the creaky wooden door of his 200-year-old barn on a hilltop in Worcestershire, 130 miles northwest of London. Inside, his dairy cows are busy uploading data to the cloud. Each animal has a half-pound sensor in her stomach, which is linked via Wi-Fi to a service that helps Knowles analyze the health and well-being of his herd. If an animal falls ill, the system e-mails the vet days before the cow is visibly sick. When one is about to go into heat, Knowles and his staff get a text message. "Cows are a lot of work," the third-generation farmer says over tea at the rough-hewn wooden table in his kitchen. "The technology takes the edge off a bit."

Knowles's Hollings Hill is one of 350 farms in almost two dozen countries using technology from Austrian startup **SmaXtec** to monitor their livestock. It works like this: A weighted sensor about the size of a hot dog is inserted into a cow's throat with a metal rod and lodges in the rumen, the first of a cow's four stomachs. The device—equipped with a battery that lasts four years, about the length of a dairy cow's productive life—transmits up-to-the-minute data such as the pH of her stomach, her temperature, how much she moves, and the amount of water she's consumed. A base station in the barn picks up the signals, adds readings on ambient temperature and humidity, and then uploads all the information to the cloud.

Since SmaXtec started offering the service six years ago, its devices have been implanted in 15,000 cows. Devices like SmaXtec's sensors offer farmers and vets an early warning system that

Rediscovering the joys of running your own data center 54

Retailers are wary of falling into Amazon's web 55

can reduce infectious diseases in their livestock, according to an independent study by the University of Cambridge. "It's easier, after all, to look at the situation from inside the cow than in the lab," says SmaXtec co-founder Stefan Rosenkranz. Although the company's gear can't yet tell farmers exactly what maladies might be afflicting their livestock, its temperature alarms "make you go and check earlier than you otherwise would," says Helen Hollingsworth, a veterinary nurse employed by **Molecare Veterinary Services**, SmaXtec's distributor in the U.K. "If you can detect illness early, you can start antibiotics earlier and ultimately use less."

Molecare also markets its own cloud-based technology to British farmers to allow them to track animals across an entire farm. One program Knowles is considering would look at data from scales at the water troughs to determine how quickly his 450 cows are growing. Another taps sensors placed in the field to measure how much they're eating. And one that's being tested uses temperature and humidity gauges to monitor the health of chickens. Farmers can share the data with retailers to give corporate customers a window into the quality of the product they're buying, says Keith Evans, who oversees the sensor technology at Molecare. "The idea is to give automated data in real time to everybody in the supply chain," Evans says.

The half-pound, 4-inch-long sensor lodges in the rumen, the first of a cow's four stomachs

SmaXtec says that with 90 million cattle on dairy farms around the world, the market for the sensors is huge. It's targeting industrial operations in China, the Middle East, and the U.S., where herds of 25,000 aren't unusual. The company or its distributors typically pay the upfront costs of deploying the gear and building the network—about $600, plus $75 to $400 per cow—and charge around $10 a month per cow for the service.

Knowles says the SmaXtec gear saves him the trouble of pulling his cows out of the herd and placing them in a gigantic metal vice called a cattle crush, where a vet checks their vitals. The sensors can also predict with 95 percent accuracy when a cow will give birth, allowing farmers to maximize milk production by spacing pregnancies as close together as possible. "The crux of any dairy farm is fertility," Knowles says as he peruses graphs and charts on a laptop giving him details of his cows' health and milk output. "We are trying to have a calf per cow every year. Everything we do on the farm comes back to that." —*Michael Scaturro*

The bottom line An Austrian startup's sensors are in the stomachs of 15,000 cows in Britain to help farmers better monitor their herds.

Strategy

A Giant in Search, But a Wisp in the Cloud

▶ **Google is a distant third behind Microsoft and Amazon**

▶ **"They don't have the DNA to deal with a chief information officer"**

Google was once a cloud pioneer, having spent years stringing together data centers to support its search business. But it squandered that lead by allowing others to market such infrastructure as a service first. **Alphabet**, Google's parent, is now intent on narrowing the gap with **Amazon.com** and **Microsoft**, in large part because it needs to build a reliable revenue stream that doesn't come from ads.

Last November, Alphabet asked board member Diane Greene to piece together the fragments of its cloud business. Greene, the co-founder and former chief executive officer of VMware, which develops cloud systems for companies, has unified several departments into a single unit called Google Cloud. In June she hired Tariq Shaukat to lead its growing sales team. Shaukat's previous job was chief commercial officer for Caesars Entertainment in Las Vegas, making him a bit of an odd duck at a company populated by computer engineers.

More than one person in Silicon Valley has described Greene as having a "blank check" for acquisitions. Since she came on board, her unit has shepherded at least four sizable deals, including the $625 million purchase of **Apigee**, which makes tools for corporate users of cloud-based applications.

A year into the job, Greene has something to show for her efforts. Google's share of the so-called public cloud market—which includes data storage, computing, and networking services—has more than doubled since the second quarter of 2015, according to estimates from Synergy Research Group. But at 5 percent or so, it's still well behind Microsoft's 12 percent and Amazon's market-leading 43 percent. Amazon Web Services logged almost $8 billion in revenue in 2015 and is on pace to top $10 billion this year. Alphabet has yet to break out results for Google Cloud, but industry insiders estimate its sales are at most a tenth of Amazon's.

During an Oct. 27 call with investors, Google CEO Sundar Pichai said the cloud division would be one of his "largest areas" of investment and personnel growth in 2017. Jonathan Atkin, an analyst with RBC Capital Markets, is skeptical about how much headway Greene can make. "Google has the raw infrastructure to be relevant in this sector, just not the DNA," he says. An investor, who asked to remain anonymous because his venture capital firm works with Google, echoes the thought: "They don't have the DNA to deal with a chief information officer."

For as long as it's been around, Google's priority has been creating software to be used by billions of individuals, which is why it has long neglected the market for business applications. Prabhakar Raghavan, a company veteran who oversees G Suite, Google's version of Microsoft Office, recalls floating an idea for a feature that would appeal to maybe 10 million users. He says the reaction from his engineers was "Give me a break." ▶

Shaukat says times have changed: "It's probably a fair characterization of what we were like three or four years ago as opposed to what we are like today." Meeting with chief information officers and other corporate executives is his "full-time job," he says.

Google is under pressure to sign up customers, because a large chunk of its cloud revenue comes from just two clients, says a former Google employee: **Apple** and Snapchat's parent company, **Snap**. Apple has developed an internal photo-storage system dubbed McQueen to gradually end its reliance on Google and Amazon servers, say people familiar with its strategy. An investor close to Snap says it may one day take a similar route.

Google and AWS have engaged in successive rounds of price-cutting to win business. As an additional inducement, Google is offering its cloud customers access to tools that incorporate artificial intelligence, such as an image-recognition feature. Several executives in Silicon Valley have lauded the offerings, but less tech-savvy companies in other industries may struggle to make use of them. "The perception from people is that Google is still quirky to use," says Matthew Prince, CEO of Cloudflare, a web security firm. "It's like everyone is speaking standardized English, and Google [is] the French speaker." —*Mark Bergen*

The bottom line Google's share of the cloud market has doubled, to about 5 percent, in the past year, but AWS has 43 percent and Microsoft 12 percent.

Productivity

Home Is Where The Data Is

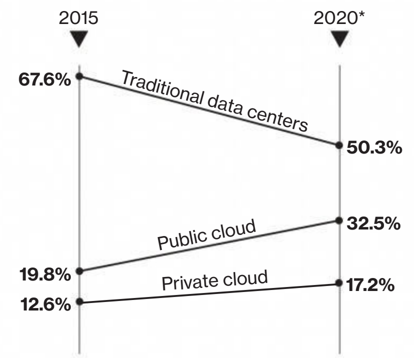
▶ **For those with large troves, the cloud may not be ideal**

▶ **"On a movie shoot, a week can be a petabyte of data"**

The cloud era is still booming, as is clear from the market's double-digit growth rate. Yet a backlash is already emerging: Companies are showing renewed appreciation for what's known as on-premises computing. The recognition

Cumulus With a Chance of Stratus

Breakdown of the cloud infrastructure market



*FORECAST; DATA: IDC

that it just doesn't make sense to hand over certain tasks or data to **Microsoft** or **Amazon.com** is creating opportunities for companies that promise to deliver the efficiencies of the cloud from the comfort of your very own data center. "We're getting to a phase in the hype cycle where there's a lot more rationality setting into the market," says Ed Anderson, cloud analyst at Gartner. "You can and should ask hard questions about if I move that workload to a cloud, will I get a meaningful benefit from that? And in some cases, the answer is probably not."

The Allen Institute for Brain Science in Seattle generates petabytes (1 petabyte equals a million gigabytes) of data through its work creating 3D maps of brains—it started with mice and has made its way up to humans. Last year the research operation costed out a move to the cloud with Amazon Web Services. It turned out the switch would have been five times more costly than keeping the data stored in-house because of the sheer amount of information involved, the difficulty of transferring it, and the speed lost in having the data and related processing located off-site, says Chinh Dang, the institute's chief administrative officer.

Last month, **Igneous Systems** unveiled a product it spent three years developing: a storage device about the height and width of a home stereo receiver but three times as deep that the Seattle startup installs in a client's data center and then maintains. Because the gear is on-site, data transfer is cheaper and faster than the speediest

"You can and should ask hard questions about if I move that workload to a cloud, will I get a meaningful benefit from that? And in some cases, the answer is probably not." —*Ed Anderson, Gartner*

option from AWS, according to Kiran Bhageshpur, chief executive officer of Igneous. "The fundamental problem of off-prem," says Bhageshpur, using industry shorthand, "is one of physics." Even though Amazon and Microsoft seem to announce a new data center in a new city almost every month, it still takes time to send data back and forth between those facilities and customer sites.

Igneous, which bills clients on a subscription basis, is initially focusing on customers in industries that tend to store vast amounts of data and need access to it quickly, like hedge funds that engage in high-frequency trading or media and entertainment companies. "On a movie shoot, a week can be a petabyte of data," Bhageshpur says.

Earlier this year, file-sharing service **Dropbox** moved 500 petabytes of the data it had stored on Amazon's cloud back onto its own machines. "We're very happy with our hybrid solution and the flexibility and cost savings it affords us," says Aditya Agarwal, the company's chief technology officer.

VMware and AWS announced last month they were teaming up to build hybrid clouds, which combine VMware's software for corporate networks with Amazon's public cloud computing services. Microsoft has sold hybrid systems for years, and **Google** is working on combo offerings, too, according to the *Information*, a technology news site.

Some makers of cloud-based software are joining the trend. **Atlassian** unveiled a version of its HipChat messaging and collaboration software for large enterprises that want to run it themselves, rather than rely on the company's cloud-based offering. It's partly an attempt by the Sydney-based startup to differentiate itself from its main rival, **Slack**, whose software is cloud-only. "We don't want to preclude any choice from customers," says Jay Simons, Atlassian's president. Slack isn't working on an on-premises alternative, because few of its customers require one, according to CEO Stewart Butterfield.

Gartner's Anderson expects that some of the concerns companies have about public cloud services will fall away as they become faster, cheaper, and more reliable. “Cloud has hit critical mass,” he says. “That doesn’t mean it’s optimal for every scenario, but over time it will be optimal for more and more scenarios.” —*Dina Bass*

The bottom line An assortment of tech companies are marketing cloudlike services that run in a business’s own data centers.

Competition

Don’t Let Your Data Sleep With the Enemy

▶ **Some retailers are shunning Amazon Web Services**

▶ **“You’ve got to think about who you’re renting your cloud from”**

At a February conference for online retailers, the founder of skin-care startup **Beauty by Design**, David Weissman, tried to kick off an insurrection. His rallying cry: Ditch Amazon Web Services, because the division’s profits help support **Amazon.com**’s e-commerce business, a direct competitor to almost every company present at the gathering.

The call to arms at the eTail West conference drew laughter, but it does underscore the quandary many retailers face as they weigh whether to keep buying servers and other computing services, or instead sign up with a cloud provider. Amazon’s “retail business is low-margin, and they make up for it with AWS,” Weissman says. “It’s very profitable revenue that’s being used to subsidize other businesses.” More companies want to move at least some parts of their business to the cloud, so they can handle extra-heavy sales volume around Christmas, Valentine’s Day, or other holidays, and to take advantage of the sophisticated data analytics many cloud vendors offer.

While AWS is far and away the market leader, chief information officers at some retailers say they chose to go with **Microsoft**’s Azure, **Alphabet**’s Google Cloud, or **IBM**’s BlueMix rather than entrust important parts of their business to a rival.

“You’ve got to think about who you’re renting your cloud from,” says Paul Gaffney, senior vice president for information technology at **Home Depot**. “If we announced tomorrow that we were renting data centers from Lowe’s, everyone would think we were crazy.” Home Depot, which began migrating functions such as purchasing to the cloud earlier this year, is working with Microsoft and Google.

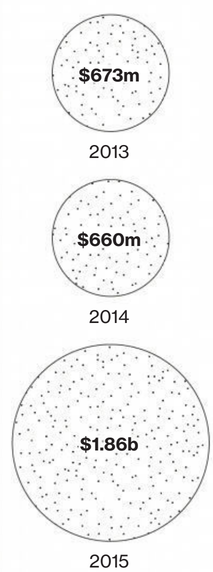
John Strain, chief digital and technology officer at kitchenware retailer **Williams-Sonoma**, says Amazon being a competitor “absolutely” factored into his thinking when choosing cloud providers, nudging him toward Microsoft. It was also a consideration for **1-800-Flowers.com**, which owns fruit-by-mail company Harry & David and other brands, according to Arnie Leap, chief information officer. He tapped BlueMix for order management and fulfillment, though he uses AWS for more plain-vanilla functions, including data storage.

Cloud companies say retailers’ reluctance to use AWS comes up in conversations, but none could point to a case where simply wanting to stick it to Amazon was the driving factor. “That’s not the foundation for a great relationship,” says Tariq Shaukat, who manages customer relationships for Google Cloud. “We want people to think they’re going to win by getting more value out of Google.” Ariel Kelman, vice president for worldwide marketing at AWS, says his unit “is a separate business inside of Amazon with a different customer base, different services, and a different leadership team.” He adds that AWS has many customers that compete against its parent in other areas, including **Netflix**, a direct rival of Amazon’s Prime streaming service. Netflix declined to comment.

Companies such as Williams-Sonoma and Home Depot would have had a tougher time justifying their anti-AWS stance a few years ago, when fewer attractive options existed. Leap, of 1-800-Flowers, says he chose IBM for two reasons. First, his company already has a relationship with Big Blue, which made it easier to integrate its software with the company’s existing systems. Second, he thought IBM’s Watson, with its analytics prowess, could best help personalize visits to his company’s website by, for example, gently encouraging a customer to spend more. “Let’s say your average order value is $90,” Leap says. Then we “should never present you an offer for a $19.99 bouquet.”

Profit Machine

Amazon’s operating income from web services



DATA: COMPANY FILINGS

Retail startups may find it harder to resist Amazon’s siren song. Some already rely on the company to handle distribution and shipping, making it a no-brainer to rent its servers as well. Sometimes, it boils down to engineers simply knowing and liking the service and not wanting to learn how to work with a new one. Beauty by Design’s Weissman says that when he talked with his software developers about going with another cloud provider, they laughed. On Amazon, “they just know how to do it,” he says with a sigh. —*Sarah McBride*

The bottom line Some retailers are concerned that Amazon is using profits from cloud services to undercut them in e-commerce.

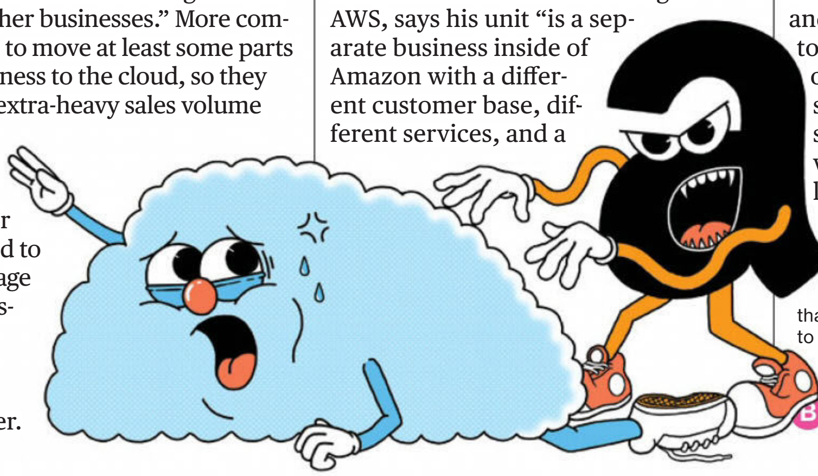


ILLUSTRATION BY JOSH FREYDKIS

Edited by Cristina Lindblad
Bloomberg.com

CYBERCRIME A Billion-Dollar Industry

Today, cyberattacks are big money—and the days when breaches were merely an IT nuisance are long gone

BUSINESS LEADERS, GOVERNMENT OFFICIALS AND DATA SECURITY EXPERTS ARE INCREASINGLY RECOGNIZING A DISTURBING REALITY: Cyberattacks have rapidly evolved into large-scale, highly sophisticated tools of organized crime that are capable of financially gutting an organization. The days when CIOs were mostly concerned with nuisance viruses and Trojans—and CEOs considered cybersecurity a wonkish IT distraction—are long gone.

