● Gaming the trade war 30 ● Brexit turns two 10 ● The missile everyone wants 36

Bloomberg Businessweek

June 25, 2018

The Legend of Nintendo

Inside a gaming icon's eternal quest to find its next great hit 54

MOMENT OF TRUTH

Data reveals new opportunities

Featuring Wells Fargo customer Dia&Co

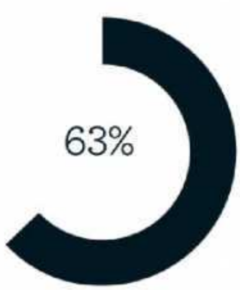
WELLS FARGO

How can I scale my company while still providing personalized services?

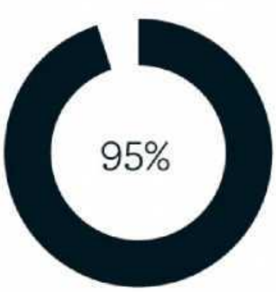
Supply Their Demands

RFID tags tell more than the price and size of clothing. They can increase inventory accuracy:

FROM



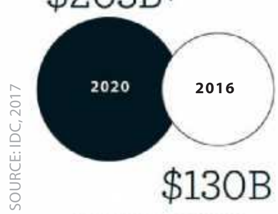
TO



SOURCE: AUBURN UNIVERSITY RFID LAB, 2015

Stay Ahead of Trends

Revenue from Big Data and analytics worldwide is expected to grow fast.



Companies are betting on the future of technology to better understand their customers and to:

- Create personalized recommendations
- Automate customer service responses
- Optimize the overall customer experience

Delivered Tailored Experiences

WHO: Dia&Co

WHAT: A personalized retail service exclusively serving women who wear sizes 14+

MOMENT OF TRUTH

"As we've scaled to millions of women, data is key in building our relationships with customers — enabling us to track the right things, look in the right places and make the right decisions."

— Nadia Boujarwah, Dia&Co CEO and Co-Founder

Wells Fargo Tech Take

"Data is fundamental to almost any consumer-based company. It provides key insights on customers' proclivities and how to best serve their needs."

— JOHN HUBER, SENIOR VICE PRESIDENT WELLS FARGO TECHNOLOGY, MEDIA & TELECOM

Size Up the Competition

Companies are leveraging customer behavioral insights to outperform peers by

85%	<25%
SALES GROWTH	GROSS MARGIN

SOURCE: "BEHAVIORAL ECONOMICS," GALLUP 2012

SPARK YOUR MOMENT OF TRUTH

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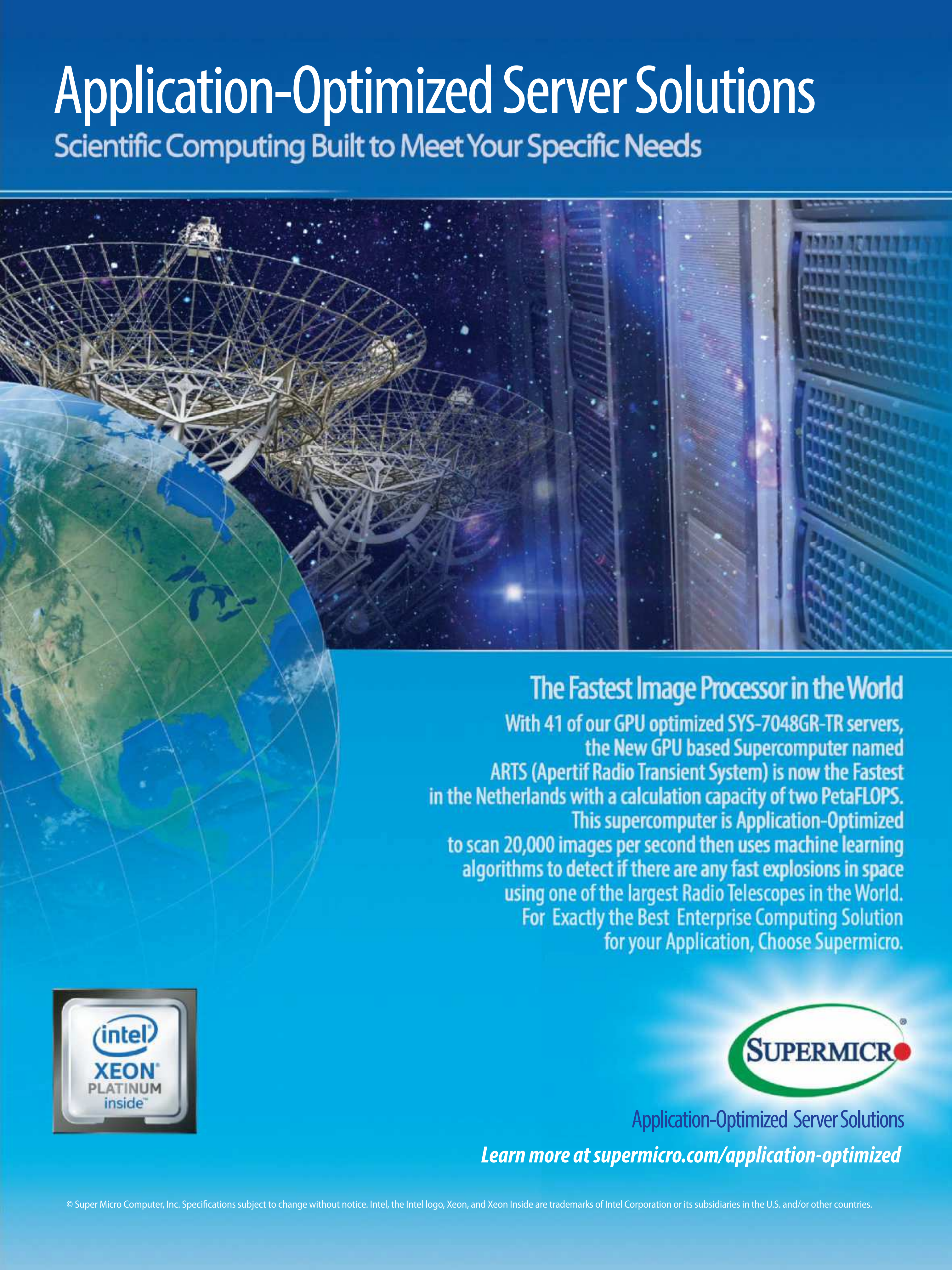

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June 25, 2018

◀ Wade recently returned to the Miami Heat; he's also a burgeoning businessman

PHOTOGRAPH BY MALIKE SIDIBE FOR BLOOMBERG BUSINESSWEEK

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By Kyle Stock

● Canada became the second nation—after Uruguay last year—to legalize marijuana.

Once the law goes into effect, probably in September, Canadians will be able to grow up to four plants and carry as much as 30 grams of weed.

● New York's Department of Financial Services reached a $205 million settlement with Deutsche Bank over allegations that traders sought to manipulate exchange rates. The bank admitted to the activity as part of the agreement and committed to improving its compliance practices.

● "We want to keep families together."

President Trump discussed the executive order he signed to reverse his administration's policy of removing children from their parents at the Mexican border. The separations had drawn condemnation from Democrats, Republicans, the United Nations, the pope, and foreign leaders. ▷ 38

● Alphabet's Google took a

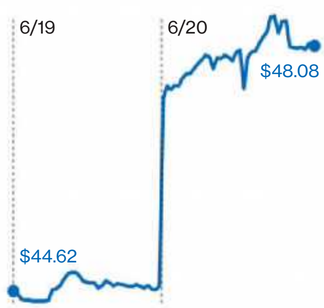
$550m

stake in JD.com, a China-based e-commerce empire. The deal gives JD access to customers in the U.S. and Europe via Google's Shopping platform.

● Audi CEO Rupert Stadler

was arrested in a German probe into emissions cheating amid fears he would tamper with evidence. Audi's parent company, Volkswagen AG, suspended Stadler and installed the brand's head of sales, Bram Schot, as interim chief. An Audi representative emphasized that the "presumption of innocence continues to apply."

● Shares of 21st Century Fox surged on June 20 as the company accepted a $71.3 billion bid from Disney for its TV and movie assets.



● U.K. Prime Minister Theresa May fended off a challenge to her Brexit strategy from within her own party.

In a 319-303 vote, Parliament rejected amendments to May's Brexit bill that would have given anti-Brexit Conservatives more influence over the final agreement with the EU.

● About 190 people were still missing two days after a ferry sank in Indonesia's Lake Toba on June 18. The lake is a popular vacation destination, and many were there celebrating Eid-al-Fitr, a holiday at the end of Ramadan.

● Florida officials approved plans for what would be the country's largest mall. The

$4b

project, dubbed American Dream Miami, calls for 2,000 hotel rooms, a ski slope, an ice-climbing wall, and a lake.

● Starbucks said it would close about 150 U.S. cafes as it grapples with its slowest growth in nine years. The company is shifting expansion plans to rural and suburban areas light on coffee shops.

● CVS Pharmacy introduced $5 prescription deliveries in partnership with the U.S. Postal Service.

● Porsche bought a 10 percent stake in Rimac Automobil, a Croatian startup that makes electric cars and components.

● Amazon, Berkshire Hathaway, and JPMorgan Chase named surgeon Atul Gawande CEO of their health-care venture.

● Bain Capital agreed to buy Varsity Brands, a maker of cheerleading uniforms, for an undisclosed sum.

AUDI: ARMIN WEIGEL/GETTY IMAGES; INDONESIA: JON NST/GETTY IMAGES; STARBUCKS: COURTESY STARBUCKS. DATA COMPILED BY BLOOMBERG

▶ GE Will Fall Out of the Dow

On June 26, Walgreen Boots Alliance replaces General Electric in the Dow Jones Industrial Average. GE was a founding member of the index in 1896 and has been on it continuously since 1907. It's also been the Dow's worst performer the last two years.

