Bloomberg Businessweek

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Bank of America Merrill Lynch

TWENTY-FIVE PERCENT **LOWER AND COUNTING**

DHL leads by example in the industry-wide reduction of global greenhouse gas emissions

The rapidly growing transport and logistics industry is responsible for 23 percent of greenhouse gas emissions, and Deutsche Post DHL Group, the world's largest logistics company, is determined to be a leader in reducing the industry's impact on the environment.

"The sector is a major contributor to global carbon emissions," says Frank Appel, CEO, Deutsche Post DHL Group. "So it was only natural that we would focus on climate protection in our corporate responsibility strategy."

In 2008, the Bonn, Germany-based company became the first among its peers to address climate protection. It set a target to reduce greenhouse gas emissions—for every letter, parcel, ton of freight and warehouse space—30 percent by 2020 over 2007 levels. Having already reported a 25 percent reduction, DHL appears well on its way to achieving its goals.

Such a sustainability strategy also makes economic sense, Appel says. Greater efficiency and lower fuel usage bring down costs, and being proactive now can mitigate potential future costs from regulatory or legal risks.

"Sustainability is a mutually inclusive concept. We cannot create jobs, pay taxes, invest and grow in a competitive marketplace without delivering profits," he explains. "We also depend on healthy and prosperous societies to provide an environment that is conducive to growth."

The logistics giant has also begun an aggressive expansion into electrified vehicles to add to the 13,500 vehicles in its network that use electric, hybrid and other fuel options or environmentally friendly features.

The company jointly developed what it calls the "Tesla of commercial vehicles"—the StreetScooter—for urban deliveries, and bought the company that produces them. This year, it plans to manufacture 2,000 for use in its inner-city fleet operations.

Customers have responded well to the company's GoGreen initiative that combines measures to address its own carbon footprint with specialized tools—such as carbon calculators and green optimization programs—that enable customers to measure and address carbon in their own supply chains.

"While it was a pioneering step in 2008, limiting carbon emissions has increasingly become a normalized feature of doing business," Appel says. "I believe there is industry-wide recognition of the need to be environmentally conscious today."

Because it believes that climate change is too great a challenge for any one player, DHL aims to set benchmarks for the industry. Doing so means collaborating to drive the industry-wide reduction of global emissions and working with organizations such as the U.K.-based CDP—formerly the Carbon Disclosure Project—and Green Freight Asia to incentivize companies to measure and disclose environmental information.

"For the past six years, Deutsche Post DHL Group has shown its leadership on climate disclosure to their key customers through CDP's supply chain program," says Dexter Galvin, Head of Supply Chain at CDP. "They have consistently scored highly on disclosure, and in 2016 joined our prestigious Climate A-List."

Walking the talk, Appel finds, is the best way of demonstrating the company's sustainability strategy to customers and other stakeholders, including employees, customers and investors. Getting them on board also means illustrating how transport impacts their carbon footprint, and how to achieve greater efficiencies.

"By offering customers carbon-neutral shipping solutions, our GoGreen program gives them confidence that they can incorporate sustainable supply chain practices into their own offerings," Appel explains. "Whether it's through reliability, time savings or access to new marketplaces, our services are an enabler for customers and provide added value for their products." ●

With its acquisition of StreetScooter in 2014, an electric delivery van that marks a new era in combined mail and parcel delivery, Deutsche Post DHL Group strengthened its commitment to developing affordable electric vehicles and significantly lowering CO2 emissions. Boasting a range of up to 120 kilometers, the StreetScooter is ideal for use in inner-city fleet operations.


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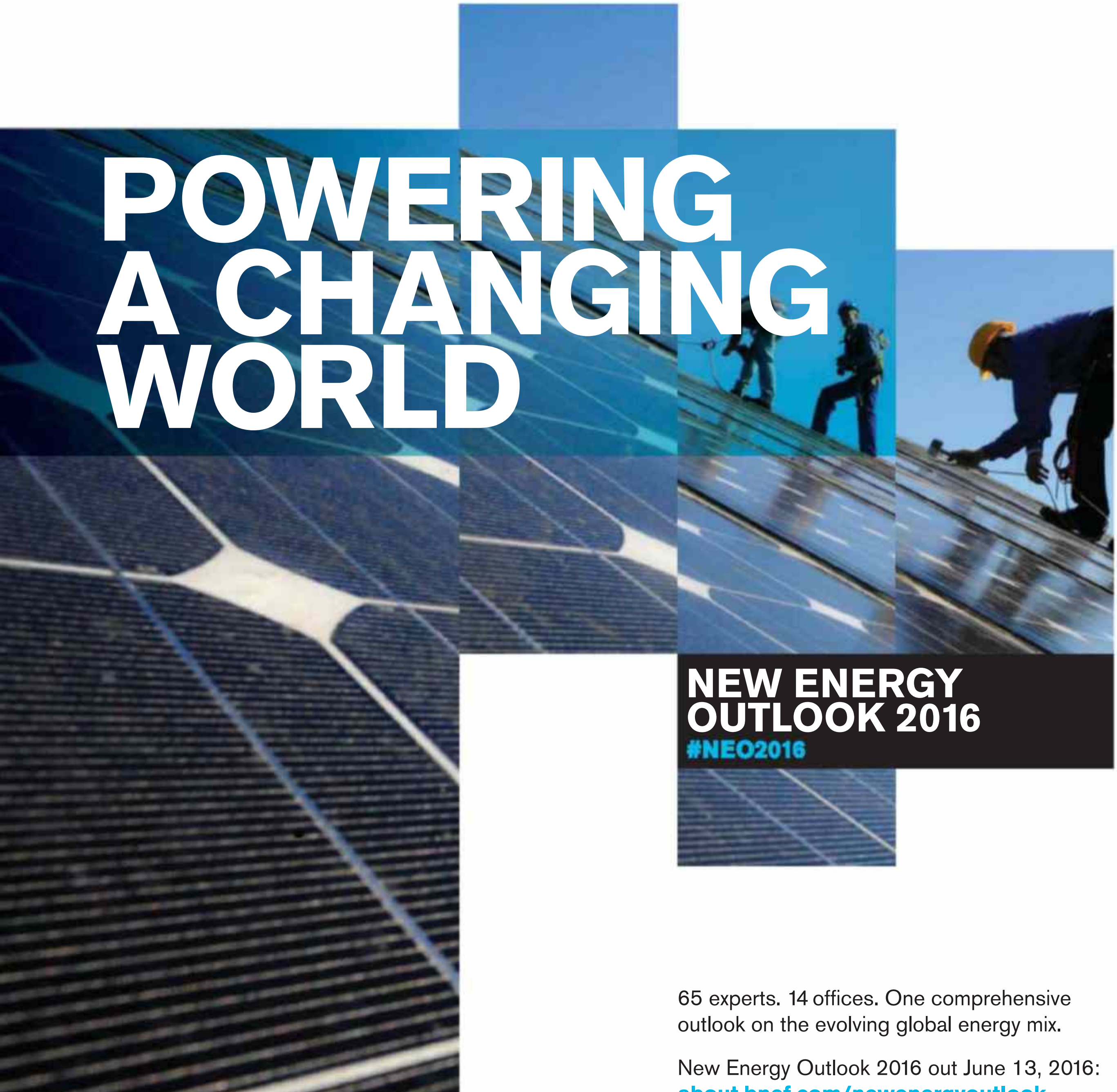

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“I REMEMBER TELLING MY MOM, *‘I’M PRETTY SURE I’M AN ANARCHIST, ACTUALLY.’* SHE WAS LIKE, *‘I THINK YOU’RE GONNA HAVE A VERY DIFFICULT LIFE.’* I GUESS SHE’S RIGHT”

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“It may not be good for America, but it’s damn good for CBS”

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“Over time, you’ll strangle this goose that’s been laying you all these golden eggs. Share the eggs”

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“There hasn’t been a lot going on in the pain space”

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Cover Trail

How the cover gets made

1

"Our cover story is an interview with the president."

"What's the interview about?"

"It touches on a few different things, like his daughters and what he would do in the private sector, but mostly it's about the economy."

"It's funny to think of Obama having a normal job. Maybe the cover should be his hypothetical résumé. It could have all these boring bullet points, and at the bottom it could look like he scrawled something at the last minute, something like 'P.S. Folks, I helped save the gosh darn economy, OK? Now gimme this dumb temp job, please!' It would be funny, because it makes him seem weird and desperate like the rest of us."

"Maybe we should take a photo of him, since he agreed to a shoot."

"Ah, I wasn't expecting that, based on our track record."

COVER AND COVER TRAIL: PHOTOGRAPH BY GEORDIE WOOD FOR BLOOMBERG BUSINESSWEEK


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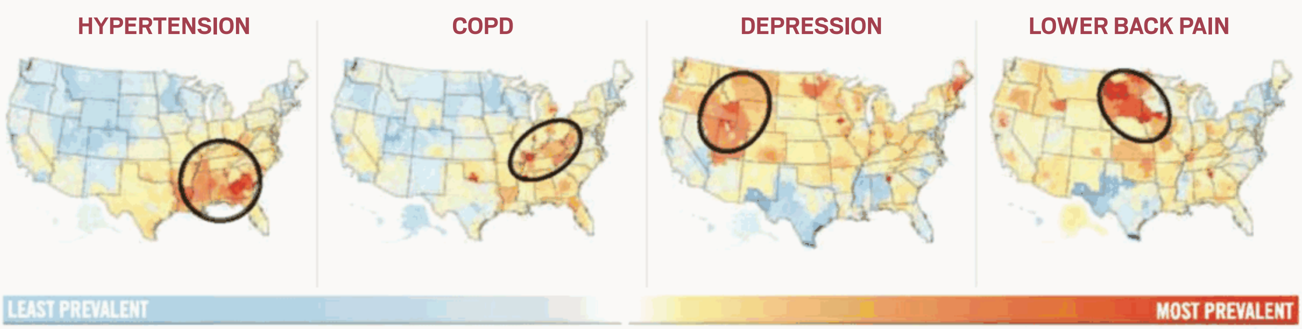
Data-Driven Health Care

THE GEOGRAPHY OF DISEASE



There are plenty of doctors, but no white coats, in the Cambridge, Mass. offices of OptumLabs™.

With a focus on science and discovery, the research and innovation collaborative examines data, not patients. Optum® partners across the entire health system in helping solve health care's biggest challenges. Its goal is to help employers, insurance companies, providers, life science organizations, governments and others understand health care in all its complexity, and find ways to improve care and reduce the costs.

The Optum™ CommunityHealth dataset tracks close to 100 different health metrics in more than 300 communities nationwide, enabling researchers to quickly visualize and understand key differences and similarities across markets. The proprietary dataset provides researchers with information from more than 100 million patients—with all the data anonymized to ensure patient privacy.

It offers comparisons of health, well-being, social factors and healthcare system quality in communities across the U.S. Using this data, employers can investigate which interventions can improve care for their employees, and where their implementation will have the greatest impact.

Some of the regional variations are easy to understand. The higher prevalence of hypertension in the South coincides with the higher incidence of a variety of other serious conditions there, including diabetes and high cholesterol, according to OptumLabs CEO, Dr. Paul Bleicher, M.D., Ph.D. The high incidence of chronic obstructive pulmonary disease (COPD) in the Ohio River Valley, particularly in West Virginia and Kentucky, correlates with communities that report some of the highest levels of smoking per capita.

Another example: There are more reported cases of depression per capita in the Rocky Mountain states than in other regions. That may be because a higher percentage of Rocky Mountain residents are depressed—but it may also be because they are "more likely to go to the doctor, or more likely to tell the doctor about their symptoms, or the doctor may be more likely to diagnose depression than do doctors in other regions," says Bleicher.

Sometimes even a dataset as sophisticated as the one at OptumLabs is insufficient to provide insights on some findings. For instance, none of the almost 100 factors tracked correlates closely with the high incidence of lower back pain in the Great Plains states.

In all the regions, by appreciating "the measures of community behavior that are correlated with—and in some cases are known to be responsible for—these diseases and conditions," employers can fund preventive health care measures and interventions in a way that will deliver maximum value to them and their employees, Bleicher says.●

OPTUM®

Opening Remarks

Get Your Pipeline Out of My Yard

By Matthew Philips

Homeowners, environmentalists, and the changing economics of natural gas are getting in the way of an industry's big dreams

Thanks to the shale drilling revolution, the U.S. has gone in less than a decade from being woefully short of natural gas to having almost a century's worth of supplies. But the pipelines that were going to transform American energy use are getting harder to build. To take full advantage of the windfall, the country must fundamentally change the way natural gas flows through the U.S. Yet what used to be seen as a rubber-stamp approval process has turned into a slow-motion headache for pipeline companies, brought on by ecological concerns and the changing economics of natural gas.

Take the case of the Hollerans. The first time they heard about the Constitution pipeline was in 2012, when men started showing up on their land to do survey work. Their 23-acre homestead in northeastern Pennsylvania was in the path of the $875 million pipeline, which would stretch 124 miles from the Marcellus Shale fields of Pennsylvania into New York state, where it would connect with existing pipelines to deliver cheap natural gas to cities in the Northeast.

As other landowners around them made deals with the pipeline's owner, Tulsa-based Williams Cos., the Hollerans held out. For two years they tried to get Williams to make alterations to the route, which initially ran through the middle of their house. Williams diverted the pipeline away from the house, but not from the grove of mature maple trees that supply the family's burgeoning syrup business. Williams offered compensation, but nothing that approached what the Hollerans considered to be the value of their land. So they refused to sign.

In December 2014, Williams secured federal approval for Constitution, which gave it the right to enforce eminent domain on the Hollerans and seize their property in the name of the public good. Over three days in early March 2016, chain saw crews cleared 3.5 acres of the Hollerans' land, including hundreds of trees and 90 percent of their maples. State police blocked off nearby roads. U.S. marshals with bulletproof vests and assault rifles stood guard.

Then, seven weeks later, on Earth Day, New York state denied Constitution water quality permits, claiming that Williams hadn't provided adequate details on its plans to bury the pipe beneath some 250 streams. Williams disputes this and is suing the New York State Department of Environmental Conservation. Technically, the pipeline isn't dead, but it's effectively on life support. To Megan Holleran, the victory is bittersweet. "Those trees will never grow back in my lifetime," she says. "We'll never be able to produce syrup on that land again."

That same week in April, Texas energy giant Kinder Morgan canceled its $3 billion Northeast Energy Direct project, a 420-mile natural gas pipeline planned to run roughly parallel with Constitution. Together, the two pipelines were going to form a sort of energy superhighway, delivering a combined 2.8 billion cubic feet of gas a day from Pennsylvania, enough to serve 14 million homes. But unlike Constitution, Kinder's pipeline wasn't killed by politics or local opposition or even a denied permit; it was doomed by basic economics. The company couldn't persuade power plants and factories in the Northeast to sign long-term contracts to buy the gas it would deliver.

As the industry presses for even more capacity, it's time to consider whether there is both a need for more pipelines and enough political and popular will to go on building them.

Since 2009 federal authorities have approved some 5,000 miles of natural gas pipelines. Companies are seeking approval for an additional 3,500 miles, representing an investment of about $35 billion. But environmental and property-rights activists have formed a considerable front against the industry. Emboldened by their win against the Keystone XL crude pipeline, activists have mounted environmental challenges that have slowed or led to the withdrawal of 8 out of 14 major pipelines proposed to take gas out of the Marcellus Shale region. The average time for a pipeline to get approved and built has grown from three years to four, according to the Interstate Natural Gas Association of America (INGAA). For an industry sitting on $35 billion in investments, those delays add up to billions in lost profits.

Gas pipelines have also become a focal point in the bigger public debate over climate change and fracking, which recently has turned against the industry. A March Gallup poll showed 51 percent of Americans oppose fracking—the technique for releasing oil and gas from rock that's made the U.S. what even President Obama describes as the "Saudi Arabia of

natural gas." That's up from 40 percent opposition in 2015. The biggest loss of support came among Republicans, 55 percent of whom say they favor fracking, down from 66 percent in 2015.

More worrying for the pipeline industry, and the natural gas producers they serve, is that the economics of pipelines are becoming less favorable. Building a pipeline requires customers to sign long-term contracts that lock them into buying gas sometimes for as long as 20 years. With wind and solar getting cheaper by the day, those commitments no longer make as much sense as they once did. Natural gas pipeline companies, in testimony to federal electricity regulators, have acknowledged as much and that the trend toward renewable energy limits the economic viability of their pipelines. "Renewables are certainly competition," says Donald Santa, president of INGAA.

This year, for the first time, natural gas is expected to pass coal as the top source of electricity generation in the U.S. That's mainly because natural gas is so cheap—but low prices are a double-edged sword for pipeline companies. As drillers struggle to make money, some are looking to break long-term contracts they've signed with pipeline companies.

Once seen as a hot investment, and a way to get in on the U.S. shale revolution, the pipeline business has turned sour for some major players. Williams and Kinder Morgan have lost billions in stock market value. Share prices for both companies have fallen more than 50 percent in the past year. Williams is in talks to merge with rival Energy Transfer Equity, whose stock price has also fallen by half since last summer. With both companies struggling, that deal is now in question.

While the industry still claims the U.S. is desperately short of natural gas pipelines and needs hundreds of billions of dollars in new projects, there's a growing case to be made that we may be on the verge of building too many in some regions. In a June 7 report, energy analyst Rusty Braziel suggests that by next year there will be enough new capacity to meet growing gas production in the Marcellus and Utica shale regions of Pennsylvania, West Virginia, and Ohio. If all 24 pipeline projects that are proposed for those regions get built, Braziel's analysis suggests, by 2019 new pipeline capacity will be three times greater than new gas production. "I'm not saying that's definitely going to happen, but it's a distinct possibility that no one seems to be thinking about," he says. Even the Department of Energy says the country's existing 1.5 million miles of natural gas pipelines can be more efficiently used.

One of the strongest arguments for more pipelines is that the lack of infrastructure is keeping energy prices high in some regions. That was certainly true during the polar vortex of January 2014, which brought record cold temperatures to much of the U.S. and record natural gas prices to New England. The region relies on natural gas for about 47 percent of its electricity generation, up from 28 percent in 2001. In January 2014, New England's governors called for an electricity tariff to pay for added natural gas pipelines.

In line with that request, last October, the public utility commission of Massachusetts gave the state's utilities the ability to sign long-term contracts with pipeline companies and pass on the costs to their rate payers, in effect shifting the cost burden of a new pipeline away from utilities and pipeline companies and onto the backs of consumers. A few weeks later, the state's attorney general, Maura Healey, issued a detailed report suggesting New England is unlikely to face reliability issues in its power sector over the next 15 years and that building pipelines would be among the most costly approaches to the region's energy needs. The industry argues it has to build to accommodate periods of peak demand, even if that's only a few days a year.

On June 14, the U.S. Senate Committee on Energy and Natural Resources held a hearing on the difficulty of building pipelines. Alaska's Republican senator and chair of the energy committee, Lisa Murkowski, essentially asked the most important question: "If the benefits are so apparent ... why is there this disconnect? What are we not doing right in conveying to the American public, the consumer, that there is a clear benefit here?"

She might want to ask Megan Holleran. "I'm not against natural gas, and I'm not anti-pipelines," says Holleran. "I'm a capitalist. But when you try and steamroll and bully people, and refuse to share the benefits of what you're doing, then of course people are going to line up against you." —*With Dave Merrill* Ⓑ

PHOTO ILLUSTRATION BY 731; ALAMY (3)

To read Noah Smith on the austerity myth and Paula Dwyer on just how scary Donald Trump's economic policies are, go to Bloombergview.com

The Problem With Ryan's Reforms

The House speaker's plan may be well-meaning but is wrongheaded on several levels

There are few things worse than red tape, and in government there's plenty to go around. That's why House Speaker Paul Ryan's latest regulatory reform plan can't be dismissed entirely. Just mostly.

First, let's look at the worthwhile stuff. Making agencies coordinate better on rules that overlap is a good idea, as is offering longer public comment periods for the most sweeping regulations. It also makes sense to require agencies to routinely review regulations to ensure they're still necessary. And wider use of sunset provisions—rules that automatically expire unless agencies can show they're still needed—could help reduce regulatory overload.

The plan also contains more dubious ideas. It endorses the notion of the so-called regulatory budget—basically, capping the number of regulations any agency can issue (or requiring that any new rule be accompanied by the elimination of an old one). It's an appealing concept, and no doubt there are many useless and outdated regulations. But the way to go about pruning them is to judge each on its merits. And if the idea is to reduce regulations, this proposal would have no effect.

It's also worth noting that the cost-benefit analysis Ryan is calling for—which is unquestionably worthwhile—is already happening. Such analysis of new rules has taken place in the executive branch at least since Ronald Reagan was president, and the Obama administration has been particularly vigilant about it. Ryan would require such analysis by law and extend it to the handful of agencies (such as the Securities and Exchange Commission) where it's not now the practice.

The trick with regulatory reform—as with politics, for that matter—is not to be naive about it. By necessity, the process of rule-making straddles the line between the possible and the necessary. Some members of Congress will always be dissatisfied with this or that regulation. That doesn't mean they should have the right to rewrite or eliminate it. Congress needs to rely on the executive branch to further define and enforce the laws it passes.

That's why Ryan's comment when he introduced his plan is so worrisome: "No major regulation should become law," he said, "unless Congress takes a vote." Not only does this misunderstand Congress's role, but it's also tantamount to eliminating all new major regulation.

None of this is to say that Ryan is wrong to focus his attention on a sclerotic and often frustrating rule-making system. Just because people disagree on the value of various costs and benefits doesn't mean cost-benefit analysis shouldn't be performed as widely as possible. The goal should always be to base any regulation on the best information available—and to reassess it as that information changes.

The Awful Lessons Of Orlando

The carnage wrought on June 12 was no less terrible for being predictable

Omar Mateen was a walking red flag. He was abusive, unstable, and prone to rages. He boasted of ties to every terrorist group under the sun. He expressed a vast catalog of hatreds and resentments. According to a former colleague, he "talked about killing people all the time."

These warning signs didn't go unnoticed. The FBI added Mateen to its main terrorist watch list, placed him under surveillance, prodded him with an informant, recorded his conversations, and interrogated him more than once.

And yet in early June, Mateen walked into a gun shop, passed a background check, and lawfully purchased a rifle, a handgun, and enough ammunition to sustain an insurgency. The resulting carnage on June 12, with 49 killed in an Orlando nightclub, was no less awful for being predictable.

Stopping such purchases should be a priority. The FBI is already alerted, through the National Instant Criminal Background Check System, when someone on its terrorist watch list tries to buy a gun through a federally licensed dealer. Since 2004, according to the Government Accountability Office, people on the watch list have tried to buy or obtain permits for firearms 2,474 times. Yet fully 91 percent of those transactions were allowed to proceed.

That's nuts. The Senate's June 20 rejection of a proposal to prevent such sales compounds the outrage. As terrorists increasingly turn to firearms for their attacks, it's asking for another tragedy. Owning a gun is a right in America. But freedoms, even those protected by the Constitution, can be reasonably limited for reasons of public safety. The First Amendment doesn't protect fraud; the Second doesn't extend to felons or the mentally ill. Excluding suspected terrorists from arming themselves is no less sensible. It might even prevent the next Omar Mateen, the next calamity, the next round of anguish and grief. Ⓑ

JIM BOURG/REUTERS

June 27 — July 3, 2016

Alone in China

▶ More of the young and elderly live by themselves

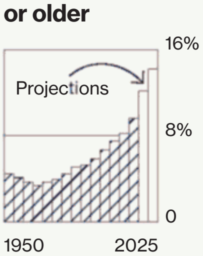
▶ "I just need someone to be nearby, to be with me"

In her Beijing studio, 26-year-old Summer Liu, a management trainee at a multinational, relaxes on a sofa, admiring the pink vase she keeps full of fresh flowers. And in her one-bedroom apartment in the eastern city of Jining, Hu Jiying, 81, sits on an old bed heaped with clothes, towels, and half a bag of snacks, worrying about the cost of her medicine.

Liu and Hu both live alone, two ends of a fast-growing demographic. The shifts threaten China's traditional family structure and the reverence for the elderly encouraged by Confucian thought.

Instead of spending their final years with sons, daughters, and grandchildren, many Chinese elderly now eke out a meager existence alone. Their children are far away, and their only recourse for assistance is a heavily burdened government social safety net. Solitary young Chinese, while a rich target for consumer-goods companies and real estate developers, also postpone having children, undermining the traditional family structure further. The rise of the single-person household is a big change for China: The erosion of the old social order could in just a generation reorder society.

Share of Chinese population 65 or older



China had 66 million registered one-person homes in 2014, or 15 percent of all households, up from 6 percent in 1990, according to government data. (In the U.S., the number is 27 percent, the United Nations reports.) The actual number of solitary households in China may be as high as 83 million, says Jean Yeung, director of the Centre for Family and Population Research at the National University of Singapore. That could rise to 132 million by 2050, she says. "Some choose to live alone because they have more economic resources and prefer more time and space for themselves. Others have no choice." Yeung and her colleagues estimate that 53.2 million Chinese age 15 to 54 live alone. Some 30 million over age 54 also keep one-person homes.

These shifts are eating away at an economic system based on extended families that goes back centuries, part of the twin Confucian values of loyalty to the emperor and filial obedience known as *zhongxiao*. "This rapid increase in single-person households represents a fundamental shift at the very bottom of the Chinese social structure," says Wang Feng, a professor of sociology at the University of California at Irvine. "Households, often with many members co-residing, have been the most basic units to organize production and consumption, socialize individuals, and to maintain networks of political power and social support."

The breakdown of the traditional family began with the one-child policy in cities, while rural couples could have two children without incurring penalties. The new rules had a shrinking effect on the big families of old. When millions of migrants began leaving rural China to work in the cities, many left parents behind without any child to support them. As spouses died, those parents often found themselves alone. The number of Chinese 65 or older living alone will reach 46 million by

PHOTOGRAPH BY B. O'BRIEN FOR BLOOMBERG BUSINESSWEEK
DATA: UNITED NATIONS, CHINA MINISTRY OF CIVIL AFFAIRS

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2050, according to the Centre for Family and Population Research.

Hu's daughter, who lives two hours away, is a paraplegic and can no longer visit. Hu's own ailments limit travel, and she hasn't seen her daughter since last summer. Her son lives in a distant city and visits once a year but is too poor to help out, she says. "How can I not be lonely?" asks Hu, who has difficulty breathing and spends much of her time watching TV. "I want someone to live here with me. She doesn't need to pay rent. I just need someone to be nearby, to be with me." Hu spends half her monthly state stipend of 600 yuan ($91) on medicine.

Many elderly, especially in rural areas, don't have full health insurance or a pension. In that case, the solitary old are more at risk because they lack family support. The government says it's expanded rural health care, encouraged private businesses to invest in retirement homes, and more than tripled the number of beds in nursing homes to 6.7 million.

For the adult children of the affluent, their careers and the pleasures of urban life make it easy to defer setting up house with a partner. In the 2010 census, 36 percent of men and 22 percent of women age 25 to 29 weren't married, twice the level it was in 2000. In cities, the percentage of unmarried women is as high as 30 percent, according to the University of California's Wang.

197%

Rise in Chinese divorce rate, 2003 to 2014

"I'm thinking about waiting one or two years before I meet someone and get married," says Liu. "I can do whatever I want living alone." New services are springing up to cater to these singles. There's the gym where Liu works out and smartphone app **Ele.me**, which delivers single-portion dinners. The Alibaba-backed company is valued at $4.5 billion and employs more than 6,000 in over 260 cities. "The rise of one-person homes makes increasing demand for housing. It makes increasing demand for automobiles. It makes increasing demand for energy," says Nicholas Eberstadt, a demographer at the American Enterprise Institute in Washington. "This is part of China's transition into a more consumption-driven economy."

Divorces are swelling the ranks of the solitary. The divorce rate almost tripled from 2003 to 2014, to 2.7 divorces per 1,000 people, according to the Ministry of Civil Affairs. Commentators blame the increase on social media and dating sites, the greater financial independence of women, and regulations that allow quick and cheap divorces.

The aging of China is one of the nation's biggest challenges. The elderly will make up the largest share of single-occupant households, increasing the stress on social services.

It takes Ni Yuehua, 82, of Beijing more than an hour to go to and from her supermarket 260 feet away. She must figure out the weight of the yogurt and vegetables because she can't carry more than 11 pounds.

Ni's husband passed away in 2002, and her older daughter died in 2006. She lived in the U.S. with her son, a computer scientist, until 2010, when he was killed in a robbery. A daughter lives in Sydney but is almost blind. So Ni lives alone, afflicted by arthritis, diabetes, and heart disease.