Research conducted by AT&T has yielded some alarming numbers: 90 percent of companies suffered a malware attack in 2015, and from 2013 to 2015, email "phishing" scams stole $749 million from more than 7,000 U.S. businesses. Unfortunately, in the majority of cases, employees are unknowingly assisting cybercriminals; the data reveals that four out of five U.S. businesses encountered at least one cyber threat in 2015 caused by someone inside the organization.

From Reactive to Proactive

"The major breaches of the past several years have given us one clear lesson, and it's that traditional security efforts could not have stopped these attacks," says Malcolm Harkins, Chief Security and Trust Officer of Cylance, a leading cybersecurity company headquartered in Irvine, Calif. "In almost all cases, they occurred because a person in the company clicked on something that looked valid, so the malicious code or malware was able to bypass many standard defenses."

Every day, cybercriminals gain the help of employees through simple tricks. These include the classic "candy drop" (leaving a malware-infected USB drive that someone will insert into a network-linked computer), pervasive "phishing" (in which criminals send thousands of poisoned emails in the hope that some will be opened) and "spear phishing" (which targets a specific person who can offer criminals especially lucrative or devastating access).

Most companies fail to stop cyberattacks initiated through these well-known methods—not to mention more sophisticated tactics—because they still rely on the obsolete reactionary approach, says Harkins. Even many global Fortune 500 companies continue to depend on the old "detection and response" model that only attempts to neutralize destructive code after it has infected networks and started wreaking havoc.

Today, given the advanced capabilities of modern cybercriminals, this 1980s-era strategy is both dangerous and excessively expensive.

"A lot of businesses are still throwing money at reactionary approaches, which not only fail to prevent attacks, but cost these organizations millions of dollars in unnecessary clean-up, investigation, end-user downtime, lost intellectual property and operational expenses every year," explains Harkins.

Instead of inviting these losses by using the conventional strategy of responding to malicious files after they've already executed on the endpoint, Cylance uses proprietary artificial intelligence to prevent the malicious software before it can load and execute, or the attackers can travel within company systems. That means they never get a chance to steal or damage a single byte of critical data.

Cylance's technology has the proven capability to prevent—not merely to locate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AT&T has the unparalleled visibility and global scale to manage over three billion security threats daily, helping companies analyze, prioritize and mitigate cyberthreats everywhere they do business.
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and halt—more than 99 percent of cyberattacks regardless of their origin or level of sophistication, and maintains nearly impervious data security for its clients and partners worldwide, which include many government institutions and Fortune 100 businesses.

However, too many organizations are still learning the necessity of upgrading to this superior prevention-based approach the hard way. The June 2015 attack on the United States Office of Personnel Management, which breached the records of 4 million people, is a notable example. "The OPM report concluded that if Cylance's technology had been deployed earlier, there's a high probability that their attack would have never occurred, or at minimum it would have been greatly diminished," says Harkins.

Cylance's prevention-based approach doesn't just enhance protection—it can streamline core business processes, reduce drag on the network and free employees from the hindrances that traditional security models impose. "Most businesses hate their security solutions because the technology gets in their way," says Harkins. The extra procedures, redundant confirmations and added processing time all contribute to "control friction" that frustrates employees and often spurs them to create vulnerabilities by ignoring bothersome checks or inventing workarounds that criminals could exploit.

"Control friction slows down your users, your critical functions, even your time to market—and that can cause a systemic business risk and lower profits," says Harkins. "Your security system must protect your data and enable your users, and Cylance's solutions prevent attacks without being disruptive to your processes or user experience."

The Rise of Ransomware

Cyber shakedowns are becoming a major threat to businesses, and they represent one of the most challenging trends affecting corporate security. "Criminals simply threaten to shut down your website—by overwhelming your main IP address with data—if you don't pay them a ransom in Bitcoin," explains Steve McGaw, Chief Marketing Officer at AT&T Business Solutions. "It's all done anonymously, and to show they're serious, they'll shut down one of your other IP addresses as a demonstration."

Ransomware is on track to become a billion-dollar crime in 2016. At its 18th annual cybersecurity conference in October, AT&T released a report, "The CEO's Guide to Navigating the Threat Landscape," that discussed this growing scourge. The report revealed that an incredible 73 percent of companies surveyed were hit at least once with a ransomware attack in 2015—and their frequency increased sevenfold in July and August 2016.

> **"It's shocking how quickly ransomware has become a billion-dollar business."**
>
> — STEVE MCGAW, CHIEF MARKETING OFFICER, AT&T BUSINESS SOLUTIONS

"It's shocking how quickly ransomware has become a billion-dollar business for organized crime syndicates," says McGaw. "What's even more troubling is how easy it is to deploy; teenagers are launching cyberattacks at schools because they don't want to take a test that week."

AT&T possesses unique strengths to help defend against ransomware attacks and other forms of cybercrime, and the company's ongoing research sheds light on the most effective approaches to cybersecurity. "The report showed that more than 90 percent of the attacks seen in the past year were 'known attacks,' which means they had been used before," McGaw explains. Software patches and strategies to counter these threats were readily available, but often went unused. "Many businesses are focusing too much on the new attacks that nobody has seen before—and that can leave them vulnerable to the 90 percent of known attacks that happen every single day," he adds.

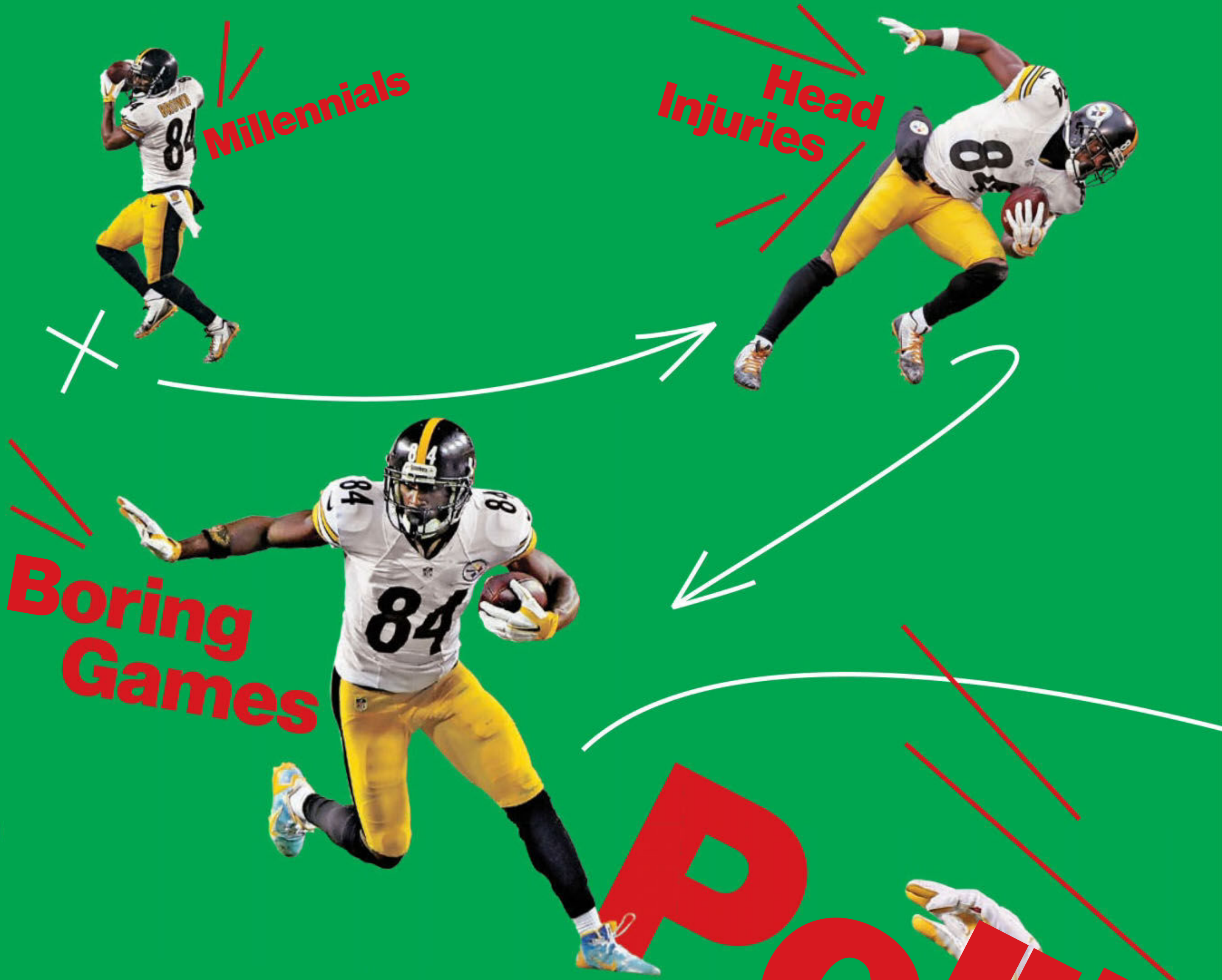
The lesson? If employees and vendors are vigilant about installing patches, updating software and ensuring that they have updated security protections, they can help shield a business against nine out of 10 threats.

However, even staying ahead of common attacks can be impossible if you lack the knowledge and resources needed to help spot and neutralize them quickly. "AT&T secures more connections than any communications company in North America," says McGaw. "No carrier experiences the depth and scale of security threats we see on a daily basis—more than 30 billion vulnerability scans and 400 million spam messages are detected on our IP network.

"AT&T's Threat Intellect is capable of analyzing 5 billion threat events in 10 minutes, and this gives us a massive repository of constantly updated intelligence that is designed to protect our customers," says McGaw. "It also means, for example, that a small bank can enjoy the same level of sophisticated protection as a large bank. AT&T can help fill that need for them."

Businesses that operate without this cutting-edge intelligence often identify threats much later than needed, McGaw says. "They can only rely on devices in their own data center to locate the threat, and this perimeter-based defense is analogous to the metal detector at an airport. Sure, it provides a certain layer of defense at obvious points of entry—but AT&T's intelligence can help to determine the threats before they even reach the airport."

Preventing cybercriminals from breaching your network is a smart move, because once they approach your network's data, it's often too late to stop them. ●



Even in this era of cord cutting and smartphones, the one thing TV networks could count on was the NFL. Until now

By Felix Gillette

From the broadcast booth at Nissan Stadium in Nashville, Jim Nantz is talking bedding. It's midway through the fourth quarter of the Oct. 27 NFL game between the Tennessee Titans and Jacksonville Jaguars on *Thursday Night Football*. Along with his colleague Phil Simms, Nantz is calling the game for the NFL Network. The game's a disaster—except for Titans fans—full of miscues, muffed punts, questionable coaching, and personal fouls. By halftime the Titans are up 27-0, and the game meanders through the second half toward a blowout. With 45 drama-free minutes of airtime left to fill, Nantz tries telling a story. He explains that every morning when Marcus Mariota, the Titans' starting quarterback, wakes up, one thing he always does is make his bed, even if he's staying in a hotel room. Simms responds by telling a second story, also involving sheets, pillows, and comforters.

"This is the truth," says Simms. "I'm not trying to be funny. In college, I made my bed every single day."

With midnight approaching on the East Coast, Nantz circles back to the game at hand, complimenting Mariota. "He doesn't play like an unmade bed, you know?"

For viewers who haven't yet shuffled off to sleep, the exchange is unintentional comedy—the weary broadcaster's version of a Freudian slip. "Turned on Thursday Night Football for 2 seconds," tweets one viewer. "Titans beating the Jags by 30 and Phil Simms is talking about making his bed in college. Nope."

"Simms talking about making his bed is a metaphor for the 2016 season," writes another.

This is the NFL on prime time: the greatest snoozefest on turf. Pro football, which has riveted TV viewers for decades, is now repelling them. Ratings are down across the board, particularly during prime-time games. So far this season, *Monday Night Football* ratings are down 20 percent from this time last year, according to Nielsen data. *Sunday Night Football* has fallen 18.5 percent. Thursday night games are down 21.8 percent. The Titans-Jaguars game averaged a little more than 5 million viewers, down 71 percent from the same week in 2015. The lackluster performance has caught various media executives by surprise. "Have they sliced and diced it too much? Is there too much product out there?" Leslie Moonves, head of CBS, said recently onstage at the Vanity Fair New Establishment Summit. "I really don't know. I've been surprised that the numbers are down."

For years, while drastic changes swept through broadcast, cable, and satellite TV, the NFL was the exception. Executives at the country's largest media companies could stave off investors' anxiety by pointing to the unwavering strength of the league. As reality TV faltered, as *American Idol* cratered, as Netflix and Amazon and YouTube started diverting viewers' attention away from network TV, football kept bringing them back. Even with the recent slump, football games are still among the highest-rated events on TV, but for some that only makes the decline more distressing.

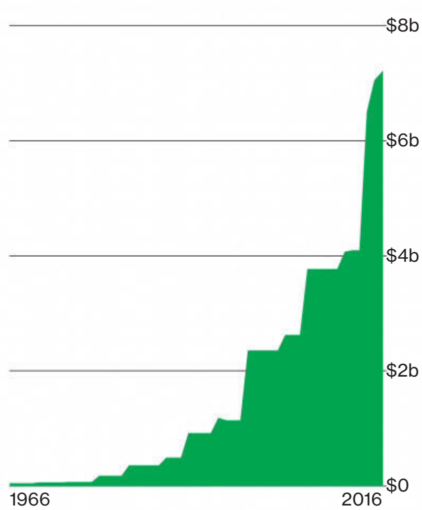
"I just felt for so long that the NFL was unstoppable," says Patrick Keane, a longtime media executive and president of Sharethrough, an online advertising company. "It's live. It's compelling. It's historical. It's only 16 games. The Super Bowl is the most watched thing in the world. It just felt untouchable. The NFL's sudden vulnerability is one of the more shocking media phenomena that I've seen in my career."

Like the clownfish and sea anemone, the National Football League and broadcast media are symbiotic creatures, deeply dependent on each other for survival. The networks—Comcast's NBC, Disney's ESPN, CBS, and 21st Century

Fox—together paid the NFL about $5.25 billion to air games this year. "I'll tell you why it's important," says sports agent Leigh Steinberg. "In 1976, when I started representing athletes, each team got a couple million dollars as a share of the national TV contracts. Last year they each got a check for $226 million. Not every penny of it was from national TV revenue. But most of it was." The multibillion-dollar valuations of NFL teams, the huge contracts for its star players, the rich sales of jerseys, memorabilia, and other merchandise—all of it, says Steinberg, is dependent on the NFL's large TV viewership. "Anything that threatens it is a real concern for anyone involved in the NFL."

While the NFL's plunge might seem sudden, the causes have been building for years. Consider the media habits of the modern NFL fan in the cord-cutting era. Not long ago, the only way to keep tabs on all the action as it unfolded in multiple stadiums every Sunday was to sit in front of a television and watch one game, no matter how lopsided or dull, and wait for the periodic scoring updates from the studios back in New York. Today, of course, all football fans—even the ones who still pay for cable—have smartphones loaded with sports news, social media, and fantasy football apps that provide real-time updates, video highlights, and stats from every game. And if fans do feel like watching TV, they can turn on NFL RedZone.

NFL Broadcast Revenue*



*INCLUDES TWITTER AND OTHER DIGITAL PLATFORMS

NFL RedZone, which the league first offered to paying subscribers in 2009, airs on Sunday afternoons. The channel adroitly jumps among games, pulling in the most exciting moments from each. There are no ads, no interminable replay reviews by the referees, no stretches of punt, punt, punt. It's football without the boring parts. Because NFL RedZone doesn't run commercials, no ratings are available, making it difficult to judge its popularity. But football connoisseurs love it. "From a consumer experience, it could not be a better product," says Sharethrough's Keane. "The problem is that the NFL thought it would only really cater to hard-core fantasy football fans, and it's turned out that RedZone is cannibalistic to the traditional viewing experience. The NFL has almost handicapped its own product. They are beating themselves."

There are quite a few theories about why the NFL's ratings slide is happening, and if there's one person shouldering more of the blame than Commissioner Roger Goodell, it's Colin Kaepernick, the San Francisco 49ers' backup quarterback. In the preseason, Kaepernick began sitting down or taking a knee during the singing of the national anthem to protest police injustice and the oppression of black people in the U.S. The protests have since been adopted, in one form or another, by other players around the league, which has drawn praise from plenty of fans and sportswriters. But within the world of conservative talk radio and websites, Kaepernick now ranks up there in the bugaboo pantheon with George Soros and Benghazi.

Mike Huckabee, the former governor of Arkansas and Republican presidential candidate, hopped on Facebook not long ago to blame the NFL's ratings drop on Kaepernick, and "the NFL Commissioner's mealy-mouthed quasi-endorsement of players imposing their grievance politics onto the game." The day before Halloween, Donald Trump weighed in. "I don't know if you know, but the NFL is way down in their ratings," Trump said at a campaign rally in Colorado. "And you know why? Two reasons. No. 1 is this: politics. They're finding it's a much rougher game than football, and more exciting. Honestly, we've taken a lot of people away from the NFL. And the other reason is Kaepernick."