▶ The U.S. Supreme Court ends its term on June 25. Its fall slate has an antitrust case against Apple's App Store and a challenge to securities fraud laws.

▶ Bidding closes for Bruce Springsteen's original manuscript of the lyrics to *Born to Run*, on the block at Sotheby's, on June 28.

▶ Most banks are expected to get a pass in the Federal Reserve's annual capital assessment, with results to be announced on June 28.

▶ To stave off a fracture in her governing coalition, Angela Merkel will try to forge a deal at the late-June EU summit to restrict migrants to Germany.

▶ The U.S. Senate's subcommittee on antitrust holds a hearing on June 27 to discuss T-Mobile USA's proposed merger with Sprint.

▶ Indonesia's central bank is poised to raise interest rates at its June 27-28 meeting, a response to rising rates in the U.S. and Europe.

■ THE BLOOMBERG VIEW

The 'Deep Fake' Threat

● High-tech forged videos could wreak havoc on politics. Policymakers must be ready

Illusions have long thrived on the internet from doctored photos to fake news. Now there's a newly sophisticated variety to pay attention to. Sometimes called "deep fakes," they're videos made with the help of artificial intelligence that appear genuine but depict events or speech that never happened. Without precautions, they could prove highly disruptive—to people and politics alike.

In their simplest form, these forgeries are easy to produce. A video faker feeds images of a person to a machine-learning algorithm, which in turn overlays her features onto the body of someone in another video, creating a simulacrum of the original person doing things she didn't do.

It's an impressive bit of voodoo, and it's being put to devious uses. Porn, naturally, was an early application: Specialized apps can superimpose anyone's face on a performer's body with ease. Crooks and creeps will no doubt find such a tool appealing—for causing embarrassment, committing extortion, or simply wreaking havoc.

More serious abuses loom. Fake news has already roiled political races; in some cases it's led to violence. Because people tend to lend more credence to videos—and can be easily misled by them—the fake news problem could get worse. Hoax films of officials making divisive statements, acting corruptly, or behaving badly may become elements of political campaigns. Intelligence agencies might use deep fakes to blackmail politicians, sway elections, or exacerbate ethnic and religious tensions. Terrorists will likely see its appeal.

Fakes also threaten to erode trust more broadly. Video has become a pillar of the criminal-justice system, for instance, because film seems a reliable record of speech or action. Deep fakes could render such evidence suspect. In his uncanny way, Donald Trump foreshadowed this problem last year, when he began privately musing that the *Access Hollywood* tape that surfaced during the 2016 campaign—in which he boasted of assaulting women—may have been faked. It wasn't, but expect plenty of defendants to try the same ploy.

In theory, many of these dangers can be addressed through the legal system. Blackmail using a fake video would presumably be just as unlawful as the traditional kind. Yet other abuses may be legally ambiguous or protected speech.

An overriding challenge, then, will be identifying and calling out these forgeries, if that's possible. Manipulated videos needs to be detected and flagged automatically. Congress should fund basic research. And platform companies, which bear ultimate responsibility for their content, must come to grips with the implications of this threat.

As for the rest of us? In the short term, at least, society will need to adapt to an unsettling reality—one where the line between real and fake is blurred, seeing isn't necessarily believing, and the illusions get more perfect by the day. Ⓑ

For more commentary, go to bloomberg.com/opinion

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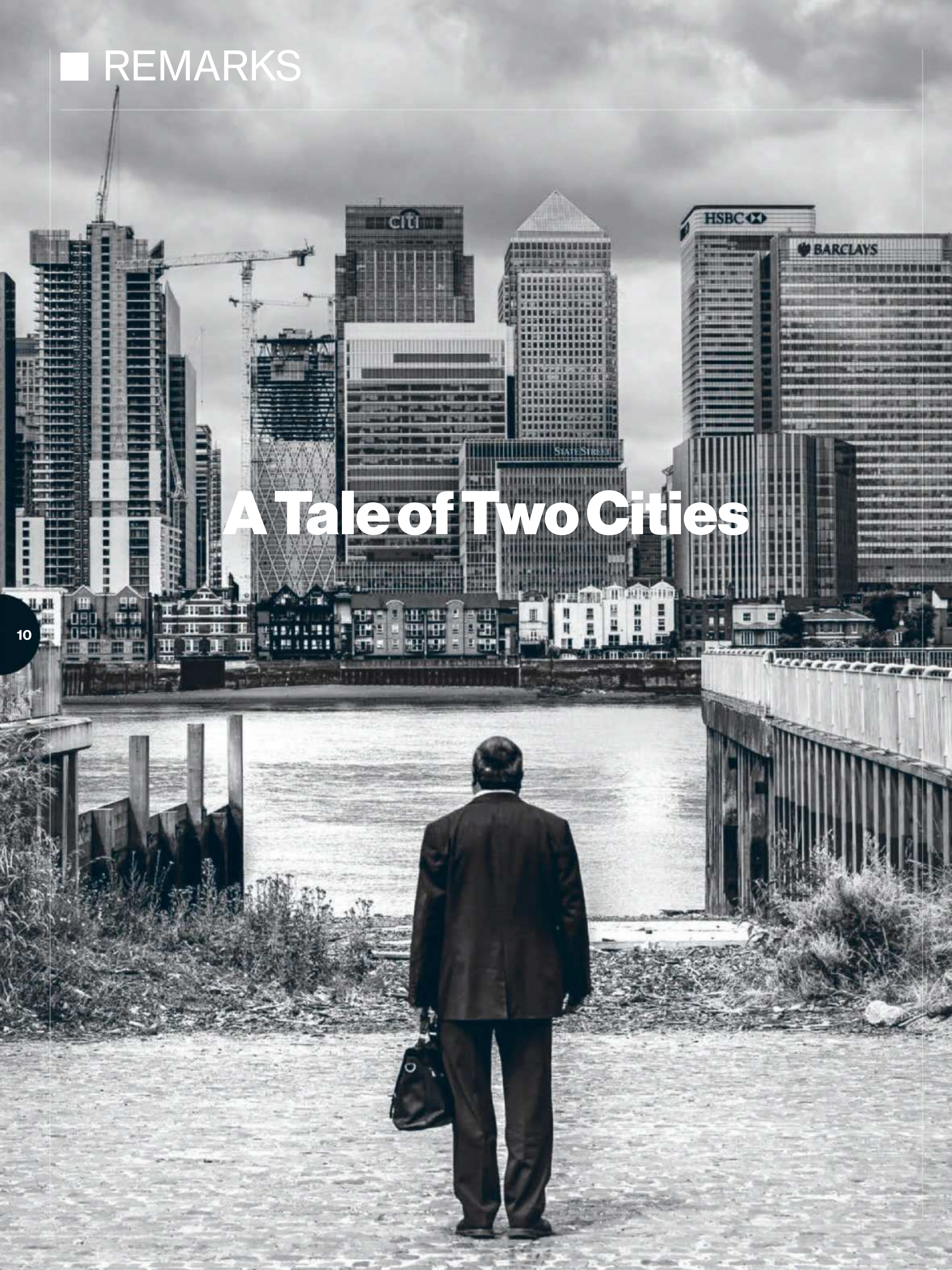
A Tale of Two Cities



● The Big Bang created the London we know today. Brexit is likely to deflate it—and the U.K.

● By Matthew A. Winkler

If you know anything about financial history, you know about the Big Bang deregulation of London's financial markets. On Oct. 27, 1986, Prime Minister Margaret Thatcher blew apart the inert blob that was the stagnant postwar U.K. economy and its ailing banking system. That explosion helped make London synonymous with international finance, ignited a cultural and economic transformation in the U.K., and even helped bring down Soviet communism.

Now, two years after Britons voted to exit the European Union, it's worth reflecting on not just how the Big Bang was detonated but also on the principles it represented. This wasn't an immutable act of nature so much as a reversible act of financial engineering, and Brexit has become an agent of its undoing. The financial revolution Thatcher kicked off was a powerful expression of faith in the power of globalization to improve lives—a faith that's been shaken in the era of Brexit and Donald Trump.

I remember what banking used to look like in the U.K. In 1982, when I began my London posting with the *Wall Street Journal*, bankers still came to work in bowler hats and repp ties (and never, ever brown shoes). To keep the dust down at the old London Stock Exchange at Capel Court, where jobbers traded equities face-to-face on a dirt floor, waiters sprinkled the ground with watering cans.

The parochialism that prevailed back then meant workdays were short and slow. Profit was a consideration, not a priority. Friendship or nepotism, not ability, usually determined who got a job. Arcane customs ensured that the sons of venerable firms such as Cazenove, Panmure Gordon, and Rowe & Pitman would have livelihoods just like their founding fathers.

Nothing symbolized the lack of ambition better than the institution of the banker's lunch, hosted either in the oak-paneled offices of more than a dozen merchant banks or, on more rarefied occasions, at an establishment such as Bill Bentley's. Journalists like me chased precious scoops about domestic business over four-course meals that—beginning with oysters and Champagne, continuing with claret, and ending with port and cheese—could span several hours. Unless you knew the correct position of fork, knife, and spoon on the plate, there was no chance of being taken seriously.

With the Big Bang, the lunches were over.

One banker who never particularly liked those lunches was Hans-Joerg Rudloff, then 45 years old and deputy chairman of London-based Credit Suisse First Boston. Born in Cologne, Rudloff was a man of Europe, capable of finding investors from any given corner of the continent to put a deal together. The Swiss-German was also the undisputed king of the eurobond market, the burgeoning business of trading bonds across borders within the lightly regulated expanse of the EU.