"Early morning is the most difficult time," she says, wiping tears from behind her reading glasses. "I have to turn on the radio so I can distract myself from those sad things."
—*Xiaoqing Pi, with Kevin Hamlin*

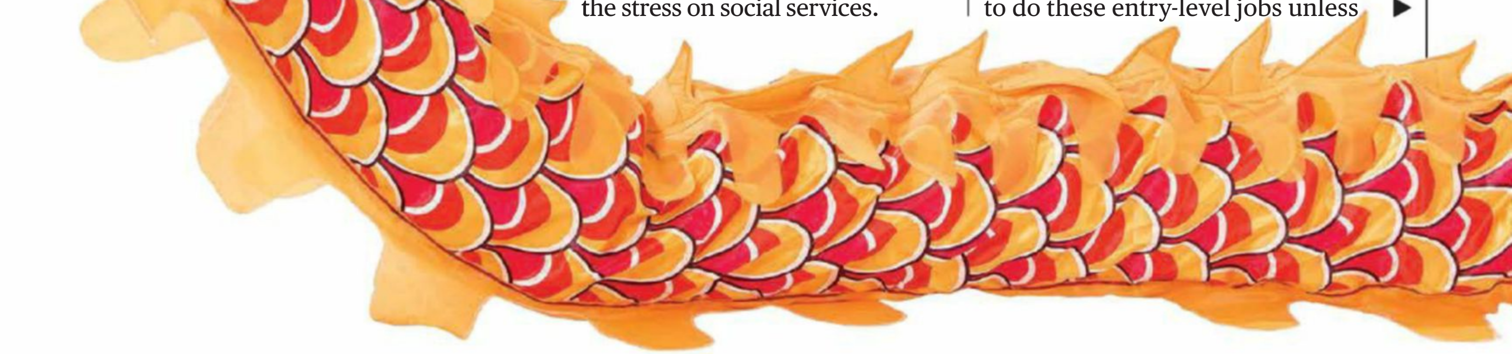
The bottom line As many as 83 million adult Chinese live alone, and the number is growing as the population ages.

Employment

U.S. Bosses Pay More, Reluctantly

- **Low-skilled workers find jobs seven years into the expansion**
- **"I've never seen it this tight, especially at the hourly level"**

Kelly Services executive George Corona started noticing the change about six months ago: The $5.5 billion temp agency was finding it tougher to find workers to fill beginner positions at warehouses and call centers run by Kelly clients. "It's becoming harder and harder to attract people to do these entry-level jobs unless



◀ you raise the wages," says Corona, Kelly's chief operating officer.

Seven years into the economic expansion, the U.S. is showing signs it's running short of job seekers qualified to fill openings. The shortfall, which has been evident for some time for highly skilled workers, is spreading to workers with less education as unemployment falls further.

"We are now close to eliminating the slack that has weighed on the labor market since the recession," Federal Reserve Chair Janet Yellen said in a June 6 speech. At 4.7 percent in May, the jobless rate is around the level that most Fed policymakers consider to be full employment.

Payrolls have risen 116,000 per month since March, compared with last year's 229,000 pace. No one knows whether the slowdown stems from the dwindling demand for labor or a shrinking supply of workers. If it's the former, the Fed needs to exercise even more caution in raising rates. If it's the latter, policymakers run the risk of overheating the economy by waiting too long to increase the cost of credit. Investors don't see the Fed raising rates this year, based on trading in the federal funds futures market.

The U.S. Department of Labor reported on June 8 that job openings rose to 5.8 million in April from 5.7 million in March. Hires fell to 5.1 million from 5.3 million. That combination "suggests that firms may be having difficulty in finding qualified employees in a tightening job market," Maury Harris, chief U.S. economist at UBS, and his team wrote in a June 8 report titled *Has the Well Run Dry?*

The jobless rate for those with a college degree or better has hovered around 2.5 percent. "Among the more credentialed people like engineers, scientists, and those in finance, if you want to work, you're working," Corona says. Bob Funk, chief executive officer of staffing agency **Express Employment Professionals**, says that to hire an accountant recently, he had to offer a salary 20 percent higher than what his existing bookkeepers get because demand for those skills is so high.

The less-skilled are now profiting from the stretched supply of labor. "I've been in the management business for restaurants since 1987 in Atlanta, and I've never seen it this tight, especially at the hourly level," says Robby Kukler, partner with Fifth Group Restaurants in Atlanta, which employs 800 people at a catering company and eight restaurants, including South City Kitchen.

"The employee is now in control," says Becca Dernberger, a vice president at **ManpowerGroup**, a staffing and worker training company with $19.3 billion in worldwide revenue last year. Some companies are responding by lowering their job requirements for applicants and taking on those who might need further training, she says.

Others, though, are finding it hard to adjust to the new reality of the job market. "Companies aren't that willing" yet to raise wages for the harder-to-fill entry-level jobs, Kelly's Corona says. "It's a process that's going to take time" to play out.

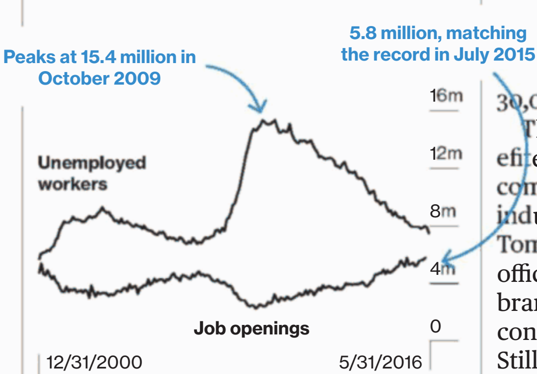
The recent downshift in hiring indicates that demand for workers is easing somewhat, Funk says. His Oklahoma City-based staffing company has about 14,000 positions open, compared with about 30,000 throughout last year.

The downturn in energy has benefited labor-starved construction companies, as workers who left that industry for the oilpatch return, says Tom Crane, chief human resources officer for Skanska USA, the American branch of the giant Swedish construction company. Still, the New York-based builder is doing a lot more—such as teaming up with local community colleges and vocational schools—than it has to recruit and retain workers. Says Crane: "It's not going to get any better."

—*Rich Miller and Steve Matthews, with Tim Jones and Alison Vekshin*

The bottom line Worker shortages are spreading, and those with lesser skills are starting to benefit, lowering unemployment in the process.

More Jobs, Fewer Jobless



DATA: BUREAU OF LABOR STATISTICS

Monetary Policy

India's Central Banker Heads Back to Chicago

▶ **With Raghuram Rajan gone, investors worry reform will suffer**

▶ **"Political pressures may have contributed to his departure"**

Raghuram Rajan said on June 18 he'll return to the University of Chicago Booth School of Business when his three-year term as governor of the Reserve Bank of India (RBI) expires on Sept. 4. Prime Minister Narendra Modi had failed to defend Rajan strongly when an influential member of Modi's party said Rajan was "willfully and deliberately wrecking the Indian economy" and was "mentally not fully Indian."

Rajan raised interest rates three times after being appointed by the previous government in 2013. As inflation eased, he cut rates more slowly than some in Modi's party wanted. Investors are nervous that India's next central banker won't press as hard as Rajan to cut inflation and force banks to clean up their bad loans. "The fact that political pressures may have contributed to his departure" clouds the outlook, Deepali Bhargava, an economist at Credit Suisse, wrote to clients.

Modi's government sent investors mixed signals in the days after Rajan's announcement. Trying to show policymakers were still pro-reform, the government said it would allow 100 percent foreign investment in sectors from local airlines to cable-TV providers. The announcement gave some support to the rupee, which slipped to a one-month low on June 20.

On fighting inflation and fixing the banks, the government hinted that

Rajan

FROM LEFT: KUNAL PATIL/HINDUSTAN TIMES/GETTY IMAGES; KACPER PEMPEL/REUTERS

Rajan had gone too far. A senior government official told reporters that the high rates Rajan has used to fight inflation, while appealing to foreigners, were hurting domestic industry. The government also suggested the RBI's own capital could be used to bolster state-owned banks grappling with nonperforming loans, according to a document obtained by Bloomberg on June 20. Tapping the RBI's capital might jeopardize its independence. Alpana Killawala, a spokeswoman for the RBI, didn't respond to an e-mail.

Arvind Subramanian, chief economic adviser to the Ministry of Finance, is Rajan's most likely successor, according to a survey of economists by Bloomberg. He is less hawkish on reducing inflation than Rajan. But his candidacy could be jeopardized by his close ties to the U.S. In 2013 he told Congress that the U.S. should address Indian policies that are "demonstrably protectionist."

"The real hard work starts now" on the inflation front, says Sonal Varma, an economist at Nomura Holdings in Singapore, citing a looming pay raise for civil servants and rising fuel prices. As for the banks, wrote Ben You Ang and David Marshall, analysts at research firm CreditSights: "The departure of Mr. Rajan as head of the RBI will inevitably be seen as a blow to the reform of the sector." *—Unni Krishnan, Sandrine Rastello, Luke Kawa, and Peter Coy*

The bottom line Rajan used high interest rates to squeeze inflation out of India, but some politicians think the rates were too high.

Energy

As Europe Drops Coal, Poland Embraces It

▶ **The country's carbon addiction is rooted in politics**

▶ **"Very few people are willing to give up any benefits"**

The World Health Organization estimates that two-thirds of the European Union's 50 most-polluted cities are in Poland, largely in the mining region of Upper Silesia, where the smell of burning coal lingers in the air.

A bulldozer works atop a heap of coal at a mine in southern Poland

Undaunted, Poland's government is doubling down on coal. "Building more efficient coal power plants will get us better results in cutting CO_2 emissions than building renewable energy sources like wind or solar," says Energy Minister Krzysztof Tchorzewski, a member of the Law and Justice party, which swept to power in October with union backing after it pledged to preserve mining jobs.

Even as other European countries shun coal, Poland is still addicted, getting almost 90 percent of its electricity from it. That has more to do with politics and fear of job losses than with the inability to generate power from other sources. Successive governments have sought to restructure the mines snaking beneath the lush Silesian countryside, but those efforts have been thwarted by unions intent on preserving the country's 100,000 mining jobs.

Before the Law and Justice party governed, Polish companies built plenty of wind turbines. In May, parliament passed a bill requiring that wind turbines be located farther away from homes, a rule that developers say effectively kills new projects.

With the government's encouragement, the three biggest publicly traded utilities agreed to spend as much as 1.5 billion zloty ($387 million) on a stake in a restructured mining company called **Polska Grupa Gornicza**. Five banks and a state company will get PGG bonds in place of loan payments.

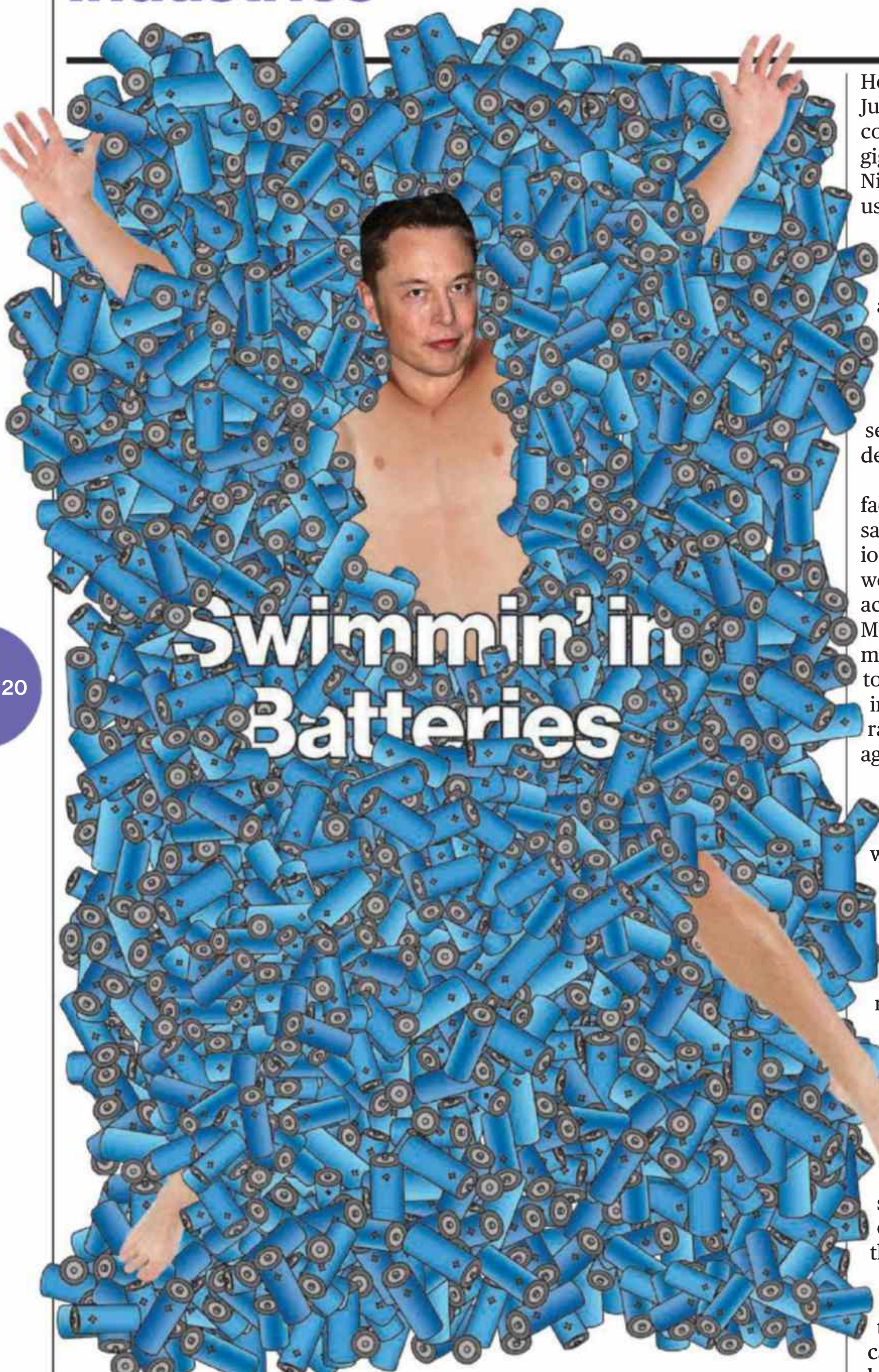
PGG's business plan assumes that coal prices will rise for the next couple of years. "PGG has little chance of becoming profitable," says Maciej Bukowski, president of Warsaw think tank WiseEuropa and co-author of a study of the industry. He says that even if coal prices increase, PGG will need more capital by 2020. And if prices remain stagnant and PGG doesn't restructure further, it could face bankruptcy within two years. Shutting down money-losing mines and cutting jobs is the only long-term solution, he says.

Some miners see that their way of life can't last forever. Michal Piotrowski, from the Silesian city of Zabrze, says he quit retailing in 2012 and became a miner to earn more for his family. He's disillusioned with what he calls a "give-it-away" culture: administrative staff who get the same free meals as miners underground; free heating coal for retired miners; an annual bonus of two months' salary. "It's slowly changing," he says. "But very few people are willing to give up any benefits."

Although the miners recently agreed to suspend part of their benefits for two years, unions say job cuts are unacceptable. Jaroslaw Grzesik, head of the mining division of the Solidarity union, praises the government's decision to promote coal over renewables, which, he claims, are being pushed by richer countries able to afford such projects. "We're not a country where the sun shines and wind blows all year," he says. "We're a country rich in coal, and we should care about our economy and our citizens." *—Ladka Bauerova and Maciej Martewicz*

The bottom line Coal miners are a powerful force in Polish politics, and they have preserved jobs as a result.

Edited by Christopher Power and David Rocks
Bloomberg.com



Swimmin' in Batteries

▶ Tesla's Elon Musk is building his own power-cell supply chain

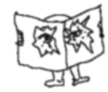
▶ "The world is going to need a lot more lithium ion batteries"

How important are metals to **Tesla**? Just check out the names of some conference rooms at its new $5 billion gigafactory in Nevada: Lithium, Nickel, Cobalt, Aluminum. They're used to make lithium ion batteries, and Chief Executive Officer Elon Musk needs unprecedented quantities of the metals to reach an ambitious goal: producing 500,000 electric vehicles a year by 2018. That's two years earlier than originally planned because of about 373,000 preorders for the Model 3 sedan, which the company will start delivering in late 2017.

And that's no small task. When the factory was announced in 2014, Tesla said it would produce more lithium ion batteries annually by 2020 than were produced worldwide in 2013. The accelerated schedule to supply the Model 3, the automaker's first mass-market car, doesn't leave much time to create a complex supply chain that includes expanded mining and exploration operations. It also pits Tesla against consumer-electronics companies, which use the batteries in everything from mobile phones to laptops, and carmakers in China, where the government wants 5 million electric and other new-energy models on the road by 2020. "The world is going to need a lot more lithium ion batteries. Tesla knows that it's going to have to source the raw materials themselves, and they are competing with China," says Simon Moores, a managing director at Benchmark Mineral Intelligence. "They need to invest in new supply, and they are conducting a global search."

Tesla's Model S sedan, which starts at $66,000 before federal or state incentives, contains more than 7,000 battery cells, which Tesla developed with Japan's **Panasonic**. They're working on larger cells for the Model 3, which will have a high-capacity battery with enhanced energy density, Panasonic said in an e-mail. Energy density, measured as kilowatt hours per kilogram, helps determine range: The more hours of power packed into a car's battery, the more miles a

PHOTOGRAPH ILLUSTRATION BY 731; PHOTOS: GETTY IMAGES (2)



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vehicle can travel on a single charge.

To secure the huge number of cells it needs and drive down the cost, Tesla is collapsing the supply chain and bringing battery-cell production in-house in a move reminiscent of Henry Ford in the 1920s. **Ford**'s massive Rouge complex in Michigan made most of the components, including engines, glass, and steel, used in its assembly plants and was supplied by Ford-owned iron mines and limestone quarries. Ford even owned and operated a rubber plantation in Brazil.

Musk's vision now includes Tesla buying SolarCity, of which he is also chairman, so his most passionate customers can get rooftop solar panels, electricity storage units, electric cars, and charging units from Tesla.

For its batteries, Tesla typically uses formulations including lithium, nickel, cobalt, and aluminum oxide. To find a steady and affordable supply of these materials—key to keeping the base price of the Model 3 at about $35,000—the company is recruiting staffers to scour the globe. It hired Rene LeBlanc, a former engineer at FMC Lithium, earlier this year. It's also looking for a Tokyo-based supply-chain analyst willing to travel frequently to China and South Korea to work closely with suppliers.

Despite all the buzz about lithium, Musk reminded investors at Tesla's May 31 shareholder meeting that the metal is "just the salt on the salad," accounting for only about 2 percent of the material in Tesla cells. Yet it's key to making batteries rechargeable, and even that small percentage doesn't exempt Tesla from the laws of supply and demand. It's competing for the metal with companies in Asia, where China, Japan, and Korea account for more than 85 percent of current lithium ion battery output, according to researcher CRU Group.

"Tesla has spent a lot of time working with all the different lithium companies," including some tiny startups, JB Straubel, the chief technology officer, said at the shareholder meeting. The goal is to make sure "they're investing on the right timeline to have the capacity ready when we need it." Tesla has signed supply agreements with **Pure Energy Minerals**, which is exploring a lithium deposit in Nevada's Clayton Valley, and **Bacanora Minerals**, which plans to develop a lithium deposit in Sonora, Mexico.

Macquarie Research estimates the lithium market will show a deficit of about 4,500 metric tons before turning to a slight surplus in 2017 and 2018. But without significant new supply coming online, Macquarie predicts a global shortage of almost 46,000 tons, equal to 16 percent of total demand, by 2021.

The cost of nickel is a bigger factor. At the May 31 meeting, Musk said "the main determinant of the cost of the cell is the price of nickel in the form that we need it." Prices in May 2014 surged past $21,000 a metric ton after Indonesia, the biggest producer of the mined metal until 2013, announced it would ban the export of all unrefined ores. Since then prices have plummeted more than 50 percent, to about $9,190 a ton on June 21, as other countries, notably the Philippines, increased output and stockpiles remained near record highs.

Tesla, which doesn't use much cobalt in its batteries, is trying to get rid of it and add nickel, Straubel says in an interview. Supplies outpaced demand in 2015 by about 1,285 tons but should turn to a deficit this year, lasting through 2020 and helping boost the price to $15 a pound by then, from about $10.80 now, according to Macquarie.

One metal for which Tesla is unlikely to see shortages or higher costs is aluminum. China, with 55 percent of the metal's output last year, is the world's biggest producer and consumer of it. (The U.S. and Canada accounted for about 8 percent of production.) Production in China has continued at a steady pace despite a global glut, partly to avoid massive job cuts and losses at banks that sank huge loans into smelting facilities. Goldman Sachs expects a surplus of about 1.25 million metric tons this year, while Harbor Intelligence, an aluminum researcher, predicts the glut will continue through 2021. If that's the case, few will be happier than Musk. —*Dana Hull and Joe Deaux*

The bottom line Tesla, which uses thousands of lithium ion battery cells in each of its cars, is trying to secure ample supplies of metals.

The Metals Tesla Needs

Lithium
Macquarie Research projects the market will undershoot 2016 demand by about

4,500
metric tons before a slight surplus in 2017.

Nickel
Prices have plummeted more than

50%
in the past two years, as producers increased output in response to Indonesia's export ban.

Cobalt
Supplies outpaced demand in 2015 by about

1,285
tons but should now fall short each year through 2020, driving up prices.

Aluminum
Goldman Sachs expects a global surplus of

1.25m
metric tons this year. Harbor Intelligence predicts a glut through 2021.

Governance

When Shareholders Aren't the Real Bosses

▶ **A company's directors stay put after shareholders vote them out**

▶ **Nabors refuses "to adopt majority supported governance reforms"**

Investors in **Nabors Industries** have big concerns, including how the oil driller pays its executives, a lack of diversity on its board, and how it communicates with owners. In a sign of disapproval, a majority of shareholders voted to oust three directors in a June 7 election. Those directors dutifully tendered their resignation—but they'll be keeping their jobs.

Lead director John Yearwood failed to get a majority of shareholder votes at the last four annual meetings. The responsibility to accept his resignation would normally lie with the governance and nominating committee. Who heads that committee? Yearwood does. Who are its other members? Michael Linn and Howard Wolf, the other two directors who were voted out.

To avoid having the three decide ▶

◀ their own fates, Nabors's board appointed a special committee of independent directors. That panel recommended that the trio stay put. The board then voted unanimously to reject the resignations, according to a June 13 company filing. It's the fourth year in a row the board has used such a tactic to overrule a shareholder vote.

Nabors, based in Bermuda but with headquarters in Houston, has a "longstanding history of inadequately responding to, or totally disregarding, majority shareholder votes," Dieter Waizenegger, executive director of pension fund adviser CtW Investment Group, wrote to investors before the vote. "This includes persistently renominating directors who have previously been rejected by shareholders and refusing to adopt majority supported governance reforms."

In the filing, Nabors said the board "considered the current structure and needs of the board, the company's current strategic needs, shareholders' expressed reasons for withholding votes, actual vote counts, and the contributions and anticipated roles" of the three directors. Nabors didn't respond to requests for comment. The company's bylaws consider shareholder votes on directors to be advisory.

So-called zombie directors are fairly common when there are no other candidates for the seats of the directors shareholders want to oust, according to the Council of Institutional Investors. Only 43 directors of companies in the Russell 3000 index failed to win majorities last year, but 38 stuck around, CII's data show. A proxy measure from some shareholders called for allowing investors who own at least 3 percent of shares for three years to nominate candidates for board seats. Nabors's current board nomination policy, limiting a single holder of 5 percent of shares for three years to making a single board nomination, "contains restrictions virtually unseen" in the S&P 500 and Russell 3000, says advisory company Institutional Shareholder Services (ISS).

The company's feud with investors is exceptional for how long it's lasted. Most companies typically make changes after a majority of owners register their unhappiness. Nabors is among a handful that have done little to address shareholder complaints. ISS recommended that investors vote against all the Nabors directors at the June 7 meeting "due to the failure of the board to fully implement two shareholder proposals which had received majority support of votes cast" last year, "marking yet another year of failure to respond to concerns expressed by the broad swath of shareholders."

In six votes Nabors has held on its executive compensation plans, investors have shown majority approval only once, in 2015, when the company cut compensation for Chief Executive Officer Anthony Petrello, whose $68 million pay package in 2013 made him one of the highest-paid bosses in the oil and gas industry that year.

In the June 7 vote, the company failed to get support for last year's compensation plan after Petrello's pay almost doubled, to $27.7 million from $14.8 million, because of a merger-related bonus. Nabors's market value has plunged to less than $3 billion, about a third of its value two years ago, as a crude glut weighs on shares of oil companies. —*Caleb Melby and Alicia Ritcey, with David Wethe*

The bottom line For four straight years, Nabors Industries has ignored votes by its shareholders and kept directors whom its investors had dumped.

Press

Readers to Fleet Street: The Love Is Gone

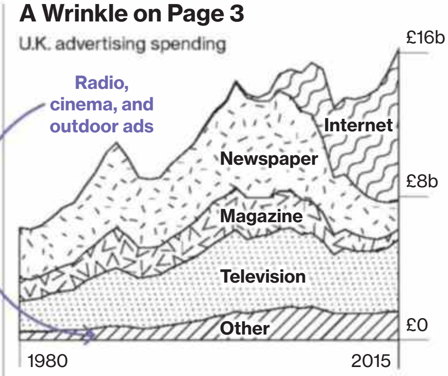
▶ U.K. papers are getting pinched as print ad revenue weakens

▶ For Britain's national dailies, "the house of cards is tumbling"

Britain's daily press—with its saucy headlines and coverage that ranges from lurid exposés of politicians' peccadilloes to sober analyses of their policies—has long weathered the digital onslaught that's decimated the business elsewhere. Two decades into the web era, the U.K. supports at least 10 print papers with national reach.

A Wrinkle on Page 3

U.K. advertising spending



Yet Fleet Street is finally feeling the pinch. Newspapers are cutting jobs and trying to shore up advertising and circulation. The *Independent* in March ceased publishing its print edition and adopted a digital-only strategy. The *Telegraph* is closing its office canteen. The *Guardian* is cutting 250 jobs as it aims to reduce costs by 20 percent. Even the *Daily Mail*, which has maintained a strong print readership while building the world's biggest English-language news website, is warning of weakness in advertising. "I've had a dread of this happening," says David Banks, a onetime editor of the *Daily Mirror* and a former managing editor at the *New York Post*. "The house of cards is tumbling."

The U.K. newspaper market generates $8 billion a year in revenue, making it the fifth-largest in the world, after the U.S., Japan, Germany, and China. But just 62 percent of British adults read a newspaper at least once a week in 2015, down from 70 percent in 2011, according to the World Association of Newspapers and News Publishers. Print ad sales at U.K. papers fell to £1.7 billion ($2.5 billion) last year, from £4.2 billion in 2005, says media-buying agency ZenithOptimedia. And web ads aren't plugging the gap: Digital ad sales totaled £356 million in 2015, leaving a shortfall of more than £2 billion. "Everyone was waiting for the moment when digital ads were going to offset the drop in print," says Alex DeGroote, media analyst at Peel Hunt. "The tipping point didn't come through, and it's not going to."

The *Guardian* invested heavily in digital operations under its former

ILLUSTRATION BY PETE SHARP; FIGURES ADJUSTED FOR INFLATION; DATA: ADVERTISING ASSOCIATION; INTERNET ADVERTISING BUREAU editor, Alan Rusbridger. While the title ranks second among English-language news sites, with 39 million unique visitors in April, vs. the *Daily Mail*'s 50 million, according to researcher ComScore, its digital ad revenue hasn't offset print declines. **Guardian Media Group**, which publishes the *Guardian* and the Sunday-only *Observer*, says it expects an operating loss of £53 million for the 12 months ended in March. David Pemsel, the group's chief executive officer, says he's aiming to break even within three years with a renewed focus on digital revenue. He's looking for sources other than advertising, such as soliciting donations from digital readers; 28,000 have chipped in so far. "The last 12 months have been a genuine wake-up call for the industry," he says.

Publishers have tried all manner of new ideas to keep readers from defecting. The *Telegraph* gives out free bottles of water with a purchase of the paper at WHSmith convenience stores. The *Mirror*'s owner in February launched *New Day*, a tabloid aimed at attracting women who've deserted newspapers. The paper featured an upbeat editorial line with stories about families, children, and relationships and largely skirted sports and crime coverage. The marketing slogan, "Life is short, live it well," turned out to be prophetic. The paper closed after less than three months.

News Corp., which publishes the staid *Times of London* and the *Sun*, a tabloid stuffed with celebrity tittle-tattle and sports news, has had mixed results trying to get readers to pay for online content. The *Times* started charging in 2010 and today has more than 170,000 paid digital subscribers. The *Sun* dropped its paywall in 2015 after two years. To tap into Britons' love of gambling and sports, it plans to add an online betting service following the introduction of Dream Team, a fantasy soccer game. "Instead of just thinking about the *Sun* as a newspaper, you think about it as a brand," says David Dinsmore, chief operating officer of News U.K.

The *Daily Mail* has bucked the industry by minimizing print declines while attracting online readers with a steady diet of Kardashians, Kate Moss, and Cristiano Ronaldo, but it's also getting hit. Shares of its owner, **Daily Mail & General Trust**, plunged in May when the company said print ad revenue fell 13 percent in the latest six months. "There is a perfect storm this summer," says Tim Luckhurst, a journalism professor at the University of Kent. *—Eric Pfanner and Kristen Schweizer*

The bottom line Britain's dailies are finally feeling the squeeze from the rise of digital news outlets, years after papers elsewhere.

Media

Clinton-Trump Is Cable News' Dream Team

▶ **Ad rates for spots during the political conventions are soaring**

▶ **If Trump stumbles, "that could draw fewer eyes"**

With all its acrimony and bare-knuckled rhetoric, the presidential primary season has been a ratings bonanza for cable news. Now networks are preparing to cash in during coverage of the major parties' nominating conventions in July. **CNN** is charging advertisers $40,000 to $100,000 for a 30-second spot during the Republican and Democratic conventions, compared with about $5,000 for a normal prime-time commercial, according to a person familiar with the matter. **Fox News** plans to charge similar rates, according to Ken Goldstein, a professor of politics at the University of San Francisco who analyzes polling and advertising for Bloomberg Politics. The cable networks declined to confirm the numbers. "They will be two of the most interesting conventions in modern political history," says Sam Feist, CNN's Washington bureau chief.