Another theory is a shortage of star power. The popularity of every sport depends to some degree on the charisma of its top performers and the intensity of their interpersonal rivalries. At the start of the 2016 NFL season, one of the league's most popular players, Peyton Manning, was newly retired; his rival Tom Brady, who turned 39 in August, was serving a multigame suspension. A crop of once-promising young quarterbacks with a flair for the dramatic—particularly Robert Griffin III and Johnny Manziel—has largely fizzled. Impressive bed-making habits notwithstanding, Marcus Mariota vs. Blake Bortles isn't exactly Magic Johnson vs. Larry Bird.

Among dedicated fans, plenty of other gripes abound. The tackling is poor. The games take too long. It's a pass-heavy league with a dearth of talented passers. By cracking down on touchdown celebrations, the league has sapped the sport of its joy. In October, during a particularly tedious, penalty-ridden matchup between the Arizona Cardinals and the New York Jets, ESPN sportscaster Sean McDonough did what every disgruntled fan does at some point: He blamed whistle-happy refs. "If you're looking for reasons why TV ratings are down in the NFL all over the place, this doesn't help," he said during one agonizing interval in the third quarter. "The way this game has been officiated is not something anybody wants to watch."

There's a prominent theory that, after years of trying to swallow up more and more TV airtime, the NFL is finally choking on its gluttony. Part of the game's appeal has always been its scarcity. Teams play once a week. The offseason lasts more than half the year. The pent-up excitement feeds the ratings. But over time, the NFL has found opportunities to move beyond its traditional territory on Sunday afternoons. The league added games on Monday night in 1970, Sunday night in 1987, and Thursday night in 2006. The NFL now also stages a handful of games each season in London, which air on the U.S. East Coast at 9:30 a.m. In the meantime, college football has begun taking the same approach, hastily colonizing whatever nights of the week don't belong to the NFL.

A few years ago, when the league expanded its Thursday night TV package, Mark Cuban, owner of the NBA's Dallas Mavericks, predicted that the proliferation would one day hurt the NFL's popularity. "I think the NFL is 10 years away from an implosion," Cuban told a group of reporters at the time. "I'm just telling you: Pigs get fat, hogs get slaughtered. And they're getting hoggy.... It's all football. At some point, the people get sick of it." Reached by e-mail in late October, Cuban was in no mood to gloat. "Nothing really to add," he responded. "The data is the data."

The NFL has reacted to all the hyperventilating on its behalf with reassurances that everything will be fine. On Oct. 19, Commissioner Goodell (who didn't respond to an interview request) held a news conference in Houston after the league's annual gathering of team owners. The questions quickly turned to the ratings. Goodell suggested that the problem isn't so much that fewer people are watching, it's that they're watching for shorter periods of time. He added that he didn't believe there was any single variable driving people to distraction. "There are a lot of factors to be considered. We don't make excuses," he said. Then he made a couple.

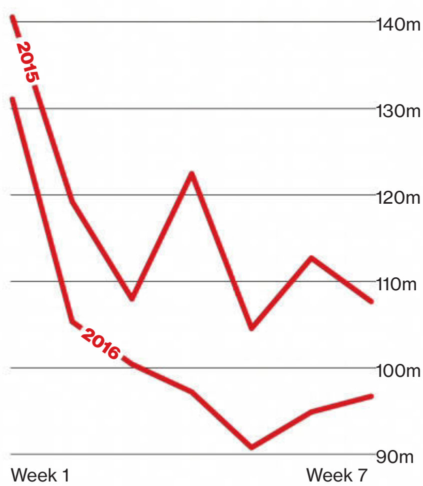
DATA: THE ECONOMICS OF THE NATIONAL FOOTBALL LEAGUE: THE STATE OF THE ART, KEVIN G. QUINN; BLOOMBERG NEWS

He pointed out that two nationally televised NFL games had gone head-to-head with debates between Trump and Hillary Clinton. Just a few weeks earlier, NFL executives had offered a similar theory in an internal memo, attributing the drop in ratings to "unprecedented interest" in the presidential race. (The NFL is hardly alone. During a recent 90-day stretch, the election, or some variation of "political uncertainty," was mentioned in more than 500 earnings calls, according to a Bloomberg transcript search, easily dwarfing invocations of bad weather, a perennial corporate excuse for poor performance.)

Goodell acknowledged that viewing habits are changing, and said the NFL has been working to connect with fans on smartphones and other platforms. In recent years the league has experimented with live-streaming online, offering a limited number of games through deals with Yahoo! and Twitter. Those digital audiences—though still minuscule compared with TV—are growing and typically aren't measured as part of the traditional TV ratings that everyone is freaking out about. Nielsen will soon introduce a metric that will eventually provide a more complete accounting of the NFL's audience, whether they're watching on TV at home, online, or in a sports bar or hotel lobby. But for now, just enough mystery remains surrounding the league's performance to further stoke the parlor game.

Lee Berke, president and chief executive officer of consulting firm LHB Sports, Entertainment & Media, believes the drop in audience is largely illusory and that people are overreacting. "You're looking at 20 years of growth, and everybody is talking about four or five games," he says. "There are fluctuations in election years and whether you have certain players around. But overall it's been a substantial increase and retention of audience in the midst of virtually every other category of programming falling off—from sitcoms, to dramas, to movies. The NFL is very resilient."

Weekly Television Viewers



The NFL's problems might not be limited to TV. After increasing slightly in each of the past three years, NFL attendance during regular-season games fell about 0.5 percent last year, to 17.5 million people, according to *Street & Smith's SportsBusiness Journal*. Merchandise sales—while still strong overall—are slipping relative to other sports leagues. Sales of NFL-licensed goods increased 3.4 percent, to $3.4 billion in 2015, according to the *Licensing Letter*, a trade publication. That's down from 5.2 percent growth the year before; sales gains were higher for the NBA, Nascar, and even Major League Soccer.

Some of the NFL's problems could stem from its rocky relationship with female fans. In recent years the NFL made a big push to court women, who make up 35 percent of its viewing audience, according to Nielsen. The NFL struck merchandise deals with apparel makers to design form-fitting jerseys, rejiggered its website to include a section aimed at women, and launched an ad campaign featuring ladies throwing their husbands' jerseys in their faces and putting on more stylish, female-friendly versions.

Then in September 2014, TMZ released a video showing Baltimore Ravens running back Ray Rice punching his fiancée in the face in the elevator of an Atlantic City casino. The video of the assault triggered public outrage over how the NFL disciplines players involved in domestic abuse. Along the way, the National Organization for Women called for Goodell to resign. Sixteen female U.S. senators sent a letter to the NFL, criticizing the league's policies. All of which may have undermined whatever goodwill the league had built up with female fans. According to research firm SportsOneSource, sales of women's NFL merchandise fell 30 percent during the past 52 weeks from the same period a year earlier.

Some football watchers believe the steady onslaught of negative headlines could finally be driving away casual NFL fans, men and women alike. "Call it football fatigue," says Steve Almond, a former die-hard Oakland Raiders fan, who in 2014 wrote a manifesto called *Against Football*. "People like the sport, because it's a joyous, escapist experience. They don't want to have their entertainment gummed up with moral issues about patriotism, and race relations, and concussions, and sexual assault. Maybe when football makes people feel conflicted and guilty, a certain small portion of viewers are like, 'Let's call the whole thing off. I'll go watch the Cubs, or whatever else is on.' It's an innocent pleasure that has lost its innocence."

When the election is over and the current fixation on cable news wanes, the NFL's prime-time audience will probably bounce back. But even if that happens, the league will still have to deal with the vexing challenge of how to keep making money when fans can no longer be trusted to turn on the TV and stay put. Steinberg, the sports agent, says the NFL should use this shudder of fear to improve its product.

He suggests getting rid of *Thursday Night Football*, jettisoning instant replay to speed up games, and working out a policy where the political protests are supported but kept out of the game venue itself. "There are a hundred forums to express free speech outside the stadium," he says. "It's a shock to the system for a lot of viewers."

The positive news for the NFL is that its TV deals give it time to figure things out. ESPN's contract runs through 2021, while CBS, Fox, and NBC are on the hook through 2022. CBS and NBC also have a deal to split the broadcast rights for *Thursday Night Football*, which expires in 2017. So the short-term pain isn't the NFL's problem, it's the networks'. They're already giving away commercial time to advertisers to make up for the shortfall in guaranteed viewers. If ratings stay down, the networks could be forced to lower NFL ad rates in years to come.

For now, both sides are putting a good face on things. In October, Robert Kraft, owner of the New England Patriots, sat onstage at the Boston College Chief Executives Club and interviewed Bob Iger, chairman and CEO of Disney. ESPN, once one of Disney's top-performing businesses, has been losing paying subscribers even as it's saddled with huge fixed costs for its live sports programming. At one point during the event, Kraft asked Iger if he was still bullish on ESPN's prospects. Iger responded in the affirmative and joked that the reason Kraft was being so friendly was because Iger writes big checks to NFL owners like Kraft. "Every year, we push a button that withdraws about $2 billion of our money and deposits it in an account that you're part recipient of," said Iger.

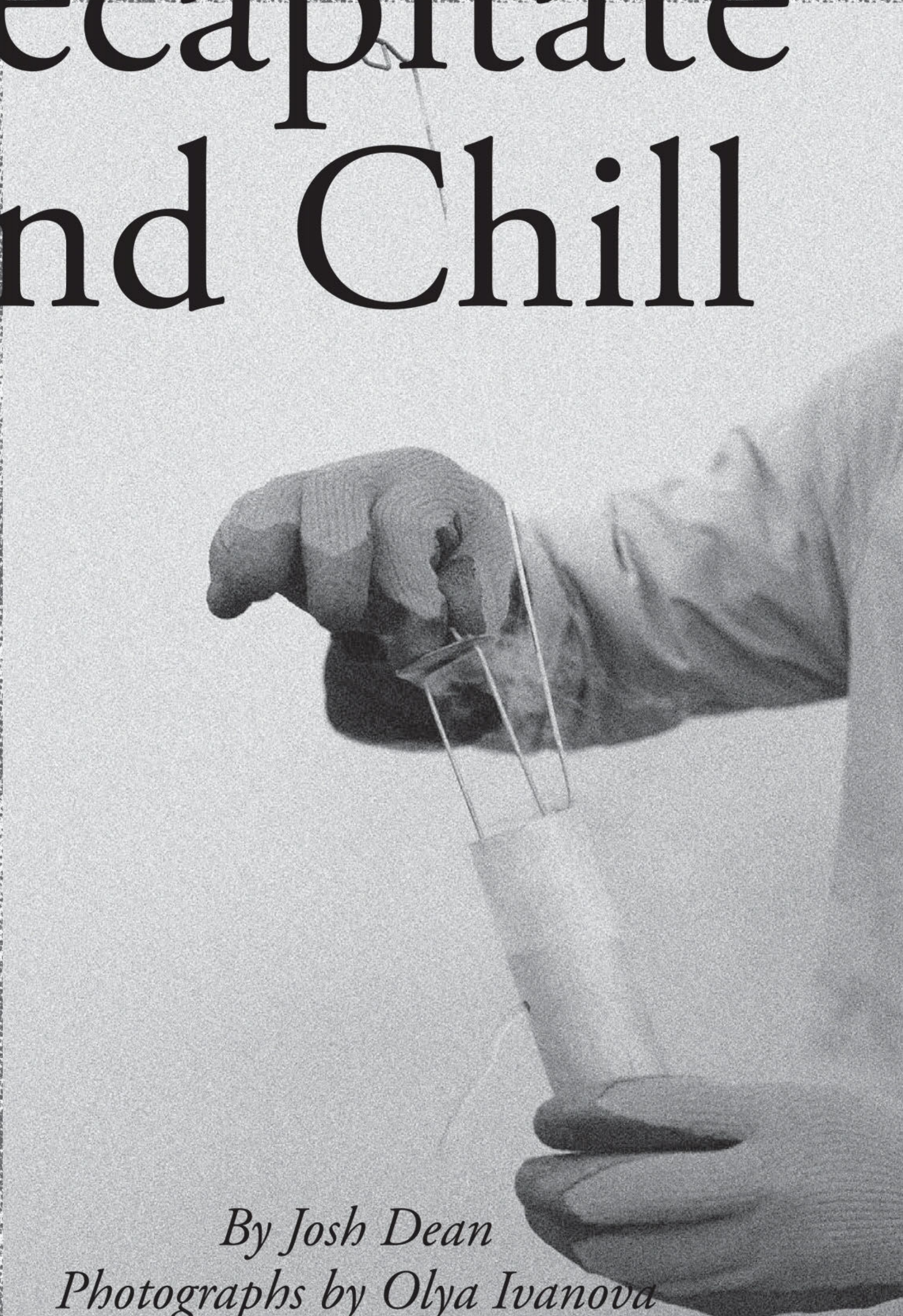
"It's one of the best deals you've ever made," said Kraft.

The crowd laughed. Ⓑ

—*With Shelly Banjo, David Ingold, Gerry Smith, and Lucas Shaw*

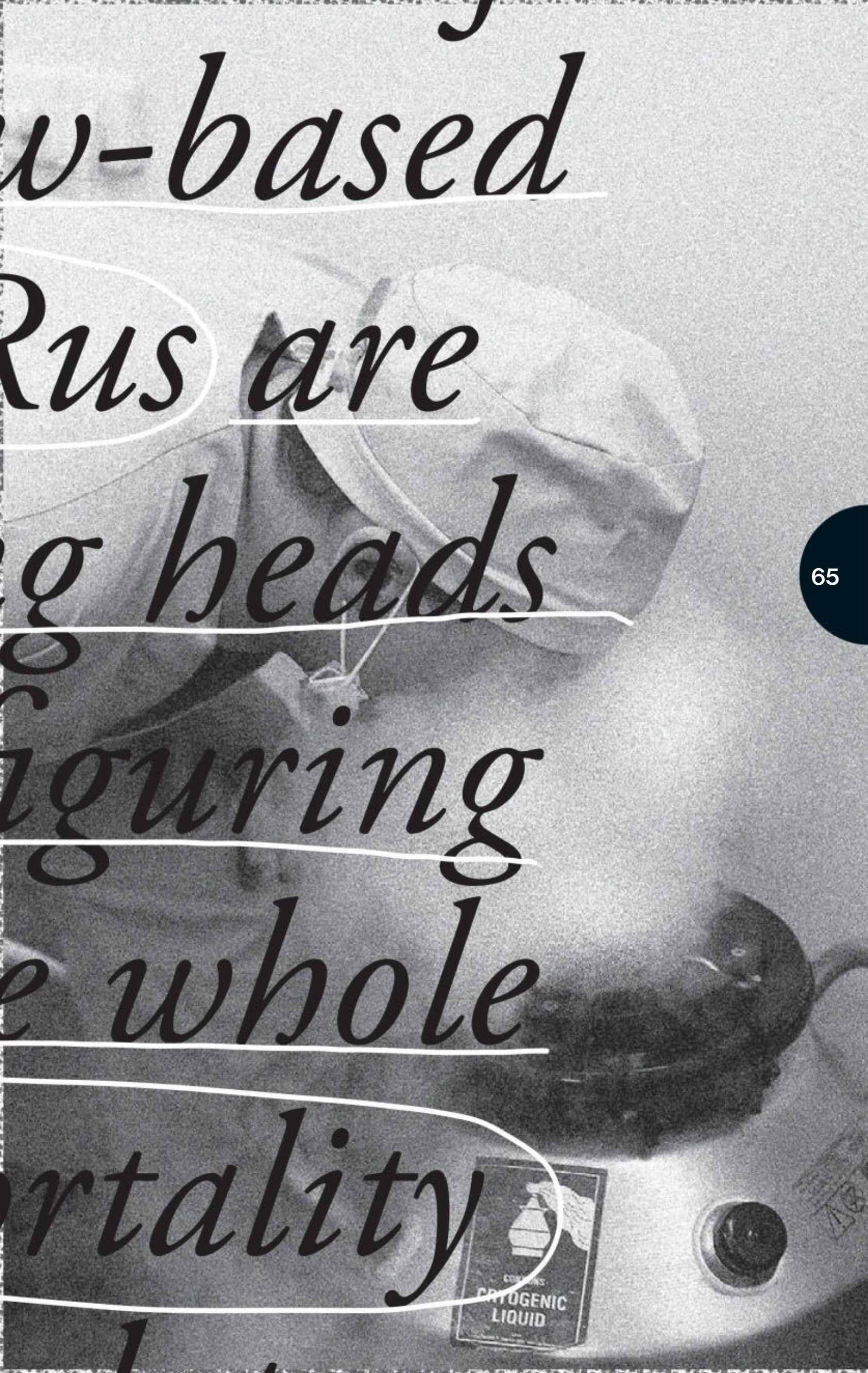
PREVIOUS PAGE: GETTY IMAGES (5); DATA: SHOWBUZZ DAILY, PROGRAMMING INSIDER, NBC SPORTS, ESPN, CBS/NFL NETWORK; COMPILED BY SPORTS MEDIA WATCH

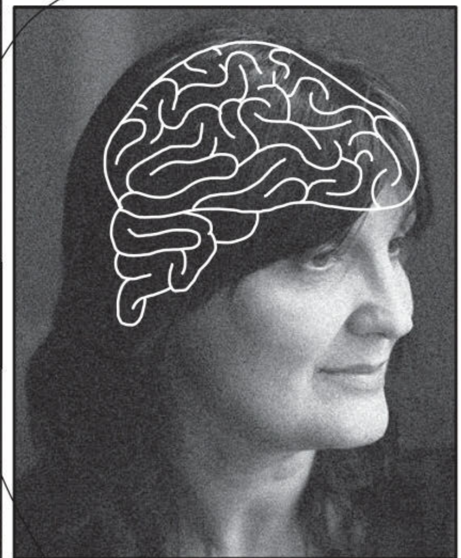
Decapitate And Chill



By Josh Dean
Photographs by Olya Ivanova

The cryonics enthusiasts of Moscow-based KrioRus are freezing heads now, figuring out the whole immortality thing later





Valerija Pride
Russian Transhumanist

The only obvious sign this is the office of a cryonics company sits on the windowsill: a stainless-steel vacuum vessel about the size of a lobster pot. It's meant to transport a human brain, and if used for its true purpose and not as a decoration, it would deliver that brain to a larger storage container filled with liquid nitrogen. The brain would be preserved there—the liquid nitrogen topped off once in a while—for however long the science and technology community takes to solve some vexing problems. First, how to repair the tissue damage caused by freezing. Second, and more important, how to gain access to the data inside—the neurons and connections and impulses that constitute a person's memories, emotions, and personality—and bring it all back to life, either in another, healthier body or uploaded into a computer.