"I still pretend the Berlin Wall was taken down by the opening of finance all over the world," Rudloff told me last December in London, where he still lives. He now works for the Zurich-based wealth management firm he co-founded, Marcuard Heritage AG. "When borders fall, they start falling everywhere. The communist bloc was totally isolated, falling behind economically and in every other respect. The free flow of ideas, merchandise, people, capital, innovation, and whatever else flows freely led to the collapse of the communist system, which imploded."

No financial instrument flowed as freely through Rudloff as eurodollar bonds, a type of eurobond bought and sold outside the domain of any country in the time zone most advantageous for the transaction. These had been created to recycle U.S. dollars after World War II by Sir Sigmund Warburg, a scion of the German-American family of bankers and a refugee from the Nazis.

While lunch wasn't Rudloff's scene, you could usually find him and his acolytes, as the clock approached midnight, celebrating yet another eurobond deal over Scotch and steak at Annabel's, the celebrated club in Mayfair.

As the Big Bang approached, it was Rudloff who recognized an opportunity largely invisible to the rest of the London financial world when, in September 1986, the Bank of England announced its intent to borrow $3 billion to fortify Britain's global trade. From Rudloff's perspective, low interest rates and an unrecognized global demand for high-quality government securities afforded an even more ambitious approach than that initially proposed by the BOE. Britain had never ranged far to raise money for its foreign-currency reserves, yet not since before World War I had there been such an enormous global appetite for U.K. debt. Through stealth lobbying efforts, Rudloff eventually persuaded the English central bankers to increase the original offering by a third, to $4 billion.

Eurobonds were the perfect vehicle to harness the Big Bang, and Rudloff made use of them before the month was out to prove that London was the center of international capital markets. He wasn't alone, though. Roy Campbell Smith, who at the time ran the London office of Goldman Sachs, remembers the Big Bang as "the restructuring of a very out-of-date, almost ancient financial marketplace that had just about everything wrong with it in terms of being able to be as competitive as it could be." (For perspective, the U.K.'s average annual growth was 1.5 percentage points slower than that of France—yes, France—during the preceding three decades.)

Goldman was only beginning to embrace global business opportunities, and Smith, a U.S. Navy veteran and graduate of Harvard Business School, used his London vantage to enlighten his New York colleagues that lucrative deals could be had abroad. His vehicle: eurobonds. His rival: Rudloff.

"Rudloff was on the phone constantly, sweet-talking the journalists and the bond brokers into understanding the ▶

PHOTOGRAPH BY GUY MARTIN FOR BLOOMBERG BUSINESSWEEK

◀ grand conceptual design of this, the euromarket's greatest financing, its finest hour," Smith recalled in *Global Bankers*, his 1989 memoir about London's transformation. "Rudloff's magical way with the press and the market-makers was similar to Henry Kissinger's during his time as national security adviser and secretary of state. He was the media's darling and its chief expert on his subject, the unquestioned authority."

That may have raised the stakes for Oct. 27, 1986. "In one morning, we traded more British stocks than any other British brokerage firm had done in two weeks," says Smith, 80, who's now emeritus professor of management practice at New York University's Leonard N. Stern School of Business. "Big Bang essentially blew away all the British rules."

In the process, Britain changed almost beyond recognition. Thatcher was empowered to complete her privatization program, transforming British Airways, British Steel, British Telecom, and other state-owned corporations into publicly traded companies. What's more, her political backing of the privately financed Channel Tunnel linking Britain and France helped make the U.K. a major tourism and migration destination, deepening the cultural, political, and social changes the Big Bang unleashed. Class-conscious rules and traditions were swept away by entrepreneurs in every industry from cuisine to real estate.

The Big Bang had global repercussions as well. Imitated in cities on the Continent as well as in Hong Kong and New York, it spearheaded the 24-hour market. "Both the financial market reforms and the privatization efforts spread worldwide because they were achieved in Britain," Smith says.

The City of London was Ground Zero for these changes, especially in the early days after 1986. Walls that had separated banks, brokers, jobbers, and discount houses came down. "London was for me the best host, because we came from an environment where we had been heavily restricted—and I'm not just saying by law, but by mentality," Rudloff says.

Deregulation and electronic trading, along with the creativity of a few Rudloffs and Smiths, opened the floodgates to huge flows of capital into the U.K.; more of it than ever before came from Asia, Europe, and North and South America. Banks anywhere that wanted to make loans, buy and sell securities, trade commodities, currencies, and their derivatives, and arrange acquisitions could now do so in London, as long as they put their money on the U.K.

Once a backwater, British finance grew into an industry that would transform the country from the slowest-growing major economy in Europe to its top performer as the 20th century ended. Soon the continent's tallest skyscrapers began to rise from the derelict eight-and-a-half square miles that had been the London Docklands. Dozens of foreign companies erected their European headquarters in the Canary Wharf development, creating more than 95,000 jobs in what became the capital's second financial district.

The original financial district—the City, the ancient square mile dating to Roman times—changed, too. Thanks to the Big Bang, it's no longer "a British thing," Smith says, but rather "a multinational thing." About half of the 5,000 people working for Goldman Sachs in London today, he says, are not British; moreover, they're wired into a global financial infrastructure spanning finance, accounting, law, and computer science.

This is exactly what Smith fears may be lost as the Brexit deadline of March 29, 2019, approaches. Since the referendum vote on June 23, 2016, growth in Britain has lagged behind the rest of Europe for the first time since the 1980s.

Economists surveyed by Bloomberg after the referendum have reduced their estimates of the U.K.'s gross domestic product to an average below that of the EU. That slippage comes as Europe is emerging from its economic doldrums. Last year it led the developed world in growth, productivity, and job creation after the euro gained 14.2 percent—its strongest appreciation since 2003 and the best performance among 16 major currencies.

The pound's 13 percent depreciation against the euro since the referendum highlights the benefit of belonging to the EU and the peril of leaving it. The pound remains among the worst-performing currencies while the euro has strengthened 1.3 percent against the U.S. dollar. Meanwhile, the pound's implied volatility relative to the euro, a measure of investor uncertainty, touched a record high in 2016.

Brexit—which won't take full effect until after an as-yet-undetermined transition period of several years—has already taken a toll on British businesses. In the market for corporate acquisitions, British companies in 2017 sold themselves at the lowest valuations in 12 years, reducing the premium that acquirers pay for U.K. assets to 15 percent from a high of 31 percent in 2009. The comparable measure for non-U.K. Western European countries was 18 percent, according to data compiled by Bloomberg. "There's been a real cutback in capital investment in the U.K., because people aren't sure what will happen to the capital they invest, particularly in commercial enterprises," Smith says.

Whereas the Big Bang blasted open a fallow national economy and linked it to the rest of the world, Brexit is inspired by rising anti-globalism and xenophobia across Europe. The same forces in the U.S. propelled President Trump to power.

"I think the U.K. has to be part of the EU to benefit from the deregulation that has taken place there and to be able to operate on a level playing field with everybody else," Smith says. "Being isolated as they are will create a kind of little England mentality in the U.K. that is going to make the British role in the world economy even smaller than it is now. I don't see that as being good for the British at all. The clock is ticking. March of 2019 and all of sudden they're out. That's falling off a cliff."

For his part, Rudloff looks back on his long career and rues the diminishing role of the U.K. in fostering the freedom and hospitality he enjoyed as a young banker in London almost 40 years ago. "It's going," he says. "It's gone." Ⓑ

Winkler, a Bloomberg Opinion columnist, is the editor-in-chief emeritus of Bloomberg News.

Deep-Water Drilling Rises From the Depths

● With Trump set to revive offshore exploration, Big Oil is developing cheaper ways to drill

On a hot, sunny May afternoon, flying fish leap out of the Gulf of Mexico's brilliant blue waters near the steel legs of a Chevron Corp. oil platform, pursued by deep-water predators. "Is that a shark chasing them?" asks barge supervisor Jamie Gobert, peering over a rail. "Think it's yellowfin tuna or maybe dolphinfish," says Emile Boudreaux, his colleague.

Typically in the region, seeing so many deep-water creatures converging on a single spot would be unusual. But these denizens of the Gulf have a road map of sorts to Chevron's huge Jack/St. Malo platform, a floating steel structure the size of three football fields about 200 miles off the Louisiana coast. The fish are following giant underwater pipelines that carry crude from three oil fields about 15 miles away in different directions from the Jack/St. Malo, like tentacles of an octopus. Unlike old-style platforms that suck oil from a field directly below, this weblike arrangement lets the Jack/St. Malo pump more than 3,000 gallons of crude a minute from the trio of fields.

The three-for-one hub is part of a wave of innovation by oil majors including Chevron, BP Plc, and Royal Dutch Shell Plc that's allowing deep-water production in the Gulf to bounce back from disasters both environmental (BP's Deepwater Horizon spill in 2010) and financial (the oil-price crash of 2014).

While U.S. shale production has been dominating markets, a quiet revolution has been taking place offshore. The combination of new technology and smarter design will end much of the overspending that's made large troves of subsea oil barely profitable to produce, industry executives say. New projects are targeting costs of about $35 to $40 a barrel, which would compete with the lowest-cost shale assets. Cutting costs lets operators tap oil reserves that were previously uneconomic to exploit.

The Gulf of Mexico has been the vanguard of global experimentation for offshore oil, and success this time could encourage more drilling in the world's hot new oil basins in countries including Brazil, Guyana, Mexico, and Mozambique. Further on, it could even encourage more U.S. offshore production, if President Trump is able to fulfill his plan to open much of the nation's coastline to fresh exploration. "In the past, a lot of the cost of development has been new technology," says Jeff Shellebarger, president of Chevron's North American division. "With the types of reservoirs we're drilling today, most of that learning curve is behind us. Now we can keep those costs pretty competitive."