CNN will dedicate almost all its 24-hour-a-day programming in late July to the Republican confab in Cleveland, starting on July 18, and the Democrats' gathering in Philadelphia, which begins on July 25. Fox News will broadcast more hours of the events than it did four years ago.

In the first quarter, Fox News—fueled by politics—led all basic cable channels in prime-time and total-day viewership for the first time in the network's history. **MSNBC**'s viewership rose 77 percent in the first quarter from a year ago, while CNN had its most-viewed quarter in seven years.

All will air the three presidential debates set for September and October, and they expect lots of eyeballs. In 2012, 67.2 million viewers tuned in to the first matchup between Barack Obama and Mitt Romney, the most since the 1980 faceoff between Jimmy Carter and Ronald Reagan drew more than 80 million. Donald Trump vs. Hillary Clinton could break that record. "That first debate, outside the Super Bowl, may be the highest-watched show we've seen in years," says Jay Wallace, Fox News executive vice president for news and editorial.

Still, overall viewership for cable news throughout the political season may depend on how well Trump, a ratings magnet, fares against Clinton. "Trump is a double-edged sword," Goldstein says. "On one hand, his participation continues to draw eyes to television." But if Trump stumbles and "the election becomes uncompetitive, that could draw fewer eyes."

Dafna Linzer, managing editor of politics for MSNBC, says the network plans to draw viewers by reminding them about the historic nature of Clinton's candidacy. "One important reason why voters are so engaged and there's so much at stake is because the parties are on the precipice of choosing candidates like they have never chosen before," Linzer says.

Cable news is better positioned to capitalize on the elections because it's always on the air. But broadcast networks have also benefited from spending on political ads. That's expected to reach $4.4 billion this year, higher than 2012's record $3.8 billion, says the Campaign Media Analysis Group.

The front-runners are so polarizing, and Trump is making such waves with his campaigning style, that it's hard to imagine a network not profiting. As Leslie Moonves, the chief executive officer of **CBS**, said earlier this year: "It may not be good for America, but it's damn good for CBS." *—Gerry Smith*

The bottom line Cable-news channels are charging as much as $100,000 for a 30-second ad during this summer's political conventions.

Edited by James E. Ellis
Bloomberg.com

The Other Trump Tower

▶ **Scammers love the candidate's lower Manhattan building**

▶ **"They want that Wall Street address"**

Donald Trump told a Maine crowd in March that critics of his business acumen should focus on an 86-year-old Manhattan skyscraper that's one of his most treasured real estate assets. "They don't want to talk about 40 Wall St.," he said. "Iconic and wonderful," the presumptive Republican nominee said at a town hall event in South Carolina last year in praise of the art deco tower known as the Trump Building.

So what's going on at 40 Wall St.? A hedge fund manager on the 28th floor, who ducked investors by pretending to be dead, reported to prison in January. A few weeks later an investment adviser on the 17th floor was accused of running a Ponzi-type scheme. On June 3 a lawyer 13 floors above pleaded guilty to stealing millions of dollars from victims who included a schizophrenic woman.

No single property in Trump's portfolio is worth more, according to a 2015 Bloomberg valuation of his assets. But the 72-story building has housed frauds, thieves, boiler rooms, and penny-stock schemers since Trump took it over in 1995. According to the U.S. Securities and Exchange Commission's current public alert list, no U.S. address has been home to more unregistered brokerages that investors have complained about. The tower, around the corner from the New York Stock Exchange, also houses a Girl Scouts office and a private school.

Rents exceed the market standard for comparable buildings, says Donald Trump Jr., who's in charge of leasing for the **Trump Organization**. "Forty Wall's average annual rent continues to achieve a record of immense success with 97 percent occupancy, a vacancy rate virtually unheard of in downtown Manhattan," he said in an e-mail.

Part of the building's appeal is that it offers a relatively cheap way to establish a company's credibility. The building's average annual rent per square foot is $36, mortgage filings show, about $20 cheaper than average in the area, according to Cushman & Wakefield, whose brokers help lease the building. "They want that Wall Street address," Trump Jr. told trade publication *Commercial Property Executive* in 2010. Eleven new tenants were cited in that interview. Since then, the heads of four have been charged with fraud.

The hedge fund manager who played dead, Mark Malik, wasn't the first tenant to try that excuse. In 2003 one of the executives at Evergreen International Spot Trading on the 37th floor faked his suicide to dodge prison, say federal prosecutors, who called another executive there "the Michael Jordan of investment fraud." The scam came to light when customers asked about their money after the Sept. 11 attacks. In 2010, according to regulators, brokers on the 34th floor were helping a financier on the 38th with a penny-stock scam; a brokerage on the 17th floor was involved in an unrelated fraud; and a bond-trading firm on the 42nd floor was bribing a Venezuelan official to win business. At the time, the 32nd floor was the headquarters of Trump University, the billionaire's school.

Trump, whose short-lived Trump Mortgage venture was on the 25th floor before it closed in 2007, wrote in his 2008 book *Trump Never Give Up* that the building houses "many of the top-notch businesses in the world." That was once the case. After founding the Manhattan Co., a forerunner of JPMorgan Chase, in 1799, Aaron Burr established an office on the site. Work began there in 1929 for the bank's tower, which was supposed to be the world's tallest—but it lost to the Chrysler Building uptown.

The tower opened in 1930, just as the economy slid toward depression following the 1929 stock market crash. Lenders foreclosed in 1940. The building passed through numerous hands, including partners from the investment bank Loeb, Rhoades. They sold the tower in 1982 to an entity that was concealing the wealth of Ferdinand and Imelda Marcos of the Philippines. After the couple was exiled in 1986, the tower was auctioned off and foreclosed on again. Saudi arms dealer Adnan Khashoggi was later charged with helping the Marcoses cover up their stake; he was ultimately acquitted.

In 1993, 40 Wall St. was acquired by Kinson Properties, an arm of a footwear and real estate company in Hong Kong. Trump pounced when Kinson had trouble turning the building around, he wrote. He's said he paid $1 million for the right to lease the building through 2059. Trump currently pays $1.65 million a year to the group that owns the land underneath the building, which includes heirs to a German shipping fortune. "They realized that after a string of losers who had owned the building, I had the integrity of their spectacular property first and foremost in my mind," Trump wrote in his book.

Trump wrote that he was collecting about $20 million a year in rent by 2008. The tower is worth $550 million, based on rental income and what buyers typically spend on similar leaseholds. In July, public records show, Trump refinanced $160 million of debt on the building.

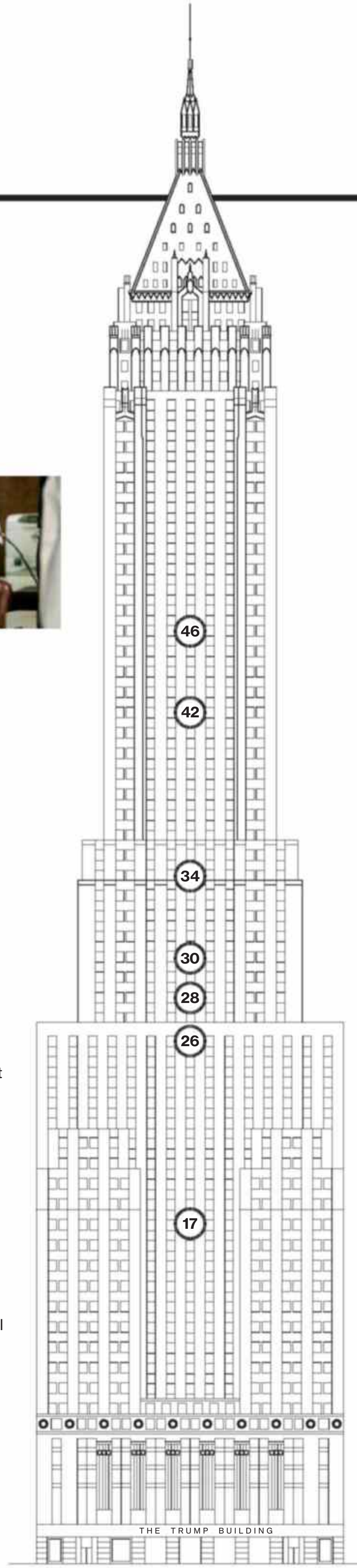
One of the cheapest ways in is to rent on the 28th floor, which is broken up into small offices. Companies listed in the lobby directory for that floor

What Russian hackers really want from U.S. politics 26

Bereft Sanders fans look at other candidates 27

Current and former tenants

Floor



46

Aegis Capital was fined $950,000 by financial regulators in 2015 for helping unload unregistered shares of penny stocks. The company didn't admit any wrongdoing.

42

Bond-trading firm **Direct Access Partners** closed after a scheme to bribe a Venezuelan bank official surfaced in 2013. The former CEO is serving a four-year prison sentence.

30

Luis Ferreira was on supervised release from prison after serving time for a telemarketing scam when his firm leased this space. He was arrested for violating parole in 2010 and later fled; he's now on the FBI's most-wanted list.

28

Mark Malik is in prison after being convicted of swindling investors out of more than $800,000. The 34-year-old pretended to have died of a heart attack when investors tried to withdraw their cash from his fake fund, Wolf Hedge.

17

Investment manager **John Bivona** was sued in March by the SEC, which said he funneled investor cash to relatives, including nephew **Frank Mazzola**, and used the money to pay for a Jersey Shore vacation home. Both have denied wrongdoing in court filings.

46

Florida-based brokerage **GunnAllen Financial** closed in 2010 after regulators said it didn't have sufficient capital; it was overwhelmed by legal costs after some brokers were involved in Ponzi schemes.

34

Ronen Zakai, a partner of the heads of **First Merger Capital**, spent most of 2015 in prison after being convicted of stealing $705,000 raised from investors who were told they were buying into Facebook's IPO. Zakai didn't respond to a Facebook message.

28

Lawyer **Matthew Bennett Greene** of Stilas International Law was banned from practicing in Virginia for failing to deliver services and fined in 2013 by Connecticut's banking commissioner over a movie investment scheme that promised 1,000 percent returns. He didn't respond to messages.

26

Day traders at **A.B. Watley Group** were found guilty in 2009 of a scheme to bribe brokers at Merrill Lynch and Citigroup to let them listen in on internal "squawk box" calls. The convictions were overturned in 2012, because prosecutors withheld evidence.

17

Mazzola of **Felix Investments** paid $500,000 to settle an SEC fraud case in 2014.

include Your Trading Room, a foreign exchange operation ordered liquidated by an Australian court in 2012; **Stilas International Law**, whose founder was banned from practicing law in Virginia; and **Ero Capital**, run by a man previously convicted of credit card fraud. Higher up, the New York panoramas are overwhelming. Says Earl David, a lawyer who worked on the 60th floor in the 1990s and was later convicted of running an immigration-fraud mill: "You will die for that view." —*Zeke Faux and Max Abelson, with Caleb Melby*

The bottom line Trump's most valuable single asset is his tower on Wall Street, where low rents attract a mixed bag of tenants.

Infrastructure

The Rotten State of U.S. Oil Reserves

▶ **The Energy Department needs Congress to greenlight upgrades**

▶ **"You get to a point where it's starting to age"**

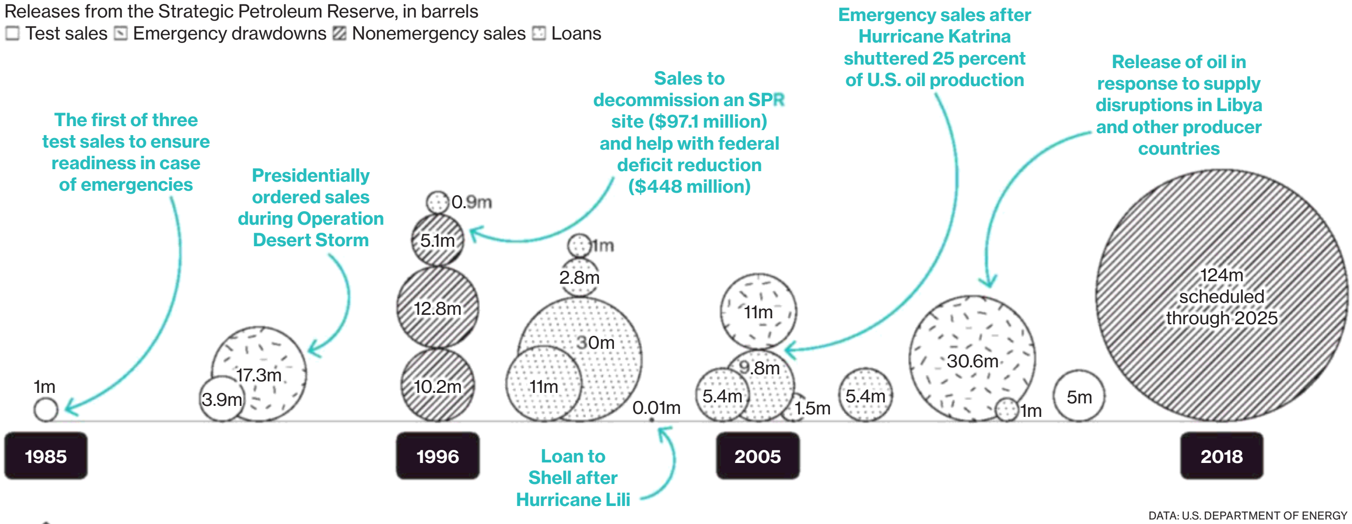
Bryan Mound, nestled in a 500-acre marshland south of Houston, is among the heavily guarded salt caverns on the Gulf Coast of Texas and Louisiana. There, the government keeps the national emergency oil stash, known as the Strategic Petroleum Reserve (SPR), stored more than 2,000 feet underground. The pipelines at Bryan Mound are capable of delivering 1.5 million barrels a day into the market to offset price or supply shocks if everything is in working order.

That's a big if. In May 2015 the roof on a 1970s-era storage tank at Bryan Mound collapsed. It still hasn't been repaired, because Congress hasn't approved the funding. Corrosion ate through a water pipe at one of the Texas sites in April. Every day, salty, humid air gnaws at the network of pipelines and pumps that crisscrosses the wetlands. Thunderstorms put extra stress on the system. Changes in the ▶

FROM LEFT: TONY SHI/GETTY IMAGES; (MALIK) STEFAN JEREMIAH/AP IMAGES; (BIVONA, MAZZOLA) CHESTER HIGGINS JR./THE NEW YORK TIMES; (ZAKAI) JESSE WARD. FLOOR LOCATIONS APPROXIMATED FROM NEW YORK CITY LANDMARKS PRESERVATION COMMISSION DATA

Drawing On the U.S. Oil Stockpile

Releases from the Strategic Petroleum Reserve, in barrels



◀ earth's pressure alter the capacity of the caves housing the reserves. "It's a very complex infrastructure, and when you get to a point where it's starting to age, then you just start to see problems," says Robert Corbin, the U.S. Department of Energy's deputy assistant secretary for the Office of Petroleum Reserves.

The reserve, created in the aftermath of the Arab oil embargo of the early 1970s, holds 695.1 million barrels of crude, the equivalent of three months' worth of imports. The stockpile's distribution system was designed with a 25-year life span, but it hasn't been upgraded since the 1990s. A test sale of 5 million barrels from the reserve in 2014 uncovered bottlenecks that would hinder the government's ability to release oil.

In April, President Obama requested $375.4 million to begin a $2 billion modernization program that will be funded with sales from the reserve and includes building three terminals for putting reserve oil in tankers. Department officials say a systemwide overhaul is needed to facilitate massive distributions from the reserve, including 124 million barrels that the Republican-led Congress scheduled to start selling in fiscal 2018 to help close the federal deficit and pay for highway maintenance. In 2005, when the department sold 20.8 million barrels to cushion the market after hurricanes Katrina and Rita, it took 20 days to start moving oil.

Some lawmakers may be worried about upsetting domestic oil producers battered by low market prices, says John Shages, a former deputy assistant energy secretary who used to oversee the oil reserve: "There are a lot of hurting companies out there who will not welcome the United States government becoming a competitor." But Congress has only itself to blame for creating that conflict when it decided to use the SPR as a piggy bank for replenishing the highway trust fund, says Republican Lisa Murkowski of Alaska, who chairs the Senate Energy and Natural Resources Committee: "They didn't care that it was bad timing. Boy, they shoulda listened." *—Brian Wingfield*

The bottom line Congress voted to sell oil from U.S. reserves but hasn't yet released money needed to get it flowing.

Cybersecurity

Russians Get Inside the U.S. Election System

▶ **A newly discovered hack may lead to public data dumps**

▶ **"The end result is a weaker president once elected"**

Before the Democratic National Committee disclosed a major computer breach in mid-June, U.S. officials had informed both political parties and the presidential campaigns of Hillary Clinton, Bernie Sanders, and Donald Trump that hackers were attempting to penetrate their computers, according to a person familiar with the government investigation. In fact, says another person familiar with the probe, from October 2015 through mid-May, the hackers targeted at least 4,000 individuals, many involved in presidential politics, including party aides, advisers, think tanks, and lawyers.

The government found the hackers, suspected by investigators to have links to the Russian state security apparatus, also succeeded in breaching systems belonging to the Clinton Foundation, as recently as mid-June, three people familiar with the matter say. Foundation officials say the organization has no evidence its systems were compromised and hasn't been notified by law enforcement.

The hacks set the stage for what could be a Washington remake of the public shaming that shook **Sony** in 2014, when thousands of internal e-mails filled with casual gossip about world leaders and Hollywood stars were made public. A hacker (or group of hackers) calling himself Guccifer 2.0 has already posted documents purportedly from the DNC, including what he said was a list of donors who had made large contributions to the Clinton Foundation. Guccifer 2.0 publicly threatened to release thousands of internal memos and other documents.

A Clinton campaign spokesman, Glen Caplin, says he can't comment on government briefings about cybersecurity but that the campaign had no evidence that its systems were compromised. "What appears evident is that the Russian groups responsible for

MONICA JORGE/ZUMA PRESS

the DNC hack are intent on attempting to influence the outcome of this election," he says. The DNC said in a statement that it believes the leaks are "part of a disinformation campaign by the Russians." Dmitry Peskov, a spokesman for President Vladimir Putin, denies the Russian government was involved.

Trump spokeswoman Hope Hicks didn't respond to e-mails seeking comment; neither did the Republican National Committee. A Sanders spokesman, Michael Briggs, says he wasn't aware of the warnings.

The U.S. Secret Service, the FBI, and the National Security Agency are all involved in the investigation; none of the agencies have made statements about the inquiry. The FBI has kept its investigation separate from the review of Clinton's use of a private e-mail server while she was secretary of state, says a person briefed on the matter.

Russia uses information operations to advance foreign policy. The audience for sensitive internal documents and damaging information wouldn't be U.S. voters, says Brendan Conlon, who formerly led an NSA hacking unit. "Why would Russia go to this trouble? Simple answer: Because it met their foreign policy objectives, to weaken the U.S. in the eyes of our allies and adversaries," says Conlon, now chief executive officer of Vahna, a cybersecurity company in Washington. "The end result is a weaker president once elected."

Russia has been accused of similar hacks in Europe. The German intelligence agency has concluded that Russia was responsible for a 2015 hack that forced the shutdown of the Bundestag's computer systems. Security software maker **Trend Micro** said in May that Russian hackers had been trying to steal data from Chancellor Angela Merkel's Christian Democratic Union party, and that they also tried to hack the Dutch Safety Board—to obtain an advance copy of a report that tied the downing of a Malaysian aircraft over Ukraine in July 2014 to a Russian-made Buk surface-to-air missile.
—*Michael Riley and Jordan Robertson, with Carol Matlack*

The bottom line Hackers have obtained sensitive documents from the Democratic Party and may have data from thousands of political operatives.

Edited by Allison Hoffman
Bloomberg.com

Election 2016

Bitter Endings

The tattoos are forever

Bernie Sanders has promised to work hard to defeat Donald Trump, but he's given no sign when—or if—he'll embrace Hillary Clinton. Many of his supporters are equally hesitant. In a June 14 Bloomberg poll, only 55 percent of them said they would vote for Clinton; 22 percent will vote for Trump, and others will back Libertarian Gary Johnson or the Green Party's Jill Stein. Here's their reasoning.
—*Joshua Green and Sahil Kapur*

"I cannot bring myself to vote for another establishment politician like Hillary."

Homemaker **Laura Armes**, 43, of Beeville, Texas. She plans to vote for Trump.

"She's definitely the lesser of two evils, but I don't trust her."

Government worker **Bako Nguasong**, 31, of Washington. She says she doesn't know whether she'll vote in November.

"It makes a lot of sense strategically to vote for Stein."

Community organizer **Eric Brooks**, 52, of San Francisco, a Green Party member. He hopes Stein can break 5 percent of the vote to qualify the party for federal funding.

"You're choosing between fascism and oligarchy."

Nonprofit worker **Perry Mitchell**, 31, of Baltimore. He plans to vote for Stein.

"A true Bernie fan would be stupid not to vote for a Democrat."

Nonprofit outreach coordinator **Albert Arevalo**, 27, originally of Brownsville, Texas. He says the Democratic Party needs to unify to defeat Trump.

Govern This With These?

▶ From copyright to privacy, courts have become the front line of cyberlaw

▶ "We're entering a phase where there's so much more unease"

FROM TOP: CONNIE ZHOU/ZUMA PRESS; GETTY IMAGES

"The law can't be right if it's 50 years old. Like, it's before the internet." The quote is from a speech Larry Page made at a Google developers conference in 2013, and it's a fair summary of how technology companies have traditionally viewed the legal system. Regulations can't keep pace with technological change, so opt for forgiveness over permission. If your idea is successful, you'll be able to defend it by the time authorities tell you to stop.

"If you look at the relationship between innovation and how society interacts with it, the emphasis has been on 'code as law,'" says Urs Gasser, the executive director for Harvard's Berkman Center for Internet & Society. That means relying mostly on software to govern online interactions—blocking spam or Twitter trolls, even trying to identify copyright infringement. Gradually, that approach is starting to change. "Post-Snowden," Gasser says, "there's a renewed emphasis on 'law as law,' to regulate code."

The change has come partly because tech companies increasingly have their own turf to protect—and the money to seek help from Washington. On June 13, bandwidth-hungry internet companies including **Netflix** won a sweeping victory against the likes of **Verizon** and **AT&T**. A broad 2-1 decision by the U.S. Court of Appeals for the D.C. Circuit upheld the Federal Communications Commission's authority to set rules on net neutrality, preventing broadband providers from favoring data traffic from certain sources—or squeezing those sources at outsize rates. (The cable companies say they'll appeal to the U.S. Supreme Court.)

Often as not, Silicon Valley is fighting one government or another, too. Some companies are seeking looser protections for labor or copyright; others want to confirm the limits of U.S. law enforcement's authority abroad. "I think we've moved out of the time when people were either triumphalists or predicting catastrophe," says James Grimmelmann, a law professor at the University of Maryland who specializes in digital issues. "But we're entering a phase where there's so much more unease. There are so many problems...which are hard to fix without messing other things up."

For now, with Congress paralyzed, changes are most likely to come through patchworks of court precedents. Here are four other questions courts have been grappling with that could reshape the digital world:

1. Do gig-economy companies have to hire workers as employees?
Tan v. GrubHub
The only thing growing faster than gig-economy companies may be the number of potential labor class actions being filed against them. More than a dozen such cases involve startups, and most allege "employee misclassification"—that the companies treat workers as contractors when they should be employees entitled to a minimum wage and overtime.

In April, **Uber** settled a class-action case in California for $84 million. The settlement allows the company to keep paying drivers as contractors and didn't resolve the underlying issue. "The Valley wants clarity," says Shannon Liss-Riordan, the lawyer at Lichten & Liss-Riordan who represented the drivers. She's also filed lawsuits that might make for stronger cases. One involves food delivery service **GrubHub**, which treats workers who sign up for delivery shifts as contractors.

A month before the Uber settlement, a federal judge dismissed most of Liss-Riordan's class-action complaint against GrubHub, which has since been amended for reconsideration, but ruled that the part of the case concerning the company's alleged failure to reimburse business expenses could proceed. The company has said the case doesn't have sufficient facts to go forward. (Liss-Riordan's firm also represents individual GrubHub workers in separate arbitration proceedings.)

The question of who's a contractor depends on facts that vary from company to company, such as how much control the employer has or who supplies workers' equipment. The stakes are high, says Daniel Rockey, a partner at law firm Bryan Cave who represents **Lyft**: "Potentially, the whole gig-economy model is at stake."

Lawsuits may have already started to change the gig economy: Startups such as **Instacart**, **Shyp**, and home-care provider **Honor HealthCare** have hired workers as full-time employees with benefits in the past couple of months. "The case against Uber seems to have had a tremendous deterrent effect," Liss-Riordan says. "I'm proud of that."

Changes are most likely to come through patchworks of court precedents

2. What does copyright cover?
Star Athletica v. Varsity Brands
A case the U.S. Supreme Court has agreed to hear in its 2016-17 term could dramatically affect the business of 3D printing. At issue is the eligibility of cheerleader uniforms for copyright protection. Give me a ©!

In the U.S., you can't copyright "useful articles," like a table, but you can copyright artistic creations, like a design on its surface. **Varsity Brands**, the $300 million-a-year queen bee of cheerleading uniform makers, is suing upstart **Star Athletica** for selling uniforms Varsity says infringe on its copyrights. Varsity's position is that its uniforms' stripes and other patterns can be copyrighted; Star says those patterns are essentially functional.

Since the passage of the 1976 Copyright Act, courts and scholars have devised several tests to separate an item's design from its function. A district court held that Varsity's uniforms couldn't be copyrighted, but the appellate court ruled for Varsity, concluding that the designs were distinctive enough for protection.

A clear Supreme Court ruling on the line between useful articles and artistic creations would help 3D-printing businesses whose customers are concerned that in the absence of clear rules they could violate someone's copyright (page 56). Printing company **Shapeways** and printer maker **Formlabs** joined an amicus brief urging the court to take the case. "Right now, everyone is in a supercautious ▶

defensive mode," says Shapeways general counsel Michael Weinberg. Martin Galese, general counsel of Formlabs, says: "Uncertainty has priced people out of the business who can't afford legal representation."

3. How much power does the U.S. have to access data abroad?
Microsoft v. United States
Microsoft's case against the federal government, argued before an appellate court last September, is expected to determine how easily the feds can access data stored in other countries. It could also determine whether the U.S. will be able to maintain its lead in the cloud-computing business, worth $100 billion a year and growing fast.

The case began when a judge issued a warrant for information relevant to a narcotics investigation, stored in a Microsoft data center in Ireland. Microsoft, which is also lobbying for cloud-era updates to U.S. privacy laws, challenged the warrant, arguing the Department of Justice doesn't automatically have jurisdiction over data held abroad. The Justice Department says Microsoft has enough control over its foreign data center for a warrant to apply. Microsoft sued and lost in district court, then appealed to the U.S. Court of Appeals for the Second Circuit.

Microsoft's stand for privacy dovetails with its financial interests. If it loses, rival cloud companies abroad will have a much better sales pitch. "A number of governments have told us that they will trust American technology only if we win," says Brad Smith, the company's president and chief legal officer. "They won't be comfortable putting information in American-run data centers if the U.S. government can reach into their country with a unilateral search warrant."

Even worse for the industry and consumers, other countries would almost certainly follow the U.S.'s lead, says Marc Zwillinger, founder of ZwillGen, a law firm that focuses on technology, who wrote the amicus brief **Apple** filed on Microsoft's behalf. "If the standard set here is that foreign law is given no weight," Zwillinger says, "foreign governments will impose similar orders that U.S. law can be disregarded." Microsoft has already gotten a taste. Last year a company executive in Brazil was detained by police demanding access to a local user's Skype data, which was stored in the U.S. Under U.S. law, Microsoft was forbidden to share it.

4. Can France expand Europe's "right to be forgotten" worldwide?
Google v. CNIL
In 2014, Europe's high court affirmed a "right to be forgotten," allowing people in the EU to formally request that search engines remove links to outdated or irrelevant material about them. It's not an absolute right: The web pages themselves remain online; search companies don't have to grant every request; and public figures merit less protection than others. But the ruling was a blessing for people whose top Google result was a dumb quote they gave their college newspapers.

Initially, however, **Google** delisted search results only on European domains, such as France's .fr or Germany's .de. Then it tried delisting results on all domains, but only for searches made in the country where the request originated. In March, CNIL, France's data protection regulator, fined the company €100,000 ($113,000) for failing to comply with its interpretation of the 2014 ruling. "The territorial scope of the delisting is just a point of interpreting and applying the law," says Mathias Moulin, the agency's deputy director in charge of enforcement.

In May, Google appealed CNIL's decision to France's highest administrative court, the Conseil d'État, which can take the case or refer it back to the EU high court. While the case will rest on technical details of European data protection law, it has broader implications. "If French law applies globally," wrote Google's general counsel, Kent Walker, in a *Le Monde* op-ed following the appeal, "how long will it be until other countries—perhaps less open and democratic—start demanding that their laws regulating information likewise have global reach?"