Otherwise, the office looks like a small apartment, and it is also that. It's the *pied-a-terre* of Danila Medvedev and Valerija Pride, life partners and co-founders of Moscow-based KrioRus, as well as a crash pad for eager young transhumanists who need a place to stay while working on projects intended to expedite the quest for immortality.

But on an evening like this, it's just an office. Medvedev, 36, sits beneath a light fixture that looks like a set of giant jacks fused together (a gift from one of Russia's leading modern furniture makers, a client) at a desk in front of a large Apple monitor. Pride, 56, sits at another desk, working on a laptop. They're discussing the fate of a brain in Spain—the brain of a man described by Medvedev as "Spain's leading cryonicist," who's just died. Despite running a Spanish-language site dedicated to cryonics, the man had no plans in place to actually be frozen upon his death. His wife has managed to get his body put on ice, and now Medvedev and Pride are trying to figure out how to have his brain removed and stored in a way that will allow it to be transferred into KrioRus's care. These are the kinds of logistical challenges Medvedev is trying to iron out as he and Pride work to make KrioRus the leading cryonics company for Europe and Asia.

"The main thing is that low temperature stops molecular and atomic activity, so essentially time stops," Medvedev says, taking a seat on a futon covered with a large sheepskin. He has short hair and a trimmed goatee, both red and several shades lighter than the deep, almost rust color of Pride's hair.

The best way to cryopreserve is to replace all the water in the body with a chemical that essentially turns the tissue into glass as it freezes. Vitrification, as the process is known, prevents the damage caused by ice crystals when a body is frozen in its natural state. But vitrification has its own flaw: No one knows how to reverse it. Medvedev describes this as a minor challenge. The important thing, he says, quoting American nanotechnologist Ralph Merkle, is that "information is not destroyed" by freezing. They'll work it out later.

On another day, I might have seen a cryopreservation in progress, because this same office is sometimes sterilized and converted to a surgical suite for the preparation of pets. "A chinchilla doesn't take much space," Medvedev jokes. Human patients are handled at the hospital, using one of several cryonic surgeons, led by Yuri Pichugin, formerly director of research for the U.S.-based Cryonics Institute.

"Of course, the goal is to have the perfect preservation, but it depends on the situation," Medvedev says. "You can have the best technology in the world, but if it's not available in Barcelona it doesn't help you much." And any preservation, cryonicists say, is better than none.

Truly, it's all just a best guess. Cryonics was first proposed by the physicist Robert Ettinger in his 1964 book, *The Prospect of Immortality*. Five years later, the first human was frozen, and a small, devoted community of cryonicists (almost all of them in America) have been debating best practices ever since. Today, the world leader is Alcor Life Extension Foundation, started in 1972 and based in Scottsdale, Ariz. Alcor has 148 patients stashed in tanks filled with liquid nitrogen, including the baseball legend Ted Williams. Then there's the aforementioned Cryonics Institute, established in 1976. It has 114 patients in storage in a suburb of Detroit and is known for being cheaper than Alcor and for having a strong preference for freezing heads over full bodies.

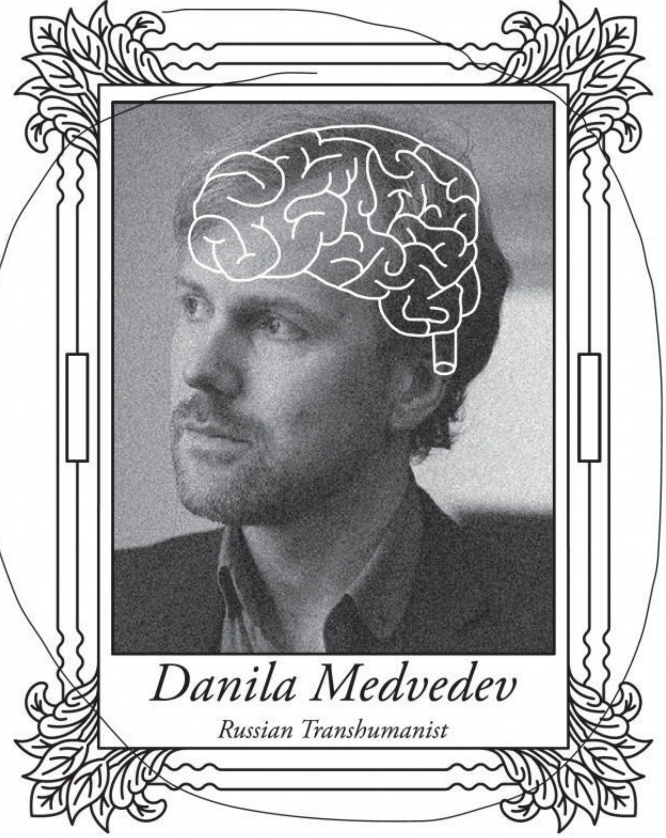
KrioRus, founded in 2005, is the only active cryonic storage company outside the U.S. and has grown far more rapidly than either of its American competitors. As of the end of September, KrioRus had preserved 51 humans (26 full bodies and 25 heads) and 20 pets (mostly cats and dogs but also three birds). The human patients are overwhelmingly Russian, but 12 are from abroad, including one American. The cost for a full-body preservation is $36,000, but the price drops to $12,000 if KrioRus freezes only your head. International transportation costs will add an additional $6,000 to the tab, so it's preferable to die in the Moscow area if at all possible.

For now, patients are stored in double-walled vessels, known as dewars, on a customer's property outside Moscow. Unlike its American rivals, KrioRus doesn't use stainless steel for its dewars. Instead, it uses a fiberglass and resin composite made by a company that builds racing yachts from the same material. (Ballistic missiles are made from it, too.) The dewars stand inside a 2,000-square-foot hangar, but they don't really need to. "The walls of the building are actually weaker than the walls of the dewars," Medvedev says. "People tend to think that patients should be stored in buildings. There are few technical reasons behind it, just tradition and irrationality."

"First you need everything functional," adds Dmitry Kvasnikov, who's been listening quietly. "Then once it is functional, you can make it look pretty."

Kvasnikov has a day job selling computer hardware, but he volunteers to help the KrioRus team however it might need him. In this case, he's on hand to translate, though Medvedev speaks

"WE STAND IN THE VERY FIRST STAGE OF THE INVESTIGATION INTO IMMORTALITY"



Danila Medvedev
Russian Transhumanist

immaculate English. Kvasnikov wears a dog tag around his neck that indicates his commitment. It reads: "In case of an emergency, call +7 911 KRIORUS." He's newly married, and it bums him out that his wife hasn't bought into the concept. "It will be very sad if I get cryopreserved and she does not, but what can I do about it?" he says. He hopes to one day persuade her, as well as his parents, to get KrioRus contracts.

The company has big plans. It will soon move to a permanent home at an agricultural college outside Tver, a few hours west of Moscow. And KrioRus's principals and clients all make clear that the cryonics operation is merely the opening salvo of a far larger campaign—the quest for immortality. Medvedev and Pride are also co-directors of the Russian Transhumanist Movement (RTM), an activist organization and incubator for ideas to advance the cause of extending the human life span until we've achieved immortality.

RTM has a few hundred highly engaged members and a mailing list of about 8,000. Generally speaking, transhumanists believe that technology is advancing at an exponential rate and that sometime in the future, death will be overcome. They like to speak of aging as a disease that can be cured, and depending on the transhumanist you're speaking with, she probably believes either that new bodies will be engineered and hooked up to our heads or that our minds and memories will live forever inside a machine. In either case, all you need is your brain, which is why most transhumanists, Medvedev and Pride included, think it's unnecessary to freeze your entire body—especially if it's old or broken-down.

KrioRus was born out of their enthusiasm for the transhumanist cause. Cryonics is the starting point. "It is Plan B," Medvedev admits. No one wants to be frozen. But dying is worse. As Mikhail Batin, an entrepreneur, transhumanist, and KrioRus client says: "It's the only alternative we have at the moment to death. It is definitely better to be frozen than buried or burned. Cryonics is the best action in the worst circumstances."

Ettinger's arguments in *The Prospect of Immortality* are laid out as (mostly) rational and science-based, but, perhaps not surprisingly, he first stumbled on his notions in a piece of science fiction. *The Jameson Satellite* by Neil Jones, from the July 1931 issue of *Amazing Stories*, tells the tale of Professor Jameson, who arranges to have his body preserved after death, stuffed into a space capsule, and blasted into space. Jameson flies around for 40 million years until a race of alien cyborgs known as the Zoromes discover him orbiting a long-dead earth, repair his brain, and bring him back to life.

Ettinger read *The Jameson Satellite* as a young man and couldn't forget it. The story was ridiculous in many ways, but the fundamental idea—that you could preserve a body after death and one day revive it—struck him as possible. By 1964 he'd made enough sense of those ideas to introduce the practice of cryonics. "The fact: At very low temperatures it is possible, right now, to preserve dead people with essentially no deterioration, indefinitely," he asserted.

Three years later, a TV repairman named Robert Nelson, an Ettinger acolyte who'd been named the founding president of the Cryonics Society of California, performed the world's first ever cryopreservation, on a psychologist named James Bedford. The procedure was crude and improvised, but Nelson did the job as best he could with the assistance of two open-minded physicians and made himself famous. *Life* magazine told the story, and Nelson published his own version the next year in a book titled *We Froze the First Man*.

This may have been the high point for cryonics.

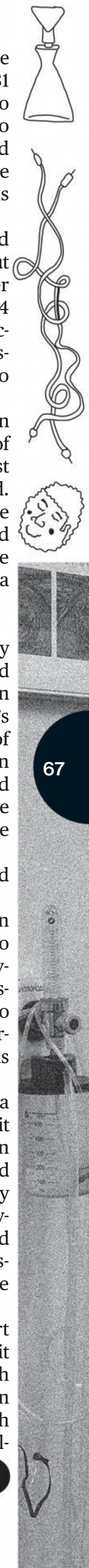
Over the next six years, 17 more humans were frozen, many of them by Nelson, but a series of unfortunate events enveloped the whole practice in controversy—none more damaging than the so-called Chatsworth Incident, in which nine of Nelson's patients, including a 9-year-old Canadian girl who'd died of cancer, were found decomposing in a cemetery vault. Nelson had run out of money for liquid nitrogen. The story horrified America, and the industry has been working to shed its image as a ghoulish practice ever since. Almost 40 years later, there are fewer than 250 Americans in cryonic storage.

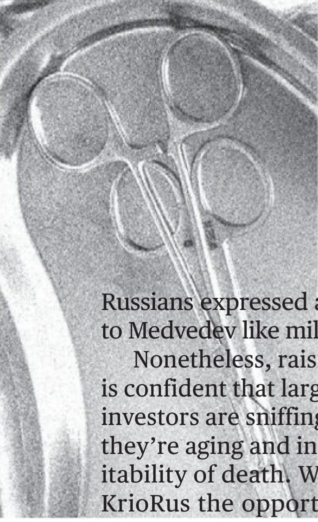
Medvedev read *The Prospect of Immortality* as a teenager, and "it immediately made sense to me," he says.

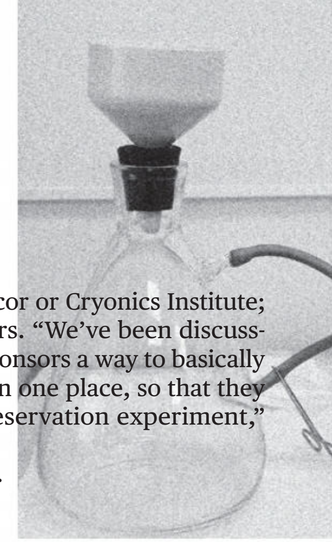
He was working as an investment banker in St. Petersburg in 2000, when at a party he began to translate Ettinger's book into Russian in a quiet room using his Palm Pilot and a foldable keyboard while his co-workers drank and danced. In 2003 that translation was published, and in 2005, Medvedev and Pride—who met the previous year and bonded through their shared interest and activism for transhumanism in Russia—started KrioRus using small investments from 10 individuals.

Medvedev was determined to introduce cryonics in Russia with great care. He studied the U.S. industry to find out why it had stalled in the 1970s, and then set out to do what American cryonicists failed to do: make cryonics, as he says, a "respected and accepted" scientific practice, free of controversy. One key was transparency. "People are naturally suspicious toward anything unusual, and you can easily imagine accusations of fraud or cultism," he says. KrioRus invited the media to its first preservation, in 2005, and to this day makes no effort to disguise the company's limited budget and modest facilities.

Russia, Medvedev says, is a place where cryonics can start over, without the cultural and historical baggage that burden it in the U.S. The Soviet state valued science over religion, which was technically illegal, and despite the resurgence of the Russian Orthodox Church in the post-Soviet era, religion itself is much less a factor in politics than it is in the U.S. Several national politicians in Russia have spoken positively about the quest to attain immortality. In a recent survey, 18 percent of







"It is Plan B. No one wants to be frozen. But dying is worse"

Russians expressed a desire to live forever, a result that looks to Medvedev like millions of potential customers.

Nonetheless, raising funds remains a challenge. Medvedev is confident that larger sums of capital will eventually arrive—investors are sniffing around, he says, in some cases because they're aging and in search of a cure for the depressing inevitability of death. While he waits for money, which will give KrioRus the opportunity to do advanced low-temperature science research, he focuses on business development. The goal is to build a system within Russian society that legitimizes being frozen as a practice every bit as normal as burial or cremation. The head of the national funeral directors' association is a close partner, and KrioRus has been a large and popular fixture at the group's annual convention, Necropolis. In 2013 the company won the gold medal in the category of innovation.

Medvedev wants doctors to come on board, too, and he sees openings for that in contemporary medical research. Already, scientists working in the field of cryobiology—people who are openly skeptical of cryonics, to be clear—can freeze certain kinds of human tissue for storage and then thaw them in good working order—stem cells and embryos, for instance, as well as simple structures such as veins and valves. These scientists hope eventually to freeze and store more complex tissue. That could enable organ banking, which would be revolutionary for transplants, replacing long waits with organs on demand, especially in light of the rapidly advancing progress of lab-grown organs. Further down the road is the possibility of short-term clinical freezing, in which a patient is placed into a temporary cryonic state to keep him or her alive while recovering from traumatic injuries, say, or during space travel. The military is looking at the former; NASA has begun some very preliminary studies on the latter (it's referred to as cryosleep) with the Atlanta-based aerospace engineering company SpaceWorks Enterprises. Projects like these could help cryonics come in out of the cold, and Medvedev wants KrioRus to help drive research in Russia.

Yet the ultimate goal remains immortality. Cryonics is the most obvious approach for Medvedev and Pride to work on as the leaders of the RTM, but they're open to others. They don't see themselves as competitors of Alcor or Cryonics Institute; rather, they hope to be collaborators. "We've been discussing with some American cryonics sponsors a way to basically pool all of the technology together in one place, so that they can try to do the best-case cryopreservation experiment," Medvedev says.

That place, he hopes, will be Tver.

"Are you sleepy? How is the jet lag?"

We are on an early-morning, high-speed train to Tver to visit the future home of KrioRus, and Pride has just caught me yawning. She looks quite alert herself. She plunders her purse and finds a small strip of pills. She pops one out, breaks it in half, and hands it to me. It's modafinil, a drug that promotes wakefulness and is a favorite smart drug among transhumanists. While they await everlasting life in the here and now, adherents aspire to use the best available practices of medicine and technology to improve their lives in any way. Brain function is seen as key, because a smarter, sharper brain can work harder and longer, which is critical considering that we're all racing time.

Outside, Moscow's endless, enormous tower blocks have given way to evergreen forest, then to small villages with rickety wooden dachas.

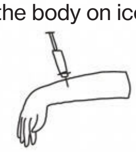
"I am living as a transhumanist as long as I remember," Pride says. She comes from three generations of atheists. "Even at 15, I was writing philosophical texts about immortality."

Pride's given name is Valerija Udalova; she changed it to acknowledge her pride in man's potential. She's a physicist by trade—a thermodynamicist—but for more than a decade her focus has been cryonics and other transhumanist subjects that she frequently writes about in Russian science journals. (She also writes fantasy novels and plays in a rock band.) Her dog, Alice, was the first animal frozen by KrioRus, in 2008, and in September 2009 her mother's brain was cryopreserved. Pride's daughter, Daria Khaltourina, is one of the country's leading public-health advocates, attached to the Ministry of Health. She was initially skeptical about cryonics but is now a KrioRus client herself.