Two things drive drilling: crude prices and production costs. In the 2000s, higher prices spurred much of the growth in the Gulf. Operators fixated on building technically advanced production platforms that were the biggest, the deepest, and able to handle the highest-pressure wells—at almost whatever the cost. They demanded customized equipment including valves and pumps, even when standard models with practically the same specifications were cheaper. Shell had an encyclopedia of 100,000 engineering standards. In some lines of business, it has cut that back 95 percent, says Harry Brekelmans, Shell's projects and technology director.

Complexity and cost didn't seem to matter much when oil averaged more than $100 a barrel from 2011 to 2014. But when prices plunged to a 12-year low of $28 a barrel in 2016, the biggest drop in a generation, many projects and companies were generating big losses. "We knew there was incredible waste, but 2014 was the trigger," Brekelmans says. "We knew there was no way we could put forward a project in the same way again."

Take BP's Mad Dog 2, designed in 2012 to be the biggest platform in the world. The initial plan was so large and complicated that a Finnish shipyard would need to be expanded to build it. The platform's projected cost was $20 billion. BP executives realized that was outlandish, even before crude prices dropped. So they redesigned the platform, stripping out features and cutting the bill to $9 billion.

BP, the Gulf's biggest operator, now wants to do more exploration around its existing platforms and pipe oil back to them, as is done at Jack/St. Malo, ▶

▶ Chevron's Jack/St. Malo platform in the Gulf of Mexico

LUKE SHARRETT/BLOOMBERG

Edited by James E. Ellis


HYDRAULIC (NON HAZ)
ST. MALO - 01
KAA
SEGMENT # 18386
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◀ rather than build expensive new floating hubs. This approach is possible because the range of the so-called tiebacks—the pipes that carry the crude from the drill site to the platform—has increased markedly in the past few years due to new subsea pump technology. Chevron expects it will soon be able to use tiebacks as long as 60 miles, almost four times the length of those at Jack/St. Malo.

If an oil field is in range, tiebacks can save about $12 a barrel compared with the cost of building a new platform, according to researcher Wood Mackenzie Ltd. "The philosophy is around infrastructure-led exploration, maintaining capacity at those hubs and filling them up," says Starlee Sykes, BP's regional president for the Gulf of Mexico and Canada. "We're focused on using technology to be safer and more efficient rather than to build the biggest ever."

Chevron and BP have cut operating expenses in the Gulf by half since 2013, the companies say, by a combination of using standardized equipment, applying better technology, eliminating jobs, and selling higher-cost assets. Shell has also reduced spending substantially, Brekelmans says.

"People ask about the big hitter in terms of cost savings," says Stephen Conner, general manager of Chevron's Gulf of Mexico operations. "But in truth, it's the one thousand little things we've done."

Analysts remain skeptical about whether the industry is truly reformed. As oil bounces back—it's up 62 percent in the past year—costs may rise again, especially as drilling and construction suppliers seek to increase their own prices, says William Turner, a Wood Mackenzie senior research analyst. "Margins for servicers are just not sustainable," he says. "I see costs creeping up, albeit from a low base."

It might seem unnecessary for companies to put so much money and effort into risky offshore projects when oil from onshore shale production is booming. Output from the Permian Basin of West Texas and New Mexico will more than double over the next five years, to 5.4 million barrels a day, more than that produced by any OPEC member other than Saudi Arabia, according to IHS Markit Ltd.

But some companies such as BP lack significant shale assets, so they don't have a choice. Even for those that do like Chevron, the advantage of drilling offshore is the sheer volume of oil that can be produced. In the Permian, a top-performing well produces about 2,000 barrels of oil daily for a few weeks before declining sharply. In the Gulf, fields can produce as much as 100,000 barrels a day for decades.

Activity in the region is picking up. Shell in April said it will build a deep-water platform named Vito, a project that had to be reengineered after the 2014 oil-price crash. Chevron's Big Foot is expecting to produce its first oil by the end of the year. BP's Mad Dog 2 is also in development mode.

Not surprisingly, BP, Shell, and Chevron all support Trump's plan to open up more than 90 percent of the U.S. outer continental shelf to drilling. But even if the administration is able to overcome strong environmental opposition by most of the coastal states, it would likely be the mid-2020s before any exploration activity could begin.

On Jack/St. Malo, Gobert and Boudreaux are showing off valves, pumps, enormous lifting chains, pipelines, safety choke points, and a three-turbine generator system that could power 58,000 houses, all floating on its giant frame. Taken together, the equipment cost $7.5 billion, and that figure excludes day-to-day running costs, taxes, and royalty payments. What makes it worth all the effort? Gobert watches as a colleague pours a sample of oil from a tap, as if from a beer keg, connected to a maze of pipes extending 14-feet high. "We call this the cash register," he says. —*Kevin Crowley*

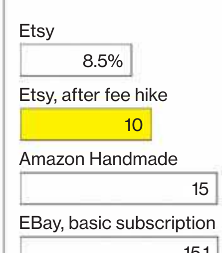
THE BOTTOM LINE Rising production of oil from shale fields has reinvigorated the U.S. oil industry. But new technology to make offshore drilling more economical could have a longer-lasting impact.

The Art of Crafting a Turnaround at Etsy

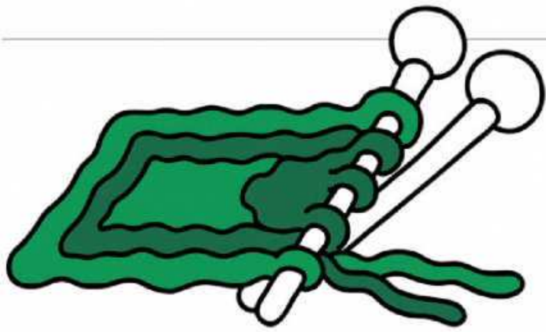
● The marketplace, founded to serve artisans, has a CEO intent on pleasing investors as well

A year ago, Etsy Inc. was in trouble. Sales growth was slowing, expenses were climbing, and its stock had slumped 65 percent since a 2015 public offering. Activist investors were clamoring for change, and in May 2017 they got it: The board fired longtime Chief Executive Officer Chad Dickerson and replaced him with Josh Silverman, a former EBay Inc. and American Express Co. executive. Silverman, 49, is worlds away from Etsy co-founder Rob Kalin, who started the marketplace as a kinder, more equitable way for artisans to sell their work online. Kalin later decamped for New York's Catskill Mountains to establish a community for artists in a reclaimed mill. While Kalin was building Etsy in the mid-2000s, Silverman was at EBay earning a reputation as a sharp-penciled turnaround specialist whose

● Required fee take rates of online marketplaces*



*TAKE RATES INCLUDE FEES FOR LISTING, TRANSACTION, AND PAYMENT PROCESSING; EBAY RATE CALCULATED FOR A $25 ITEM, EXCLUDING BASIC STORE PLAN FEE AND INCLUDING PAYPAL'S FEE; AMAZON HANDMADE RATE EXCLUDES MONTHLY FEE FOR PROFESSIONAL SELLERS; ETSY RATES CALCULATED FOR ITEM FROM $20 TO $25 SOLD IN THE U.S.; DATA: KEYBANC CAPITAL MARKETS



signature achievement was fixing the Skype division for an eventual lucrative sale to Microsoft Corp.

Silverman has brought to Etsy the kind of relentless focus on customer experience perfected by Amazon.com Inc. It's a cultural revolution for Etsy, which analysts say had previously neglected the core marketplace by putting merchants first. Some sellers are deeply unhappy, not the least with Silverman's decision to jack up the company's share of each transaction. But the changes play well with investors, who've pushed shares up 200 percent, to more than $40, besting the $30 a share activist investors were predicting if Silverman followed their suggestions. "Any good retailer, traditional or e-commerce, puts the consumer first, and everything flows from that," says Edward Yruma, an analyst with KeyBanc Capital Markets Inc. "Etsy never really did that until Josh showed up."

Silverman got his start in tech as co-founder of Evite, an online invitation company he began after finishing an MBA at Stanford. In 2001 he sold Evite to IAC/InterActive Corp. for an undisclosed sum and moved to EBay, where he was assigned to turn around the e-commerce company's flagging Netherlands business. He pulled it off, and in 2008 he was put in charge of Skype, whose value EBay had just written down by $1.39 billion—more than half of the $2.5 billion it paid for the company two years earlier. He stayed on when Skype was sold to private investors and helmed a turnaround leading to its sale to Microsoft three years later for $8.5 billion.

At Etsy, Silverman's plan is straightforward: bring more people to the site more often and help them find what they're looking for. To address customers' long-standing complaints that the site was hard to navigate, he pressed engineers to improve the search function. He also cut underperforming side projects, such as tools to link merchants with manufacturers and retailers, and introduced sitewide holiday sales. Anything that didn't help gross merchant sales—the total revenue made by all sellers across the platform—was deemed secondary. "The main thing is keeping the main thing the main thing," Silverman says. "Why are we launching brand-new businesses when the return on every hour we invest on the core marketplace is so enormous?"

Silverman has a knack for "strategic clarity" about the decisions that need to be made to get something done, says John Lilly, a partner at venture firm Greylock Partners. "He's able to explain the high-level strategy but also to get into the details."

The switch from the widely loved Dickerson to Silverman was emotional for some employees. A few took to Twitter, expressing fear the company might be turning away from its values. At an all-hands meeting to announce his appointment, Silverman expressed hope and patiently answered questions. Today he says Etsy is even more socially responsible than it was before, because it's doing a better job of helping sellers make money.

For the fourth quarter of 2017, during the most recent holiday shopping season, Etsy reached a milestone—generating $1 billion of gross merchant sales. That number is important because the more sales on the platform, the more money Etsy makes in transaction fees. The stock jumped as investors saw Silverman bringing more customers to the site.

Now that he has the marketplace on the mend, Silverman is looking for ways to make more money from the merchants that use it. In early June he unveiled a tiered subscription model that charges sellers a monthly fee for extra tools such as branded websites or software to help manage a small team of people fulfilling orders.