That's an argument unlikely to win over a French court, though. "We have this really interesting conflict emerging between the desire of multinationals to create the most global internet possible and the jurisdictional demands of other countries," says Trevor Hughes, head of the International Association of Privacy Professionals. "That tension is only going to increase." —*Robert Levine*

The bottom line Cases now working their way through U.S. and European courts could do a lot to update laws to keep pace with technology.

Hardware

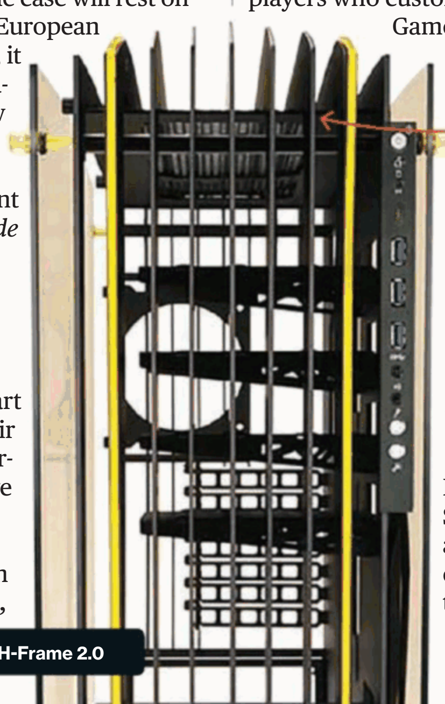
Taiwan's PC Makers Are Gunning for Gamers

▶ **In Win Development's computer cases go from generic to cool**

▶ **"You want to have it just right, and you're willing to pay for it"**

For decades, Taiwan has been the go-to place for HP, Dell, and others that need efficient production of computers and their components. But with PC sales falling worldwide, many Taiwanese companies are trying to stem their losses by appealing to one group of customers who still rely on desktops: PC gamers who want specialized, high-powered rigs. Some companies are selling models with features designed for gameplay; others are focusing on players who custom-build their PCs.

Gamers care less about price than ordinary PC buyers do. "You want to have the features, you want to have it now, you want to have it just right, and you're willing to pay for it," says Bloomberg Intelligence analyst Anand Srinivasan. Computers for gamers account for 5 percent to 8 percent of total PC shipments, Srinivasan says, but average selling prices can be two to three times higher than


H-Frame 2.0

CLOCKWISE FROM LEFT: COURTESY IN WIN (3); PHOTO ILLUSTRATION BY 731; PHOTOS: GETTY IMAGES (2)

In Win's mechanized case opens to reveal the components inside

those for ordinary machines. PC shipments worldwide fell 10.6 percent in 2015, according to market-research firm IDC, in part because of the growing popularity of smartphones.

In Win Development, a Taiwanese producer of computer cases, is going after do-it-yourselfers. At its peak in 2008, In Win had NT$4 billion ($124 million) in revenue. Sales have dropped 47 percent since, to NT$2.1 billion in 2015. Taiwan's overall electronics exports were $95.5 million in 2015, a 4.5 percent drop from 2014. Chairman Vincent Lai started preparing to target gamers in 2012, telling his designers to come up with something that didn't look like a PC.

The In Win H-Frame 2.0 chassis, which accommodates a range of components, has tempered glass and nine stacked aluminum sheets, illuminated by LED lights, allowing air to pass through the case. The H-Tower case, which opens and closes via a button or an app, sells for $2,400. "Players want their hardware to be cool," says Lai, who hopes the new gear will help the company reverse its slide. In Win is one of several Taiwanese electronics makers that sponsor competitions for "case modders," PC fans who modify their computers.

Other Taiwan manufacturers are selling PCs for gamers who don't want to build their own. **Gigabyte Technology**, a leading maker of components, including motherboards and keyboards, launched its Aorus line of high-powered PCs in 2014. The Aorus X7 Pro laptop, with two graphics cards that help make the virtual-reality experience faster, sells for about $2,500. **Acer** boasts that its $1,700 Predator G6 gaming desktop has an "armor-like shell crafted to look the part of an unstoppable fighting machine." **Asustek Computer** introduced its Republic of Gamers line of desktops, laptops, and peripherals 10 years ago. It rolled out a gaming monitor in May that it claims is 20 percent faster than other models.

"A lot of hard-core gamers are opinion leaders in terms of technology," says Jackie Hsu, vice president in charge of Asustek's ROG line. "If they have enjoyed your machine, when their friends are consulting with them they'll recommend your product." So far, though, the industry continues to shrink. IDC expects the PC market to contract an additional 7.3 percent this year. There's a limit to what cool hardware can do, says Bryan Ma, an IDC analyst in Singapore. "Virtual reality and gaming is still a very small part of the market," he says. —*Bruce Einhorn*

The bottom line Taiwanese PC companies roll out high-priced gear for gamers to turn around falling computer sales.

Security

Now the Boss Can Monitor Your Phone

▶ **Russian technology lets employers listen to cell calls**

▶ **"A hot ticket for any company seeking to protect" secrets**

Ever sought a bit of privacy by stepping away from your desk to make a personal call on your cell phone? Soon, that may not be enough to prevent the boss from listening in, at least not in Russia. A Moscow security company has developed technology that lets employers eavesdrop on cell calls made on their premises. **InfoWatch** says the product is legal in Russia, and it's scouting for other markets where banks, government agencies, or anyone else trying to prevent leaks of confidential information would be allowed to employ it. "These technologies have been used by secret services or the military in certain countries," says Natalya Kaspersky, chief executive officer of InfoWatch. "Our breakthrough is in applying them for corporate security."

In some places, InfoWatch and its clients risk lawsuits from workers who'd balk at the idea of the boss monitoring their calls, says Petr Gorodetskiy, an analyst at researcher Gartner. "This technology may become a hot ticket for any company seeking to protect its commercial secrets," he says. "But it can't be rolled out in markets where it may trigger court claims."

InfoWatch says the technology doesn't compromise privacy because initial screening is done by computers that analyze and scan calls for keywords. Security personnel only get involved if there's cause for concern, the company says. InfoWatch already sells software for monitoring other communication channels–landline phones, e-mail, messaging apps–to customers such as Russian wireless carrier **VimpelCom**, Austria's **Raiffeisen Bank International**, and oil giant **Gazprom**. The company's revenue reached 1.1 billion rubles ($17 million) last year, mostly from its Traffic Monitor service, a basic version of which costs $3,000 to install on as many as 100 computers.

That product lets companies vet information transmitted via corporate e-mail, file-sharing applications, instant messages, and Skype, and it can track what gets stored on USB sticks or other removable media. The company says it can even intercept encrypted messages from services such as WhatsApp and Telegram, but it declines to give details. "Our only loophole has been voice traffic on mobile phones–we didn't monitor that," says Kaspersky, who co-founded Russian antivirus company Kaspersky Lab in 1997 but left it in 2007 after splitting up with husband Eugene Kaspersky. As part of the split, she got control of InfoWatch, originally a unit of Kaspersky Lab.

The mobile monitoring technology works in conjunction with a device that amplifies wireless calls inside ▶

Innovation

Watly

"This is the future of water management and electricity generation. It's production close to consumption"

Form and function
Watly, a 15-ton, 130-foot-long computer, uses energy from 80 solar modules to purify water, provide wireless coverage, and power or charge other devices. Its inventors say it can meet these daily needs for about 3,000 people.

Innovator Marco Attisani

Age 44

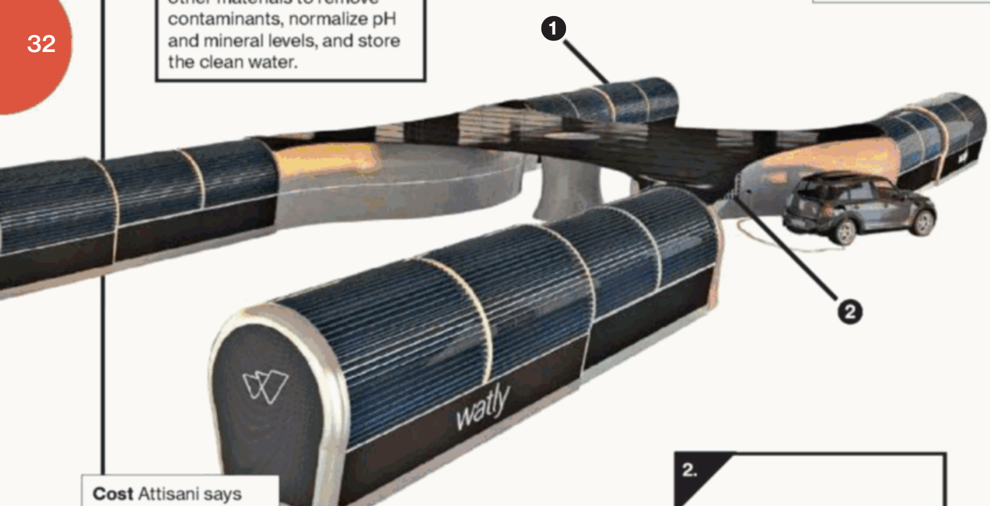
Founder and chief executive officer of Watly, a 10-employee startup in Udine, Italy

Origin Attisani, an MBA who also studied electronics, was born into poverty in Brasilia and adopted by Italians when he was 11. He started developing Watly in 2013, looking to address infrastructure problems by combining existing technology in new ways.

Funding Watly has raised about €2 million ($2.26 million) from government grants and private investors.

1.

Water Watly's solar-powered pumps can draw about 1,300 gallons of dirty water a day through a tanks-and-pipes system that uses heat, graphene, and other materials to remove contaminants, normalize pH and mineral levels, and store the clean water.



Cost Attisani says he plans to sell the first machine for €500,000 to €1 million to a telecom company or similar utility.

Backup When it's not sunny, batteries provide three days' worth of power for Wi-Fi and charging but not enough for the water purifier.

2.

Power The machine's removable battery packs can charge 10 smartphones in about an hour. Its telecommunications gear uses satellite or carrier signals to create a high-speed Wi-Fi connection that can handle hundreds of devices at once.

Next Steps

Attisani says he's working to bring Watly's price down as he refines a new model, due in July. He's also working on a water purification unit that's one-tenth Watly's size, which he plans to price at €20,000 or less. Rachida Justo, an entrepreneurship professor at IE Business School in Madrid, says Watly's potential justifies the upfront cost. "I see a lot of innovation in just one machine," she says. —*Nick Leiber*

◀ buildings and hands them off to the broader network outside. Using software originally developed for the Soviet-era KGB, the device can convert calls in 35 languages into text and search for words such as, say, "brokerage account" or "share offering"–though there's no reason it couldn't also search for "football," "sex," or anything else. If a suspicious phrase is found, the text fragment gets sent to the client's security department.

Stefano Zanero, a professor at the Polytechnic University of Milan who specializes in cybersecurity, cautions that besides being illegal in many countries, the heart of the service may not be reliable. "The part that puzzles me is how successful speech recognition, transcription, and automated analysis of texts can be," Zanero says. "I don't think this can be very accurate."

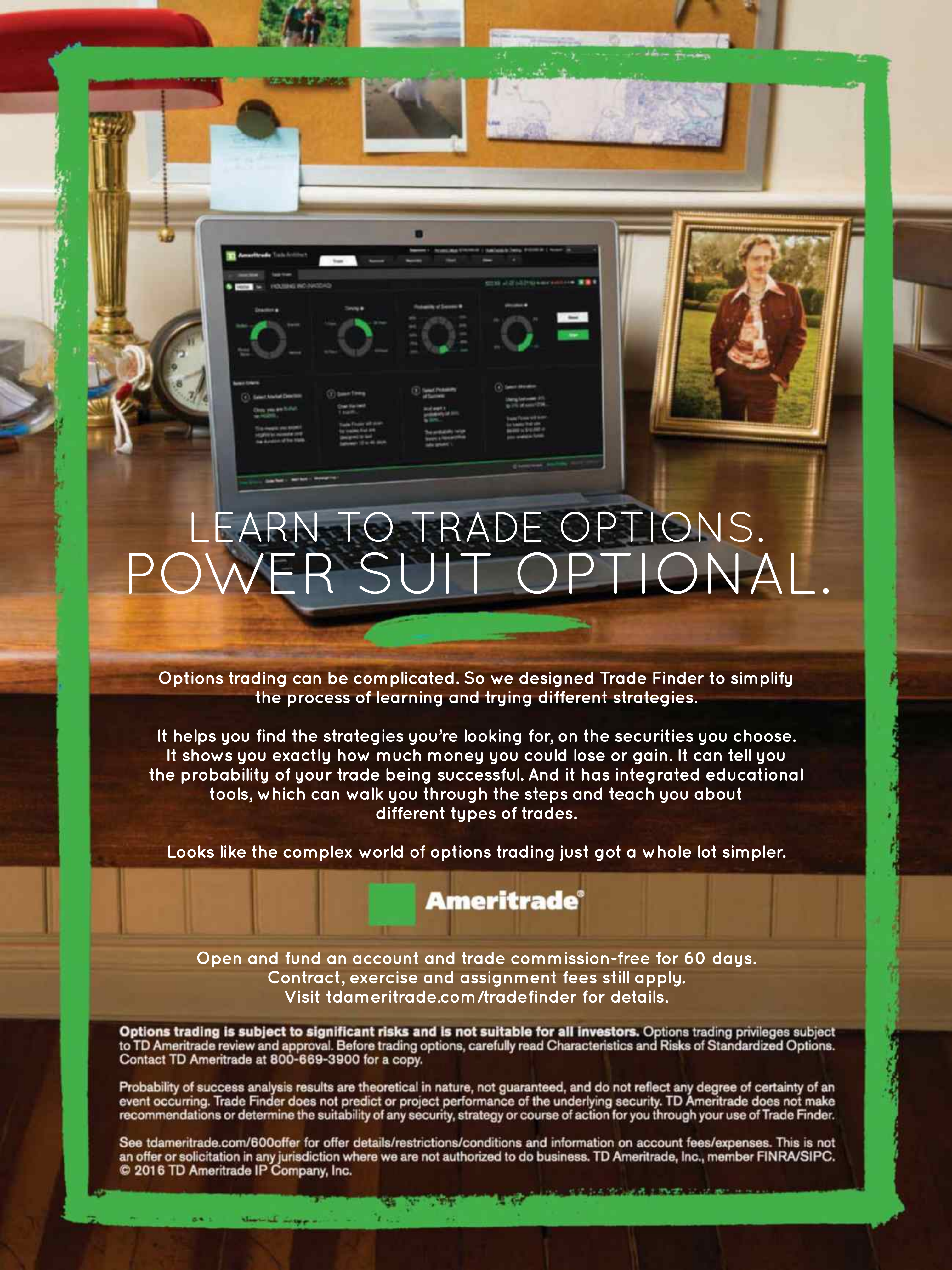
InfoWatch says it has preorders from companies in Indonesia, and that others in Russia, other former Soviet countries, and the Middle East have expressed interest. Two of its customers are testing the prototype, and the final product is slated for release by yearend. The company hasn't yet set a price. In the small but growing market for data-leak prevention–set to exceed $1 billion by 2020, according to Gartner–InfoWatch faces formidable rivals such as **Symantec** and **Raytheon**, which offer monitoring systems for corporate data networks.

Kaspersky acknowledges that Western Europe may be a challenge because of legal obstacles and privacy concerns. But in Russia and many other countries, workers often sign agreements allowing employers to monitor their activities at work, she says. In May, Russia's central bank started recommending that banks monitor employees' personal mobile phone calls at work along with e-mails, instant messages, and removable media. "Ignoring this channel of potential data leaks–after we've got all other channels under control–would be unprofessional," Kaspersky says. "And we are professionals." —*Ilya Khrennikov*

The bottom line A spinoff of Russian security company Kaspersky Lab has developed technology that lets employers listen in on mobile phone calls.

Edited by Jeff Muskus and Dimitra Kessenides
Bloomberg.com

COURTESY WATLY (3)


LEARN TO TRADE OPTIONS.
POWER SUIT OPTIONAL.
Options trading can be complicated. So we designed Trade Finder to simplify the process of learning and trying different strategies.
It helps you find the strategies you're looking for, on the securities you choose. It shows you exactly how much money you could lose or gain. It can tell you the probability of your trade being successful. And it has integrated educational tools, which can walk you through the steps and teach you about different types of trades.
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A Big Fat Tax Is Coming For the Hedge Fund Elite

▶ **Their lawyers and tax planners are looking for ways to minimize the bite**

▶ **"In this cat-and-mouse game, the advisers have the edge"**

Some of the richest money managers in the U.S. are about to get a heavy tax bill. They've had eight years to dream up a way around it. So far, not much luck—although they may have found a way to get their heirs a break.

On Dec. 31, 2017, a loophole is set to close that allowed hedge fund managers to keep certain earnings parked offshore. Some managers have already brought the money home and paid the taxes due. Others have been waiting until the last moment so they can benefit from the magic of tax-free compounding for as long as possible. Estimates by lawyers in the field—based on their conversations with clients, brokers, and fund-service providers—put the amount of cash about to be subject to tax at $100 billion or more.

Money managers "figured that by the time we got to 2017, someone would have found a way to eliminate all of the tax," says Richard LeVine of Withers Bergman, a law firm that's a pioneer in tax planning for the ultrawealthy. That didn't happen. "Now we are halfway through 2016, and it's going to get very busy," he says.

The experts' failure to find a perfect fix is good news for the U.S. Department of the Treasury and some states, including Connecticut and New York, where many hedge funders live and work. The money will be taxed as ordinary income, and the combined tax receipts could reach tens of billions. Charities could benefit, too, because the best way for the rich to cut liabilities is to donate to an IRS-approved cause.

Hedge funds create offshore entities in tax havens such as the Cayman Islands to manage money for clients who are not subject to U.S. taxes.

$100 billion

Estimated offshore income for hedge fund managers that will soon become taxable by the IRS

Managers have been able to keep the fees they earn for running those funds offshore and untaxed, as long as the money stays invested. In 2008, though, Congress decided the managers would have to recognize that

ILLUSTRATION BY SIMON ABRANOWICZ

income by the end of 2017. The Joint Committee on Taxation figured the tax-code change would generate about $25 billion over the ensuing decade, including $8 billion in 2017.

Tax lawyers say the panel's revenue forecasts are low, based on what they know about a few individuals who together could account for a big chunk of the estimate. George Soros, for example, was by the end of 2013 holding $13.3 billion in deferred income offshore in **Soros Fund Management**, according to Irish regulatory filings. Soros declined to comment.

Hedge fund manager David Tepper, once the wealthiest resident of New Jersey, decamped last year to Florida, where the state income tax is zero. A person with knowledge of his thinking says Tepper moved to Miami Beach primarily for family reasons but that minimizing his New Jersey taxes was also a factor, with the 2017 deadline looming.

The maneuver wouldn't work for a manager in New York or Connecticut, since those states say they're owed taxes on income earned while people resided or worked there, even if the payment of that income is deferred. Tepper declined to comment. But LeVine and fellow Withers Bergman lawyer Stanley Bergman, along with other tax attorneys in the U.S., are telling clients there's a way to ease the pain—for their children and future generations at least.

It works like this: They can put the money into a charitable lead annuity trust, or CLAT, and have the trust purchase a customized kind of life insurance policy with an investment component. The U.S. allows the taxpayer to deduct up to 30 percent of adjusted gross income for such contributions. The trust is required to donate only the original deposit plus a government-set interest rate—currently 1.8 percent. If the investment can earn gains above that amount, those profits can grow untaxed for later distribution to heirs.

Scott Sambur, a partner at Seward & Kissel in New York, figures the kids of a middle-aged manager with $100 million offshore would end up pretty happy. Assuming an annualized rate of return on investments of 7 percent for 28 years, Sambur says the manager could leave more than $260 million to his heirs, tax-free.

Money managers "figured that by the time we got to 2017, someone would have found a way to eliminate all of the tax."
—*Richard LeVine, tax lawyer*

It's perfectly legal. The rich and their tax experts always manage to figure something out, says Steven Rosenthal, a senior fellow at the Urban-Brookings Tax Policy Center. "In this cat-and-mouse game, the advisers have the edge," he says. "The cat is sluggish, and the mice are nimble." But in this case, at least, the IRS won't be coming away with nothing. "You are still paying tax on 70 percent," LeVine says. "No one has come up with the magic bullet." *—Katherine Burton and Margaret Collins*

The bottom line Money managers soon have to recognize a total of at least $100 billion in offshore income. Good news for charities and tax lawyers.

Compensation

The Hail Mary Pass Of Executive Pay

▶ **Awards tied to lofty goals are worth nothing—or millions**

▶ **A practice "more common among hedge funds" hits the C-suite**

Lavish executive pay packages tend to attract attention. But a few companies are using a little-known technique that keeps potential payouts under the radar. **Six Flags Entertainment** and **Tempur Sealy International** have awarded incentive stock grants to top bosses and valued them at zero, because the grants come with performance targets they said were unlikely to be met. Even so, Six Flags reached some of those goals, resulting in windfalls since 2011 worth tens of millions of dollars for James Reid-Anderson, the chairman and former chief executive officer. Tempur Sealy's managers face their first target in 2017.

"It's very unusual for a compensation committee to grant a performance award that really has no hope of being earned," says John Roe, a managing director at a unit of Institutional Shareholder Services, which advises large investors on proxy votes.

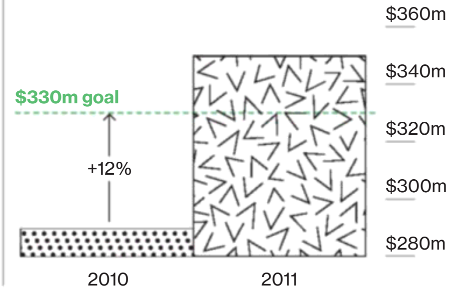
Even equity awards considered valueless are disclosed in regulatory documents, but they can be omitted from an executive's pay figures listed in the summary compensation table in proxy filings. That number is closely scrutinized by investors and governance experts. The pay practice is rare: No company in the S&P 500-stock index that's disclosed 2015 pay awarded zero-value stock that year.

The largest investor in Six Flags and Tempur Sealy is the hedge fund **H Partners Management**. The uncommon pay practice was put in place after H Partners amassed stakes in the companies, and the idea is an import from the hedge fund world. "Giving a big equity award upfront is much more common among hedge funds and private equity firms than public companies," says Steven Hall Jr., a consultant at compensation firm Steven Hall & Partners.

Six Flags disclosed the first of three zero-value grants after emerging from bankruptcy in April 2010. H Partners had become the largest shareholder after gobbling up Six Flags' debt during its reorganization. Reid-Anderson was named the new CEO, and he and five other ▶

To Dream the Possible Dream

To get a big payout, Six Flags execs had to hit $330 million in the earnings measure Ebitda for 2011



Lending

In China, your online life can become part of your credit profile. Lending platform China Rapid Finance has used data on the frequency of instant messaging, the number of online friends, and even gaming habits to pre-approve millions of borrowers. WeLab gives borrowers in Hong Kong a discount of 5% on the cost of a loan for connecting their Facebook accounts and a 10% break for LinkedIn. With relatively few Chinese using traditional lenders like banks, there's a big potential market for new kinds of credit.

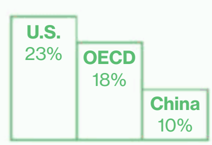
—Shai Oster and David Ramli

Compared with the U.S. and Europe, there are fewer legal barriers to mining personal information. Premier Li Keqiang has said that 80% of data collected in China is in government hands.

"The behavior of your phone shows your personality," says Simon Loong, chief executive officer of WeLab.

WeLab also operates on the mainland. In exchange for a lower rate, it can look at the apps people have downloaded or their phone's location tracker.

Percentage of adults who borrow from financial institutions:



SOURCE: WORLD BANK GROUP

Since the Mao era, the government has kept a *dang'an*, or secret file, on almost everyone. It contains health records, school reports, and personality assessments.

WeLab says talkative people pay back loans. But the *very* talkative tend to default.

managers were awarded shares that would vest only if the company reached $330 million in adjusted earnings before interest, taxes, depreciation, and amortization (Ebitda) in 2011. That was 12 percent above the number posted in 2010.

According to a Six Flags regulatory filing, those stock grants were excluded from summary pay figures because the goal was "not considered to be probable of being earned." Estimates of what the executives could take home if the award vested were disclosed in a footnote. Six Flags exceeded the target, and the six executives received shares worth $49.6 million. Reid-Anderson got $34.5 million of that.

The practice has helped improve the company's performance, Jon Luther, chairman of the Six Flags compensation committee, said in an e-mail. "The board believes long-term aspirational targets are a good way to stretch management to achieve certain goals—and that approach has been highly successful," he said. Six Flags' shares have risen sixfold since June 2010, compared with an 87 percent increase in the S&P 500.

Luther said reporting of the pay formula was transparent and followed legal and regulatory requirements. H Partners didn't respond to requests for comment.

In August 2011, Six Flags disclosed a second stock award valued at zero. The executive team again defied the company's predictions, met the goal, and received shares worth $72 million when the award paid out, including $47.9 million earmarked for Reid-Anderson. A third zero-value award disclosed in 2014 will be split among about 180 employees if the next goal is achieved in 2017.

H Partners waged a proxy battle at Tempur Sealy last year that led to the ouster of three directors including the then-CEO. Shortly after the board shake-up, five senior executives, including new CEO Scott Thompson, were granted stock awards tied to increasing adjusted Ebitda by 43 percent in 2017 from its 2015 level. The shares were listed without a value in the proxy because the goal was considered "not probable." Executives will earn part of the award if the target is met by 2018. A company spokesman didn't provide a comment.

If Tempur Sealy had assigned a value to the stock grant and included it in its 2015 compensation table, Thompson's reported pay could have been as much as $68 million. That's almost triple the $23.3 million shown on the table. But to get there, of course, he'll have to prove his own company's forecast wrong. —*Anders Melin*

The bottom line Companies can value stock grants at zero if they're linked to improbable goals. But improbable doesn't mean impossible.

Investing

Active Managers Start To Feel the Pain

▶ **The fund business braces for shrinking profits and assets**

▶ **Maybe consolidation will help? "Just the opposite is true"**

Even after the shock of the financial crisis, managing other people's money remained a pretty great business. While banks shed jobs, employment at the largest publicly traded asset managers rose about 20 percent from 2008 to 2015, according to data compiled by Bloomberg. Now top executives at some of the largest fund companies, including Larry Fink at **BlackRock** and Gregory Johnson at **Franklin Resources**, are warning that a reckoning is coming.

The pain is focused on companies that emphasize active management–picking stocks and bonds in an effort to beat the market. Those companies haven't fared well compared with rivals offering cheaper funds that mainly track indexes. Fund executives envision a future of shrinking assets, lower profit margins, and more mergers as companies try to adapt.

"Large firms are talking to large firms," says Joseph Sullivan, chief executive officer of fund company **Legg Mason**. "There are a lot of conversations going on at high levels."

Several companies have trimmed jobs recently. **Pacific Investment Management**, whose Pimco Total Return was once the world's largest mutual fund, cut its workforce by 3 percent, or 68 people, after assets declined by a quarter from the peak three years ago. "Pimco constantly adjusts its resources to capitalize on changing markets and investment opportunities," spokesman Michael Reid said in an e-mailed statement.

GMO, known for the contrarian views of co-founder Jeremy Grantham, has cut about 10 percent of its 650-person staff in a retrenching that followed a sharp decline in assets. Tucker Hewes, a spokesman for GMO, declined to comment.

Over the past five years passive funds, which mimic indexes, attracted a net $1.7 trillion in the U.S., while active funds saw a slight outflow. The active managers haven't been able to show they deliver a performance edge for their higher fees: In the five years ended in December, only 39 percent of actively managed equity mutual funds beat their benchmark indexes, according to Morningstar. Bond managers haven't fared much better. In the past two calendar years, three-quarters of taxable bond funds trailed the market averages.

"It's pretty clear that active managers have not performed above their benchmarks to any great degree."
—*Peter Kraus, AllianceBernstein*

"The reality is that indexing is taking over," Franklin CEO Johnson told the *Financial Times* in early June. Equity index funds charge their owners as little as 0.05 percent of assets each year, compared with a weighted average of 0.82 percent for active stock funds.

Franklin, a big player in international stock and bond funds, cut 1 percent of its global staff of about 9,400 in February. The firm suffered redemptions of more than $20 billion in each of the last three quarters. Its best-known fund, the $48 billion Templeton Global Bond Fund, underperformed similar ones over the past year.

Fink, who runs the world's largest money manager, with $4.7 trillion under management, said at a conference on May 31 that the shift into indexing will not only continue but will be "massive." He cited new rules from the U.S. Department of Labor that require financial advisers recommending investments for retirement accounts to put their clients' interests first. That could push advisers away from recommending so-so products that happen to offer sales commissions, and toward lower-cost investments like index funds.

BlackRock would be relatively well-positioned for such a shift, since it offers a mix of active funds and index-based products such as the iShares exchange-traded funds. Still, the firm has cut about 400 jobs, or roughly 3 percent of its 13,000 employees, people with knowledge of the matter said in March. It will continue to hire in key areas and expects to end the year with a higher head count, one of the people said at the time.

Sean Healey, CEO of **Affiliated Managers Group**, which owns a collection of boutique mutual fund and hedge fund companies, says consolidation won't solve the industry's fundamental problem of performance. "Just the opposite is true," he says. Having to put more money to work often makes managers less nimble.