Pride and Medvedev divide up KrioRus's outreach efforts,

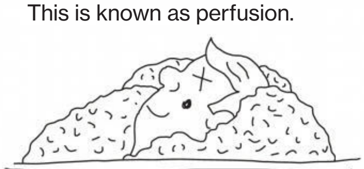
You Won't Feel a Thing

1. Ideally, a cryonics team provides cardiopulmonary support just after death and during initial cool-down. If a person dies before a cryonic surgeon is on the scene, the essential thing is to get the body on ice.



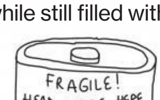
2. An anticoagulant is injected to prevent the blood from clotting.

3. A cryonic surgeon will "wash out" blood from the body and replace it with a cryoprotectant. This is known as perfusion.



4. The body, or just the head, is further cooled over several days in dry ice until the tissue temperature reaches -120C.

5. As a body or head slowly cools, the cells begin to "vitrify"—essentially, they turn to glass. Vitrification prevents the catastrophic tissue damage that would be caused if the cells were frozen while still filled with water.



6. Once the body or head has reached liquid nitrogen temperature (-196C), it's moved to a cryonic storage vessel known as a dewar, which is filled with liquid nitrogen.

7. The liquid nitrogen is topped off periodically, but that's it—a cryonic patient can be maintained with no electricity or additional care.

8. Wait for the Singularity.

"you can EASILY IMAGINE accusations of fraud or cultism"

and in the past year they've pursued discussions with groups in Switzerland and China about creating offshoots. China is similar to Russia in that it has a large base of scientists and a top-down bureaucracy that enables quick action, while Switzerland's legalized euthanasia makes it the perfect environment for cryonics, because the ideal way to preserve a person would be to precisely control the final moments of life. Medvedev uses the term cryoeuthanasia; he's working with Swiss lawyers to prepare for history's first case, perhaps as soon as this year.

The base of operations, though, will be at the Tver State Agricultural Institute. On its spacious grounds, a group led by the Upper Volga Institute, a local university, plans to build an advanced cancer treatment center with Russia's first proton-beam-therapy installation, as well as a palliative care center for incurable cases that can offer cryonics as an additional final step once death can no longer be thwarted.

The KrioRus facility will begin modestly. Two student architects have come along with us to consider the space. But the first phase, to open later this year, will be simply an office with basic lab equipment that can also serve as a base for teaching cryonics practices to people from other countries. Relocating the existing KrioRus patients in their dewars isn't seen as a priority, because they certainly don't care and the company's funds are better spent on other things.

At the moment, it's all a little hard to picture. The Tver Agricultural Institute is a Soviet-era university, a collection of concrete block buildings in a spruce forest about 15 minutes from the city center. The school's leader is Oleg Balayan, a handsome man with white hair and a fitted houndstooth jacket who ushers us into a conference room near his office. Directly behind him is a framed photo of a Russian MiG firing a missile, which seems like a weird thing to hang in the conference room of an ag school until he explains that he's a lieutenant general in the air force. He left active duty in 2009 but is still a reserve pilot, as well as a member of the general staff of the Communist Party.

Aside from land, what the school can offer, Balayan says, is an eager student body, active laboratories, and even some expertise with freezing organic materials—such as a proprietary technique for the rapid freezing of meat and vegetables for storage and transport. There's also a vet department, where one professor is using gene therapy to restore vision in blind dogs. What's more, the nearby medical college is eager to partner, and the whole endeavor has the enthusiastic support of the local and state government.

"Many achievements in recent science are on the border of different sciences," Balayan says.

"You know, convergence," Pride adds. "I am the author with Danila of the first article about convergence in Russia. Here in this center we will see the convergence of biology and IT." Down the road, she can imagine labs that work on genetic engineering, cloning, and organ printing.

What drew an air force general and prominent political figure who runs a major state-sponsored institute to transhumanism?

"I'm not 18," Balayan says, smiling widely. "I would like to live eternally. And we can investigate this direction here."

Is there state interest? He laughs. "Do you think I'm the only representative? This is an eternal idea for all the people." And, he says, it's an idea they're already studying—with potatoes: "When we dig a potato out of the land, we think, How can we keep it alive longer?" And then there's meat—the value in preserving its freshness and quality. "These are the first steps on one and the same question," he says. "We stand in the very first stage of the investigation into immortality."

Once a month on a Saturday night, the public is invited to KrioRus for a tea party, both to facilitate the exchange of transhumanist ideas and to provide a casual entry point for the curious. Those who can't attend can watch via livestream.

Among the attendees one Saturday night are Igor Artyukov, a gerontologist and RTM founder who's been a transhumanist since 1964, when he was 10; Igor Kirilyuk, a mathematician at the Institute of Economics at the Russian Academy of Sciences and also an RTM member; Alexey Samykin, a ponytailed gerontologist who's another of the company's cryonic surgeons; a millennial with a wild mane of red hair who dreams of a time when her "brain is always connected to the internet"; and Anna Arlanova, a beautiful actress who made a film about Russia's second-ever cryopreservation and is now at work on a follow-up.

To my left, across a plate of biscuits, is Elena Milova, a psychologist and a co-founder of the International Longevity Alliance, which advocates for anti-aging research around the world. She joined the RTM five years ago after having an epiphany when Steve Jobs died. "People keep dying, even really bright people—and it's a huge problem for society," she tells me. Milova has a cryonics contract for herself, and last year, at Pride's urging, she had KrioRus cryopreserve her cat, Laska.

Much of Milova's work is focused on fundraising for gerontological sciences, including a recent crowdfunding campaign to study protective therapies that slow aging in mice. "It's a way to force clinical trials on humans," she says, adding that while progress is slower than she'd like, she's confident that "artificial intelligence will help us solve the problems of anti-aging."

Kvasnikov, my translator, makes a face. "It could either solve the problem of aging or kill us all," he says.

"There's some period of time between the two events," Milova replies, and Artyukov chimes in to say that AI is already better than the world's best oncologists. "Imagine an oncologist who read 1 million research papers and memorized every number," Milova says, agreeing with him. "This is basically what IBM's Watson is able to do." The room erupts into an emotional discussion about how to shift the transhumanist movement from the fringe into the mainstream.

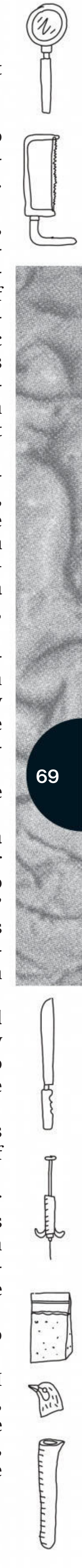
Eventually, Pride reins in the chatter and informs the crowd that the Tver facility is officially going forward, with Medvedev as director. Later this year, "there will be good opportunities to live and work there. There are few projects in Russia for people who really want to do something," she says.

Almost everyone laughs when Medvedev declares, "Tver is a future center of Russia," which I take to be the equivalent of someone announcing, "Toledo is the next Silicon Valley!"

And yet, who knows? The country's largest highway, under construction between St. Petersburg and Moscow, will pass within a few hundred yards of Tver, and the high-speed train from Moscow takes less than two hours. The new cryonics facility, Medvedev boasts, will be twice the size of Alcor and the Cryonics Institute combined once it's built out.

There is enough expertise in the room, Artyukov says, "to start a special class on cryonics at the university right away."

Medvedev nods. That's precisely what he wants to hear. "I want to start a ripple in the transhumanist community," he says, "that you should get up and do something!" For years now, the RTM has been motivating people to work for little or no money, but that's changing. "There are a lot of people out to invest," he says. "The time for cryonics has come." B



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A Climate Hawk A

Republican entrepreneur Jay Faison wants to shift his party's stance on climate change. He's learning just how little good intentions and $175 million can buy

mong the Deniers

By Zachary Mider
Photograph by M. Scott Brauer

When Jay Faison, one of the Republican Party's most generous patrons, flew to Cleveland for its national convention in July, things weren't looking good for anyone concerned about the health of the planet. The month was shaping up to be the hottest in recorded history, and the party was about to nominate a candidate who'd called global warming a hoax invented by China. GOP leaders were also preparing their most backward climate platform in a decade—one that, beneath the heading "Environmental Progress," questioned the objectivity of established climate scientists and faulted Democrats for inventing "the illusion of an environmental crisis." Inside the air-conditioned Huntington Convention Center, nobody objected when one delegate, an evangelical activist from Texas, suggested that coal, which is responsible for a quarter of U.S. greenhouse gas emissions, be described as "clean." "The Democratic Party does not understand that coal is an abundant, clean, affordable, reliable domestic energy resource," the final text of the document read.

Faison arrived at the convention a few days after the platform committee met. The staff of ClearPath, the nonprofit foundation he'd created to persuade conservatives to fight climate change, had quietly lobbied the platform's drafters, to little effect. But as Faison worked the panel-discussion circuit in Cleveland, he was relentlessly, almost absurdly, diplomatic. "I don't think calling coal 'clean' without explaining is a great political move, and I'm not sure I agree with it, exactly," he said at an event hosted by the American Petroleum Institute. Furrowing his brow, he quickly added that coal could be made clean, and that "we need to work towards it."

The year before, Faison had arrived in Washington as a political nobody, flush with cash from the sale of his Charlotte-based electronics company. He hoped that, by dedicating his time and $175 million to the cause, he could show Republicans they had a role to play in saving the planet. Others have attempted this mission, but few have been as determined as Faison—and no one has invested as much money. Yet he's encountered such indifference and hostility that he's been forced to scale back his ambitions and shift sharply to the right. It's been a lesson in what happens in politics when the irresistible force of cash meets the immovable object of dogma.

If you were looking for the wonkish, Chamber-of-Commerce Republicanism that's gone out of favor in the age of Trump, you'd find it in Faison. Forty-eight years old, with a jutting chin and a compact, athletic frame, he wears a $34 Ironman watch, hunts quail, drives a Tesla, and attends both CrossFit and church. He's impressed by experts, advanced degrees, and elite institutions. When he says the word "nuclear," which he does a lot, he gives it an extra "u," the way George W. Bush does.

Faison grew up in Charlotte, the son of a wealthy shopping-mall developer and Republican power broker. After attending business school at the University of Virginia, he opened a chain of Blockbuster stores in Portugal, then founded SnapAV, which makes home-theater and other audio-video equipment and sells it online. A lifelong Republican, his business career reinforced a native skepticism about the effectiveness of big government.

Faison first got interested in climate change about 16 years ago, when his wife dragged him to a talk by a trustee of the Environmental Defense Fund. The speaker was an investment banker who'd had a distinguished career at Morgan Stanley. If a serious businessman like that is worried about the climate, Faison recalls thinking, maybe there's something to it.

In 2013 he sold his stake in SnapAV for about $200 million and looked for a cause to which he could dedicate his sudden surfeit of time and money. He toyed with the idea of developing software for churches in poor countries before committing to climate change. Given the scientific consensus that human activity is causing the earth to warm, the resistance of his fellow Republicans puzzled him. Maybe, he figured, they needed to hear the message delivered in a conservative voice—one that didn't remind them of liberal politicians like Al Gore. That fall, he started ClearPath, funding it the following year with $165 million, which he says was more than two-thirds of his net worth at the time. He immersed himself in the scientific literature and met with top researchers at NASA and the National Oceanic and Atmospheric Administration.

Why tackle a problem that might place him at odds with his friends, family, and party? Faison has a stubborn streak and a tech entrepreneur's taste for disruption. Adam Levy, a friend and business partner at SnapAV, describes his colleague's management style as "Let's set some unreasonable expectations and see how close we can get to them."

For ClearPath, Faison approached the problem with a classic chief-executive move: He hired McKinsey. The global consulting firm is better known for corporate strategy than for political savvy, but Faison was impressed by the Ivy League pedigrees of the consultants he met. "One gal…she went to Cornell and won the science award, like, for the whole school," he says.

Faison's initial plan was to pitch the grass roots: a social media campaign intended to drive Republican and independent voters to clearpath.org, where the Ivy Leaguers had assembled unimpeachable, footnoted scientific information, mingled with reminders that the Reagan administration had helped save the ozone layer and George H.W. Bush's had stopped acid rain. Across a few months, ClearPath poured nearly $2 million into Facebook and Google ads, but almost nobody stayed on the site for more than a couple of minutes or shared links with friends. Only a handful of people commented on the foundation's Facebook page, and many of those who did were talking about "Liberal Envirowhackoes" or posting dubious data from climate-denier sites. "I thought there were people like me that were curious and wanted to get knowledgeable," Faison says. "And there are people like me. It just happens to be, like, 0.2 percent of the population that's not Democrat." After a few months of fruitless tweaking, he ended the campaign.

The problem before Faison was one that Daniel Kahan, a professor at Yale Law School, calls the cultural cognition thesis. In 2010, Kahan helped create an online survey that asked 1,540 Americans to rate the risk of climate change on a scale of 1 to 10 and tested respondents' knowledge of science with questions such as "Electrons are smaller than atoms [true/false]." Not surprisingly, people with liberal leanings saw climate change as a bigger risk than did conservatives, and liberals with a strong grasp of science perceived more risk than did liberals with less knowledge of the subject. But among conservative-leaning respondents, the inverse was true—the better they understood science, the less risk they assigned to climate change. "They are using their reason not to figure out what the facts are, but to form an engagement with the issue that will reliably summon their view of who they are," Kahan says. "It's perfectly rational, because other people they depend on are going to judge them for it."

Kahan argues that when people form opinions on controversial issues remote from their daily lives, identity trumps facts. He's identified similar effects in the way people assess the HPV vaccine, fracking, and gun control. The findings suggest that liberals are no more likely than conservatives to base their beliefs on science. Other studies Kahan has conducted show liberals are just as prone to rejecting science on issues like the storage of nuclear waste.

Following Kahan's logic, an ad campaign like Faison's risks hardening the opposition. Describing a similar blitz by a liberal activist, Kahan asks, "Why doesn't he just take a truckload of money and set it on fire?"

Faison was hedging his bets, though, and right around the time his social media adventure was flopping, he announced a big investment in politics. In June of last year, he committed to spending $10 million over several years in support of Republicans who backed clean energy, and to raising millions more from other donors. Washington soon became his exclusive focus. Why try to change countless Republican minds, he figured, when the 300-odd in Congress had the power to effect real change? To prove he was serious, he wrote a $500,000 check to a group backing Kelly Ayotte, a moderate New Hampshire senator facing a tough reelection fight. Until then, Faison had been unknown to Washington, but the money made him an instant player. The Senate majority leader, Mitch McConnell, stopped by Charlotte for a chat. Congressmen were suddenly very easy to get on the phone. *Politico* put him on its list of 50 "thinkers, doers, and visionaries transforming American politics."

He soon learned that access isn't the same as influence. Not long after he wrote the check for Ayotte, he found himself in a private room at Washington's mahogany-paneled Capital Grille, where a porcini-rubbed rib-eye sells for $56. A dozen or so of the party's leading financiers were gathered in support of Thom Tillis, a North Carolina senator, and McConnell, from coal-rich Kentucky. At one point Tillis turned to Faison. "I like to spice things up at these dinners," Faison recalls him saying. "Jay, tell us all about your issue."

Faison swallowed and launched into his case for climate action. "It's just a matter of time before the Republican Party is going to get beaten up on this," he said. "Every academy of science in the world, 82 percent of the Fortune 500 companies, NASA, NOAA, every institution that has studied this agrees." An awkward silence followed.

Sometimes the hostility was more overt. Senator James Inhofe

"There are peop happens to be, like population that's

of Oklahoma, who famously tossed a snowball across the Senate chamber to support his contention that the planet isn't warming, cautioned conservatives in a speech about a new deep-pocketed donor who was "claiming to be a Republican." Between Faison and the liberal activist Tom Steyer, Inhofe said, an avalanche of cash was headed to Washington "to try to resurrect the myth of global warming."

As Faison made the rounds in Congress, he got the feeling people saw him as a closet liberal. "When I say 'climate change,' they think Nancy Pelosi," he says, referring to the House minority leader. He was hoping to open a D.C. office and hire a team of Washington staffers, but unless something changed, he realized, he wouldn't be able to find any qualified Republicans to work for him.

The resistance was partly cultural, but it was also pragmatic. Even Republican politicians who don't share Inhofe's views remember what happened to Robert Inglis, the former GOP congressman from South Carolina. In 2010, Inglis ran for his seventh term. Tea Party fervor was cresting, and a Democratic climate bill was foundering in the Senate. In just a few years, climate change had gone from a bipartisan issue to a polarizing one. Asked about global warming at a Tea Party gathering in his district, Inglis defended mainstream climate science and was roundly booed. A month later, he lost his primary by 42 points. On Capitol Hill, his name is now a verb—nobody wants to get "Inglised" over climate change.

Last fall and winter, Faison brought in a new group of advisers and overhauled his platform in a way that burnished his conservative bona fides. Where once he'd floated the idea of a market mechanism to discourage emissions, in consultation with a group of carbon-tax advocates, he now dropped such talk and scrubbed the advocates' names from ClearPath's website, along with virtually any mention of wind or solar power. The new platform proposes cutting red tape on nuclear and hydropower development, expanding the use of natural gas, and encouraging research into carbon-capture technology that might one day make "clean coal" a reality. Around the office in Charlotte, they called it ClearPath 2.0.