Other decisions Silverman has made have been controversial. Etsy boosted its charge per transaction from 3.5 percent to 5 percent—which is still significantly lower than such marketplaces as EBay and Amazon—and the change riled some merchants who want Etsy to be a friendly partner rather than a business with investors to please. "It's hard to see that as anything other than just a cash grab," says Matthew Buchholz, who's sold prints and birthday cards featuring drawings of monsters rampaging through idyllic historical scenes on Etsy since 2010. "It really starts to feel like this isn't a partnership anymore."

Silverman says what's good for investors—boosting sales on the website—is also the best way to fulfill the company's core mission of helping its community of merchants do more business. Much of the extra money from the transaction fee increase will go to offline and online ads to get consumers to visit the site more often, rather than at only such moments as Mother's Day or birthdays. "Our sellers fundamentally have hired us to market them," he says. "We've got to communicate to the world when Etsy is relevant." —*Gerrit De Vynck*

THE BOTTOM LINE By switching Etsy's focus from its artisans to their customers, the handicrafts marketplace's CEO has sparked a turnaround. Shares have tripled since his arrival.

● Silverman

ILLUSTRATION BY OSCAR BOLTON GREEN; SILVERMAN: DAVID PAUL MORRIS/BLOOMBERG

Some Assembly Required

● With $1 billion in hand, Katerra is making construction sites look a lot more like Lego kits

Upstairs in Katerra Inc.'s cavernous 250,000-square-foot factory on the west side of Phoenix, real estate developers compare quartz countertops and bathroom fixtures while architects use the company's design software to pick from premade plans. On the factory floor, workers and robots hammer pallets of Douglas fir into finished wall panels and put them on an assembly line, where other machines and craftspeople add windows and plumbing before a crane stacks the finished walls on a flatbed. When the truck arrives in Lodi, Calif., three days later, Amanda Andel, a construction materials manager, uses an RFID scanner to see what's arrived and an iPad to show where cranes should set each piece of a four-story retirement home.

This process is a radical change for the construction industry and a threat to decades of this-is-just-how-we-do-it attitudes. While other construction tech startups try to modernize some parts of the business, designing modular homes or building robot-run factories to make prefab parts, Katerra seems to have the best shot at putting all these pieces together, from design to finished building. It's pitching some of its own appliances, carpets, windows, even engineered lumber. The company wants to control everything from "womb to tomb," says customer Dean Henry, chief executive officer of real estate firm Legacy Partners Inc.

In a little over three years, Katerra has raised more than $1 billion in venture capital, led by SoftBank Group Corp.'s Vision Fund, and says it's collected close to $3 billion in bookings. "Almost everywhere you look, there's money to be saved," says Chairman Michael Marks, adding that he hopes to have revenue of about $15 billion in five years. "It's so inefficient in so many ways, it kind of takes your breath away."

On June 21, the company said it will combine with its biggest Indian counterpart, KEF Infra; the Indian company will receive several hundred million dollars in cash and stock. The deal offers Katerra access to commercial clients (including IT giant Infosys Ltd.) and the massive construction markets in India and the Middle East. The combined company will have about $3.7 billion in bookings across 260 projects.

Katerra is benefiting from housing shortages, advances in automation, and a glut of VC in search of returns. It will need even more spending and excellent timing to remold a highly regulated, highly cyclical industry with thin margins and little interest in change.

The company is the brainchild of Marks, who's a private equity investor, along with fellow leveraged buyout specialist Jim Davidson and real estate developer Fritz Wolff. So far, their biggest customer by far is Wolff himself, whose ▶

Edited by Jeff Muskus and Jillian Goodman

◀ development company has booked more than $500 million with Katerra. Wolff says he recognizes the risks of putting so much faith in a startup with startup-type problems, "but failure to me looks like the industry today." Marks says he's vowed to turn a profit next year.

Katerra saves money by buying everything from wood to toilets in bulk and using software and sensors to closely track materials, factory output, and construction speed. Its architects use software to build a catalog of standard buildings, rather than starting from scratch on each project, and to ensure contractors aren't making impulsive structural decisions. Each generation of buildings has become steadily more prefab, requiring less work on-site and speeding construction.

At the Lodi site, there are about 70 workers the day the walls go in on the second story. Normally there would be about 10 more on hand to nail them together, says Mike Rock, Katerra's construction chief. For a similar project in Carson, Calif., the company will use 25 workers to frame the building instead of the 150 another company bid, according to Rock. Some of that labor will simply shift to the factory, but volumes there are higher.

Before private equity, Marks made his name running Flex Ltd., then called Flextronics International Ltd., an electronics maker that's one of the world's

◀ At a factory in Phoenix, Katerra staffers and robots build prefab wall panels on an assembly line

biggest tech industry suppliers. If you own an iMac, an Xbox, or an HP printer, Flextronics probably built it. He'd spent about a decade in private equity before Wolff, a friend, asked him to apply Flex's cost-cutting model to the construction business.

Katerra has taken pains to show developers its homes are more stylish than the image conjured by modular, factory-built housing. In the Phoenix factory's showroom, there's a high-end model apartment with quartz countertops, stainless steel General Electric Co. appliances, engineered wood flooring, and leak-detection sensors, plus a model with lower-end appliances, thinner countertops, and vinyl flooring. A separate showroom features custom carpet samples, faucets, and other options.

Yet here, too, Katerra will lower costs by buying

▼ Katerra wants to cut costs by reducing options and making more of its own materials—even engineered lumber

COURTESY KATERRA INC. (2)

in bulk fewer options than an outside architect would offer. "It's stupid to be infinite," Marks says. And as it plans four more U.S. factories, each twice as big as the Phoenix site, Katerra seeks to engineer more of its own raw materials, sell more of its own gear, and perhaps get into the trucking business, too.

The idea of modular housing goes back more than a century—Sears, Roebuck & Co. sold more than 70,000 home kits from 1908 to 1940—but the construction business has been changed far less by technology than any other major U.S. industry, says Harvard fellow Mark Erlich, former executive secretary-treasurer of the New England Regional Council of Carpenters. Innovators have been foiled by an inability to put together enough capital, enough guaranteed business, or both, Erlich says.

Europe is further ahead, and change is coming to the U.S. BoKlok, a joint venture between Ikea of Sweden AB and Skanska AB, builds affordable multifamily buildings in Scandinavia, and a host of smaller U.S. companies with such names as Prescient, Blu Homes, and Hive Modular also design and sell prefab housing. Venture capitalists have poured $3.9 billion into technology related to construction and real estate in the past five and a half years, according to researcher CB Insights. For now, however, Katerra's domestic rivals look more like small-scale design shops than massive factory operations, says Gary Beasley, CEO of rental marketplace company Roofstock.

Marks says dealing with tech suppliers was tougher than construction, but Katerra has a lot of serious worries. While there are only a few standard models of iMac or Xbox, apartments are beholden to 110,000 U.S. municipalities' building codes, each with its own idiosyncrasies. Regional seismic and weather needs can vary widely. And Katerra's aim to steadily cut labor costs, meaning jobs, won't exactly endear it to the industry. The company concedes that it's so far avoided areas where unions are strong. That'll be a problem if it wants to compete for projects in major cities. Labor leaders may demand that Katerra's factories be unionized, says Ehrlich, the former union official.

Through all the challenges, Marks says, the company's emphasis on speed and savings will stand it in good stead with customers. And its focus on multifamily, senior, and other housing may insulate it somewhat from downturns in demand for, say, single-family homes. "People don't understand it or believe it," Marks says of the company's long-term plan. "But they will." —*Dina Bass*

THE BOTTOM LINE Katerra is using its massive SoftBank investment to steadily cut costs and shrink labor needs with its prefab housing. Its chairman says he'll turn a profit next year.

This Startup Got $40 Million To Build a Space Catapult

● Airbus, Alphabet, and Kleiner Perkins are backing SpinLaunch's effort to fling objects into space

Flying cars. Cures for death. And now, space catapults. Bless you, California, for not letting reality get you down.

On June 14, a Silicon Valley startup called SpinLaunch revealed the first details of its plans to build a machine meant to hurl rockets into space. To achieve that goal, the company has secured $40 million from technology investors, including Airbus Ventures, Alphabet's GV (formerly Google Ventures), and Kleiner Perkins Caufield & Byers, says Jonathan Yaney, the founder and chief executive officer.

SpinLaunch remains tight-lipped about exactly how this contraption will work, but its name gives away the basics. Rather than using propellants such as kerosene and liquid oxygen to ignite a fire under a rocket, the company plans to get a rocket traveling in a tight radius at up to 5,000 miles and then let it go—more or less throwing the rocket to the edge of space, at which point it can fire up and deliver payloads including satellites into orbit.

Why would anyone do such a thing? Well, Yaney is trying to work around the limits that physics has placed on the rocket launch industry for decades. To overcome gravity and Earth's atmosphere, rockets must be almost perfectly engineered, and even then, they can push only a relatively small payload into space. The items carried on a typical rocket make up less than 5 percent of its mass, with the rest going toward fuel and the body. (Airplane passengers and cargo, by contrast, can total as much as half a plane's mass.)

"We are evaluating five potential launch sites within the United States"

SpinLaunch's so-called kinetic energy launch system would use electricity to accelerate the projectile, doing much of the work to fight gravity and get through the atmosphere. In theory, this means the company could build a simpler, less expensive rocket that's more efficient at ferrying satellites. "Some people call it a nonrocket launch," Yaney says. "It seems crazy. It seems fantastic. But we are actually using relatively low-tech industrial components to break this problem into manageable chunks."