Peter Kraus, CEO of **AllianceBernstein Holding**, said in an interview on Bloomberg TV in June that "it's pretty clear that active managers have not performed above their benchmarks to any great degree." He estimated assets in actively managed funds may have to shrink by as much as 30 percent to restore their ability to beat indexes. For a business based on regularly collecting a little slice of those assets, that cure would hurt more than the disease. —*Charles Stein*

The bottom line Fund managers who try to beat the market mostly fail, and their business may be about to get smaller.

Fund flows since 2011

-$5.6b
Active funds

$1.7t
Passive funds

Fink

JUSTIN CHIN/BLOOMBERG

Edited by Pat Regnier
Bloomberg.com

June 27 — July 3, 2016

After 190 Tries, A Closer to a Cure

▶ **Drug development has focused on one facet of the disease, marginalizing other approaches**

▶ **“The amyloid people are still fighting. They’re not willing to see the facts in front of them”**

Eli Lilly has spent almost three decades working on drugs for Alzheimer’s disease with not much to show for it yet. This year the company began human tests using a totally new approach. Its latest drug targets an aberrant protein called tau that spreads through the brain as Alzheimer’s progresses, accumulating in telltale tangles that strangle brain cells.

Lilly’s tau drug marks a shift in Alzheimer’s research. Drug companies have long focused on a different protein called amyloid that clumps in the brains of Alzheimer’s patients and is thought to trigger the disease. Companies have poured billions into amyloid-blocking drugs with little success. In 2010, Eli Lilly halted trials of semagacestat after patients on the drug deteriorated more quickly than those on a placebo. In 2012, **Pfizer** and **Johnson & Johnson** released results of large trials that showed their amyloid treatment didn’t slow progression of the disease. All told, at least 190 Alzheimer’s drugs have failed in human trials, according to Bernard Munos, a senior fellow at FasterCures, a health nonprofit.

Big Pharma might have thrown in the towel if Alzheimer’s weren’t one of the industry’s last big untapped markets. More than 5 million Americans have the disease, and that number may rise to 13.8 million by 2050, according to the Alzheimer’s Association. Existing medicines, which mostly treat symptoms, have combined sales of about $3 billion today. “If any of these drugs actually manage to slow the progress of the disease, their sales potential would be orders of magnitude higher,” says Sam Fazeli, senior pharmaceuticals analyst for Bloomberg Intelligence.

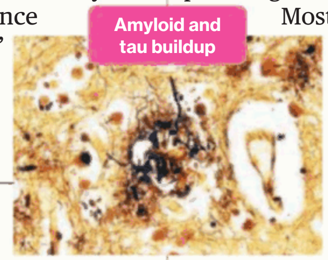
The disease got its name from German psychiatrist Alois Alzheimer, who in 1906 reported that an autopsy of a woman with severe dementia had revealed clumps and tangles in the brain. More than a century later, nobody knows for sure whether amyloid is the main cause of Alzheimer’s or a minor contributor.

The industry has focused on amyloid because the genetic evidence “has been so compelling,” says Roger Perlmutter, head of research at **Merck**. In 2012, researchers in Iceland discovered a rare gene mutation that appears to protect against Alzheimer’s by lowering amyloid production. Merck expects to complete its first final-stage trial next year of a pill called verubecestat that blocks amyloid production.

As numerous amyloid drugs have fizzled, however, Big Pharma’s interest in alternatives has grown. The industry “is realizing you may need more than getting rid of amyloid to cure the disease,” says Virginia Man-Yee Lee, a professor at the University of Pennsylvania. Since 2014, venture capitalists and other investors have put at least $350 million into startups pursuing novel approaches.

Most drugs targeting tau are years—or even a decade—behind amyloid therapies in terms of clinical trials. **Biogen** has two drugs targeting tau nearing human trials. For now, its focus is on an amyloid-removing medicine called aducanumab. But in a preliminary trial last year, only some of the doses tested slowed cognition loss, raising questions about the drug’s effectiveness.

Driving some of the interest in tau is research published in 2012 and 2013 showing that the protein can spread between brain cells, which makes it easier for drug companies to develop medicines to combat it. “The amyloid people are still fighting. They are not willing to see the facts in front of



Amyloid and tau buildup

Elusive Quest

○Targets amyloid □Targets tau
▲Final stages of human trials △Initial human trials

Drug	Company
○▲ Solanezumab	Eli Lilly
○▲ Aducanumab	Biogen
○▲ Verubecestat	Merck
○▲ Gantenerumab	Roche Holding
○▲ Crenezumab	Roche Holding
○▲ AZD3293	AstraZeneca/Eli Lilly
□▲ LMTX	TauRx Pharmaceuticals
□△ Tau vaccine	Johnson & Johnson/AC Immune
□△ ABBV-8E12	AbbVie

Are We Any for Alzheimer's?

them," says Harvard Medical School professor Jie Shen, whose work suggests that amyloid plays only a modest role in the disease. Samantha Budd Haeberlein, vice president of clinical development at Biogen, has a different perspective. She says that while tau is "possibly the executioner" of brain cells, amyloid is "the gun."

AbbVie, which has a tau drug in early human trials, says targeting tau could have certain advantages over hitting amyloid. Tau's buildup is slower than amyloid's and continues as symptoms develop, meaning it might be possible to treat patients with more advanced stages of the disease and still get "a very valuable therapeutic benefit," Eric Karran, vice president of AbbVie's Foundational Neuroscience Center, told analysts in June.

TauRx Pharmaceuticals plans to present results from a final stage trial of its tau drug at a big Alzheimer's conference in late July. A successful result would have "huge implications" for the entire tau field, says Claude Wischik, the company's co-founder.

In the meantime, the amyloid drugs will continue moving through the pipeline. Merck, Biogen, and **Roche Holding** all have treatments in late-stage trials, while Eli Lilly is retesting solanezumab, which didn't succeed in earlier trials. Steven Paul, a former head of research for Eli Lilly who's now the chief executive officer of **Voyager Therapeutics**, is bullish on the current crop of drugs because they're more potent and are being tested at earlier stages of the disease, when they're more likely to work. "We have a much greater possibility of success than we did three or four or five years ago," he says.

Despite the cautious optimism, Michael Hutton, a distinguished medical fellow at Eli Lilly, conjures a "nightmare scenario" in which money for research and development on Alzheimer's dries up if the latest amyloid drug trials report lackluster results next year. If that happens, "I do suspect we'll see pullback from some pharmaceutical companies," he says.
—*Robert Langreth and Cynthia Koons, with Caroline Chen*

The bottom line Most Alzheimer's drugs targeting brain-cell-killing tau are as much as a decade behind amyloid therapies.

Pipeline

Chili Peppers Could Free Us from Opioids

- **A startup zeroes in on nonaddictive pain treatments**
- **"Physicians feel like they only have one bullet in their toolbox"**

A painting of bright red chilies hangs in the boss's office at **Centrexion Therapeutics**. A wreath of the spicy peppers sits on the desk of the company's chief scientist. Chilies in one form or another seem to be everywhere at the company's Baltimore headquarters. Led by former **Pfizer** Chief Executive Officer Jeffrey Kindler, Centrexion is developing a new generation of nonaddictive painkillers, and hot peppers could play a role.

About 100 million Americans suffer from chronic pain—more than those living with diabetes, heart disease, and cancer combined, according to the Institute of Medicine. "People for the last 100,000 years have been chewing or smearing or smoking or trying agents in their environment to relieve pain," says Daniel Carr, president of the American Academy of Pain Medicine.

Many people in pain turn to opioid-based drugs such as OxyContin, which are a leading cause of drug addiction and overdose deaths in the U.S. Narcotics, including heroin, were responsible for more than 28,000 deaths in 2014, according to the Centers for Disease Control and Prevention, which figures at least half involved a prescription drug. The resulting burden on the American economy is $635 billion a year in medical costs and lost productivity, according to the Institute of Medicine. "When we talk about chronic pain, like chronic low-back pain, physicians feel like they only have one bullet in their toolbox that works for many, many patients," says Michael Oshinsky, program director for pain and migraine at the National Institutes of Health, about opioids.

The pharma industry has struggled to come up with alternatives. No fewer than 33 experimental medicines for chronic pain went into clinical trials from 2009 to 2015, and all failed, Oshinsky says. ▶

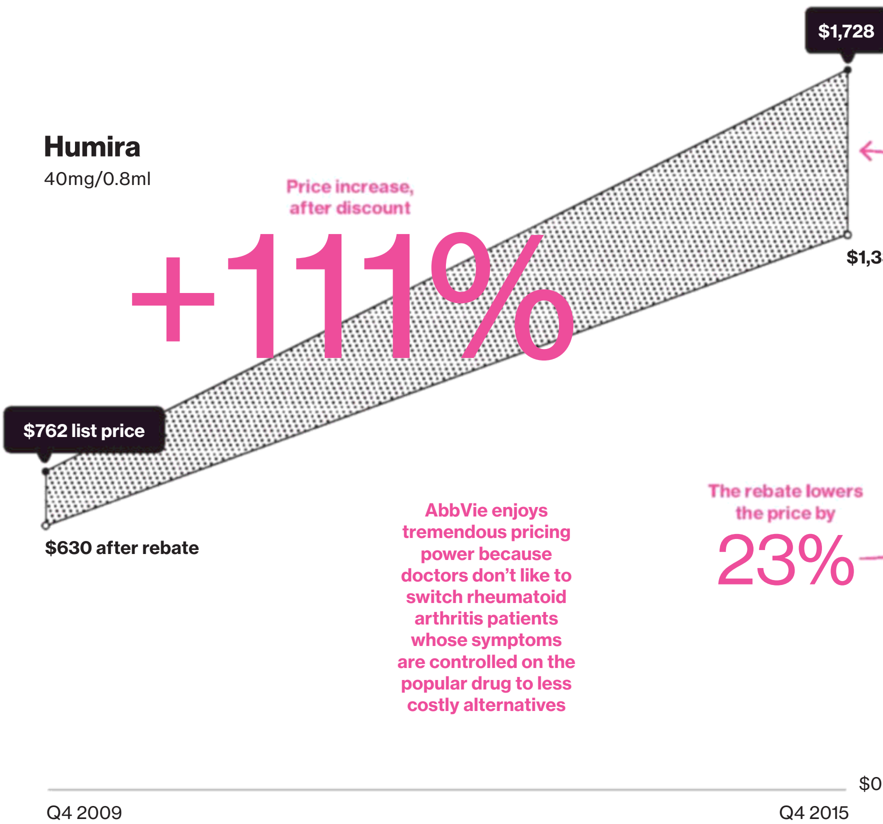
CULTURA RM/ALAMY

Reality Check Demystifying Drug Pricing

The pharmaceutical industry has long said that list prices aren't a reliable indicator of what Americans pay for prescription drugs because big customers, including health insurers and pharmacy benefit managers, negotiate discounts. Yet a Bloomberg analysis of 38 medicines with global sales of more than $1 billion a year showed that 29 of them logged price increases of more than double the rate of inflation from 2009 to 2015, even after estimated discounts were factored in. —*Robert Langreth, with Jared Hopkins*

Humira

40mg/0.8ml



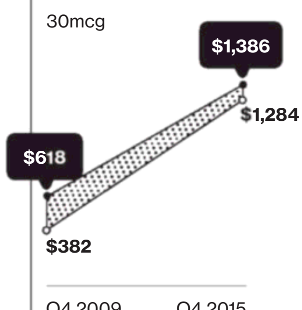
Lyrica

150mg

Pfizer has increased discounts on its Lyrica medicine for nerve pain. Because the drug has few close competitors, Pfizer was able to raise the list price faster, resulting in a net gain of about 85 percent during the period.

Avonex

30mcg



Biogen has been ratcheting down discounts on Avonex as demand declines and it focuses on its newer multiple sclerosis medicines. The result: The after-discount price has more than tripled in six years.

Advair

250mcg/50mcg

Express Scripts dropped the popular asthma inhaler Advair from its list of covered drugs in 2014, prompting GlaxoSmithKline to offer even bigger discounts to regain coverage. The net price has barely budged since 2009.

METHODOLOGY: PRICES ARE FOR ONE TYPICAL DOSE. LIST PRICE HISTORIES WERE PROVIDED BY CONNECTURE. SSR HEALTH CALCULATED DISCOUNTS BY COMPARING ESTIMATES OF GROSS SALES TO COMPANY-REPORTED NET SALES. GLAXOSMITHKLINE, PFIZER, AND BIOGEN DISPUTED THE ACCURACY OF DISCOUNT ESTIMATES BUT DIDN'T PROVIDE ALTERNATE NUMBERS. ABBVIE CONFIRMED HUMIRA'S LIST PRICES, BUT DECLINED TO COMMENT ON REBATES.

◀ The problem with narcotics is that in treating pain they affect an area of the brain that registers intense pleasure. Centrexion's drugs are designed to target pain directly, without triggering the brain's reward system. The company is developing an injectable drug to treat arthritis and foot pain that contains a synthetic version of capsaicin, a substance in chili plants. It's the furthest along of five drugs Centrexion has in development and could hit the market by 2020. "Truthfully, there aren't many, if any, really safe, effective chronic-pain treatments that have good duration, good safety, and nonaddictive properties," Kindler says.

Other companies working on non-opioid pain relief include **Hydra Biosciences** of Cambridge, Mass., and **Heron Therapeutics** of Redwood City, Calif., which are targeting diabetic and postoperative pain, respectively. Pfizer and **Eli Lilly** last year resumed late-stage trials of a non-opioid medicine for arthritic pain, which they halted after the U.S. Food and Drug Administration raised concerns that the entire class of drugs might have side effects on the nervous system.

Kindler has kept a relatively low profile since abruptly retiring from the top job at Pfizer in 2010, at the age of 55. At the time, he said he needed to "recharge" after a "period extremely demanding on me personally." His more than four years as the head of America's biggest pharma company were difficult ones: Pfizer's top-selling drug, Lipitor, was on the eve of losing patent protection, while promising treatments for cholesterol and Alzheimer's failed in trials. In one of the higher-profile moves of his tenure, Kindler bought rival drugmaker Wyeth for $68 billion in 2009.

Since moving into the CEO suite at Centrexion in 2013, Kindler has taken up development of a topical lidocaine gel for muscle pain and painful skin conditions. The benefits of working with ingredients like lidocaine, used in dental work, and capsaicin, available as an over-the-counter topical pain relief cream, is that their side effects are well understood, says Kerrie Brady, the company's chief business officer.

Centrexion has also acquired three drugs from

Kindler

Born May

DONALD BOWERS/GETTY IMAGES; CHRISTOPHER CANNON AND MICHAEL KELLER OF BLOOMBERG VISUAL DATA

Boehringer Ingelheim that target different forms of chronic pain. One works on the same receptor that a cannabinoid targets but without the mind-altering effects that marijuana-derived medications sometimes exhibit. "There hasn't been a lot going on in the pain space," says Brady. "There really hasn't been a lot of innovation out there." —*Cynthia Koons*

The bottom line Some 33 experimental therapies for pain failed in trials from 2009 to 2015. Centrexion thinks it can beat the odds.

Cost Control

Pharmacy Managers Unleash Big Data

▶ **Companies like OptumRx gain leverage over drugmakers**

▶ **"Difficult decisions about having to cover one drug vs. another"**

OptumRx was doing a routine analysis of a client's prescription-drug claims when it noticed something odd. The company's spending on acne medicine seemed high compared with those of other customers. Digging into the usage data for clues, the pharmacy arm of the health insurer, **UnitedHealth Group**, found that employees had been prescribed newer brand-name acne drugs that were, for the most part, combinations of older generic medicines. OptumRx began requiring patients to begin treatment with the cheaper remedies and switch to the pricier ones only if the others proved ineffective. Within six months, the 60,000-employee company had saved more than $70,000, OptumRx says.

Historically, pharmacy benefit managers (PBMs) have been known more for their relentless supply efficiency than their tech chops. But with the easiest savings already in the past, OptumRx and rivals such as **CVS Health** and **Express Scripts** have begun mining their huge troves of prescription data in search of economies. "Lowering costs now means having to make really difficult decisions about having to cover one drug vs. another," says Walid Gellad, who heads the Center for Pharmaceutical Policy and Prescribing at the University of Pittsburgh. "They've had to become more sophisticated in how they make these decisions."

UnitedHealth began laying the groundwork for the data push in 2011, when it grouped an array of businesses under the Optum brand. In a recent case, the company noticed that at one client, drugs for attention deficit hyperactivity disorder were being overprescribed to adults. Some were using the drug to improve their performance at work, according to Andrea Marks, chief analytics officer at OptumRx. The benefit manager took action, saving the 19,000-worker company $110,000. "Sometimes we're looking at patterns at a very broad-based level," Marks says. "Sometimes at an individual level."

As they seek to exert greater control over costs on behalf of their clients, PBMs may become more open to legal challenges. New York, Indiana, and West Virginia all passed laws this year to curb their influence over prescribing decisions in response to lobbying from patient groups. Sumit Dutta, OptumRx's chief medical officer, says the company makes sure its coverage decisions are medically appropriate. "All of those have to be vetted clinically first," he says. "You can't say one drug is favored over another drug unless you've fully vetted that clinically."

Number of prescriptions filled in 2015

1.3b	Express Scripts
1.2b	CVS
1.0b	OptumRx

OptumRx says it's also using data analytics to improve patient health. For example, it can look at refill frequency to spot whether asthma sufferers are taking too many puffs on their inhaler, an indication they may require a different drug. Switching patients to more effective medicines pays off, even if these are more expensive, if they help reduce costly hospitalizations and visits to emergency rooms.

Employers should be skeptical of claims like that, according to Linda Cahn, an attorney who's represented businesses in lawsuits against PBMs. If benefit managers promise savings, those should be spelled out in contracts, she says.

The focus on Big Data dovetails with another development in the industry: Increasingly, insurers are tying reimbursements for prescription drugs to measures of their efficacy. **Cigna**, for instance, is paying for some new cholesterol drugs from **Sanofi** and **Amgen/Regeneron Pharmaceuticals**, known as PCSK9 inhibitors, based on whether the drugs deliver results at least as good as those reported in clinical trials.

There's little doubt PBMs will use their data to gain the upper hand in price negotiations with drugmakers, says Dan Mahony, a health-care investor at asset manager Polar Capital. "They're all looking at ways they can utilize the information they've got to essentially push for a better deal," he says. "You're just seeing the beginnings of it." —*Zachary Tracer*

The bottom line Pharmacy benefit managers are mining their data to measure drug efficacy and make decision about coverage.

Startups

The Great Sea Turtle Migration

▶ **Chinese biopharma talent is leaving the Valley for Shanghai**

▶ **"If a few make it, that's enough. A few winners will take it all"**

In 2001, a dozen Chinese expats met one Saturday in San Jose to trade tips on pharmaceutical proteins and share career advice over craft beers and garlic fries. The gathering was a networking session organized by two friends originally from Wuhan who met in the Bay Area as graduate students in the 1990s. Fifteen years later, many members of the group have returned to China to start their own businesses. And what had been an informal networking circle is now an exclusive industry group called BayHelix that counts among its members more than 300 senior executives active in the Chinese biopharma market.

Called *hai gui*, or "sea turtles," in their home country, these returnees ▶

Goal Bringing a line of nonaddictive painkillers to market

13, 1955 **Education** Law degree from Harvard **Career Highlights** General counsel at McDonald's, CEO and chairman of Pfizer **Current Gig** CEO of biopharma startup Centrexion

Focus On/Pharma

◀ are trading on relationships forged in the U.S. and tapping the hundreds of millions in venture capital flowing through China. They're building or backing health-care startups and brokering deals, all in the hope of giving China an original blockbuster drug. "Everything's falling into place," says Nisa Leung, a managing partner at **Qiming Venture Partners**, a China-focused venture fund. Leung, who studied at Stanford and Cornell, has led investments in more than 50 Chinese health-care companies in the past decade. Commercial investment in China's life sciences sector totaled more than $30 billion in 2015, up 70 percent from the previous year, according to ChinaBio Consulting.

China is the second-biggest pharmaceutical market in the world after the U.S., according to IMS Institute for Healthcare Informatics, which expects the country's annual spending on drugs to reach $190 billion by 2020, up from an estimated $115 billion last year. To ensure that not all that money flows into the coffers of foreign companies, the Communist Party has enacted measures to foster national champions in life sciences. Pharma and biotech startups are eligible for tax incentives and rent subsidies, and their products qualify for expedited regulatory approval. "We're at a tipping point in China," says Ge Li, founder and chief executive officer of Shanghai-based **WuXi Apptec**. "I personally believe that we have another 10 to 20 years of good growth ahead."

Li gave up a six-figure salary at New Jersey-based Pharmacopeia in 2000 to start WuXi. He had to improvise at first, hiring a kitchen manufacturer to build him a lab because no qualified vendors were available in China. Now he presides over 11,000 scientists who conduct research and assess clinical data for other drugmakers. The company is expanding into drug manufacturing and has a venture capital arm that invests in U.S. and Chinese startups. Li took NYSE-listed WuXi private last year but plans to relist in China at some point.

In some respects, Chinese pharma companies enjoy advantages over their U.S. counterparts. Bringing a drug to market in the U.S. could cost as much as $4 billion, according to Leung; in China, it's closer to $50 million. But all face the same tough odds in that only a fraction of drugs in development ever reach market. "I will expect that many of them won't make it," says Kewen Jin, chairman of BayHelix. "That's the nature of this industry. But even if a few make it, that's enough. A few winners will take it all."

$30b

Commercial investment in China's life sciences sector in 2015

Among the contenders is **Zai Lab**, a two-year-old Shanghai company backed by about $140 million in funds from **Sequoia Capital China** and Qiming, among others. Its founder, Samantha Du, worked for Pfizer in Connecticut before returning to China. Zai's focus is on anti-inflammation therapies and oncology treatments. Du says that while it's a thriving time to start a health-care business that's "global but based in China," the country has yet to amass the scientific know-how to rival the U.S. Ultimately that may depend on whether other Chinese living abroad follow in Du's path. Chinese made up almost a third of all foreign students in the U.S. in the 2014-15 school year, according to the Institute of International Education.

Steve Yang, a BayHelix co-founder who once worked at AstraZeneca and is now chief operating officer of WuXi, likens the histories of many of the industry's top movers to DNA strands, with combinations and recombinations of networks built at U.S. graduate schools, in Silicon Valley, and now as entrepreneurs back home. "In China, we have a saying: 'It takes a long journey to test how good your horse is,'" Yang says, referring to trust built through the years. "So it's good we started early in 2001." —*Natasha Khan*

The bottom line Investment in China's life sciences sector shot up 70 percent last year, to more than $30 billion.

Edited by Cristina Lindblad
Bloomberg.com

ARIANA LINDQUIST/BLOOMBERG; DATA: BLOOMBERG INTELLIGENCE

The president on free trade, why his
on Wall

‘Don’t Gamble,

daughters won't work
Street,
and what he'd do right now if he
were a CEO

Invest'

Photographs by Geordie Wood

A little after 2:30 p.m. on Monday, June 13, we sat down with President Obama in the Oval Office, which is exactly the range of yellow, taupe, and beige we all know from television but smaller than expected. It's an old building, after all. Obama offered coffee to the three of us conducting the interview: John Micklethwait, editor-in-chief for Bloomberg; Megan Murphy, Bloomberg News Washington bureau chief; and Bloomberg Businessweek *Editor-in-Chief Ellen Pollock. He touched briefly on the mass shooting in Orlando, before quickly switching gears: "All right, let's talk about the economy."*

BLOOMBERG BUSINESSWEEK: The stock market has tripled. Profits are very high. And yet you still have this label of being an anti-business figure. How do you look at that?

OBAMA: Well, first of all, toward the end of my second term, I think among the business community, there's maybe a greater acknowledgment, a less grudging acknowledgment, that we steered through the worst financial and economic crisis in our lifetimes successfully—certainly more successfully than many of our peers. We're now 10 percent above the GDP pre-crisis. In Europe, for example, they're just now getting back to even.

As you mentioned, the stock market, obviously, has come roaring back. But I think more relevant for ordinary folks, we've cut the unemployment rate in half. We've been able to have the longest [stretch of] consecutive months of private-sector job growth in our history. Biggest job growth since the '90s in manufacturing. The auto industry has come roaring back and is selling more cars than ever. We've doubled the production of clean energy. Our production of traditional fossil fuels has exceeded all expectations. We've been able to grow the economy, reduce unemployment, and cut the deficit by around three-quarters, measured as a percent of GDP. So it's hard to argue with the facts.

I think where the business community has traditionally voiced complaints about my administration is in the regulatory sector. And yet, if you look at the results—Dodd-Frank being a good example—it is indisputable that our banking system and our financial sector are safer and more stable than when I came into office. Now, what's also true is that banking profits are not as outsized as they were, but I don't consider that a bad thing, and I think most Americans don't either. They're still making a profit, it's just that there is a froth that's been eliminated, and that's good over the long term for the financial sector.

Do you think it's a benefit of regulation that it reduced profitability, as opposed to just making the system safer?

Our intention has not been to reduce profits just for the sake of reducing profits. Our intention has been to reduce reckless behavior that led to outsized profits. I think the fact that it's harder to leverage and trade in ways that threaten the stability of the economy as a whole is a positive for the U.S. economy. It may show up in terms of less profitability for some banking activities, but my argument has always been, start making money the old-fashioned way. Don't gamble, invest.

Jamie Dimon, the chief executive officer of JPMorgan Chase, came out with a statement saying, "I don't think in the next 10 years you're going to see a banker serving in a senior role in Washington." Do you think that's unlikely as well?

There's no doubt that the banking industry took a hit post-Lehman. What was interesting is, early in my administration, somehow they often thought that me or Tim Geithner or others were fanning the flames of antibank sentiment, and we'd have to explain to them, no, what's fanning the flames is that people have lost their homes and their savings, and this has all spilled out into Main Street while you guys still made out all right. Hopefully, there's been some more reflection on the part of the banking industry.

There are a number of banking CEOs, including somebody like a Jamie Dimon, who I think are smart and are outstanding businesspeople, but they have different roles to play. Their job is to serve their shareholders, maximize profits, run a business. My job as president of the United States is to make sure that the overall system is stable and that the economy as a whole is well-served by a healthy, functioning system that allocates capital in efficient ways. And that means the interests of any individual bank or banker are not always going to be congruent with the interests of the economy as a whole. That shouldn't be a surprise, and I would say the American people should be suspicious if anybody who's occupying this office thinks that whatever's good for the top 10 banks is automatically good for America. Even bankers shouldn't want their president to be thinking that way.

When we put forward regulations that make mortgages simpler and more intelligible to consumers, that may be bad for somebody's short-term bottom line—if their business model is built on pushing out shaky loans to consumers. But it will actually be good for the housing market and for the financial system as a whole if people know what they're buying and they can afford the mortgages they take on.

Some of the rules put in place have meant it's harder to get a loan. Something like 58 percent of approved mortgages are going to the wealthiest applicants, and homeownership among African Americans is down. Where's the balance there?

Well, the interesting thing—and we've looked at this very carefully—is that there's no doubt that there's been some pullback and increased conservatism on the part of lenders. But oftentimes, it's not justified by the regulations. It's a byproduct of them rethinking their business model. And so if you talk to a number of bankers, what they'll say is, "Look, these loans just aren't that profitable to us." Or, "These small-business loans may just not be worth us churning through the paperwork." And that's independent of any regulatory requirements that are being placed on them. Typically, what you've seen is a pendulum swinging where, after a financial crisis, oftentimes there's a pullback on the part of the banking industry. My suspicion is that will end up loosening, and when it does, that's when you want to make sure that those regulations are avoiding some of the excesses that we saw in the past.

So it's unlikely, then, that you'll go to work on Wall Street?

(Laughs)

Would you be happy if your daughters ended up there?

Well, I'm pretty certain that my daughters will not end up working on Wall Street. But look, I genuinely believe that one of the great comparative advantages that we have as a country is this extremely broad, deep, sophisticated financial sector. It means there's more capital flowing through this country that can be directed to startups and small businesses and expansion than anyplace else. And we want to keep it that way. But I do believe—and this isn't just my bias; I think a lot of economists share this view—that if you start getting to the point where 40 percent of the economy is taken up by the financial sector and that our best and brightest are going into financial work as opposed to engineering or computer science, then we could actually lose our competitive edge over time.

We've talked about some of the positive things in the economy, but we're still seeing very low productivity and GDP growth hovering around 2 percent. People like Larry Summers talk about secular stagnation. What avenues do you see for growth? And do you think something fundamental has changed?

Well, I'm a congenital optimist about the prospects of the American economy and the world economy generally. If our expectations are to duplicate the growth here in the United States that occurred right after World War II, when Europe was destroyed, Japan was destroyed, half of Europe was behind an Iron Curtain, and billions of people in China and India were suffering under either communist rule, in the case of China, or socialist approaches to the economy that stifled creativity and growth and innovation in India—we have to see that as a unique period in our history. But I do believe we can grow a lot faster than we're growing right now. And I think we can grow faster than any other advanced economy.

Some of this foundation that we have laid out, I think, puts us in a position to do that. The investments we've made in R&D, the investments we're making in clean energy, the investment we've been making in education and job training—those are all things that may not have a payoff today but will have a payoff 5 years from now, 10 years from now, 20 years from now.

Just to take a simple example: When I came into office, we started working both with the public sector, but also private-sector companies like Intel, to say how are we going to produce more engineers? And our goal has been to generate 100,000 more engineers, but also engineering teachers, and to really focus on STEM [science, technology, engineering, and math] education. That will help with productivity growth over the long term, even though it may not show up in Year 1, Year 2, Year 3 of that initiative.