Faison laid out his new strategy at the National Press Club in March, in six minutes of prepared remarks that were notably free of the words "climate" and "warming." When a reporter finally asked about the C-word, Faison said it was beside the point. "You don't need to agree on climate to agree on conservative clean energy," he said. "Frankly, we can walk into any office in Congress and have these types of conversations in a very nonconfrontational way."

A few weeks later, on a sunny spring afternoon, I followed Faison as he shuttled across Capitol Hill for meetings with three congressmen. He brought along his new head of government affairs, Zak Baig, a former staffer for Senator David Vitter of le like me. It just , 0.2 percent of the not Democrat”

oil-rich Louisiana. Baig, I later found out, is himself skeptical about human-caused climate change.

The pitch they planned to make wasn't scientific or moral, but political. When we reached the office of one representative, Faison went in armed with a graph showing how Republicans' lack of a "clean energy" message pushes independents and young voters away from the party. He emerged an hour later, smiling. "You can tell it's a good meeting when the scheduler comes in and he waves them away," Faison said. "He knows we don't have a message. He knows we look like Neanderthals."

A few weeks later, I visited Faison in Charlotte. As he drove me around town in his Tesla, he was brimming with optimism. At lunch, he left to take a call and returned with good news: A member of the Koch brothers' donor network had committed $100,000 to Faison's political fund. He'd been writing clean-energy op-eds with a couple of senators, and he was working with lawmakers on a handful of policy initiatives, some of which, on hydro and nuclear power, were creeping forward in Congress. He said he hoped the GOP platform would present another chance to showcase his ideas.

One of ClearPath's new advisers, George David Banks, a gregarious Missourian and former staffer for Inhofe, appreciates the delicacy of these discussions for Republicans. "I don't sit and talk about the science—'Do you believe in the science?'" he says. "You remember the whole gay thing in the military, don't ask, don't tell? That's kind of what it is." In Banks's telling, Faison failed, early on, to win over the permanent Republican professional class, which holds much of the real power in Washington. "When you are bringing something that's not part of the consensus, or is out of the box or unconventional, you need to build alliances with a broad segment, and it's not just people up on the Hill. It's people downtown, because of the important advisory role they play," he says, referring to the former Hill staffers who fill conservative think tanks, law offices, and lobbying firms.

Faison had always thought of ClearPath as an ally of industry, but he hadn't made outreach a priority. After Banks joined this spring, he organized dinners and cocktail hours to introduce Faison to lobbyists representing interests like coal, utilities, and cement. Over the summer, Faison toured a huge coal plant in Illinois and sent an aide to speak at a nuclear-energy event at the Heritage Foundation, one of the leading forces of climate denialism. He says his new approach reflects his own learning on policy issues. He's become convinced that wind and solar power won't wean the world off carbon emissions, that the solution requires nuclear, hydro, and "clean" coal, and that these energy sources need an advocate who isn't perceived as an industry shill.

At the same time, Faison acknowledges an element of realpolitik. "There's some tactical in this. There's not a lot of black and white in this. There's not a lot of black and white in D.C." He puts the ratio of personal evolution to political pragmatism at "85-15, or 80-20." And many Republicans are praising him. "I don't know where or when we got to this point that somehow or other, if you wanted to focus on clean energy sources, that meant you were a Democrat," says Lisa Murkowski of Alaska, the chairwoman of the Senate Committee on Energy and Natural Resources. "He is helping shape the discussion on energy in a positive and constructive way."

The environmental Left, which once praised Faison, now sees him as an apologist for the fossil fuel lobby. And not everyone on the Right buys his new approach, either. One afternoon, I stopped by the office of Thomas Pyle, who runs the American Energy Alliance, an advocacy group. AEA has received funding from Koch Industries and other fossil fuel interests, and Pyle once worked as a lobbyist for Koch. "The stuff that he's providing is very benign. It's easy for everyone to get behind," Pyle said of Faison. "Nuclear. Hydro. That's kind of where he's at right now. Great, so am I!"

Then he pointed at a manila folder lying on a table—a file on Faison that was circulating among conservative operatives in Washington. Inside was evidence of Faison's earlier flirtation with a carbon tax, as well as e-mails obtained through public-record requests, showing he'd once funded a state-level, bipartisan climate project. Most troubling to Pyle, that initiative had involved a former aide to Gore. "You can't get to where he wants to be, in his lifetime, without a massive dose of good old-fashioned government intervention," Pyle said.

Faison tries to stay upbeat in the face of such resistance, but he clearly finds it maddening. In May, I saw him on another trip he made to Washington, to buy a town house that would serve as a headquarters for his growing political operation. The place was about a 15-minute walk from Capitol Hill. He told me he was thinking about getting a bike, but that Baig had half-jokingly warned him against it. "People will think somehow I'm some kind of granola guy," Faison said, his voice rising. "Why is that? Riding a bike. I mean, it's cheaper. It's more efficient. It's faster. It's a good business move. We've created all these labels. I just don't get it." He rapped his fingers on the table. "I'm probably just going to ride the bike and take the hits. You know what I mean? I'm going to ride the damn bike." (As of late October, he hadn't bought one.)

The summer and fall brought little to suggest that Faison was altering the party's direction. Before the convention, he sent Baig to a meeting in Washington to help draft the platform's passages on energy and the environment, but the aide was one of the only people in the room who wasn't an industry lobbyist, and few of ClearPath's ideas made it into the text. Donald Trump's slide in the polls also hurt the chances of the 15 congressional candidates Faison is backing; in New Hampshire, where Ayotte once held a narrow lead, some polls show her trailing.

Faison's party loyalty has its limits. His favored presidential candidates, Jeb Bush and Lindsey Graham, tanked early in the primaries; he recently told me he was thinking about voting for Gary Johnson, the Libertarian candidate. Faison says he's spent more than $4 million on ClearPath's political operation and his own direct giving, and the foundation will have paid out an additional $26 million for nonpolitical work.

Faison is already looking past Election Day. He's been gathering data about the effectiveness of digital ads touting his candidates' positions on clean energy—data he plans to share with any Republican who will listen to him. Meanwhile, ClearPath continues to move forward on more than a dozen policy initiatives, including the hydro and nuclear bills it has in the legislative pipeline. He pledges to keep at it for as long as it takes. "Now we're pushing the ball down the hill. When I started, we were pushing the ball up the hill," he says. "If I can accelerate what should happen, even the smallest amount, I will feel very good." Ⓑ

TRONC IF YOU WANT T

Busy year for Michael Ferro. Bought Tribune Publishing. Renamed it tronc. Tried to sell to Gannett. Failed. Up next: Figure out how to make money in newspapers

TO SAVE JOURNALISM

By Felix Gillette and Gerry Smith

In April 2012, Lupe Fiasco was on tour in Detroit when he got a phone call from a revved-up businessman named Michael Ferro. Ferro said he was the new owner of the *Chicago Sun-Times* and was recruiting local talent to write "celebrity-produced content." Payment would be a $1,000 donation per column, to the charity of the celebrity's choice. Fiasco, a Grammy-winning rapper who grew up on Chicago's West Side, loved the idea.

Over the following year, Fiasco wrote five pieces for the *Sun-Times*—poetic riffs on race-car road trips and ghetto ghost stories. Somewhere along the way, Ferro gave Fiasco a tour of the *Sun-Times* headquarters, and the rapper asked the businessman for some advice. Instead, Ferro offered him a job at his health-care startup, Higi, which shared offices with the newspaper. In between concerts, Fiasco started showing up at the *Sun-Times* building, reporting for duty as Higi's "creative director."

"That's the title they give celebrities," says Fiasco. "Because you don't really know what you're doing."


Los Angeles Times
Guard can't find 4,000 soldiers in pay scandal
L.A.'s traffic battle plan: transit, yes, but cars too
D.A. to review donations tied to developer
FBI speeds up email inquiry after criticism

1


Chicago Tribune
CUBS' HAMMER TRIES TO NAIL IT

2


The San Diego Union-Tribune
MARINES' NEWEST FIGHTER PASSES CRUCIAL SEA TEST

3


Hartford Courant
Tax Move Raises Doubts

4


Orlando Sentinel
Sanford Burnham told to repay $77.6M

5


SunSentinel
Florida voters rush to cast early ballots

6

He spent time with the engineers, the sales team, and the marketers. Sometimes he sat in on management meetings, where he watched Ferro up close. Ferro, who declined to be interviewed for this story, began his career as an entrepreneur, founding companies in the 1980s and '90s, including a software startup. By the time he met Fiasco, Ferro had long since transitioned from creating businesses to buying them—especially ones in financial trouble. And for an investor in distressed companies, few industries have targets as numerous and tempting as newspapers.

Ferro's career had made him famous in Chicago, especially after he bought the *Sun-Times*, but he never attracted much notice in the rest of the country. That changed this February, when his Merrick Media invested $44 million for a controlling stake in Tribune Publishing, one of the biggest newspaper chains in the U.S., with holdings that include the *Chicago Tribune* and *Los Angeles Times*. In a series of press interviews, Ferro said he was motivated by a lofty purpose: to save journalism.

If anyone believed he was going to succeed, the feeling didn't last long. The Ferro era at Tribune has quickly become one of the more baffling chapters in media history. Over eight months, Team Ferro has rejected one purchase offer, angering shareholders; promised to unveil a "content monetization engine" that would unleash newspapers' true potential as a "rock star business"; posted a want ad for an employee to assist "news content harvesting robots"; rejected another, more lucrative purchase offer; rebranded Tribune as Tronc, or tronc, as the company insists; and split and re-rebranded tronc into troncM, for media, and troncX, for exchange.

The media industry has struggled to classify Ferro in the taxonomy of rich guys who buy newspapers: He's not as despised as Sam Zell, the real estate magnate and ex-owner of Tribune, and certainly not as respected as Jeff Bezos, the Amazon.com founder and *Washington Post* owner. The consensus seems to be that Ferro is ridiculous—a model-train-loving, celebrity-obsessed, self-described technologist who's semi-fluent in Silicon Valley disrupter-speak. On HBO, John Oliver skewered him. On CNBC, Jim Cramer placed him on his Wall of Shame. His corporate renaming ignited extended spasms of #tronc mockery on social media. Sample tweet: "WHAT YOU GONNA DO WITH ALL THAT JONC ALL THAT JONC INSIDE YOUR TRONC."

And yet, until recently, Ferro was on the verge of laughing all the way to the bonc, as it were. In October, Ferro reached a handshake agreement to sell tronc to Gannett, the publisher of *USA Today*, for about $18.75 a share. Ferro and his investors were about to make more than $50 million in profit. But the deal fell apart, a source told Bloomberg News, when the banks financing the takeover backed out over concerns that the price was too high. On Nov. 1, after weeks of delay, Gannett announced it was officially ending its pursuit, sending tronc's and Gannett's shares tumbling.

So now the spotlight is back on Ferro and his vision for saving journalism. His supporters think he's up to it. Fiasco points out that distressed companies often require radical thinking. "When he's bringing companies back from the brink, Michael does some things, like, holy shit," Fiasco says. "But there's a method to his madness."

Ferro is 50 and looks like the biz dev guy at the airport sports bar who talks your ear off during *Monday Night Football*. He was raised in Merrick, N.Y., on the south shore of Long Island. While he was in high school, his family moved to Naperville, Ill., an affluent suburb of Chicago. During his college years at the University of Illinois at Chicago, Ferro started a roofing company called Chem-Roof, which he sold after graduation for an undisclosed sum.

A few years later, Ferro got his first taste of public acclaim. In 1996 he founded a company called Click Interactive, which made internet software for inventory management and other office functions. Silicon Valley was then lionizing many of its young tech entrepreneurs, and Chicago was looking to crown a hometown champion. Ferro, who was in his early 30s, played the part with gusto. He moved into *Playboy* founder Hugh Hefner's former office at the top of the Palmolive Building on North Michigan Avenue. Along with a lifelong love of model trains, he's an aficionado of classic video games who could often be found in Click's arcade room, according to a former employee. When a reporter for the *Chicago Tribune* came by for a visit, Ferro showed off a secret cabinet where Hefner once stashed a movie projector for impromptu screenings. "Our time has come," Ferro boasted. "We're the hip company now."

In the summer of 2000, Click went public on the Nasdaq. But as the air went out of the dot-com bubble, the company faltered, cutting costs and struggling to turn a profit. In the third quarter of 2002, it lost $2.2 million on $3.5 million of revenue. Ferro nonetheless talked his way into a sizable payday. In 2006 he sold Click to one of its clients, Illinois Tool Works, a publicly traded global company that manufactured things such as auto parts and food-services equipment, for $292 million. Ferro took home roughly $65 million. Two years later, ITW wrote down the value of the unit by $97 million. "They really botched that deal," John Kearney, an analyst with Morningstar, concluded at the time.

Ferro's next business was Merrick Ventures, a private equity and venture capital firm investing in Chicago-area tech companies. Talia Mashiach, founder of Eved, a local startup that makes software to help companies track spending on meetings and events, says Ferro was the preeminent supporter of the Chicago tech scene. "He's got such a big personality," she says. "People who are entrepreneurs really appreciate getting in a room with him. He'll throw out a whole bunch of different things that no one else would think of."

In 2008, Merrick spent $20 million for a controlling stake in Merge Healthcare, a medical software company in the suburbs of Milwaukee that was reeling from an accounting scandal. Ferro took over as chairman and moved the headquarters to Chicago. A few years later, amid shrinking revenue, widening losses, and a sinking share price, Merge's CEO resigned and was replaced by Justin Dearborn, Ferro's former general manager at Click. Ferro publicly apologized to shareholders for the company's lackluster performance and stepped down as chairman. But eventually he engineered another lucrative exit: Last year, IBM acquired Merge for $1 billion.

7

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11

Tronc-owned front pages from Nov. 1, 2016

1 *Los Angeles Times*
2 *Chicago Tribune*
3 *San Diego Union-Tribune*
4 *Hartford Courant*
5 *Orlando Sentinel*
6 *South Florida Sun Sentinel*
7 *Carroll County Times*
8 *The Capital* (Annapolis, Md.)
9 *Baltimore Sun*
10 *Morning Call* (Allentown, Pa.)
11 *Daily Press* (Newport News, Va.)

NEWSEUM (11)

In 2011, Ferro got a call from John Canning, the founder of Madison Dearborn Partners, a private equity firm in Chicago. Canning told Ferro he was putting together a group of investors to save the financially troubled *Chicago Sun-Times*, the city's perennially second-place daily paper, known for its crime reporting and scoops from City Hall.

Ferro agreed to lead the rescue effort, kicking in $24 million of the $60 million raised, according to *Chicago* magazine, and taking over as chairman of a new holding company, named Wrapports. In December 2011, Wrapports bought the *Sun-Times* and a portfolio of websites and suburban papers for roughly $20 million. Shortly thereafter, Ferro showed up at a going-away party for the outgoing editor-in-chief, Donald Hayner, at Chicago Chop House, a sepia-toned steakhouse with photos of politicians and gangsters on its walls. Curious *Sun-Times* employees wandered over to meet their new patron. According to one person who was there, Ferro said he wanted the *Sun-Times* to increase its celebrity coverage and make its website more like that of Rupert Murdoch's *New York Post*.

In May 2012, Ferro revealed similar ambitions in a speech at the City Club of Chicago. His goal, he explained, was to improve the paper's technology and pump up its celebrity wattage. He wanted to increase the paper's audience by 100,000 Sunday subscribers. The key, he said, would be the three c's: "We want to be credible, colorful, and charitable."

Under Ferro's guidance, the *Sun-Times* revamped its offices, adding an arcade and a candy room. To attract more weekend subscribers, he proposed creating four new magazines, which would be published on Sundays on a rotating basis. The lineup would include *Grid*, covering business; *Splash*, covering celebrities; *Higi*, on health care; and *High School Cube*, on sports. The latter two would share their names with Ferro-backed startups to cross-promote the brands. According to a former employee, Ferro believed the paper could "gamify" the magazines online, designing in competitive elements to make the products more compelling. One of his ideas for *Grid*, says the source, was to create a tool whereby businesspeople could enter their frequent-flier points and compete with one another to see who flew more miles. (Through a spokesman, Ferro says he has no recollection of proposing such a game.)

At the same time, Wrapports tech people started working on a website and an iPad app for the *Sun-Times*, as well as a homegrown content management system named Hermes, after the Greek messenger of the gods. Executives believed they could eventually license Hermes to other publishers (as Bezos's *Washington Post* is now doing with its content management system, Arc Publishing). Wrapports and the *Sun-Times* employed only a small staff of coders, however, and before long the development team was struggling to keep up with the myriad demands placed on them. The company's strategy often shifted faster than products could be built and tested. In the end, according to three sources who were then at the paper, the iPad app, which had been costly to develop, failed to attract many readers. *Higi*, the health-care magazine, was mocked up and then abandoned. *High School Cube* never materialized. *Grid* ran for a year, then was shuttered. Hermes was rife with problems and was eventually shut down. Frustrated employees had taken to calling it "herpes."

According to two former employees, Ferro took a hands-off approach with most of the day-to-day journalism at the *Sun-Times* but sporadically got involved in editorial decisions—such as recommending profiles of business associates, friends, and celebrities. Ferro's 100,000 new Sunday subscribers failed to turn up. In fact, circulation plummeted.