Following in the footsteps of Elon Musk's Space Exploration Technologies Corp., dozens of companies have begun trying to make small, ▶

◀ cheap rockets that can be launched weekly or even daily. These smaller rockets have been built to carry a new breed of shoebox-size satellites, dubbed smallsats, that are packed full of imaging, telecommunications, and scientific equipment. The rockets are just miniaturized versions of the large, traditional models that have flown for decades. SpinLaunch is a new take on the concept of the rocket itself. "We are very intrigued by SpinLaunch's innovative use of rotational kinetic energy to revolutionize the smallsat market," Wen Hsieh, a general partner at Kleiner Perkins, said in an email. "SpinLaunch can be powered by renewable energy sources such as solar and wind, thereby eliminating the use of toxic and dangerous rocket fuels."

SpinLaunch has a working prototype of its launcher, though the company has declined to provide details about exactly how it works or how close it is to a final system. It says it plans to begin operation by 2022, sending into orbit multiple rockets a day and charging less than $500,000 for each takeoff. The world's top rocket companies usually launch about once a month, and most of SpinLaunch's rivals have been aiming to charge $2 million to $10 million a launch for a small rocket. If the startup is able to achieve its goals, it will easily be the cheapest and most prolific company in the space.

The company will, of course, need to build a launch facility and prove the technology works. "We are evaluating five potential launch sites within the United States," Yaney says.

Yaney grew up in California and has run a variety of businesses, from software makers to construction companies. When it comes to aerospace engineering, he's self-taught, having pored over textbooks in the years leading up to the founding of SpinLaunch in 2014.

The idea of a rocket slingshot may seem like science fiction—along the lines of a space elevator or some other NASA pipe dream—and Yaney has nothing resembling the classic background for a rocket manufacturer. Still, some rocket experts who have seen the prototype were impressed by him and are convinced the company has a fighting chance. One such believer is Simon "Pete" Worden, the former director of NASA's Ames Research Center, who's unaffiliated with SpinLaunch. "It's a very good approach, in my opinion," he says. —*Ashlee Vance*

THE BOTTOM LINE SpinLaunch has a lot to prove before it starts catapulting rockets into space, but it's won over some big names in the industry and the world of venture capital.

Fertility for the Masses

● The ABC IVF clinic is making an expensive process cheaper

Forty years ago, the world's first test-tube baby, Louise Brown, was born to Lesley Brown and her husband, John, a truck driver for British Rail. To pay for the experimental treatment, they used £800 John had won betting on soccer, the equivalent of almost £4,500 ($5,977) today.

In the decades since, an estimated 6.5 million babies have been born through in vitro fertilization. As the technology has become more mainstream, the costs have soared, putting fertility treatments beyond the reach of working-class patients like the Browns. In the U.S., the most expensive country for IVF, treatment cycles can cost as much as $23,000, according to FertilityIQ, a San Francisco-based website that collects fertility information and patient reviews. In the U.K. the average cycle costs about £5,000, almost one-fifth of the median annual disposable income of a British household.

Infertility is indifferent to class. In the U.K. it affects about 1 in 7 couples, or 3.5 million people, according to the National Health Service. Last fall fertility doctor Geeta Nargund and her son, Praful, opened ABC IVF, a low-cost clinic, in London. As with conventional IVF, the process begins with hormone shots or tablets to encourage a woman's body to release extra eggs, which are then combined with sperm in a laboratory to produce embryos that are implanted in her uterus. Thanks to a streamlined hormonal regimen and a simplified device for culturing embryos, an IVF cycle at ABC costs just £2,500, including all tests, medicines, and doctor visits. "At the end of the day, infertility is a disease," Nargund says. "It must be regarded as any health-care need."

● Average cost of an IVF cycle in the U.K.

£5.0k

● Total cost of a cycle at ABC IVF

£2.5k

Nargund developed what's called the mild-stimulation approach at Create Fertility, a network of six clinics across the U.K. that she founded and still operates with Praful, who handles the business side of both companies. Reduced hormone dosages were originally intended not only to make IVF more affordable but also to protect women's health by preventing ovarian hyperstimulation syndrome, a potentially fatal complication that affects almost 2 percent of women undergoing ovarian stimulation. Nargund has since contributed to research showing that less hormonal stimulation produces better-quality eggs, though fewer, with a lower risk of chromosomal abnormality and a higher likelihood of implantation.

The Nargunds estimate that about 60 percent of IVF patients in the U.K. meet the standards for treatment at ABC: They are 38 or younger, with normal ovarian reserve and no extraordinary medical complications. Sticking to a standard patient profile, Praful says, reduces the number of doctor visits and the need for additional tests and add-on services that can drive up costs. (Create Fertility clinics take older patients with more complex conditions; treatment there starts at £3,295, not including the cost of medications.)

The Nargunds plan to expand ABC IVF throughout Europe, where the birthrate has dropped below the rate of population replacement in recent decades. That's partly the result of Europeans marrying later and delaying birth, suggesting that demand for IVF and other assisted reproductive technologies, such as egg freezing, will grow. In the U.K. the birthrate hit a 10-year low in 2016, according to the Office of National Statistics, even as the number of IVF cycles rose 4 percent from the previous year, to 68,000, according to the Human Fertilization and Embryology Authority, Britain's regulatory body for the fertility industry.

The Nargunds' approach isn't yet generally accepted in the medical community. "It's definitely cheaper, it's definitely easier. Is it better, is it more efficient? No, no," says Dr. James Grifo, director of the fertility center at New York University's Langone School of Medicine, where a cycle of IVF starts at $12,650, not including medications, lab tests, and other components of the process. "You spend a certain amount of money to have a certain level of quality," he says. "You can't charge less than that number." In a paper published in 2014, Nargund and her co-authors showed that the simplified embryo-culturing device she uses produced results almost identical to those of conventional IVF: just more than a 30 percent chance of a live birth for each embryo transferred.

▲ Geeta Nargund opened a low-cost clinic in London

Nargund says most add-ons, such as immunological therapies and high doses of fertility drugs, are prescribed despite "little justifiable evidence to support their use," as she wrote in a 2015 paper evaluating research on a range of interventions. Praful says many established clinics have a large investment in the status quo, with top-ranked fertility doctors earning millions of dollars a year in the U.S. He says other doctors ask, "Well, if the cost is half, do I have to see double the number of patients to maintain my income and my lifestyle?"

Ultimately, Praful expects patients to vote with their feet. The U.S., where only about 26 percent of insurance plans cover IVF, is on his radar as a potential market. He and Nargund haven't yet found a manufacturer for their simplified incubators, which are currently made by the Walking Egg, a Belgian nonprofit focused on bringing IVF to developing countries. Nargund says funders will catch on. "They want to see a maturity phase before they make an investment," she says. "It's achievable. I think it's just early stages, that's all." *—Anna Louie Sussman*

▲ A simplified embryo incubator

THE BOTTOM LINE With birthrates falling around the world, ABC IVF is poised to offer low-cost fertility treatments to a growing number of reproductively challenged parents.

FROM LEFT: SOPHIA EVANS/EYEVINE/REDUX; COURTESY CREATE FERTILITY

Ant Financial Is Too Big to Ignore

The Chinese fintech powerhouse scares banks but wants to make them customers

Eric Jing, chief executive officer of Ant Financial, gathered his management team in between meetings at the Chinese financial conglomerate's Hangzhou headquarters on June 6. The company had just closed a $14 billion funding round, one of the largest in history, and Jing was ready to celebrate.

Sort of. "Let's raise our tea cups and have a simple toast," he said, before quickly bringing an end to the festivities. "This will be the entirety of our celebration." Jing, who took the helm of Jack Ma's Alibaba Group Holding Ltd. spinoff in 2016, was telling his troops to be humble. But the episode also underscored the tough road ahead for Ant as it embarks on a major strategic shift.

The company's extraordinary rise over the past 15 years has come largely at the expense of ▶

ILLUSTRATION BY KURT WOERPEL

Edited by Pat Regnier

◀ traditional financial companies in China and, to a lesser extent, overseas. Ant's wildly popular money-market funds have siphoned deposits from banks. Its online payment systems have disrupted card issuers. And its credit units have challenged lenders of all stripes.

But the company is increasingly turning the old model on its head. Instead of competing with banks and other financial firms, Ant sees its future in selling them computing power, risk-management systems, and other technology. Fees from such services may swell to 65 percent of revenue by 2021, from about 35 percent in 2017, according to a company presentation to investors seen by Bloomberg News. Some of Ant's latest initiatives include upgrading Shanghai Pudong Development Bank Co.'s fraud-detection systems and a plan to provide technology to help at least four other banks extend loans to small businesses.

"We have been working with all the big banks, and we intend to even further deepen those collaborations," says Jing, speaking with an international media outlet for the first time since closing Ant's funding round. "We don't want to be a big tree, we want to grow a forest with others." BlackRock Inc., the world's largest asset manager, has pursued a similar strategy with its Aladdin portfolio analytics software, and China's Ping An Insurance Group Co. has said it wants to eventually get half its earnings from technology sales. Still, the scale and speed of Ant's planned transition stands out.

The company has an extra incentive to move fast. Ant's existing businesses—particularly its lending units and its 1.68 trillion yuan ($261 billion) Yu'E Bao money-market fund—are, like others in the industry, under pressure as Chinese President Xi Jinping tries to reduce financial risks in the world's second-largest economy. Ant may soon face minimum capital requirements for the first time, say people familiar with the matter, as regulators step up supervision of companies that straddle multiple financial businesses. Ant says it has always worked closely with regulators.

Whether Ant can pull off the transformation is an open question. The company has to maintain a competitive edge in financial services while at the same time selling its tech to industry players. Other Chinese fintech giants, including Ping An and Tencent Holdings Ltd., are also hot on its heels. "Making more money from technology services might be a good story to tell for a better valuation," says Julia Pan, a Shanghai-based analyst at UOB Kay Hian. "However, the growth from this sector might not be as fast."