The things we have not done that we need to do, that could make an enormous difference, are proposals I've put forward that Congress has so far blocked. The most obvious one would be infrastructure. We have about $2 trillion worth of deferred maintenance. And those are jobs that can't be shipped oversea Those are jobs that economists will tell you create a multiplier effect throughout the economy, but also lay the foundation for long-term productivity. And at a time when capital is so cheap, for us not to be doing that is crazy.

The fact that we haven't fixed our immigration system in an intelligent way is contrary to what our experience tells us, which is that compared to Europe or China or Japan, one of our biggest advantages is attracting new talent, strivers who want to come to this country, who are willing to take enormous risks to get here, and then are going to try to start a new business or populate entire communities that have fallen on hard times. That will make a significant difference.

Making college more affordable so that every young person is getting some post-high-school training: If our workers are better trained, have higher skills, that's going to make us more productive. So there are a number of things we could do right now that don't require some out-of-the-box policy initiatives and that would really make a difference in boosting productivity growth. I also believe that increasing wages as a share of the overall economy will help us grow.

What do you think is the ideal minimum wage? You said $12 before, but how high can it go?

Here's what I would say as a general proposition: If you work full time in our society, you should be above the poverty rate. And that might mean something different in Manhattan than it does in a small town in Arkansas or Oklahoma. But what is absolutely clear is there's a certain threshold above which you can pay your bills and below which you can't.

Now, what our economic history seems to indicate is that when workers have a sufficient share of the overall pie, they spend it. Consumer confidence grows and businesses are more prone to invest. One of the problems that we have right now—and I talk to CEOs who tell me, “Look, if we’re growing at 2 percent, then I don’t need to make significant business investment to make a profit, I just have to make sure that, through automation and other means, I’m keeping my costs low enough that I’m going to make money selling basically the same amount of stuff.” If you have workers making a better wage, now you’ve got bigger markets to go chase.

And what we also know is that when people see some modest increase in their wages, it ends up having a virtuous effect on the economy as a whole. So I think that as we move toward an economy where, because of automation, you need fewer and fewer people to make more and more stuff, more and more of us are going to have to move into the service sector. The service sector historically has been a low-wage sector. And in order for us to make sure that we don’t see this growing divide between haves and have-nots, with a middle class that’s shrinking, we’re going to have to make sure the service sector pays better.

Think about how difficult it is right now for a young, idealistic person who wants to go into teaching to figure out how they’re going to live a middle-class life as a teacher. There’s no job that’s more important to our economy than having really good teachers in the classroom, but right now, the way our economy is structured, it’s very hard for young people to make that decision unless the parents are subsidizing them in a fairly significant way.

What’s the answer to that problem?

Well, that’s an example of us thinking about, how do we pay our teachers? How do we pay our health-care workers? More and more people are going to be going into that sector. Those are sectors, by the way, where productivity gains aren’t going to be as fast, because, by definition, interacting with a child or helping an elderly person who’s going through physical therapy is less subject to automation. So we’re going to have to make some broader decisions in terms of the social compact about how folks who are making a living in really important, necessary jobs are getting compensated.

My broader point, though, is that for a while I think there’s been a tendency among economists, business leaders, pundits, to pose this conflict between issues of equity and distribution, and efficiency. And my argument is that we should be investing in those things that are going to make us more efficient—like infrastructure, like R&D, like education, like trade—which puts me in conflict sometimes with some members of my party. I’m not somebody who believes we can lop off the global supply chain and somehow that’s going to make us more productive, even if it was possible. But I also believe that if you combine those things that make us more efficient and more productive with a strategy to increase wages for those folks who are increasingly going to be employed in the service sectors, then you will not only get sustained, broader economic growth, but you’ll also gain the political consensus that’s necessary to continue becoming more efficient over time.

Some economists suggest that globalization is going to start targeting all those services jobs. If you want to keep up wages in that area, doesn’t it push us toward something like a universal basic income?

The way I describe it is that, because of automation, because of globalization, we’re going to have to examine the social compact, the same way we did early in the 19th century and then again during and after the Great Depression. The notion of a 40-hour workweek, a minimum wage, child labor laws, etc.—those will have to be updated for these new realities. But if we’re smart right now, then we build ourselves a runway to make that transition less abrupt, because we’re still growing, and we’re beating the competition around the world. Look, for example, at smart cars, where the technology basically exists now. The number of people who are currently employed driving vehicles of some sort is enormous. And some of those jobs are pretty good jobs. You know,

people are worried about Uber, but the fear is actually driverless Uber, right?

Or driverless buses or what have you.

Now, there are all kinds of reasons why society may be better off if smart cars are the norm. Significant drops in traffic fatalities, much more efficient use of the vehicle, so that we’re less likely to emit as much pollution and carbon that causes climate change. You know, drastically reduced traffic, which means we’re giving back hours to families that are currently taken up in road rage. All kinds of reasons why we may want to do that. But if we haven’t given any thought to where are the people who are currently making a living driving transferring into, then there’s going to be deep resistance.

So trying to separate out issues of efficiency and productivity from issues of distribution and how people experience their own lives and their ability to take care of their families, I think, is a bad recipe. It’s not an either/or situation. It’s a both/and situation.

One of the reasons people are feeling left behind is free trade. Have you not done a good job of selling the benefits of trade to people who feel that this is something that’s taking their jobs, taking away their future?

A couple of interesting things about trade. No. 1, the majority of Americans, surveys show, still favor free trade. It’s just that those who are opposed feel it much more intensely. No. 2, there is no doubt that some of the trade deals of the past, and the way in which globalization occurred over the course of the last 40 years, has not always been to the U.S.’s advantage.

So you take the example of China’s accession to the WTO [World Trade Organization]. From a geopolitical perspective, it was absolutely the right thing to do. And in fairness, nobody anticipated that China suddenly was going to be the engine of world manufacturing that rapidly. But there probably were some safeguards that could have been built to make sure that they weren’t devaluing their currency unfairly, that they weren’t engaged in the same state-owned enterprise subsidies and dumping that they were. Hopefully we’ve learned lessons from what happened there.

My argument with my friends in the union movement, for example—and I’m a strong union supporter—is if you’re fighting that battle, you’re fighting the last war. That you have to recognize that globalization is here to stay. That to keep one of the auto plants that have reopened and grown here in the United States operating at full capacity—they’re relying on parts from all over the world, and trying to disentangle that is all but impossible. And our goal, then, should be to try to shape trade deals that raise standards everywhere. And that’s what we’ve done with the Trans-Pacific Partnership.

I just came back from Vietnam. They're introducing measures in their constitution to recognize worker organizations that are independent from the government for the first time. The only reason they're doing that is because they wanted to be part of TPP.

If we simply pretend that trade will go away or that we can block it off, then China will set the rules for trade for the next 20, 30, 50 years. It sure won't be good for U.S. businesses. It won't be good for U.S. workers, and ultimately it won't be as good for workers in Vietnam or the people of Malaysia or other countries we're working with.

The last point I'd make on this is that the challenge from a perceptions point of view is that the benefits of globalization we take for granted. The costs are highly visible. You know, you can argue that one of the reasons inflation has been so low over the last two decades is because we're able to get a lot of stuff cheap from all around the world.

We take for granted that we can get a flatscreen TV really cheap, or that we get clothes that fit better and last longer than when I was a kid. You walk into J.Crew or the Gap, and it's a great improvement. I try to tell my kids, "You guys look a lot sharper than I did when I was your age, because we went to Sears, and it wasn't working the same way."

On the other hand, when a plant closes, we see it. And people feel it acutely. And entire communities feel it acutely. So I think this is where we need to go into those localized areas that are most acutely affected by trade and work with them—not to sell them a bill of goods that somehow if we just stopped trade, all those manufacturing jobs are coming back, because they're not. Automation has displaced them a lot more than globalization has.

So we've got to go into those communities that have been hard-hit and say, "We can still make stuff, but if your strategy is just to make the same old steel that you were making 30 years ago, you're not going to be able to outsell the Chinese or the Brazilians or others." But what we can do is have an old Kodak plant suddenly be at the cutting edge of photonics and train an entire generation through your community colleges and universities so that they're expert in that field, and you'll see a new growth that's compatible with globalization and will allow you to succeed.

And we need to say that we're going to make sure your kid is getting the kind of training that allows them to succeed in the next generation of manufacturing, the next generation of biotech. We're going to make sure that your entire community has broadband. One of the great successes of our administration that hasn't been talked about a lot is the fact that—in part because of some smart decisions we made about spectrum and laying broadband lines—the penetration and the speed of broadband in this country since I came into office has grown exponentially. Through a program called ConnectEd, we're on track for 98, 99 percent of the schools around America to be connected with high-speed broadband.

The basic facts seem to be out there that free trade offers real advantages, but people aren't getting it. They're revolting against globalization, not just with Donald Trump, but Brexit, or Marine Le Pen. They don't accept the stuff about immigration. Have the politics of selling that message changed?

My argument has been that the reason people are resistant to [the free-trade] argument is because global elites have been inattentive to the issues of wages, incomes, and opportunity for ordinary people. If you're selling globalization and saying it's great, even though each year, not just in the United States but across the advanced economy, you're seeing more and more of a winner-take-all economy, where not just the top 1 percent, but the top 0.01 percent, are getting a larger and larger share, then, yes, it's going to be pretty hard to make the argument that "Don't worry, this is great for you."

And this is another area where sometimes I find myself arguing with my friends in the business community. The issue is not resentment or class warfare or that somehow we want to level everybody down rather than lift everybody up. The issue is that, if in fact automation and globalization do have a tendency to create vast wealth and opportunity for a very small, highly skilled set of people and have a tendency to create a larger and larger group of folks who feel redundant in the economy, and if you don't pay attention to that, then people will rightly resist. They will understandably say, "I am not getting a good deal here."

Is that what Trump is tapping into?

Look, I think that the temptation in that circumstance is to resort to nativism and nostalgia and the sense that these are things that are now out of control and I want to take control back. And that can be true on the Left; it can be true on the Right. But I continue to believe that the majority of people, whether in the United States, in Europe, or certainly in rapidly advancing parts of the world like Asia—those folks recognize that the world has shrunk, and that if the rules are structured properly, this gives them more opportunity, not less, to succeed.

I think most people still understand that. If you talk to the younger generation here in the United States, they're not knee-jerk anti-trade. They're not anti-globalization. If you look at surveys, it tends to be older workers who are feeling displaced who are attracted to this notion of "let's pull up the drawbridge and shut everybody off."

But if we are to succeed in shaping a sustainable, growing, prosperous, integrated world economy, we have to pay attention to the trends that push toward greater inequality and find ways to modify those tendencies. And we know how to do it.

We know that if we're investing in education, early childhood education, college—making that cheaper and more affordable—then workers are going to have more opportunity. We know that if we have higher minimum wages, then they'll get a larger share of the fruits of all these amazing new innovations and globalization. We know that if we have stronger labor standards and workers have more of a voice, that's going to make a difference.

There were a bunch of decisions that were made back in the '30s by FDR and then again later, in this country in the '60s, that were fiercely resisted by business but essentially created a social compact and a social welfare state where people said, "OK, I'm seeing the benefits of innovation. I'm seeing the benefits of capitalism. I'm seeing the benefits of trade." We just have to update those for the 21st century in the same way that in previous eras we updated those for the shift from agriculture to industry. And that's going to require some farsightedness, not just in the public arena but also in the private sector.

You know, if I am a CEO in a boardroom right now, I should be thinking about, how do I make sure my workers are making a decent wage? And if I'm a shareholder, that is something I should be paying attention to, too, because if you're not, that's when you start getting the kinds of political pushback that you're seeing here in the United States. That's how you start getting a Brexit campaign. Over time, you'll strangle this goose that's been laying you all these golden eggs. Share the eggs.

Do you have any desire to run a company yourself?

Well, I've said this before and, I think, surprised a lot of people, but if I think about what would stir my passions had I not gone into politics, it'd probably be starting some kind of business. The skill set of starting my presidential campaigns—and building the kinds of teams that we did and marketing ideas—I think would be the same kinds of skills that I would enjoy exercising in the private sector.

Now, I'm always careful about drawing too many easy parallels there, because sometimes there are CEOs who come in and start explaining to me how I should be running the presidency. And I sometimes have to stop them and say, "All right. One, I appreciate your advice. But imagine a situation in which half your board and management were actively trying to get rid of you and prevent you from accomplishing anything. And you had 2 million employees, and you couldn't fire a large portion of them. And your competitors weren't simply promoting their own products, but were continually saying how your products were the worst that were ever invented and will cause a civilizational crisis. If you pull that all together, then you've got about half of what I'm dealing with on a daily basis.

What industries would you think about going into?

Well, you know, it's hard to say. But what I will say is that—just to bring things full circle about innovation—the conversations I have with Silicon Valley and with venture capital pull together my interests in science and organization in a way I find really satisfying. You know, you think about something like precision medicine: the work we've done to try to build off of breakthroughs in the human genome; the fact that now you can have your personal genome mapped for a thousand bucks instead of $100,000; and the potential for us to identify what your tendencies are, and to sculpt medicines that are uniquely effective for you. That's just an example of something I can sit and listen and talk to folks for hours about.

We're going to have a global entrepreneurship summit—the last one of a series that we began when I first came into office. And the enthusiasm from around the world about these summits speaks to the advantage that we continue to have here in the United States. It's this notion that if you get a good idea, and you organize some people to support you, and you learn from your mistakes, you can create something entirely new.

You can become Bill Gates.

You can become Bill Gates. Or, in some cases, you can electrify a village. You can save water in a desert. That's the thing about the U.S. economy that continues to be unique. And it's tied to capitalism and markets, but it's also tied to a faith in science and reason and a mindset that says there's always something new to discover, and we don't know everything, and we're going to try new things, and we're pragmatic. And if we ever lose that, then we will have lost what has made us an incredible force for good in the world. If we sustain it, then we can maintain the kind of progress that has been made. I always tell interns and young people who I talk to that as tough as things seem right now,

do not believe people when they tell you they wish they could go back to the good old days.

Because the good old days aren't—I'm now old enough where I remember some of those good old days.

Does it annoy you, then, that the guy who wants to go back and is America's most successful businessman, at least by his own reckoning, is Donald Trump?

Well, I—there's no successful businessman in America who actually thinks the most successful businessman in the country is Donald Trump. I know those guys, and so do you, and I guarantee you, that's not their view. Ⓑ

Designed by Comcast in Philadelphia

And now, attempting a feat of unimaginable daring,
the company will unveil a product people may actually … not hate

By Felix Gillette

The pingpong table arrived on the 15th floor of Comcast's corporate headquarters in downtown Philadelphia in about 2008. When the company invited local reporters for a viewing, none had trouble getting the significance. They also took note of the orange furniture and relaxed dress code, and quickly connected the dots. Internet culture liked pingpong. Comcast got a pingpong table. Comcast was embracing internet culture.

Eight years later, the software nerds and the mobile-app and data geeks have settled into more prosaic jobs on pingpong-free floors throughout the Comcast tower. On 35, Fraser Stirling is standing by his desk, palming a security camera. Its lens is set in a rectangular, anodized-aluminum enclosure that gives it a futuristic, almost Pixar-character profile. The camera will be available later this year to customers who pay Comcast for security-protection services. "It's got a real nice feel," he says, running his finger under the camera's chin. "You'll notice we designed it with a bit of personality, right?"

Stirling, 36, whose official title is senior vice president for hardware development, is broad-shouldered and bespectacled. His office has a turntable and a microscope and is strewn with prototypes of devices in various stages of development. As he gives a peek inside the company's skunk works, he explains how he ended up working for Comcast, the giant provider of TV and internet services, owner of NBCUniversal, and historically one of the most despised brands in the U.S.

He says he's fulfilling a childhood dream of designing beautiful things. Born and raised in Scotland, Stirling grew up playing rugby. "My father is a very traditional Scottish chap," he says. "He suggested in no uncertain terms that I should find something more manly to do. In his eyes, 'manly' included fishing, moving rocks with my hands, or wrestling bears."

Stirling defied his father and studied music technology and electronics in college and then spent eight years working for BSkyB, the London-based telecommunications company. In 2013 he moved to Silicon Valley to work for Intel's experimental internet-based TV system, OnCue. Shortly after, the company sold OnCue to Verizon Communications. Soon, Stirling says, he found himself weighing competing job offers from Apple, the global paragon of product design, and Comcast, a product wasteland. Stirling chose Comcast. The challenge was more compelling.

Comcast has installed tens of millions of cable boxes, Wi-Fi routers, and other hardware in American homes over the years. These devices have been forgettable at best. Stirling hopes that's about to change. Later this year, the company will begin rolling out a family of slimmed-down internet, TV, and home-security gadgets. The devices are designed according to a radical concept that's largely gone untested in more than a half-century of cable-TV history—that hardware doesn't have to be hideous. "We're trying to emphasize the importance of design," Stirling says. "Hardware is a thing you can touch. It's often the personification of a service or a brand."

The new devices are designed to work in concert with X1—the software at the heart of Comcast's strategy to keep its 22.4 million cable subscribers from cutting the cord and defecting to Netflix, Hulu, and Amazon. Think of X1 as the company's own Android or iOS—a technological platform upon which an empire of software, hardware, and services can be built. Comcast initially designed X1 for a specific TV-related purpose. A few years ago the proliferation of cable channels, combined with the rapid expansion in the number of shows and movies available on demand from networks such as HBO, Showtime, and Starz, was overwhelming many viewers. Finding something to watch on TV felt exhausting.

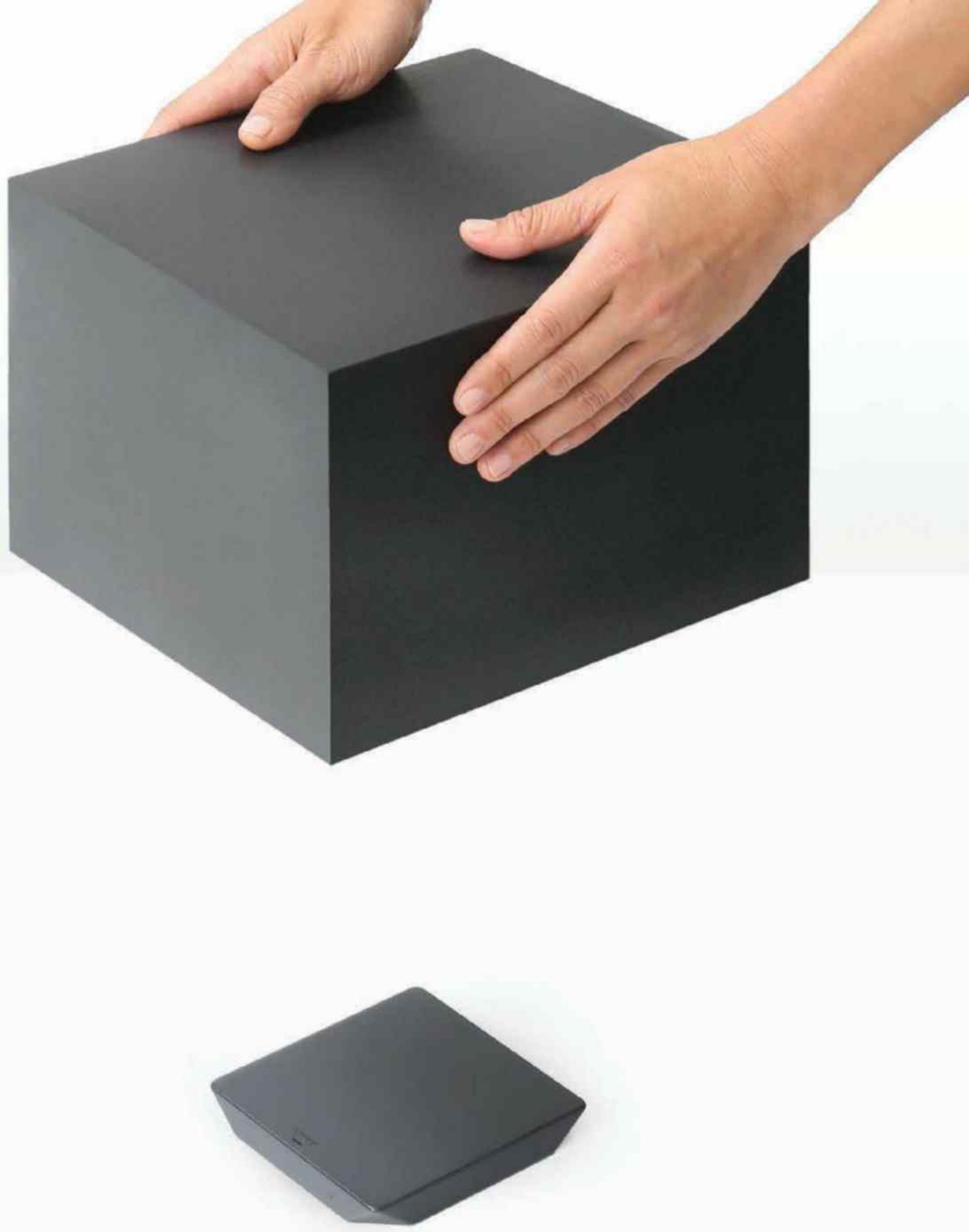
Instead of just throwing every channel into a linear grid accessed by clicking up and down with a remote, X1 aggregates programming from hundreds of TV networks and online sources and arranges everything by genre. Sports. Movies. Children's programming. News. There's still a remote, but with X1 it's voice-activated. You tell the system what you want. It shows you what's available. The software is based in the cloud, meaning Comcast can update it without coming to your home. Since its release in 2012, X1 has become a hit.

Unlike most cable companies, Comcast has actually been gaining TV subscribers. In April the company announced that during the first quarter of 2016, video revenue jumped 4 percent, to $5.5 billion, and it added 53,000 video customers, its best result in nine years. In 2015 it made $8.2 billion in profit on $74 billion in revenue. Executives credit the new platform: "When people get X1, they watch more hours of TV, and they watch a broader selection of TV," says Sam Schwartz, chief business development officer for Comcast Cable. "We can see how many channels on average people watch during a month, and it almost doubles." Even other cable companies seem to like X1—Comcast has licensed the system to Cox Communications and Shaw Communications.

Comcast is installing 40,000 X1 boxes a day and expects half of its video customers to have the technology by Aug. 5, when it will face a high-profile test: the Olympics. Comcast's NBC will air every event in Rio de Janeiro live on TV or online. Subscribers will be able to use X1 to search by event, athlete, or country, and get alerts when an American is close to winning gold. "Google organizes the world. Facebook connects people," says Chief Executive Officer Brian Roberts. "Comcast is connecting our customers to the moments that matter in their life."

The company says X1 has the potential to solve a broader problem now swallowing the modern home. American families keep adding more Wi-Fi-enabled devices to their lives, not just smartphones and tablets, but also "smart" thermostats, stereo systems, fire alarms, refrigerators, lights, locks, and toys. Trying to manage this riot of gadgets can be bewildering. Comcast's solution: Hook everything up to X1 and manage the entire menagerie from your TV. "The home is a huge opportunity for us," Schwartz says.

The notion of Comcast taking over more residential territory may seem terrifying. It has long ranked last or near last in consumer satisfaction surveys. (Tales of Kafkaesque customer interactions are an internet staple. For a sampling go to comcastsucks.org, or just Google "rep from hell.") The company has been trying to fix some of the most obvious problems: It's redesigning



The X1 set-top box

hundreds of its service centers in a style that's less high-security pawnshop and more Apple Store. (Step 1: Remove bulletproof glass.) It's working on a mobile app that will allow customers to track the location and arrival time of home-service technicians. *Philadelphia* magazine has called the app "Uber for your cable guy."

Comcast is after something much bigger than merely not being hated, though. It wants to be loved. "It sounds a bit daft coming from a guy with a Scottish accent," Stirling says. "But we really are genuinely trying to create an emotional experience, whether that's love, or whatever, like you have with your phone. We want people to be able to put something from Comcast in their study or their living room and people can look at it and go, 'Oof, what is that? It's amazing.'"

The X1 remote

From the edge of his desk, Stirling grabs a prototype cable box. With X1, Comcast shifts the bulk of its customers' TV activity—what shows they record on DVR, what *WrestleMania*s they order on pay-per-view—from the physical hardware into the cloud. As a result, the set-top boxes no longer need lots of hard drives. Comcast's new box, which will arrive later this year, isn't boxlike at all. It's square, about the size of a pancake, and could pass as a trivet. Over the years, various companies have trademarked specific colors to codify their brand's identity. Coke red. Home Depot orange. Tiffany blue. Comcast's forthcoming gadgetry will come in customized hues. "This is our Comcast gray," Stirling says, showing off a box. "We also have it in Comcast white."

He puts down the trivet and continues his guided tour. The walls in the hallway outside his office are decorated with plaques displaying the company's technology patents. They hang in long, densely packed rows, as if Comcast's interior designer was a crazed inventor with a raging case of obsessive-compulsive disorder. Construction cranes are visible across the street at the site of the 59-story Comcast Innovation and Technology Center, which will open sometime in 2018. Norman Foster, who also worked on Apple's new doughnut-shaped headquarters, is the architect.

In an audiovisual lab, Stirling greets Tony Werner, president of technology and product for Comcast Cable. For a moment, they stand side by side, gazing down at a cluster of old Comcast cable boxes and routers from a few years ago, a reminder of their inglorious past. "This is where we came from," Werner says. "This is where a lot of competition still is." He looks at one particularly hefty set-top box. "Where do you want your microwave?" he jokes.

Werner's swagger is fueled, in part, by the growing success of Comcast's voice-activated remote control. In May 2015, CEO Roberts stood onstage in Chicago at the Internet & Television Expo, the cable industry's recently rebranded annual gathering, and gave a demonstration. Holding the remote like a karaoke microphone, Roberts spoke commands that were promptly executed by X1 on a giant TV screen behind him. Instead of clicking back and forth through various menus to find the movie, TV show, or sports matchup you want to watch, Roberts explained, you could just say what you're looking for. A few weeks before Roberts's demonstration, Comcast executives had announced they were dropping the company's $45 billion bid for Time Warner Cable. During his Chicago presentation, Roberts acknowledged the defeat and vowed to move on. "Our folks in the labs have been really amazing," he said, holding up the remote. "Show me the Comcast–Time Warner Cable merger." The screen behind him played a movie clip of a fiery explosion engulfing a house as bystanders scream and dive for cover.

Werner says Comcast initially planned to ship 10,000 of the voice remotes in the first year. But after sharp prodding from Roberts, the company ended up distributing 7 million. Comcast executives say that unlike with other voice-activated products—ahem, Siri—customers keep talking to it long after the novelty has worn off. "We're now getting 180 million voice commands a month, and it's growing," Werner says.

Comcast already has more than 1,000 employees working on X1 in Denver, Washington, D.C., Silicon Valley, and Philadelphia. Every three months, they can take a week off to work on projects that could become new products. Some of the best X1 updates, Werner says, originated in these so-called lab weeks. He cites Kids Zone as an example. With a single voice command, a parent can lock her TV into a child-friendly programming mode, hand her kid the remote control, and go cook dinner or take a shower without the risk of returning to find her 8-year-old watching *Masters of Sex*.

Werner says much of what gets made in lab week never sees the light of day. Recently a team of engineers succeeded in hooking up a breathalyzer to X1. They rigged the system so that a viewer bingeing on, say, *Game of Thrones* and Scotch-and-sodas could monitor his rising intoxication. If his blood-alcohol level gets too high, it could lock him out of certain potentially regrettable activities, such as watching too much E! "We're never going to add a breathalyzer to the remote," Werner says. "So why do we let them do that? It's fun for everyone. And we're experimenting with how to add different kinds of sensors into the system."

The product team is designing thermostats, routers, and window sensors to hook up to X1, and Comcast says it's happy to aggregate other companies' Wi-Fi-enabled hardware into its system, too. It's formed partnerships with several companies, including Nest Labs, which makes smart thermostats, August Home (smart locks), and Lutron Electronics (smart lighting systems), among others.

Comcast knows its technology, no matter how good, will run into a marketing problem. People don't expect

"A lot of people think the cable guys don't get it. Part of my role is to get nice things from cable companies. They expect crap. In 2015, Comcast began stamping its remotes with the words “Designed by Comcast in Philadelphia”—an homage to the slogan on the iPhone’s packaging, “Designed by Apple in California.” The move was widely mocked on social media. “They forgot to bracket it with a poop emoji on each side,” tweeted Ryan Freitas, director for product design at Uber. Comcast has since updated the slogan to “Designed with ♥ in Philadelphia.”

For years, Comcast has been pouring advertising money into rebranding its cable, internet, and home services under the name Xfinity, using the tag line “The future of awesome.” The company is also stockpiling consumer-product gurus. Last year, Chris Satchell arrived at Comcast from Nike to serve as chief product officer. Satchell has a fetching British accent and looks like Vin Diesel. On the technology-panel circuit, he can somehow make Comcast sound less like a knuckle-dragging corporate cyclops and more like a boutique steampunk collective. “We’re in a long-term relationship with the customer. We’ve got to delight them,” he says. “How do we make you feel like you’re a Comcast family?”

Satchell talks a lot about transforming ambivalent subscribers into brand ambassadors. Along the way, he’s introduced a number of mantras into the company’s lexicon, such as: “CBB: Customers. Brand. Business.” Another: “Own the couch. Own the room. Own the home.”