“WE ALL WANT TO DO SO

In March 2012, the *Sun-Times* was selling 416,805 papers on Sundays, according to the Alliance for Audited Media; two years later, Sunday readership was 139,754 (falling along with many other newspapers’ circulation). Ferro left the editorial decisions up to the journalists and eliminated the paper’s debt, according to Ferro spokesman Dennis Culloton. “It continues to be a vibrant, independent big-city newspaper while others have been folded or been swallowed by big chains,” he says.

As the *Sun-Times*’ readership declined, so did its journalistic credibility, at least in the eyes of some of its staff. In January 2012, the *Sun-Times* had announced that for the first time in its 71-year history, it would stop making political endorsements. But a year and a half later, Bruce Rauner, a wealthy Republican businessman who had invested in both Wrapports and Merge, announced he would run for governor in 2014 against the incumbent Democrat, Pat Quinn. Ferro’s wife, Jacqueline, gave $5,300 to Rauner’s campaign, and on the eve

Ferro

of the election—after sitting out several political cycles—the *Sun-Times* endorsed Rauner. He won.

Several days after the endorsement, Dave McKinney, the paper’s Springfield bureau chief, resigned. In a letter addressed to Ferro, he expressed concerns that the paper’s management was interfering with his coverage of the candidate. “I’m convinced this newspaper no longer has the backs of reporters like me,” McKinney wrote. The *Sun-Times* responded by denying it acted inappropriately. (Jim Kirk, the newspaper’s editor-in-chief and publisher, declined to comment for this article.)

Undeterred, Ferro kept coming up with ideas about how to pay for digital journalism. In early 2014, according to Josh Metnick, former chief technology officer at Wrapports, Ferro got excited about a new product, which he wanted to name tronc—borrowing a word that dates to the early 20th century, when hotel and restaurant workers would collect service fees in a “tronc,” a fund that would later be communally distributed. The idea, Metnick says, was to create a kind of digital “tronc box,” whereby newspapers would be able to collect micropayments from the readers they were serving far and wide across the web. At around the same time, in February 2014, the *Sun-Times* became the first major newspaper in the country to accept bitcoin in exchange for access to its pay-walled stories. The cryptocurrency experiment was short-lived, and the cyber tronc box never got off the ground. Even so, Ferro held on to the tronc name, which he later repurposed to much commotion.

Meanwhile, he kept pushing ahead with various digital journalism ventures, often working with Aggrego, a Chicago-based startup backed by Wrapports. In the fall of 2014, Wrapports and Aggrego launched the Sun Times Network, a constellation of websites aggregating local news in 70 U.S. cities. The sites used a breezy style, designed for hasty consumption on smartphones and tablets, which Wrapports executives compared to *BuzzFeed* and *Deadspin*. Ferro stepped in as chairman. Despite $14 million in initial funding, the venture sputtered. Last year, Sam Stecklow, a former Sun Times Network journalist, wrote a piece for the *Awl* portraying Ferro’s brainchild as a slipshod content factory powered by inexperienced staffers cranking out voluminous posts about places they’d never been. This summer, the network shut down.

Although a pall hung over the *Sun-Times*, Ferro still seemed to be having fun. He recruited former *Playboy* Playmate Jenny McCarthy to join the paper as an advice columnist. One of his startups hired Ashley Bond, a former Miss Illinois USA and Chicago Bulls dancer, to work as a social media manager. (Neither Bond nor McCarthy responded to interview requests.) In 2013, *Chicago* magazine revealed that some *Sun-Times* staffers had begun referring to Ferro’s short-skirt-wearing assistants as “Ferro’s Angels.”

Celebrities roamed the offices. Jim Belushi, who was also named a columnist, came in and pitched an idea for a sketch-comedy channel in the vein of Funny or Die that would star his son, Robert. The channel never materialized. At one point, according to two staffers, Ferro approached the *Sun-Times*’ entertainment columnist, Bill Zwecker, to see if he could procure tickets for Ferro to the Academy Awards ceremony in Los Angeles. As it turned out, the paper didn’t have any tickets. Through a spokesman, Ferro says the incident never happened.

Every summer, Ferro threw himself a lavish birthday party, attended by a mix of local politicians, business executives, and celebrities. One year every guest received an Apple Watch. Another time, McCarthy sang *Happy Birthday*.

In the fall of 2013, Ferro’s wife co-chaired the Sun-Times Foundation’s inaugural Halloween Ball to raise money for charity. Alongside a DJ booth in the shape of a cauldron, masked men and women in formalwear mingled with magicians, fortunetellers, and McCarthy. “I don’t know anybody in the city of Chicago who does more civic things,” says Tom Ricketts, owner of the Chicago Cubs. “He and Jacky are on every committee, every fundraiser, every civic institution.”

John McCarter, former head of the Field Museum, says Ferro stands out among Chicago’s aging crowd of philanthropists because of his relative youth and achievements. “I loved going into his office [at Merge Healthcare] and looking at all his patents,” says McCarter. “My goodness. He’s got a whole bunch of them up on the wall.”

Eventually, Ferro’s eye began to wander to a new media property to save. In the summer of 2014, following a prolonged bankruptcy triggered by the many missteps of its erstwhile owner, Zell, the media conglomerate formerly known as the Tribune Co. was split into Tribune Publishing, made up largely of newspaper brands, and Tribune Media, composed largely of TV assets. Tribune Publishing emerged from the spinoff owning a portfolio of papers including the *Baltimore Sun*. It was carrying $350 million in debt and facing a bleak environment for daily newspapers. In February, Merrick Media bought its controlling stake.

Ferro’s firm paid $8.50 a share for a 16.5 percent stake, which made it Tribune Publishing’s largest shareholder. Ferro promptly stepped down as chairman of Wrapports and took over as Tribune’s non-executive chairman. During an interview with the *Chicago Tribune* in March, he said he wanted to finish what he’d started at the *Sun-Times*, on a much larger scale. “Instead of playing golf and doing stuff, this is my project: journalism,” he said.

"We all want to do something great in life. Just because you made money, is that what your kids are going to remember you for? Journalism is important to save right now."

Ferro quickly reconfigured the company's management. Jack Griffin, an industry veteran, was replaced as CEO by, once again, Dearborn. In March, during an earnings call, Dearborn laid out the new strategy. Tribune, he said, would focus on the four c's (one more "c" than the *Sun-Times*): "content, culture, commerce, and community."

Ferro bought a house in Los Angeles, and Dearborn soon followed him there. According to U.S. Securities and Exchange Commission filings, Tribune Publishing picked up the bill for Dearborn's move, providing $262,000 plus a rental car and a leased house for up to four months. The company also began paying for the Bombardier jet that Ferro was using to crisscross the country at a cost of $8,500 per flight hour.

It didn't take long for Ferro's presence at the *L.A. Times* to touch off a flap in the newsroom. In late February, on the eve of the Oscars, the entertainment staff sent a blistering e-mail, first reported by *Politico*'s Ken Doctor, complaining to management that Ferro, Dearborn, and other executives had grabbed all six of the paper's tickets to the awards ceremony. "To fail to send a single reporter on a year when the Oscars are at the center of a cultural debate over diversity is not only embarrassing, it's bad journalism," they wrote.

The paper's management eventually relented, and two reporters attended. So too did Ferro and Dearborn—who only went, according to Ferro's spokesman, Culloton, at the insistence of the newspaper's editor and publisher. "Michael is famous among his friends," he says, "for eschewing late-night events, ceremonies, and parties."

While Ferro was networking in Hollywood, a new suitor was circling. In April, Gannett sent a letter to Tribune Publishing's board, making an unsolicited offer to acquire the company for about $815 million in cash, at $12.25 a share—63 percent above its share price at the time. Already the largest newspaper chain in the U.S. by circulation, Gannett, under CEO Bob Dickey, was aggressively snapping up papers across the country. Two weeks later, without a clear answer from Tribune, Gannett went public with its bid. In a letter to shareholders, it argued that combining operations with Tribune would result in $50 million of annual "synergies." In early May, Tribune's board unanimously rejected the offer. Tensions escalated. "I want to reiterate that Gannett's repeated claims that our board did not take this proposal seriously are misleading and disingenuous," Dearborn said on a call with analysts. He added that sometime later in 2016, Tribune would be opening seven foreign news bureaus, from Lagos to Mumbai.

In the meantime, the company acquired the Sunday celebrity magazine *Splash* from the *Sun-Times* and relaunched the *Chicago Tribune*'s long-dormant celebrity-gossip column. It's also working on a content-sharing partnership with Aggrego, which since the collapse of the Sun Times Network has been retooling its aggregation strategy and raising more money.

On May 16, Gannett increased its bid to $15 a share. Again, Tribune's board spurned the offer. In a letter to Tribune shareholders, Gannett alleged that Ferro was acting in his own interest, not theirs. He brushed off the criticism and countered with a surprise maneuver. Tribune announced it was selling 4.7 million newly issued shares, at $15, to Nant Capital, an investment company controlled by Dr. Patrick Soon-Shiong, a billionaire surgeon-turned-investor, whose daughter had recently interned at the *L.A. Times*. Soon-Shiong joined the board as vice chairman, clearly aligned with Ferro. He told Bloomberg News that "machine vision" technology could help transform the experience of reading a print newspaper, turning static images into moving pictures. "You'd be bringing to life whatever you see on the newspaper," he said.

Some of Ferro's fellow investors weren't impressed. By summer, Tribune faced at least two lawsuits filed by shareholders upset that Gannett's offers had been rejected. In May, when CNBC's Cramer named Ferro to his *Mad Money* Wall of Shame, a "rogue gallery of incompetent, value-destroying" leaders, he said: "We're entering crazy-town territory, people."

The following month, Tribune Publishing issued a press release announcing that it would henceforth be called tronc, a "content curation and monetization company focused on creating and distributing premium, verified content across all channels." Twitter pounced, as it usually does, on a delectable new object of ridicule. A *Washington Post* headline called the announcement the "worst press release in the history of journalism."

Shortly thereafter, tronc released a promotional video starring Chief Technology Officer Malcolm CasSelle and Chief Digital Officer Anne Vasquez. Tronc, they explained, would "harness the power" of the company's local journalism and "feed it into a funnel" to reach the biggest global audience possible. On HBO, Oliver mocked the clip. "They're going to feed journalism into a funnel?" he said. "'Oh, we're just going to take content and simply cram it down your throat like you're an abused goose.'"

On CNBC in June, Ferro suggested that tronc would ramp up its production of mechanized news. "There's all these really new, fun features we're going to be able to do with artificial intelligence and content to make videos faster," said Ferro. "Right now we're doing a couple hundred videos a day; we think we need to be doing 2,000 videos a day." *Los Angeles Times* employees began passing around a job listing from tronc's website that called for a "content specialist." The posting noted that among other duties, the employee would support "our news content harvesting robots."

On Nov. 1, hours after the Gannett deal officially imploded, tronc held an earnings call. The results weren't pretty. Third-quarter revenue was off 7 percent from a year ago, dragged down by an 11 percent decline in ad revenue. Dearborn said that the company was "disappointed" in Gannett's "unilaterally terminating" the deal and blamed the extensive negotiations for delaying many tronc turnaround plans. Even so, said Dearborn, the company's newsrooms were doing great work. He praised the *Chicago Tribune* for creating more than 200 Cubs-related videos in October. By the end of the day, tronc's stock price was down 12 percent, but the future of the company, Dearborn said, was looking up. "It's not how you start," as Ferro told the *Tribune* in March. "It's how you finish." Ⓑ

METHING GREAT IN LIFE"

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ETC

Danielle Weisberg

Carly Zakin

All the News That's Fit to Click

How two roommates made the Skimm a must-read for millennials

By Max Chafkin

Photographs by Daniel Dorsa

On the morning of Oct. 20, the *New York Times*, the *Washington Post*, the *Wall Street Journal*, and pretty much every other major U.S. publication led with the previous night's big story: the final presidential debate in Las Vegas.

At the Skimm, which sends a newsletter called *Daily Skimm* to the in-boxes of more than 4 million young professionals each morning, the debate was the main event, too. But the tenor of the Skimm's coverage was, uh, less formal: "Trump and Hillz had a night out in Vegas," the summary began. In Skimm parlance, "Hillz" is Hillary Clinton. Donald Trump doesn't get a nickname, though during the 2012 election Mitt Romney was known as Mittens.

Given the Skimm's chatty tone—and that the Oct. 20 edition also featured a story about a chain-smoking chimp—its take on the debate was surprisingly sober. It didn't declare either candidate a winner, and their arguments were summarized faithfully. Trump and Hillz, the Skimm wrote, "brought their A-game." Special praise was reserved only for moderator Chris Wallace, who handled the candidates "like a boss."

A staff of 35—and one panda (right)—produces the Skimm's daily e-mails

It might be helpful to think of the Skimm as a millennial-friendly update to Henry Luce's original *Time* magazine, combining an earnest journalistic comprehensiveness with in-jokes. As the name implies, the Skimm won't satisfy any deep intellectual curiosity; it will help you avoid seeming uninformed at a cocktail party, though. Each blast consists of news summaries and links about politics, business, culture, and sometimes sports (under the heading "Balls"). It's a throwback, especially at a time when new-media outlets such as *BuzzFeed* are tailoring content to readers based on interests or identities in the hope that it goes viral on Facebook and Twitter. The Skimm has a website and Facebook page, too, but the vast majority of readers consume it as an e-mail. There is no customization. There are no hot takes.

Founders Danielle Weisberg and Carly Zakin, both 30 and former NBC News producers, started the company in 2012 while sharing an apartment in New York. The idea arose from seeing most of their friends avidly consuming media, including lifestyle blogs, Instagram, and Netflix, while often remaining woefully underinformed about world events. "There was no news source geared to them," Weisberg says, sitting on a sofa at Skimm headquarters in Manhattan's Flatiron neighborhood. "There was such a trend toward personalizing the news with Twitter." Zakin nods, finishing the thought: "Personalization was limiting the well-roundedness of people."

From "Going Mad(uro)," about anti-government protests in Venezuela:

From: **theSkimm**
<dailyskimm@morning7.theskimm.com>
Date: Oct. 27, 2016, 06:50
Subject: Some like it hot

"Tens of thousands of people took to the streets to pressure [Nicolas] Maduro to pack his bags and leave. That's because, for weeks, opposition lawmakers have been asking President Maduro to leave politely, by requesting a recall vote. Maduro said, 'nah, not leaving.'"

Today, Weisberg and Zakin are co-chief executive officers and co-edit the newsletter. "The Skimm girl," Weisberg says, "is that friend everyone has who's sarcastic but always knows what's going on." Weisberg and Zakin argue that millennials value conventional news and aspire to a basic level of civic competence. The Skimm's success suggests that what's broken about the news isn't the news, but the delivery mechanism.

Weisberg and Zakin met during a college study-abroad program in Rome and spent about three years as roommates. When they started at NBC after graduating in 2008—Weisberg from Tufts University, Zakin from the University of Pennsylvania—they thought they'd landed dream jobs. "We were both in love with news," Weisberg says. "We wanted to be Katie Couric." They assumed they'd be promoted and eventually become anchors or executive producers. Then the recession hit, complicating an already grim picture for the networks. Older viewers were turning to opinion-driven cable channels such as Fox News; younger viewers weren't watching TV at all. Weisberg and Zakin saw their careers going sideways. "That upwards trajectory just didn't feel like it was there," Weisberg says. "We saw our bosses taking buyouts."

The friends chose to deliver their newsletter by e-mail partly to fit into the daily routines of their readers—twenty- and thirty-somethings check e-mail before getting out of bed—and also because e-mailing seemed easier than launching a website. They started the Skimm in July 2012, leading with a story about a bus bombing in Bulgaria.

Every night around dinnertime, Weisberg and Zakin would sit down to write, often working past midnight. To ensure timeliness, they slept in shifts, waking up once an hour to check that nothing new had happened in the world until they published at 6 a.m. Then they'd get a few hours of real sleep and begin their workday at about 10, meeting with potential investors, pitching friends in the press to cover their startup, and collecting e-mail addresses outside Equinox gyms and Starbucks coffee shops. "It was crazy," Weisberg says. After six

From "2 Become 1," about the proposed merger between AT&T and Time Warner:

From: **theSkimm**
<dailyskimm@morning7.theskimm.com>
Date: Oct. 24, 2016, 06:47
Subject: Fly me to the moon

"This could be one of the largest media mergers ever. It would bring Jon Snow, Anderson Cooper, and your phone plan all under one roof."

months, they refined their schedule: no editorial work before 4 p.m. and nothing related to the business after that.

Their approach, however, didn't inspire confidence among the venture capitalists they pitched in 2013. Sites focused on video and social media sharing were the rage; the scuttlebutt in Silicon Valley was that young people were abandoning e-mail. "Everyone told us e-mail was dead," Weisberg says. Zakin remembers people saying, "No one wants to invest in content." "Basically," Weisberg continues, "anything about the Skimm that today people celebrate, when we started, people hated."

> "We thought this could be big, not just the *DailyCandy* of news"

After more than 100 rejections, they landed $1.1 million in an investment round led by Homebrew, an early-stage venture capital firm founded by two former Google executives. "We thought this could be big, not just the *DailyCandy* of news," says Homebrew's Satya Patel, referring to the shopping newsletter popular in the mid-2000s. (NBC purchased it in 2008 and shut it down in 2014.) "Carly and Danielle can build the Skimm into the *Oprah* of their generation."