Jing says he enjoys the competition. He also has the backing of some of the world's biggest investors. Participants in the company's latest funding round included international heavyweights such as Temasek Holdings Pte., Singapore's state-owned investment firm, and Warburg Pincus, a private equity firm that manages more than $44 billion. "Ant Financial's tech capabilities and scale are hard to replicate," says Ben Zhou, a managing director at Warburg Pincus.

Born out of an online payment system for Alibaba, the business has grown into a financial behemoth with few equals. Ant's $150 billion valuation dwarfs those of Goldman Sachs Group Inc. and Morgan Stanley. The company's Alipay and its global affiliates have 870 million users and handled as many as 256,000 transactions a second last year. The payment system—along with a competitor run by Tencent—has revolutionized the way people buy and sell things in China, prompting former Central Bank Governor Zhou Xiaochuan to predict in March that the country's physical banknotes may one day cease to exist.

Ant, formally known as Zhejiang Ant Small & Micro Financial Services Group Co., has leveraged Alipay's popularity to expand into everything from asset management to insurance, credit scoring, and lending. Its lending unit had originated an estimated 322 billion yuan of outstanding consumer loans as of the end of last year, according to a Goldman Sachs research report. Ant is also making a big overseas push, focusing on Southeast Asia, India, and other emerging markets after U.S. authorities blocked its bid to acquire MoneyGram International Inc. in January. The company will use most of the $10 billion raised from foreign investors in its latest financing round—widely seen as the precursor to an initial public offering—to build the overseas business. "This will expedite our global expansion," says Jing, who joined Ant's predecessor in 2009 after a two-year stint at Alibaba.

Some of China's financial incumbents and their supporters have long pushed back against Ant's rise. A commentator for one of China's state-run television stations called it a "blood-sucking vampire" in 2014. But Jing expresses confidence about Ant's ability to collaborate with other financial companies. While Ant didn't disclose terms of its recent arrangements with banks, Jing explains the rationale for the cooperative approach this way: "My father told me if you close your hand when trying to hold on to something in your palm, the less you keep. If you open your hand, you will hold more." —*Bloomberg News*

THE BOTTOM LINE Ant Financial may be facing a tougher regulatory environment in China. That's giving it added incentive to find new lines of business.

● Businesses of Ant Financial

Asset management

The company manages the world's largest money-market fund, with assets of

1.68t
yuan

Lending

Ant has made outstanding consumer loans worth an estimated

322b
yuan

Online payments

Alipay and the company's joint ventures around the world have

870m
active users

Insurance

Ant offers auto, health, travel, accident, and property coverage

Securitization

In 2017, the company issued consumer-loan backed securities worth

259b
yuan

Gambling Is Going On in Here

● The new developer betting on a huge, failed Atlantic City resort gets back to casino basics

The Revel hotel and casino was sitting empty last year on Atlantic City's boardwalk, a bleak symbol of real estate failure rather than the glittering resort it was built to be. Bruce Deifik decided to take control of it sight unseen.

Deifik, a property investor based in Denver who'd never been to Atlantic City, got a call in May 2017 from a friend seeking \$5 million to help two developers revive the casino. Four days later, he agreed to double that amount and take over their effort. By January he was the majority owner, part of a group with \$200 million on the line.

Now he'll see if the gamble pays off. The Revel has been refurbished and renamed Ocean Resort Casino, opening on June 28. Deifik is trying to overcome the history of a \$2.6 billion property that was conceived more than a decade ago by Morgan Stanley to offer an antidote to the old, dark, smoke-filled casinos further down the boardwalk. The Revel ended up going bankrupt twice, done in by its high debt load, design miscues, and competition. "I'm either the world's biggest moron or I'm reasonably intelligent," says Deifik, 63. "I'm not working with funds that have unlimited deep pockets. This is our family. We take this very, very seriously."

Deifik says he's borrowed against his other properties and invested pretty much all his liquid resources in the casino. He's doing so in a struggling gambling market where developers, including Donald Trump, have failed spectacularly. The Ocean Resort is opening the same day as the Hard Rock Hotel & Casino, a \$500 million redo of the former Trump Taj Mahal, adding thousands of rooms to the city. "It's going to be swimming up against the current when it opens," says Alex Bumazhny, an analyst with Fitch Ratings.

Gray-haired and stocky, with a Long Island accent—even though he hasn't lived there since he was 12—Deifik is a character cut out for Atlantic City, a tough talker who also worked in the casino business in Las Vegas. He fist-bumps workers and greets many by name. His manner is a far cry from the buttoned-up ethos of Kevin DeSanctis, the former Steve Wynn lieutenant who developed the Revel with the backing of Morgan Stanley and other Wall Street companies. DeSanctis, who couldn't be reached for comment, envisioned the resort as a playground for New York jet-setters, where gambling was just one of many amenities.

◀ The Revel has a new name and owner

The timing was disastrous. Construction began shortly before the start of the 2008 financial crisis, and Morgan Stanley lost \$1.2 billion on the project. The Revel opened in 2012, only to close two years later. Florida developer Glenn Straub bought it in 2015 for \$82 million, but says he gave up after disputes with local officials. Enter Deifik, whose company and family office, Integrated Properties Inc., owns several million square feet of office, retail, and residential real estate, in places including Colorado, Phoenix, and Las Vegas. "He's a really calculating and savvy risk-taker," says Tim Richey, a broker with CBRE Group Inc. in Denver who says he's worked with the developer for almost three decades.

Deifik says his experience buying down-and-out Denver properties enabled him to see opportunity in the Revel, gaining an asset that cost billions to build for cents on the dollar. "I felt that the Atlantic City market was coming back in a big way," he says. With additional renovation costs, he and his partners are on the hook for \$377 million, with about half that in the form of a loan from JPMorgan Chase & Co.

Ocean Resort is designed to attract a broader range of clientele. A space that used to be a poker room is being remodeled with pool tables, air hockey, and computers for video games to draw millennials. Actor Mark Wahlberg will open a Wahlburgers restaurant and a bar tied to the show he produced, *Entourage*. The resort is also hosting the Gameacon esports convention in October to lure fans of competitive video gaming. Deifik is opening up a once narrow entrance to the casino from the boardwalk that he says discouraged access.

"I'm so happy you're here! And can I get you something to drink?"

He says he doesn't have the "arrogance" of previous owners, who were looking to attract clients seeking a resort experience. The idea wasn't crazy: Las Vegas casinos rely less on gaming revenue than Atlantic City's do. But Deifik says the Revel emphasized the resort side at the expense ▶

PHOTOGRAPH: WAYNE PARRY/AP PHOTO. DATA: ANT FINANCIAL, GOLDMAN SACHS RESEARCH, BLOOMBERG

◀ of casino customers. Initially, at least, it didn't have a VIP lounge for high rollers, nor did it have food choices aimed at its Asian players, inexpensive dining options, or a smoking area. It required customers to stay at least two nights. "If I have a room in inventory and you want to spend one night," Deifik says, the only thing to say is, "'Thank you for coming! I'm so happy you're here! And can I get you something to drink?'"

One big change since the last time someone tried to make a go of the Revel is sports betting. New Jersey began allowing wagers this month after a U.S. Supreme Court ruling paved the way. Ocean Resort has reached a deal with London-based William Hill Plc to build a $6 million sportsbook at the center of the casino to attract guests coming for college basketball's March Madness, the Super Bowl, and other games in the beach resort's off-season. "This is a huge boost, particularly for the former Revel," says Raymond Lesniak, the onetime New Jersey legislator who led the charge for sports betting. "They're more designed for the people who stay long weekends."

Yet the challenge of attracting more visitors to Atlantic City remains. Gambling revenue in the city has fallen by half since it peaked in 2006, and the number of casinos in operation has dropped from 12 to seven, not including the Ocean and the Hard Rock. There's competition from nearby New York, Pennsylvania, and Maryland. Years of urban renewal efforts haven't erased the city's reputation for blight and crime.

Ocean Resort must reach out to customers beyond New Jersey and the mid-Atlantic to places such as Georgia and the Carolinas that don't have similar resorts nearby, says Steve Norton, a casino consultant who spent much of his career working in Atlantic City. "I've got my fingers crossed," he says. But Atlantic City casinos "keep overlooking where their customers are coming from."

Deifik knows he's taken on a challenge. "Unless you're really 100 percent dedicated, 24 hours a day, a property like this–as beautiful as she is–it will kill you," he says. "It will take you down." —*Simone Foxman and Christopher Palmeri*

THE BOTTOM LINE The Revel was a $2.6 billion project built on the idea that Atlantic City visitors wanted a high-end resort experience. Deifik is investing a lot less and focusing on gamblers.

Class, Race, and Municipal Debt

● A wealthy Georgia community wants to split from its city. Investors fear the consequences

As Vikki Consiglio tells it, a new Georgia law that has alarmed Wall Street had its genesis two years ago, with a birthday dinner for her husband in Atlanta's Buckhead neighborhood, at a steakhouse in a graceful, brick-paved complex of high-end furniture stores and designer boutiques. "A light just went off," she says.

Her own neighborhood in the suburbs–a cluster of gated communities surrounding a country club–lacked the same exclusive feel along its main drag. "I want those things, those amenities," Consiglio says. "I wanted to be part of a gated community in a high-end area. Instead, when I come out of the gate, I see a Waffle House and dollar stores."

Consiglio's home is part of Stockbridge, a predominantly black city in Henry County, some 20 miles south of Atlanta. She says her section can't attract businesses like Buckhead's because of the lower income of the rest of Stockbridge. Her idea: The whole neighborhood could break away. Consiglio is the spokeswoman for the movement that pushed for and won a state law to allow a "de-annexation."