The competition in home automation will be fearsome. In 2014, Amazon started selling Echo, a cylindrical wireless device that in response to voice commands can play music, provide weather reports, adjust your thermostat, and order a ride from Uber. In May, Google announced a competing product—a chatty virtual assistant housed in a voice-activated device called Google Home. And Apple is reportedly working on a Siri-powered home-automation hub.

Comcast never really needed a product-driven triumph to make money, says Joseph DiStefano, the author of *Comcasted: How Ralph and Brian Roberts Took Over America’s TV, One Deal at a Time*. “They always observed the technology dispassionately,” he says. “They were not obsessed by it. Technology was their servant, not their master. They didn’t want to be the guys spending all the extra money that might or might not develop a market.”

Comcast executives insist that’s no longer the case. “When I started at Comcast, the official strategy was ‘Hey, we’ll let other people cut their teeth and innovate, and then we’ll be a fast follow.’ And even fast was kind of ersatz fast,” says Sree Kotay, chief technology officer for Comcast Cable, who joined the company in 2007. “That has shifted in deep and profound ways. Now our mantra is to create the best-looking products, the best services, the best journey, the best experience in the world. Not just the best for a cable company in North America.”

“A lot of people think the cable guys don’t get it,” says Schwartz, the chief business development officer. “Part of my role is to get Silicon Valley to understand that we think like they do. That we’re real. That they can partner with us. And that we have the platform to do this.”

Silicon Valley to understand that we think like they do. That we’re real”

On the condition that we don’t reveal certain details, including what it looks like, Stirling has agreed to show off a prototype of a wireless, voice-activated device that might someday allow a Comcast customer to holler commands at X1 without having to walk around with the remote control in hand.

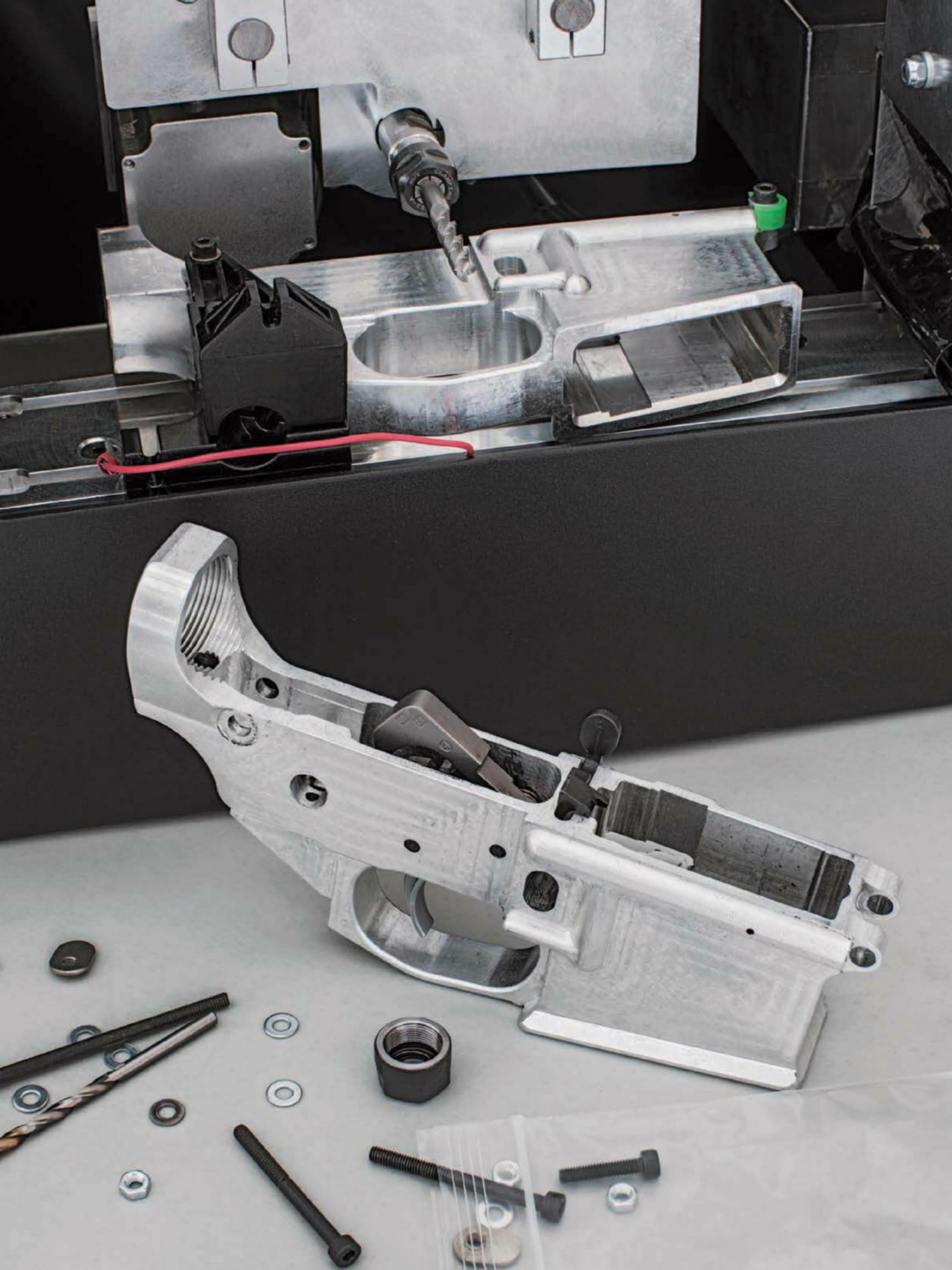
“Welcome to the dungeon,” Stirling says. “This is where the magic happens.” The dungeon is a windowless laboratory high up in the Comcast tower. He stands a few feet away from the prototype and calls out one of Tom Cruise’s most famous movie lines. “Show me the money!” he says. The TV screen overhead jumps to the 1996 film *Jerry Maguire*.

“What is the weather like?” Stirling asks. A report pops up on the screen. “The difference between anything we would do in voice and what Echo does,” he says, “is that we would attach it to an anchor point. Which is TV and content. It’s linked to a broader service.”

In the laboratory next door to the dungeon, the product team is working on a Comcast-designed outdoor Wi-Fi hub, which it’s placed inside a copper box the size of a mini-refrigerator. The box is designed for testing how new products perform in isolation. During other stages of the development cycle, however, engineers need to know how a gadget will interact with other devices in the home. To handle that kind of work, Comcast began renting a house in the suburbs of Philadelphia last year and turned it into a six-bedroom, three-bath Wi-Fi laboratory. “It’s awesome,” Stirling says. “It reminds me of the *Addams Family* house because it’s so big.”

Homeowners tend to only notice Wi-Fi when it’s not working and remember how difficult it can be to get it running again. Comcast engineers are developing a new product, known internally as Smart Internet, that would allow customers to monitor Wi-Fi performance in the home using a simple diagnostic control panel on the X1 menu. In theory, parents could use the Smart Internet tool to shut down Wi-Fi access in their kids’ bedrooms at a certain hour each night or to identify which smart gadget has lost its mind and is disturbing the rest of the network. The goal is to demystify internet performance and perhaps to empower users to look slightly less clueless in front of their children.

For years, futurists have predicted the eventual demise of the living room TV as it’s pushed aside by smarter devices: mobile phones. Tablets. Virtual-reality goggles. Comcast’s vision for X1 would restore TV’s centrality, transforming it from a device for consuming entertainment into a far-reaching command center, capable of monitoring and controlling every networked object in your home and all the invisible spaces in between. “Right now you turn off your TV when it’s no longer giving you value,” says Matthew Strauss, executive vice president of video services for Comcast Cable. “We’re going to change that. Eventually, your TV will always be on.” —*With Gerry Smith*



DIY ASSAULT RIFLE KIT

FIRST HE SHARED 3D-PRINTED GUN FILES ONLINE. NOW, CODY WILSON IS SELLING A DESKTOP AR-15 PARTS MAKER. THERE'S A WAITING LIST

BY ROB WALKER
PHOTOGRAPHS BY BRYAN SCHUTMAAT

During a recent visit to Defense Distributed, the mood is casual, with workers starting to trickle in between 10 and 11 a.m. The nonprofit's workspace takes up roughly 1,900 square feet in a bland office park in northeast Austin, and the only exterior marking is a sticker on the door advertising a small-business association. Inside, it looks like any other small-scale manufacturer, employing about 15 people, mostly male. Clever millennials with idiosyncratic political views, they swap observations about Donald Trump—viewed as so absurd that his ascendancy might result in perversely productive chaos—as they strip wires and screw machines together.

Cody Wilson, the mediagenic 28-year-old behind Defense Distributed, paces around, multitasking: A detailed discussion of the high failure rate of a batch of couplings from a Chinese supplier gives way to phone calls to line up a new accounting firm. Occasionally he chimes in on the Trump speculation, but Wilson does not vote. To do so would acknowledge the legitimacy of a political system he doesn't believe in.

Defense Distributed is most famous for the Liberator, the world's first design code that can be fed into a 3D printer to create a complete, working gun. After Wilson released the code online in 2013, it was downloaded more than 100,000 times around the world. Then the Department of State ordered Wilson to remove the files. Posting the blueprint for an American audience is legal, but according to the State Department, because the web is global, he may have violated weapons-export regulations. The Liberator attracted a fusillade of press coverage and political backlash and landed Wilson on *Wired*'s list of "the most dangerous people on the internet."

Wilson's journey since being "smashed" by the government—as he puts it—has been three years of nonstop stress as he scrambled to save his project. In May 2015, Defense Distributed filed suit against the State Department and related parties, alleging that its position on the Liberator files violated the First, Second, and Fifth Amendments and seeking to allow Wilson's organization to post its code again. It lost, then appealed. At the beginning of June, the Fifth Circuit court in New Orleans heard oral arguments from Wilson's and the government's lawyers. Its ruling, which could be issued in a few weeks, will determine the future of Defense Distributed and, potentially, protect a burgeoning DIY tech weapons culture under free speech.

"YOU'RE A DUPE IF YOU BELIEVE IN REALITY; THERE'S ONLY THE WORLD AS IT IS"

To fund his legal quest, Wilson has overseen the creation of a newer product called the Ghost Gunner. It's not a gun; it's a 50-pound, $1,500 desktop machine, about the size of a microwave oven, that mills the most crucial element of a semiautomatic assault-style weapon. That means anyone who buys it can build their own version of the AR-15—without a serial number. That's the same category of weapon as the Sig Sauer MCX used in the June 12 mass murder in Orlando. The magazine *AR-15*, a lush and hefty spinoff of *Guns & Ammo*, says the Ghost Gunner "will rewrite the future of firearms." In the meantime, it's become a $2 million-a-year business.

In the Austin shop, which Wilson rents for $1,600 a month, his workers assemble more than 160 parts, from a range of American and Chinese suppliers, on a 13-station assembly line bordered by metal shelves holding boxes labeled "spindle mount" or "flushed arduinos" or "ballscrew blocks." A stack of half-completed Ghost Gunners fills a long table in the front, and a row of finished models sits to one side, waiting to be shipped. In the back, there's another table where the machine's circuit boards get built, plus pallets loaded with casings and a smattering of heavy-duty equipment. On a good day they can produce 10 Ghost Gunners; there are currently more than 600 orders to fill.

The tedious hustle of running a small startup—one that produces a controversial, potentially deadly product—has specific challenges, such as a constant churn in payment processors willing to do business. It's not the life that Wilson had in mind for himself. He's an idea guy. With a neatly trimmed beard and even features, Wilson resembles a 6-foot-tall G.I. Joe doll. In public appearances and on camera, he can be amusingly obnoxious, going out of his way to frame his points in the most provocative manner possible. He's fond of I-just-blew-your-mind references to Foucault and Baudrillard. It's "part of who I am," he says—and partly an act. "You're a dupe if you believe in reality; there's only the world as it is," he'll say, referencing the distinction French Continental philosophers draw between reality, viewed as a construct of language (in the service of capitalism, according to Baudrillard), and the real real—a state of being or perception nearly impossible to achieve for people caught up in the system. He doesn't articulate his theories for the unschooled, but he'll add with a grin, "This all sounds like nonsense, I know."

Wilson grew up near Little Rock. As early as the ninth grade, he says, he was "attracted to radical politics," reading up on the Russian revolution online. Still, he wasn't a rebellious kid; he was the student president of his high school. At the University of Central Arkansas, he took philosophy and economics courses, and read Derrida, Nietzsche, Habermas, Hans-Hermann Hoppe. "I remember telling my mom, 'I'm pretty sure I'm an anarchist, actually.' She was like, 'I think you're gonna have a very difficult life,' " he says. "I guess she's right."

Wilson started law school at the University of Texas at Austin, but he was restless there. It was more engaging to dream up grandiose schemes with Ben Denio, a good Facebook friend with whom he was an undergrad. For a time they toyed with starting what sounds like a gonzo variation of a super PAC to fund "disruptive" causes such as extreme advertising with outlandish attacks on candidates "to ruin the discourse." (Wilson notes: "Trump has now realized the whole thing.") Then, during a phone call one evening in the summer of 2012, Denio mused aloud: "What about printable guns?"

Wilson liked that. He resists labels but more or less accepts the designation of crypto-anarchist: one who believes in the supremacy of individual political and ideological freedom and seeks to achieve these goals through digital encryption and decryption. An early movement manifesto ends with a rallying cry: "Just as a seemingly minor invention like barbed wire made possible the fencing-off of vast ranches and farms, thus altering forever the concepts of land and property rights in the frontier West, so too will the seemingly minor discovery out of an arcane branch of mathematics come to be the wire clippers which dismantle the barbed wire around intellectual property. Arise, you have nothing to lose but your barbed wire fences!"

Wilson is sneeringly dismissive of a traditional notion of government that he believes technology is making irrelevant. For someone looking to disrupt public discourse on the implications of new technology and contemporary society, there could be no better conversation-starter (or -stopper) than a lethal weapon.

The walls of Wilson's north Austin apartment are bare. Apart from a bed and a book-strewn desk, the furniture consists of two folding chairs and a crate with a drone inside that doubles as a table. The place is somewhere to sleep, he explains with a shrug. He has a girlfriend, whom he visits regularly in Arkansas.

Growing up, Wilson says, he wasn't particularly interested in guns. He knew people who hunted, and his father owned a shotgun. But that's not unusual in the South, and by the time he was in law school, Wilson had gone shooting "maybe once." He also wasn't exactly a geek or a budding entrepreneur. He never formally studied design, engineering, business, or anything else that might have been useful to an aspiring inventor.

But in 2012, 3D printing was becoming a broadly available technology. The open source RepRap project (a collaborative effort to build a machine that makes its own parts) had just given birth to the press-friendly MakerBot, a machine, guided by software, that laid down successive layers of melted plastic to form an object. Originally, 3D printing was intended to speed up industrial prototyping, but the technology took on new implications with this desktop machine printer, which sold for around $2,000 and required software know-how but no coding. Evangelists argued that 3D printers were more than gadgets—they were the next great chapter in the history of technology, giving people greater autonomy to produce on their own terms.

Wilson taught himself how to use a range of 3D-printing-related hardware and software. In 2012, Wilson, Denio, and two Arkansas friends, Sean Kubin and Daniel Bizzell, founded Defense Distributed and launched a weapons wiki. They modified existing printable gun-component models and invited others to help create a homemade handgun. Viewed romantically, their project was a way to harness the internet to resurrect an American Revolution-era vision of local smithies adapting European firearm technology to arm pioneers. But this adventure in innovation wasn't embraced by a growing maker scene motivated by an ethos of social progress. (Successes include an affordable 3D-printed prosthetic hand.) A Defense Distributed crowdfunding campaign was kicked off Indiegogo; and Thingiverse, MakerBot's platform for open source object designs, booted off all gun-related files. Stratasys, manufacturer of an early, heavy-duty 3D printer, took back a high-end unit the group had leased.

The silver piece is an aluminum lower receiver milled by the Ghost Gunner (behind)

The maker scene, Wilson says, turned out to be "just another cathedral-based culture. Like, to invoke Baudrillard here—there's no real intention for Luciferian rebellion, OK? They're selling you the approved revolution. They'll give you a little kit, so you can cut your name into some wood." He continues, with deadpan sarcasm, "Isn't that great? Look at all you've learned!" He adds, "They won't actually give you capability." Defense Distributed wanted to "enact the actual real of our idea."

Wilson converted each setback into an opportunity for more attention, through interviews with the tech press or his own YouTube videos. When Thingiverse ejected gun content, he created DefCad.org, a new home for downloadable weapon files. Over time, this attracted talented sympathizers.

One of them was a gifted engineer named John Sullivan, now 30, who was then working for National Instruments, an Austin-based maker of high-tech equipment and software. He's also a gun enthusiast—the licensed owner, he says, of an M16. Sullivan was concerned that in the wake of the December 2012 Sandy Hook slaughter, the U.S. might adopt a strict gun-control regimen. (Many gun-rights advocates have a similar reaction to mass shootings, which invariably boost sales of weapons that some believe will be banned or restricted.) "How," he recalls wondering, "can I contribute to this social argument?"

Sullivan saw a Defense Distributed video and got in touch with Wilson, who seemed to think he was a government plant. " 'Who's this dweeb that has a machine gun?' " Sullivan says. "He thought he was walking into a trap." An electrical engineer by training, Sullivan taught himself computer-assisted-design rendering, bought a broken Stratasys printer for about $6,000 on EBay—roughly one-fifth the price of a new one—and fixed it with a friend's help. He says he devised a working version of the Liberator in a matter of weeks. "I facilitate technology. Cody Wilson sells it. Very cool," he says. In May 2013, Wilson demonstrated the Liberator for a *Forbes* reporter, released a promotional video that quickly went viral, and made the design files freely downloadable at DefCad.org.

It was a short-lived triumph for Defense Distributed. Within days, the State Department sent Wilson a letter directing his group to remove the files, citing possible export-permit violations. The penalties could include a decade or more in prison and six-figure fines. Wilson complied but pointed out in interviews that the files had already been downloaded more than 100,000 times. (They can also still be found at file-sharing venues such as The Pirate Bay.) "We win," he declared, claiming victory over what he imagines as the forces of government suppression of personal freedoms.

"Look, man," Wilson says now. "Did I get smashed, or did I get smashed? No one knows how smashed I got smashed." Sitting in a booth at a north Austin Jim's Restaurant, a chain he prefers to the city's numerous independent coffee shops, Wilson recounts the rocky period after the Liberator crackdown.

To offset costs, Defense Distributed had intended to support its file-sharing DefCad.org site with advertising. Now unable to use its marquee files, the organization's revenue plummeted. For months, Wilson waited to learn whether he would be prosecuted. Much of the "support network" of technical contributors and advisers he'd built evaporated. With a few exceptions, he says, "nobody wanted the heat."

Physically spent, Wilson dropped out of law school. His lease was ending, and he retreated to Arkansas. "No money, no prospects," he says. "I was like, wow, we did what we wanted to, but–my God–that's all I get to do?"

Still, Wilson had become a minor celebrity in radical circles and beyond. He connected with Amir Taaki, a British-Iranian technologist with an enthusiasm for bitcoin. They worked together on Darkwallet, a piece of software designed to enable untraceable monetary transactions, and bounced around Europe, raising money and meeting, among others, Julian Assange and the musician M.I.A., who at the time was using 3D-printed gun imagery in one of her videos. He attended a private retreat in Wyoming hosted by PayPal co-founder and tech libertarian Peter Thiel. He kept fielding media and speaking requests. He got a $250,000 book deal with Simon & Schuster. *Come and Take It*, his account of the Liberator story (much of it written at Jim's), is scheduled to be published this fall.

Wilson was never prosecuted, and he became convinced that the State Department's actions against him were legally untenable. Getting the best possible lawyers to advance his argument would be pricey, but Sullivan, Wilson's faithful engineer, had an idea.

The Gun Control Act of 1968 and associated legislation restrict the buying and selling of weapons. This still leaves the possibility of legally making your own weapon. That doesn't just mean crude zip-guns made from basement parts: It turns out that it's easy to buy most of an assault-style rifle–the upper receiver, barrel, and stock–prefabricated. The tricky bit is the lower receiver, which is where the most complicated mechanisms of such a firearm reside. A cottage industry supplies blocks of metal that are 80 percent finished lower receivers. It's up to the aspiring DIY gunmaker to machine mill the final 20 percent of the piece so that it can accommodate the functional guts of an automatic rifle, including the trigger mechanism.

This requires high-end technical equipment and specialized skills. The typical method of finishing a lower receiver involves a shop-grade computer numerical controlled (or CNC) milling machine capable of precisely cutting aluminum. John Zawahri used a semiautomatic rifle completed in this manner in a 2013 mass shooting in Santa Monica, Calif., killing five people. The Bureau of Alcohol, Tobacco, Firearms and Explosives has acknowledged that such guns, with no serial number or registration requirement, are difficult to track or regulate. Politicians who argue such weapons should be banned call them ghost guns.

Sullivan knew that the expensive and complicated CNC milling tools used for this process existed in machine shops, operated by experts. But, he wondered, "what if the people owned the CNC machine? What if it was on your desk?" He studied more modest consumer-directed CNC milling machine variations that could cut metal, including one called ShapeOko. He concluded that he could design a single-purpose variation that would make carving the lower receivers relatively easy. The goal, he says: "You can take it right out of the box and start using it."

The 3D-printed single-shot Liberator

Wilson was open to Sullivan's scheme–and really, at the time, would probably have been open to almost anything that would fund his legal battle. Leery of crowdfunding sites after their earlier experiences, the two decided to offer the device for pre-sale, before it actually existed. Wilson devised a spooky promotional video, juxtaposing clandestine-looking footage of a mysterious machine operated by anonymous figures in shadowy locales with excerpts from a California politician's ominous descriptions of "ghost guns." The politician's assertions that "the threat is real" and "no one knows that [these guns] exist" came across as titillating selling points, as did converting what was meant as a warning into the name of the product: the Ghost Gunner.

Sullivan (left) and Wilson at Defense Distributed

This was brassy, given that their prototype needed a total redesign. "Cody likes to work under immense pressure," Sullivan says. For the initial seed capital, Wilson converted Liberator-era bitcoin donations into dollars–the exchange rate had spiked from $10 or $12 to more than $1,000. They began accepting pre-orders, at $1,000 apiece, on Oct. 1, 2014. "It just had to work," Wilson says. He figured if they got 300 buyers, he could afford a lawyer.

Most people can purchase a pretty good factory-built gun for $1,000. Even so, Wilson got 10 orders on Day One and started raising the price, soon cutting off pre-orders at 500. Sullivan submitted redesigned specs to suppliers by mid-December, with Wilson, Sullivan, and Denio building the earliest units themselves. They started shipping in April 2015.

Gradually, Wilson put together an assembly team–contacts from his network, random supporters who reached out via Twitter, and so on. "It's torture, man, getting going," he says. "But here we are. It's been a full year of Ghost Gunner shipping." The enterprise just surpassed 2,000 units shipped. (An upgraded Ghost Gunner 2 debuted on June 21 at $1,500; you can get on a waiting list for $250.)

Sullivan has since transitioned to a "consulting role." He spoke to me, somewhere en route to Oklahoma City, from his van, which is where he and his fiancée essentially live, having sold most of their possessions. He's opted for a low-expense, permanent-vacation lifestyle, he says, and can now pick and choose the projects that interest him.

Back at Jim's, Wilson says the Ghost Gunner business could expand, even internationally—or could be snuffed out by regulatory caprice. His partner Denio has taken an interest in a few orders from engineering educators and now imagines a spinoff business—thoroughly rebranded—bringing desktop CNC machines to that market. (That said, Denio underscored to me that his ideological goals trump his entrepreneurial ones: "I wouldn't mind living on the street and eating garbage if I knew our Second Amendment was protected.")

Wilson says he wants the product to succeed and satisfy the customers who've supported him. In May, Defense Distributed had its first trade-show booth, at a survivalist expo in Dallas. But it's pretty clear that engineering and business aren't a rush for him but a means to an end. "I'm just trying," he says, "to win my lawsuit."

On June 6 the notorious crypto-anarchist put on a suit and, along with more than a dozen of his Defense Distributed colleagues, made his way to the John Minor Wisdom U.S. Court of Appeals Building in downtown New Orleans. Wilson didn't have much confidence that his ideas about the radical individual freedoms technology should enable would ever get a fair hearing from the government he's so noisily opposed.

Defense Distributed v. U.S. Department of State, et al, argues that while government rules require weapon makers to obtain advance permission to export products, there's no such obligation for sharing weapon-design information—and that Department of Justice guidance dating back several decades suggests that such a requirement would likely amount to a curb on free speech. So when the government sent Wilson a letter telling him to obtain specific permission to post the Liberator files because they might be accessible to "a foreign person," it was, the suit argues, demanding a vague and wide-ranging pre-approval of speech as well as violating gun rights.

"I WOULDN'T MIND LIVING ON THE STREET AND EATING GARBAGE IF I KNEW OUR SECOND AMENDMENT WAS PROTECTED"

A group of 16 Republican congressional representatives filed a supportive brief, as did the Cato Institute and a couple of other conservative groups. So did the Reporters Committee for Freedom of the Press and the Electronic Frontier Foundation. Kit Walsh, an EFF attorney, says the Defense Distributed argument is consistent with the organization's belief that "publishing information describing technology is protected speech." While the EFF has no particular policy on gun rights, Walsh says the "aggressive" response "gives the government a veto on any speech it deems not to be advisable that relates to the technology at issue." The government may have legitimate interests that butt against speech rights, she continues. But the law should be clear and specific about where those lines are and how to negotiate them—matters perhaps better addressed legislatively. (New York Representative Steve Israel unsuccessfully attempted to introduce laws banning weapons that could get through a metal detector, which would include 3D-printed guns because they can be made entirely of plastic. The Liberator's design includes a metal shank, but it's not necessary for the gun to function.)

The government's response has emphasized the need "to prevent the dissemination of undetectable firearms to foreign nationals"—essentially a national security argument. At the hearing, Defense Distributed was represented by Alan Gura, a 45-year-old lawyer with a resemblance to Perry Mason who was included in the *National Law Journal*'s 2013 100 Most Influential Lawyers in America list. Based in Washington, D.C., he successfully argued before the Supreme Court in the 2008 case *District of Columbia v. Heller*, a landmark 5-4 ruling that was seen as the high court's strongest statement to date that the Second Amendment gives individuals the right to own firearms for self-defense.

While the three-judge panel asked Gura pointed questions ("What practical and legal use is there for a single-shot printed plastic handgun?"), Gura held his own, insisting that his clients have a right to "express themselves" with computer files just as they would by publishing a book. The government's lawyer, Daniel Tenny, had a tougher time. One of the three judges, Edith Jones, a Reagan appointee who's questioned the reasoning behind legal abortion and invalidated a federal ban on machine guns, repeatedly complained that the regulatory language was "vague" and could be read to bar the publication of any computer-assisted manufacturing technology. Echoing a point Wilson likes to make, she noted that factory-made American guns are already easily acquired by drug cartels. "I'm sorry," she said to Tenny in an unfriendly Southern drawl after an exchange about the government's position on the distinction between a "gun" and the Liberator files, "but you're being, in my view, somewhat evasive." Wilson and his allies in the courtroom were "trying not to stare at each other and guffaw," he says. Tenny sounded rattled and afterward left as quickly as possible. Wilson and his posse lingered, pausing for a group photo on the courthouse steps. "They sent that lawyer here to die," Wilson gloated. Everyone laughed, and later they had a celebratory dinner at Arnaud's, a swanky French Quarter stalwart.

If Wilson loses, he'll appeal. Ghost Gunner sales seem capable of funding a trip to the Supreme Court, if necessary. The Orlando tragedy caused a spike in traffic to the company's site, and fear of a new Clinton administration will be good for sales, too.

But if Wilson wins, he says, Defense Distributed has plenty of material it's never been able to share—a backlog of homespun, open source weapon innovations, ready to upload. His view on the Orlando massacre, which happened six days after his hearing, is one of cynical spectator. "Western modernity, right? The clash of civilizations, in microcosm." It was the sort of event that "doesn't cut clean," and so "it forces everyone to come to the table," he said, a state of chaos he thinks the mind-numbed masses need. But he was fazed enough to search his records to see if Defense Distributed had sold the murderer, Omar Mateen, anything. It had not. "Once I saw that it wasn't an AR-15, I was out," he says, meaning he stopped thinking about the direct implications for him.

He remains focused on his court battle. "It's very satisfying," he says later. "You gotta bust your ass for two years and humiliate yourself—just so the government can have a hard time for a couple minutes. But it's very satisfying." He pauses for a beat. "It's almost worth it, man." B

LIBERATOR: COURTESY DEFENSE DISTRIBUTED

GAMERS GET A TV SHOW / **6** SUPER CHILL DESSERTS / DOGGY STYLE **GURU** / **HOW** DO YOU DISCONNECT?

ETC

COME FOR THE CAGE-FREE EGGS, STAY FOR THE TEABOT

Whole Foods courts millennial shoppers with 365
By Joel Stein

When the first 365 by Whole Foods Market opened near me in Los Angeles, I went immediately, curious to see how millennials shop for food. Do they just take photos of it? Do they look for items with their own names on them? Do they even buy groceries? Don't they just smash buttons on their iPhones until a cooked meal appears at their door? Market researcher Mintel reported last year that 40 percent of them don't even eat cereal because it requires cleaning up afterward.