Getting to this point hasn't been easy. The Skimm transitioned from a do-it-yourself guerrilla media property to a company employing 35, including software developers, ad salespeople, and full-time writers. "The first time someone asked, 'What's your ESP?' " Zakin recalls, using the acronym for e-mail service provider, "I was like, 'Oh my God. They know I am psychic.' We had no idea what these platforms were."

Today, the Skimm's audience may be modest compared with that of *BuzzFeed*, which attracts more than 200 million visitors a month, but it represents a coveted demographic. Eighty percent of its readers are women, most from 22 to 34. And the company boasts open rates—the percentage of e-mails actually read—of 35 percent, compared with typical rates, which, according to software provider MailChimp, are 21.5 percent. That means each day more than 1 million people read *Daily Skimm*. "They're able to reach an audience that's particularly hard to get—young, successful women," says Molly Peck, director of marketing for Buick, which has been advertising within Skimm e-mails since the beginning of 2016.

The Skimm has managed to do something its new-media peers have struggled with: turning readers into paying customers. In April the company introduced an iPhone app, which for $2.99 per month alerts readers—in the same voice as the newsletter—to important events, such as the day Google reported its earnings or when the new *Gilmore Girls* hits Netflix. "The Skimm isn't just building a user base," says Rich Greenfield, a media analyst who was one of the Skimm's first angel investors. "They've been keeping them engaged for years and years." One especially engaged member of the Skimm's audience: James Murdoch, son of Rupert and CEO of 21st Century Fox. In June, Fox led an $8.5 million investment round in the company with several venture capital firms and the New York Times Co. "We were interested in the point of view of the founders and the simplicity of what they were trying to do," says Randy Freer, president of Fox Networks Group.

Although celebrity endorsements helped the Skimm grow—*Girls* creator Lena Dunham tweeted about it in 2013, and Oprah praised it in 2014—the co-founders also cultivated grass-roots support by creating meetups for its 15,000 "Skimm'bassadors." Readers get a unique code to distribute to friends and can order swag depending on how many users they sign up. Bringing in 10 earns you a tote bag; 1,000 gets you a trip to New York to tour the company's offices.

This in-crowd sensibility is reinforced in the content of the newsletters—in the tone of the write-ups, the obscure references, and the general goofiness in each day's subject line (Sun's out, buns out; Stop looking at me, swan; and Hi, pumpkin, for example). All Skimm readers get a shout-out on their birthday. "We're a company about membership and about activating our audience," Zakin says.

From "Life Is Like a Box of Emails," about the FBI's discovery of e-mails that could be connected to its investigation of Hillary Clinton:

From: **theSkimm**
<dailyskimm@morning7.theskimm.com>
Date: Oct. 31, 2016, 06:52
Subject: Muahahaha

"There are eight days left until the election, and the FBI just made things a lot more interesting. TBD on whether this will change voters' minds, but some polls show it might."

Instead of endorsing a candidate, the Skimm devotes the bottom of its daily e-mails to the importance of voting, including links to a voter-registration website and a guide to state-registration deadlines. Since Sept. 12 the startup has registered more than 110,000 voters as part of a partnership with the nonprofit Rock the Vote and the Lifetime cable channel. It's also cultivated a revenue stream recommending books and wine, from which it earns affiliate fees.

The co-founders decline to discuss any financial information, but clearly they're doing well. When they met with representatives from the New York Times Co. this summer, the proceeds from their iPhone app—at the time the top-grossing news app on Apple's U.S. charts—helped make their case. "They were like, 'How's the app doing?' " Zakin recalls. "And we were like, 'We're beating you.' " Ⓑ

SOAK IT ALL IN

Rough day at the office? Enjoy a better bath
By Afa Mangum

EARTH THERAPEUTICS CHARCOAL EXFOLIATING GLOVES

$7; ulta.com
The coarse texture exfoliates, while charcoal is said to draw out impurities. It's a win-win.

DR. JART+ CERAMIDIN BODY OIL

$23; sephora.com
The blend of olive, avocado, safflower seed, green tea seed, and primrose oils absorbs quickly, for those who don't want to be *too* slick.

THIS WORKS DEEP SLEEP BATH OIL

$148; thisworks.com
Lavender, patchouli, and vetiver oils create an exotic scent to beguile the stress right out of you.

CLARINS MOISTURE-RICH BODY LOTION

$42; clarinsusa.com
The ultimate creamy, nutrient-rich moisturizer for dry winter skin.

THE ORGANIC PHARMACY CLEOPATRA'S MILK BATH

$75; theorganicpharmacy.com
Bathing in milk is as luxurious as it gets. Lactic acid is a gentle exfoliant, while rose and geranium petals lend a subtle, relaxing fragrance.

SABON BATH BALL

$6; sabonnyc.com
This fizzing mineral bomb has rose petals for a bath that's as pretty as it is soothing.

HERBIVORE BOTANICALS COCO ROSE BODY POLISH

$36; credobeauty.com
Granulated sugar is suspended in a mix of virgin coconut and Moroccan rose oils to create a scrub that also conditions skin.

AFRICAN BOTANICS KALAHARI DESERT DETOX BATH SALTS

$75; credobeauty.com
Infused with antioxidant-abundant seaweed and crushed African *buchu* leaf, known for its antiseptic properties, to help balance your skin's pH levels and relax sore muscles.

PHOTOGRAPH BY HARRY GRIFFIN FOR BLOOMBERG BUSINESSWEEK; PROP STYLIST: CAROLINE TOMPKINS

THE SLO-MO ECONOMY

Economist Marc Levinson argues that we won't be replicating the postwar boom anytime soon. By Peter Coy

In 1973, when Barbra Streisand starred with Robert Redford in *The Way We Were*, she sang longingly about "misty watercolor memories." In retrospect, 1973 itself was a year to remember. It was the end of a golden era—a period of rapid growth in productivity and living standards that had no predecessor and hasn't been repeated.

In *An Extraordinary Time*, economist and journalist Marc Levinson says the good times are over for good, or at least for the foreseeable future. The boom from 1948 to '73 was extraordinary. What we have now, his subtitle asserts, is "the return of the ordinary economy."

An Extraordinary Time (Basic Books, $27.99) won't sit well with people who believe that removing various obstacles to growth would bring back the way we were. The U.S. economy has been grinding out 2 percent growth since 2009. Donald Trump said in the third presidential debate, "I actually think we can go higher than 4 percent. I think you can go to 5 percent or 6 percent."

TRUMP: WE CAN HIT 6 PERCENT GROWTH. LEVINSON: NO, WE CAN'T

Levinson cites prominent economists to make the case that this Trumpian hyperbole is misplaced. One is Northwestern University's Robert Gordon, author of last year's *The Rise and Fall of American Growth: The U.S. Standard of Living Since the Civil War*. In 762 pages, Gordon argues that inventions since 1970, including the internet, don't live up to the innovations that powered growth from 1870 to 1970, such as refrigerators, cars, telephones, and aircraft. Levinson quotes productivity expert John Fernald of the Federal Reserve Bank of San Francisco, who says, "It is the exceptional growth," not the slowdown since, "that appears unusual."

Economists' regression analyses are all well and good, but you can't understand history without the folks who made it. There's Karl Schiller, a onetime Nazi Party member who became a key planner of West Germany's postwar miracle; Ahmed Zaki Yamani, the skiing, opera-loving former Saudi oil minister; and William Simon, the deregulation-happy energy czar who was exasperated by the interventionist tendencies of his boss, Richard Nixon. Levinson recounts episodes that reveal the mindset of a different time. In 1973 in Japan, people filled their tiny homes with rolls of toilet paper after rumors spread in Osaka that the country was running out.

Levinson holds a doctorate in economics, but he has a journalist's appreciation for the power of on-the-ground observation. (He's written for *Time*, *Newsweek*, the *Economist*, *Bloomberg.com*, the *Wall Street Journal*, and others.) His authorial technique is to tell a big story by telling a small one. Previous books were about an object (*The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger*) and a company (*The Great A&P and the Struggle for Small Business in America*); this time he's focused on a period, and within that a year, and within that a day: Nov. 4, 1973, when the Netherlands declared a car-free Sunday to cope with the Arab oil embargo, and 64-year-old Queen Juliana "cheerfully hopped on a bicycle to visit her grandchildren."

The oil price shocks of 1973 and '79 probably contributed to the end of the postwar boom, Levinson writes. Beyond that, he acknowledges, the story is muddled. Did overregulation and overtaxation impede growth? Maybe, but productivity didn't get back to its boom trajectory after the small-government revolutions of Ronald Reagan and Margaret Thatcher. Was high inflation the growth killer? Maybe. But as he observes, inflation is exceptionally low now, and strong growth hasn't resumed.

Levinson finishes on an elegiac note by quoting Paul Samuelson, the great American economist, who wrote: "The third quarter of the Twentieth Century was a golden age of economic progress. It surpassed any reasoned expectations. And we are not likely to see its equivalent soon again." We're living in an age of diminished expectations; it's fair to say the adjustment has been painful. Ⓑ

ILLUSTRATION BY PAWEŁ MILDNER

These Are the

The classic
By

Allover sequins in a neutral color provide texture and depth with just a hint of showgirl

Iro Amaia bomber
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PHOTOGRAPHS BY RYAN DUFFIN FOR BLOOMBERG BUSINESSWEEK; PROP AND SOFT-GOODS
STYLIST: ALEX BRANNIAN; HAIR AND MAKEUP: D'ANGELO THOMPSON FOR ENHANCED BEAUTY

Jackets Bomb

bomber reimagined
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Theory Ferge PF bomber
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ON HIM: SATURDAYS SURF NYC SHIRT, $125; SATURDAYSNYC.COM. A.P.C. SWEATER, $340; 131 MERCER ST., N.Y. RING JACKET PANTS, $1,750; AVAILABLE AT THE ARMOURY, 168 DUANE ST., N.Y. SANTONI BOOTS, $970; 762 MADISON AVE., N.Y. ON HER: A.P.C. SHIRT, $210; APC.FR. J.CREW PANTS, $350; 91 FIFTH AVE., N.Y. SCOSHA EARRINGS, $180, AND NECKLACE, $1,045; SCOSHA.COM. SPORTMAX SHOES, $775; 450 WEST BROADWAY, N.Y.

NO SCOOP NECESSARY

High-protein, low-sugar Halo Top is virtuous enough to eat by the pint. By Carrie Battan

PHOTOGRAPH BY CAROLINE TOMPKINS FOR BLOOMBERG BUSINESSWEEK

Ice cream has always been a place of steep nutritional compromise—you either go whole-hog and eat the real, butter-fat-laden deal, or you settle for some suspicious, chemical-based foam and get a stomachache. For those who love cold, creamy deliciousness but don't want to wind up in a food coma, the situation has been truly unjust.

Until lately, that is. If you're a committed ice cream adherent, you may have already heard of Halo Top, the wonder dessert with as many calories per pint (240 to 280; $5.99) as a single half-cup serving of most ice creams. It also has just 5 grams of sugar, as much protein as a 3-ounce serving of beef (24g), and only 8g of fat. Compared with a pint of Chunky Monkey (1,200 calories, 112g sugar, 16g protein, 72g fat), or even Breyer's fat-free (360 calories, 52g sugar, 8g protein), Halo Top looks like a flat-out miracle. Its convincingly ice cream-like taste and texture have inspired a cult following—one Reddit user threatened to name a child after the brand.

THE DESSERT THAT HELPS YOU SLIM DOWN OR BULK UP

Like many great inventions, Halo Top was the result of trial and error. Justin Woolverton, 37, was an attorney who'd long suffered from hypoglycemic episodes. Even the allegedly healthy frozen treats out there, he found, were filled with sugar—a holdover from the days when fat was America's biggest dietary bugbear and snack food companies loaded up low-fat treats with sugar to make up for lost flavor.

"There was a lot of fun involved in figuring out how to hack this," Woolverton says. In traditional ice cream, not only does sugar provide flavor, but it also lowers the melting point so the frozen product doesn't get rock hard. Fat, meanwhile, helps create a scoopable consistency. Remove both of those components, and you're left with what amounts to flavored ice. Woolverton bought an ice cream maker on Amazon.com in 2011 and began fiddling with recipes. Eventually, he landed on a no-calorie sugar alcohol called erythritol (not the kind of alcohol that would get you drunk) along with the all-natural, zero-calorie sweetener Stevia for sweetness, milk protein to make up for the lost fat, plant fiber to help with meltability, and extra egg white for overall consistency.

Woolverton researched local factories that could help him manufacture at scale. The first nine said no. By 2014, however, Halo Top was in Kroger, Whole Foods Market, and other stores nationwide. Still, the company was "hanging on by a string," Woolverton says. He and his business partner, Doug Bouton, received some consumer feedback saying Halo Top had the tendency to develop a chalky texture, the result of too much freezing and melting during distribution. They consolidated some steps in their shipping processes and brought in a food scientist to help engineer the product for shelf stability. (Whatever changes they made are a trade secret, Woolverton says.) They also revamped the packaging toward the end of last year, replacing dull colors with a brighter, bubblier aesthetic.

What they wound up with was a frozen delight that appeals to two seemingly opposed groups: those seeking low-calorie ice cream alternatives, and others seduced by a dessert that can help them bulk up. ("I hit my best bench-press set ever that day," wrote one *GQ* writer, describing a week during which he consumed only Halo Top.) The company says it's on track for an 1,800 percent rise in sales from last year.

Halo Top's success has enabled it to experiment in an unexpected way: with higher-calorie versions. In October the company introduced 10 flavors, including red velvet and peanut butter cup. "Every now and again, even I want the Ben & Jerry's Chunky Monkey," Woolverton admits. "Now maybe you'd rather just have the Halo Top chocolate chip cookie dough." At 360 calories a pint, it's still a sweet deal. Ⓑ

MIKE SHIM

31, co-founder and chief technology officer, Bonsai Tech, Seattle

What do you do at Bonsai?
Have you ever changed the value of a cell in Excel? You would normally lose whatever information was in there, but we're creating something called Chronobase that tracks every change you make.

You don't dress like a startup guy.
The tech industry is shifting away from T-shirts and hoodies to button-downs. I almost always wear nice jeans and a collared shirt.

Nice watch.
My wife bought a fancy watch, and it made me want one, too.

No Apple Watch?
I have no desire to get a smartwatch. I've had them before—everyone in tech has the Apple Watch, and before that it was the Pebble—but for me, it's distracting to get your e-mails and texts on your wrist.

Are your jeans raw denim?
Yes. My friend told me about this brand out of Kansas City. I liked that they were made in the U.S.

Do you wear a belt?
Yeah, it's another Kickstarter purchase, from a company called Elliot Havok. I hate a leather belt that you wear for a year and then it starts falling apart. This one's promised to last for 25 years, so we'll see.

Do you wear your boots every day?
I do. This is my third pair from this brand, which I discovered on Kickstarter.

PHOTOGRAPH BY CHRISTOPHER LEAMAN FOR BLOOMBERG BUSINESSWEEK

Interview by Jason Chen

GREG CREED

Chief executive officer, Yum! Brands

Age 2, with his parents, in Australia, 1959

"According to my mum, my preschool teacher said, 'He may not be the brightest kid in the class, but if he finds his passion, he's going to be very successful.' So I said to Mum, 'Was that a compliment?'"

Education

MacGregor State High School, Brisbane, Australia, class of 1974

Queensland University of Technology, Brisbane, class of 1977

"I almost became an army officer—I did the Army Cadets, which is similar to ROTC. I decided not to, because I couldn't study business and serve in the reserves."

College graduation

Work Experience

1977–86
Brand manager for detergents, marketing manager for bar soaps and fabric softeners, Unilever Australia

1987–88
Detergents coordinator, Unilever London

1989–94
Category director for personal washing, Unilever New York

1994–2001
Chief marketing officer for KFC, Pizza Hut, and Taco Bell in Australia and New Zealand, PepsiCo Restaurants International

2001–05
Chief marketing officer, Taco Bell U.S.

2005–06
Chief operating officer, Yum! Brands

2006–11
President and chief concept officer, Taco Bell

2011–14
CEO, Taco Bell

2015–Present
CEO, Yum! Brands

"In a big company like Unilever, there are the growing brands and the ones everyone thinks are ready for the trash heap. If you can turn those around, you make a name for yourself."

With one of Taco Bell's first franchisees, Dan Jones (left), at the brand's 50th anniversary celebration, 2012

PepsiCo spun off KFC, Pizza Hut, and Taco Bell into Tricon Global Restaurants in 1997; Tricon was renamed Yum! Brands in 2002

"We came up with 'Think Outside the Bun,' repositioned our products, relaunched the brand, and went from seven years of decline to four and a half years of growth."

"We had an E. coli issue and then got sued for supposedly not having any beef in our meat. We ran an ad that said, 'Thank you for suing us. Now we can tell our story.' And when they withdrew the lawsuit, we ran, 'Would it kill you to say you're sorry?'"

With his wife, Carolyn, 2014

"A lot of people were surprised, including me. I was like, 'I don't really know how to run restaurants. I know how to build brands.'"

"We have over 43,000 restaurants in 135 countries, and we open six new ones per day on average. We completed the separation of our China business on Oct. 31, creating two powerful, independent companies."

Life Lessons

1. "Take the jobs no one else wants." **2.** "Creating great experiences for employees is the key to delivering superb experiences for customers." **3.** "Don't use as much detergent as they tell you to use."

Courtesy subject (5). Logos: Yum! Brands

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