The 365 concept is Whole Foods' response to three quarters of sales declines at stores open at least a year. The parent store's focus on organic and local has been copied elsewhere, cheaper. It's getting killed by Trader Joe's and Aldi, because they offer lower prices; smaller, easy-to-navigate stores; and an ever-rotating selection of inventive items covered in chocolate or Sriracha. Whole Foods is a victim of its own success: It got shoppers to buy fresh groceries instead of stuffing their freezers. But that meant they were going to the store more often, so they wanted to get out faster, without having to choose among 100 olive oils. And if you're going to get them to drive somewhere, the destination has to feel like an "experience" they can't get online. Instacart and AmazonFresh have the competitive advantage among folks who want to stay on the couch, snacking on something other than cereal.

Whole Foods has signed 19 leases for 365 stores across the country. It planted the first in the hipster-est section of L.A., Silver Lake, known for having a coffee shop/dog adoption agency and a stop sign on which someone's added "Hammer Time" in graffiti. To get the perspective of someone in 365's target audience, I brought along my 27-year-old friend Igor Hiller; his millennial bona fides include doing improv at Upright Citizens Brigade and having car insurance paid by his mother.

We were greeted outside with a sign that said, "Free Air Guitars." Walking in, we found a clean, well-lit, and colorful store, with exposed beams and ducts. There were no employees in sight, as if to say, "Shop, don't shop, totally up to you, dude." (What they're actually saying is: fewer employees, less overhead, smaller costs to pass on.) Igor liked it immediately. He liked that it was a third smaller than the Whole Foods he spent hours roaming as a screenwriter's assistant; that items were cheaper, closer to what he paid at Trader Joe's; that there were only a few choices per product; and that the salad bar was priced by the container, not the pound, making him reconsider his entire belief system about avoiding items with a lot of water weight. He got way too excited that prices were listed on digital tablets instead of on chalkboards with photos of farmers—he gets it, farmers grow food, whatever. He didn't mind the absence of a butcher or a cheesemonger, or that the wine expert was replaced by a screen where he could search reviews of pinot noirs.

A FAKE INSTAGRAM ACCOUNT FOR THE STORE GAINED ATTENTION FOR FABRICATING A STORY THAT SINGER KIM GORDON HAD BEEN BITTEN BY A COYOTE IN THE PARKING LOT

We stopped at the TeaBot, where we chose personalized blends, caffeine levels, and temperatures. Mine was based on a mixture called Chai These Nuts. Then we went over to a mural that said, "Silver Kale." Igor made me pose with him in front of it while another shopper took our photo. "It's very Instagrammable," Igor said. "That's why they put that in." He didn't like the anagram, though. (Get it? Silver Lake, Silver Kale?) "I hate any advertisement that pretends to know me. You're not my friend. You're a company. Don't try to have an inside joke with me."

There seemed to be fewer shoppers at 365 who were Igor's age than there were fortysomethings like me. Five minutes after we got there, we ran into my Generation X friend Bruce Gilbert, a music supervisor for shows such as *Transparent* and *Orange Is the New Black*, wearing a Joy Division T-shirt with lead singer Ian Curtis replaced by Joey Tribbiani from *Friends*. Sipping a cortado from the Allegro cafe—it also serves beer and wine—he told us he'd been there four times in the previous three days, partly to check out the singles scene. "I was here at 10 o'clock last night," he said, which was apparently peak time. He hadn't shopped for groceries yet.

That's cool with 365's president, the

PREVIOUS PAGE: ILLUSTRATION BY RAMI NIEMI

Some items available at 365 that you won't find at a regular Whole Foods

Sweet-potato wrap with feta & kale $4 | **Orange-maple salmon with edamame quinoa pilaf & asparagus** $10 | **Sriracha soy-chicken skewers** $6.99/lb. | **Chimichurri beef skirt steak** $12.99/lb. | **Carrot dog** $6 | **Peanut power bowl** $8 | **Vegan veggie pizza** $12 | **Harissa boneless pork tenderloin** $9.99/lb. | **Farmed**

very chill Gen Xer Jeff Turnas, who's been with Whole Foods for 21 years. "We didn't set out to say we just want millennials in our store," he says. "We set out to create a fun, new, fresh way to shop with amazing prices." Turnas spent the past few years in Europe and, with 365, is trying to copy the vibe that makes supermarkets there more experiential. He obsessed about the store's music; the playlist, which you can subscribe to on Spotify (current followers: 50), includes such songs as *Odessa* by Caribou and *How Did I Get Here* by Odesza. (The website 365 team members use for job information is called Backstage Pass; a "You Rocked It" program lets them award points to co-workers that can be redeemed for gift cards.) And Igor was right: Turnas added the mural after the stylish company that provides 365's employee uniforms told him the store needed an Instagram attraction. "I liked 'Silver Save' more than 'Silver Kale,'" he says, preferring a message that riffed on prices. "But we let the artist do his thing."

Turnas is also cool with a fake Instagram account made for the store. Created by 27-year-old music video director Jack Wagner, it gained attention for fabricating a story that singer Kim Gordon had been bitten by a coyote in the parking lot. It also posted a fake apology from a barista for inserting indie rock cassette tapes into boxes of organic cereal. Wagner started the account after walking to 365 every morning to get a breakfast burrito and iced coffee. He, too, hasn't yet purchased any groceries. "We drank beers," Wagner says. "We treated it like a bar and pregamed there before a Memorial Day party." Turnas says Wagner's account might have bothered the executives who run Whole Foods, but not the folks at 365. "I'm not sure it's negative," Turnas says. He figures it's an honor that someone cared enough to mock the place. Still, supermarket analyst Phil Lempert, the food trends editor for NBC's *Today* show, says 365 is "trying way too hard to be hip."

PHOTOGRAPHS BY JULIAN BERMAN FOR BLOOMBERG BUSINESSWEEK

It's difficult enough to succeed even when you're not. Tesco, the hugely successful British grocer, started a U.S. chain called Fresh & Easy in 2007 and wound up lending Ron Burkle $234 million in 2013 to assume its liabilities; Burkle closed all 150 stores last October. Fresh & Easy was intentionally unhip. Vegetables and fruits were wrapped in cellophane—it was supposed to make them look convenient and safe, but they were seen instead as gross. The self-checkout lines were confusing. The lack of Sriracha-and-chocolate-influenced products bored customers.

Aldi, however, has had great success as a no-frills supermarket. (In a not-very-millennial move, Aldi, a private company, declined to share its financials.) It's all about speed and price, not Spotify playlists. Aldi is as cheap as a grocery can be, and when I visited one alone in Arcadia, about 20 minutes outside L.A., I could see why. You put a quarter in the shopping cart dispenser to rent one, getting your money back when you return it, so no worker has to play fetch. There are no paper or plastic bags—it's BYOB—and no one to put what you buy into them. Items are displayed Costco-style, in the cases they arrived in, and about 90 percent are house brands. Instead of 30 aisles, there are only five, but there's room for constantly changing "Aldi Finds" such as chocolate-covered pistachios and Sriracha kettle chips. "The customer doesn't have to walk in the store and have so many options and take time to decide. We've done that work for them," says Liz Ruggles, Aldi's marketing director. There are 1,500 Aldi stores in the U.S., and the company says it plans to open 500 more by the end of 2017.

More competition is coming. Kroger, the largest supermarket chain in the country, is working on its own cooler version of itself: In February it opened a Main & Vine in Gig Harbor, Wash., exactly the kind of city you want to audition in. Produce, which makes up half the store's inventory, is in the interior aisles, not on the perimeter, an acknowledgment that people are putting fresh ingredients center stage in their meal planning. A chef cooks at a table in the front of the store, and you can buy the ingredients to re-create his dishes, such as Mexican-style corn; bacon, Brie, and apple baguette sandwiches; and spiced cherry grilled chicken thighs. There are regular wine, beer, and cheese tastings, as well as a bar and cafe. Millennials "want to hang out in a cool environment" and feel like foodies, says Mike Donnelly, Kroger's executive vice president for merchandising, who's in charge of Main & Vine. Up to a point. They don't want bento boxes, Donnelly learned. People thought they were too weird.

In its first week, at least, 365 had this crucial hangout thing down. When we went, Igor suggested we go to a tablet and order bowls of quinoa, Brussels sprouts, and barbacoa. After our names appeared on a giant screen and we picked up our meals (no human interaction necessary), we ate at an indoor picnic table next to my cart, which was filled with two chimichurri-marinated chicken breasts ($5), two prepacked Dover sole filets ($5), Beast burgers ($4.39), and Justin's honey peanut butter ($5). I'll be back. The figs were really cheap. For the record, Igor didn't buy any groceries. Ⓑ

tilapia with tequila-lime rub $8.99/lb. | **Mixed summer squash noodles** $4 | **Potato-cheddar-jalapeño pierogi** $3.99 | **Momofuku ssäm sauce** $5.99

Digital Detox

How do you unplug? By Katie Morell

"My family has been going to a lake cabin around the Fourth of July for almost 20 years. We don't have cell reception except at the top of a huge hill. One year I was pitching a large client and needed to participate in a conference call, so I went to the top of the hill and had hourslong conversations in 95-degree heat, with mosquitoes, biting horseflies, cicadas buzzing, sweat coming out of everywhere, and red-winged blackbirds divebombing me. Now if I really have to be online, I drive into town and find a truck stop that has Wi-Fi."

Todd LaBeau
Senior vice president for digital marketing and social media, Lindsay, Stone & Briggs

"I went to Bali and wanted to decompress, so I asked the front desk to lock up my iPhone and BlackBerry in the safe during my stay. It was very hard at first, but after a few days I got used to it. Somehow, it shifted my perspective away from always being connected and distracted to being able to focus on relaxing—a new thing for me."

Sonita Lontoh
Vice president for marketing, Siemens Digital Grid

"I was on vacation in Greece aboard a yacht and found myself answering three business calls and 10 texts per day. This didn't bother me until one day a client threw a hissy fit. I was so annoyed, I punted my phone off the back of the boat. It felt so liberating."

Curtis Boyd
Acting chief executive officer, Future Solutions Media

"I had a period of about six weeks when I was overseeing several campaigns all launching at the same time. I was attached to my phone 24/7, and it was constantly blowing up. One morning I woke up to hundreds of e-mails and felt like I couldn't turn off my phone, so I put it—screen facing away from me—on my windshield under my wiper blades and drove to work. I knew the e-mails wouldn't go away, but for the 20 minutes of my commute, I felt better."

Thom Gruhler
Corporate vice president for apps and services, Microsoft

"I was in Italy with my then-boyfriend, trying not to check e-mail. That became a nonissue when my phone fell out of my back pocket and into the toilet two days into our trip. I was in an all-out panic and am embarrassed to say I desperately fished it out and tried to dry it out. We got some rice and tried that method, hoping it would spring back to life, but nothing happened. At first I was really uncomfortable being so out of touch, but the disconnectivity allowed me to focus on the guy I was with and realize he wasn't right for me. I was clearly meant to focus on that reality, not my e-mails."

Brenda Reynolds
Founder, BKR Consulting

ILLUSTRATION BY BRANDON CELI

I WANT THIS BITCH'S LIFE

Toast the dog is the toast of Instagram
By Ariana Igneri

Toast is a Cavalier King Charles spaniel who was rescued from a North Carolina puppy mill in 2011 by Katie Sturino, blogger and wife of comedian Josh Ostrovsky, aka the Fat Jew. Toast quickly—in human years, at least—transcended her humble beginnings. Five years later she's internet-famous, with more than 360,000 Instagram followers. She's appeared in photos with actresses such as Jane Lynch and Reese Witherspoon; she wore more than $150,000 in diamonds to her "wedding" in January, which was sponsored by a dozen-plus high-end brands promoted on her account; and she recently released her own lifestyle book, *ToastHampton: How to Summer in Style* (Harper Design).

LESSONS ON SUMMERING IN STYLE FROM A CAVALIER KING CHARLES

ToastHampton is as much a manual for how to leverage fame in 2016 as it is a book about a cute dog. Advertisers spend half a billion dollars a year selling products via animal influencers, says James Nord of Fur Card, an online platform that connects marketers with glam pets. Toast has promoted products for brands including Barneys and Coach. Karen Walker, a designer known for her stylish sunglasses, gave Toast her big break last summer with a photo shoot featuring a wind machine. Animals with accounts as big as Toast's can make about a thousand dollars per sponsored post; those with a few million followers can make enough money for their owners to quit their jobs. So if your supercute Pomeranian isn't earning his keep, the book might be worth the $16.99 to see what you two can aspire to.

ToastHampton is aimed mostly at stoking LOLs among the dog's existing fans—Sturino probably doesn't expect you to actually take your vacation cues from her pet. But it also aims to define Toast as a globally known aspirational figure in the mode of a Martha or a Gwyneth (is there really room for another?) who confers status on brands, as opposed to the other way around. "This is my face every morning when I wake up in the Hamptons," Toast—OK, Sturino—writes, sitting next to a cup of coffee from Tate's, a favorite bakeshop of Hamptons-goers, her pink tongue wagging in the sunshine. There's a glossy, full-page photo of her at Sant Ambroeus cafe, another local hot spot, and one of her running down porch steps in a Ralph Lauren sweater. In the back of the book, a list of "pup-approved" restaurants, stores, and tourist destinations includes—surprise!—Tate's, Sant Ambroeus, and Ralph Lauren, which, though not paid endorsements, clearly came with such perks as a wardrobe of doggie polos.

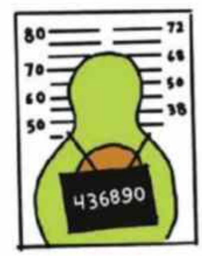
Sturino is already familiar with the very real rewards of internet fame. Ostrovsky's Instagram account, with more than 8 million followers, has helped him snag, so far, a modeling contract and a book deal; he even has a wine label called White Girl Rosé. Thankfully, Sturino is well aware of how ridiculous doggie fame is, which saves the book from being obnoxious—or, at least, totally obnoxious. In one picture, Toast poses in front of the store BookHampton and says she's always been "very into reading." A few photos later, she droops over a stack of cookbooks. "I actually can't read," she admits. It's the kind of brazen lie we don't often catch our dogs telling, and copping to it makes Toast that much more human. Ⓑ

TOAST: INSTAGRAM; ILLUSTRATIONS BY TIM LAHAN

Critical Mass

A random ranking of recent bad behavior

Most Worst



70

GREEN GOLD

Demand for avocados has led to a crime wave in New Zealand. So the next time you contemplate Instagramming your avocado toast, think about the syndicate you're helping support.

47

AND THEN YOU EAT A STEAK

Outback Steakhouse's Loaded Bloom is a regular Bloomin' Onion topped with fries, cheese, and bacon, putting it north of 2,000 calories, aka pretty close to what adults should eat in the course of a day.

18

COURTSIDE PLEATS

According to a digital wealth-management firm, the average NBA player spends about $42,500 a month, and his favorite merchant is Express. Do extra-slim-fit dress pants scream "baller"?

04

FIGURE OF SPEECH

Apple's iOS 10 will prompt phone users to change words into emoji, causing a senior vice president to joke that tomorrow's kids will "have no understanding" of English, the prospect of which seems more than.

Least Worst

Crushing It

Ice is the hottest ingredient in this summer's coolest desserts
By Maridel Reyes

WASHINGTON SCHOOL HOUSE HOTEL

Park City, Utah

Washington School House started life in 1889 as—you guessed it—a schoolhouse. Today, it's a 12-room boutique hotel with a guests-only restaurant specializing in American standards, including a sweet blackberry granita made with local honey, fruit, and mint picked from the garden. Bonus: Enjoy the tart treat while lounging at the property's hillside-perched pool. *Complimentary for hotel guests; washingtonschoolhouse.com*

PIG AND KHAO

New York

Top Chef alum Leah Cohen took a traditional dessert from the Philippines (her mother's home) and made it her own. She starts her *halo-halo* with shaved ice, then adds flan, shredded coconut, and caramelized plantains. A scoop of purple-yam ice cream crowns the dish, which she then drowns in a mixture of condensed and evaporated milks and garnishes with toasted crispy rice. "It tastes like an adult bowl of cereal," Cohen says. *$8; pigandkhao.com*

MARIN RESTAURANT & BAR

Minneapolis

This spot features a rotating menu of frozen slushees based on the *raspado*, a Mexican shaved-ice dessert. Marin's current iteration combines the smokiness of mezcal and the sweetness of fresh mango purée, plus a bit of heat from ginger liqueur and house-made Sriracha salt. The cocktail is strained over hand-shaved ice into an elegant coupe glass. *$10; marinrestaurant.com*

Four Ways To Chill Out

Granita: An Italian shaved-ice dessert that can be flavored with anything from fruit or herbs to coffee. Its name derives from granite, referring to its grainy texture.

Halo-Halo: This means "mix-mix" in Tagalog, one of the official languages of the Philippines. It's traditionally served with condensed milk, tapioca, sweet beans, and corn, and garnished with a slice of flan and a scoop of purple-yam ice cream.

Raspado: Most Latin American countries have a version of shaved ice. This Mexican variety is typically sold by street vendors, who scrape ice by hand and top it with ingredients like flavored syrups, fruit, chili powder, and lime.

Cabinet: A Rhode Island milkshake, sensibly named for the place you store your blender.

PHOTOGRAPH BY SAMANTHA CASOLARI FOR BLOOMBERG BUSINESSWEEK; FOOD STYLIST: BRETT KURZWEIL

Bourbon Cabinet

BARREL HOUSE AMERICAN BAR

Beverly, Mass.

The bourbon cabinet served here blends Evan Williams 100-proof bourbon, syrup from Luxardo cherries, and vanilla ice cream. (No ice, per se, but who really cares?) The inspiration for this adult milkshake comes from the classic Manhattan. "Cocktail bars can often take themselves a little too seriously," says managing partner and bartender Sean Maher. "These help keep the atmosphere fun and relaxed." *$12; barrelhousebeverly.com*

Piña Colada

L'APPART

New York

Chef Nicolas Abello serves a piña colada-inspired palate cleanser before dessert that he says offers "an interplay of tropical spices with classic French cuisine." The bottom layer is an intense rum gelée; Abello tops that with a roasted pineapple smoothie and finishes it with coconut-milk granita and kaffir lime zest. *$18; lappartnyc.com*

Pineapple Crushed Ice

RESTAURANT 1833

Monterey, Calif.

Pastry chef Ben Spungin introduced pineapple crushed ice with burnt-cinnamon-stick ice cream to the "secret menu"—usually reserved for locals and regulars—in May. He roasts cinnamon sticks for his ice cream in a wood-burning oven. Then he juices pineapples and combines the liquid with lime, sugar, and water, freezes it in sheet pans, and scrapes it into a slush. The acidic, refreshing, sweet pineapple cuts through the richness of the ice cream, which is perfumed with a drizzle of tarragon oil made from local organic herbs. *$6; restaurant1833.com*

A LEAGUE OF THEIR OWN

TBS tries to solve the e-sports dilemma. By Will Leitch

Spend a day at the 10,000-square-foot Atlanta studio that Turner Sports built to house its new competitive video gaming show, *eLeague*, and you'll come away convinced that e-sports are a legitimate activity with legitimate fans and the potential for a legitimate market share of the TV-sports universe. You know who isn't convinced? The camerapeople. They're used to covering live athletics in which players, you know, move. One of them jokes in the bathroom, "S---, I could go on the roof and have a cigarette, and no one would notice."

This has long been the dilemma of bringing e-sports to television: How do you make an entertaining program out of people sitting in one place for hours at a time? The trick, says Craig Barry, Turner Sports' chief content officer, is less about getting e-sports going than moving out of its way. "This is a community that already exists," he says. "We want to help expand it, not fix it." With a three-hour showcase broadcast every Friday night on TBS (and about four hours of daily streaming on online gaming broadcaster Twitch Interactive), *eLeague* is the highest-profile corporate plunge into competitive gaming to date.

Here's how it works: Twenty-four teams, split into six divisions (collectively, the eLeague), play *Counter Strike: Global Offensive*. Each team's five players work as a platoon to shoot their opponents' avatars dead in 20 one-minute-and-fifty-five-second rounds and earn fake money to buy more sophisticated and lethal weapons. The TBS show is the final round of a divisional tournament played on Twitch throughout the week. Each episode's winning team gets a spot in the eLeague playoffs, with the ultimate champions standing to take home $390,000 from a $1.4 million pool when the show concludes on July 30. Its May 27 debut averaged 509,000 viewers—not horrible for a Friday night—and 4.3 million people streamed games on Twitch during the week.

A COMEBACK, THEN TOTAL ANNIHILATION—IT WAS THRILLING

Even OK audience numbers haven't stopped some people, including Turner Sports employees, from throwing shade at competitive video gaming: *Inside the NBA*'s Kenny Smith has already declared it "not a real sport." Fox Sports radio dope Colin Cowherd regularly calls participants "nerds." Barry, however, has been *eLeague*'s champion, getting onboard early to spearhead the project even though he says he was "never a gamer." He compares the broadcast to the early-aughts boom in TV poker. "It's something people know, but we're showing them how to watch it better," he says.

Many *eLeague* players are already star gamers. One, "Tarik," who plays for Team CLG (Counter Logic Gaming), says having his matches on TBS is no big deal, because "I've had a million people watch me play before" on Twitch. But for a viewer unfamiliar with the gaming world, the players are just pasty selfies floating on a screen—it's the game itself, plus fast-talking announcers with well-lubricated vocal cords, that does all the work. In one early match, an underdog team mounted a rally to come back from a four-round deficit—then ran out of cash, leaving it underequipped, helpless, and, eventually, totally annihilated. It was thrilling.

Barry says he's not too worried about how quickly the TBS audience catches on—though ratings have grown each week so far, and executives at Turner have already greenlighted a second season. The TBS show "is for the curious fan, but we're serving the loyalists," he says. That may be a smart move: Gaming analysis firm Newzoo projects that revenue from e-sports will rise 43 percent from 2015 to $463 million this year. And if you think e-sports are absurd, well, *all* sports are absurd. Take a piece of wood, hit a piece of cowhide, run around in a circle. Throw a piece of rubber through a ring. Hit a small frozen disc with a stick into a net... *while skating*. It just takes exposure to make it seem normal. B

Fans cheer on eLeaguers at Turner Studios in Atlanta

COURTESY ELEAGUE

A fan made this portrait out of chewing gum. (It's under glass.)

DEBORAH NORVILLE

57, anchor, Inside Edition*; board member, Viacom, New York*

What do you do?
I'm anchor of the nation's top-rated syndicated newsmagazine show.

How long have you been there?
Twenty years. No one's been anchoring a national television show longer than I have.

Is that a bracelet?
It's a handmade stainless-steel cuff. The brass Marine Corps emblem is from the collar pin of a gentleman who traveled during Korea with my father, who was in the Air Force. Daddy said, "You can have it on one condition: If anybody asks, you have to tell them the story."

What's your favorite on-air look?
Armani jacket, straight-leg pants, tailored shirt. I'm tailored but not fussy. You don't see ruffles on me.

Why does this cut of jacket work for TV?
The wonderful waist cinches in. You want to look like you have a figure on television.

Why wear heels?
My grandmother, God bless her, died at 85, and no one has any recollection of ever seeing her wear anything but heels. So it may be an inherited trait.

What was your fashion high point on-air?
I'm a seamstress, and I did a story where I showed what designers go through. I designed, sourced, and made an evening gown and took it to the Bloomingdale's fashion director. He said, "Did you really do this? I would want this in my store for holiday." It was like you'd given me an Oscar, an Emmy, and a Tony in one.

PHOTOGRAPH BY B. O'BRIEN FOR BLOOMBERG BUSINESSWEEK

Interview by Arianne Cohen

SHARON PRICE JOHN

Chief executive officer, Build-A-Bear Workshop

As a high school cheerleader, 1982

"I was a cheerleader, gymnast, and dancer, and I was voted friendliest and class favorite."

Education

- Lincoln County High School, Fayetteville, Tenn., class of 1982
- University of Tennessee at Knoxville, class of 1986
- Columbia Business School, class of 1994

"I was one of 11 in the international business program in Leuven, Belgium. It was a crash course in the different facets people bring to business."

"I worked on Hershey—the Whatchamacallit bar and the launch of a chocolate-bar-flavored pudding that didn't work out."

Work Experience

1987–88
Account executive, Bagwell Communications

1989–91
Senior account executive, DDB Needham

1991–93
Account supervisor, Backer Spielvogel Bates

1994–99
Vice president for international marketing, Disney business unit, Mattel

1999–2000
VP for U.S. toy marketing and product development, VTech

2002–09
Senior VP, U.S. toy marketing, Hasbro

2010–13
President, Stride Rite Children's Group

2013–Present
CEO, Build-A-Bear Workshop

"The toy industry is like advertising. It's fast-paced, and you have to make gut-based calls. I had six titles in five years."

"I moved from all of these little accounts to being the supervisor on what was, and I believe still is, the largest candy bar in the world: Snickers."

Ringing the bell at NYSE, 2015

"We purchased the rights to one of my favorite toys from childhood, a fashion doll named Dawn. Our container was on the way from the factory to our first national retailer when Sept. 11 happened. Our orders were canceled."

John was founder and CEO of Checkerboard Toys from 2000 to 2002

"The game changer for my career was the relaunch of Nerf."

"We lost $49 million in 2012. In 2014 we were at $16 million income, and now our goal is sustained, profitable growth—2017 is our 20th anniversary. Kids who played with our products now have kids."

"They really wanted someone who understood the intersection of kids, moms, and branding, and that's what I do."

Life Lessons

1. "Don't compartmentalize work and life. Do what you love." **2.** "A positive attitude, perseverance, and passion can get you far." **3.** "Believe in yourself, but recognize you cannot do it alone."

Courtesy subject (2), Valerie Caviness/NYSE (1)

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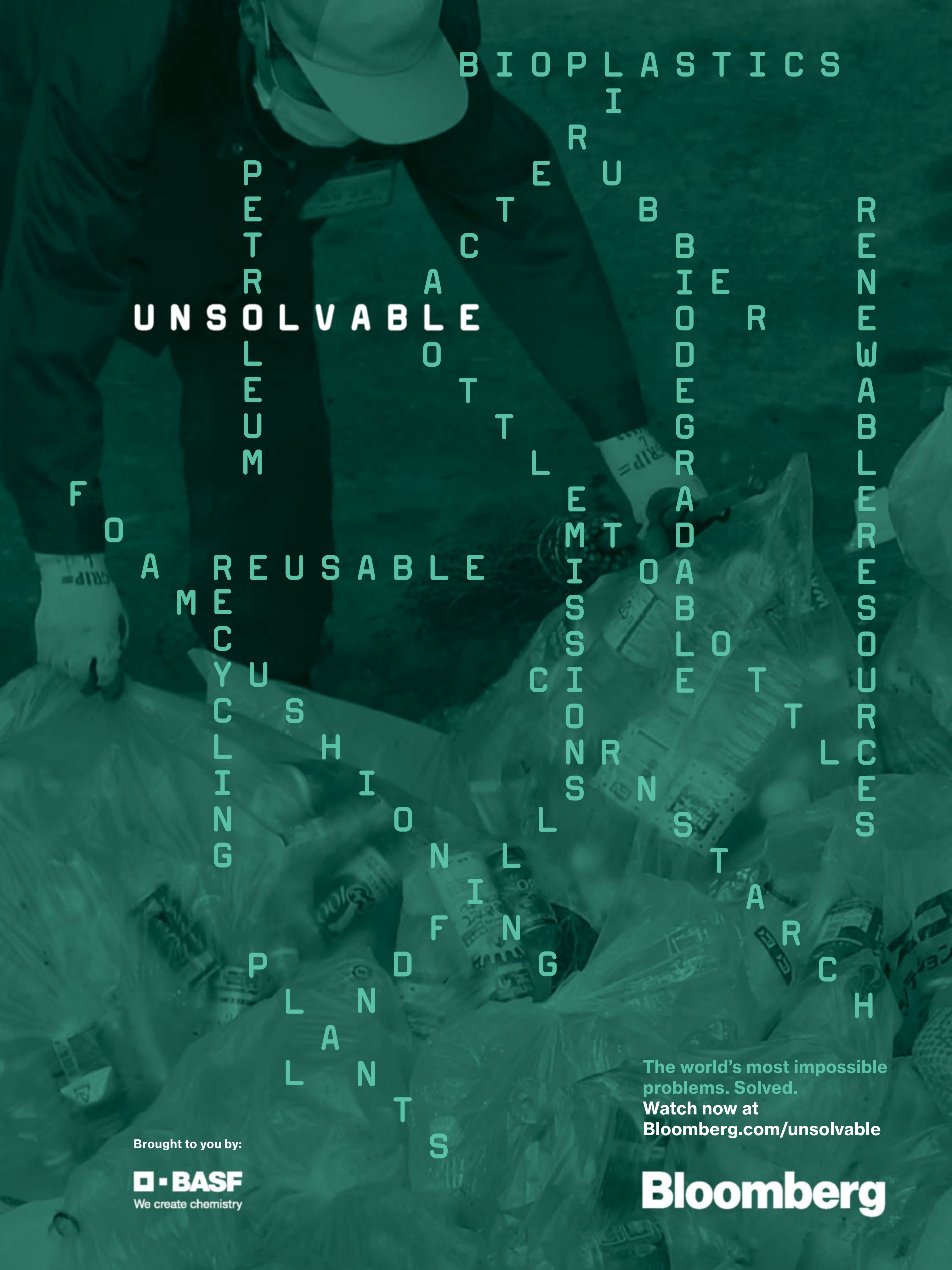
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