For more than a decade, the Atlanta area has been dividing into ever-smaller pieces segregated by race and class as cities are carved out from unincorporated county land. But the law signed in May could take the balkanization one step further: It will allow the wealthiest residents of Stockbridge to vote to form their own town, taking with them the most important commercial corridors and about half of its tax revenue. The new city would also be able to leave Stockbridge's $15.5 million of debt with the smaller, poorer remnant of the city. Residents of the rest of Stockbridge will have no say in the outcome of the November ballot proposal. And that doesn't worry only them; it has investors and credit rating agencies up in arms, too.

"It's like a shotgun divorce by the state legislature"

The law applies only to the proposed division of the suburb of 29,000. But it raises the specter that residents of other well-heeled Georgia neighborhoods could ask the state for the same thing. It was all attendees were buzzing about at a recent municipal finance conference in Detroit, according to Tracy Gordon of the Urban Institute, a think tank. Citigroup Inc. says investors are concerned it could create a "destabilizing precedent."

Both Moody's Investors Service Inc. and S&P Global Ratings have issued warnings about potential impacts. On May 30, S&P said the credit ratings of Georgia cities could be jeopardized if such crackups proliferate. The state effectively changed what investors bought into, says Randy Layman, an S&P analyst. "It's going to raise borrowing costs for municipalities all across Georgia once you know the state is in the business of allowing rich communities to carve themselves off," says Yale Law School professor David Schleicher.

City finance experts say the Stockbridge de-annexation is the most aggressive move against a city they've seen. Only a handful of cases come close. Kentucky once allowed cities to steal land from each other during an annexation war between Covington and its suburbs that lasted 30 years starting in 1950. Mobile, Ala., tried and failed to form a shadow government a century ago to get off the hook from debt. Staten Island in New York City and the San Fernando Valley in Los Angeles tried to secede. They failed because all city residents had a vote. The Georgia model puts the decision in the hands of those who might leave. "It's like a shotgun divorce by the state legislature," says William Fischel, a Dartmouth College economist. "It really puzzles me."

Stockbridge politicians say it's about more than some residents wanting a standalone city rich enough to attract a Whole Foods. They say it's also about control of land development deals and a battle between black Democrats—who won all city offices for the first time last year—and the white Republicans who control politics in the surrounding county and state. "It was Democrats vs. Republicans. That was the way it was presented to us," says Renee Unterman, a Republican state senator not from Stockbridge who opposed the measure.

Supporters of the proposed city, called Eagles Landing, say race isn't the issue. It would be 39 percent white and 47 percent black, with most of the rest Asian. Stockbridge as a whole was 29 percent white in 2010, down from 72 percent in 2000.

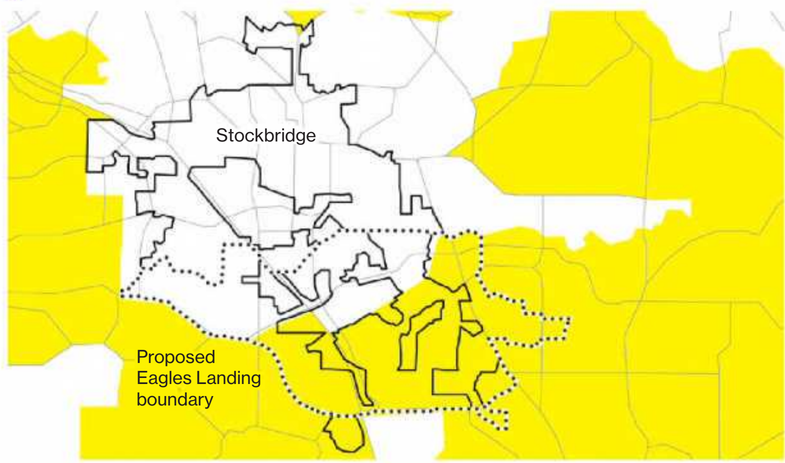
People in the Atlanta area began creating cities out of unincorporated land in 2005, when legislators passed a law allowing some residents of Fulton County's richer, whiter north to form the city of Sandy Springs and provide their own services, rather than rely on the majority-black county government. Over the next decade, 10 other areas followed, eight majority white followed by two majority black. The legislature passed laws allowing each new city, in what became known as the cityhood movement. Even some original supporters of that movement, such as Unterman, now say it's been taken too far. The Stockbridge legislation would allow a new city to take an existing city's land for the first time. Brian Strickland, the Republican state senator who carried the bill this year, didn't return calls for comment.

Unterman says de-annexation could spread, fed by culture wars in diversifying areas such as some northern suburbs she represents. "You could get people saying, 'I don't like Koreatown or Chinatown, so I'm going to de-annex,'" she says. "Maybe people don't want to pay for police in the Hispanic part, so 'we're going to leave.' This whole issue of de-annexation, it's just a brand-new animal."

Breaking Away

If approved by voters, a new city would take some of the old one's richer neighborhoods

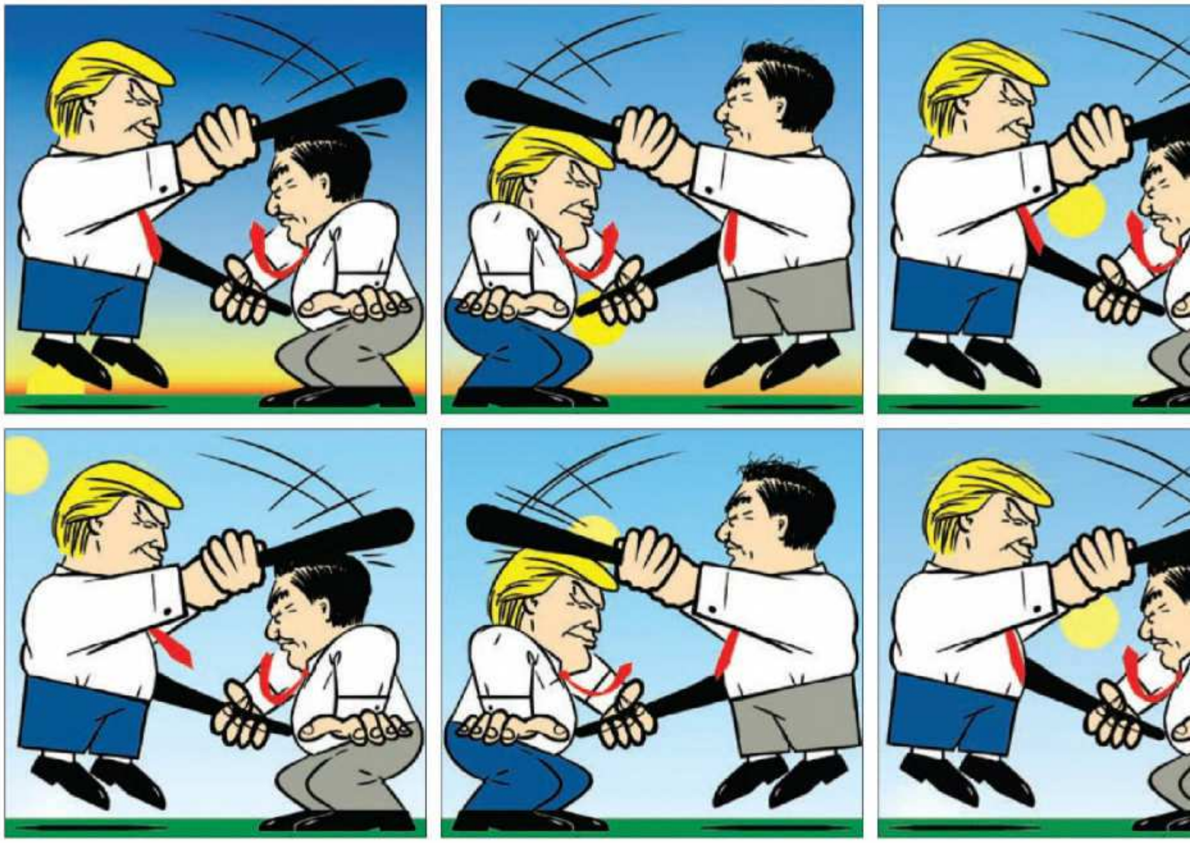
■ Median household income above $60k



State Senator Emanuel Jones, a Democrat who represents most of Stockbridge, and the city's new mayor, Anthony Ford, dismiss the idea that changing city lines will make shops and businesses appear. "Just because you draw different boundaries, the demographics are not going to change," says Jones. Both say the real issue was a fight between the city government and a majority-white old guard in surrounding Henry County over a planned $300 million mixed-use development near the proposed city. Stockbridge annexed the land for it in 2016, at the developer's request and despite the county's opposition. Breaking up the town would put the land back in the county's hands. "How can I put this?" Jones says. "This is economic." —*Margaret Newkirk*

THE BOTTOM LINE If a wealthy section of Stockbridge breaks away, it could take with it a big chunk of the tax base while leaving the city's debts behind.

GRAPHIC BY BLOOMBERG BUSINESSWEEK. DATA: U.S. CENSUS BUREAU, EAGLES LANDING EDUCATIONAL RESEARCH COMMITTEE



Tit for Tat for Tit for Tat...

Gaming out how the trade spat between the U.S. and China could end

Picking a fight with a trading partner seems like a bad idea, but it's not necessarily irrational. Probing a partner's weaknesses can be an effective way to get a better trade deal, according to game theory, the branch of mathematics that deals with strategy. It sometimes makes sense for countries to "test each other's resolve," says Ethan Harris, head of global economics at Bank of America Merrill Lynch. "The act of putting on tariffs teaches you something about the other side," in particular its willingness to retaliate, Harris says. It worked for the U.S. when it threatened South Korea with steel and aluminum tariffs; the Koreans quickly made concessions to escape the tariffs.

The problem with tit for tat is not irrationality, but miscalculation. If each country keeps escalating in the mistaken expectation that the other side will eventually back down, the result will be high tariff barriers and a reduction in cross-border commerce that leaves both sides worse off. That's the risk the U.S. and China are courting.

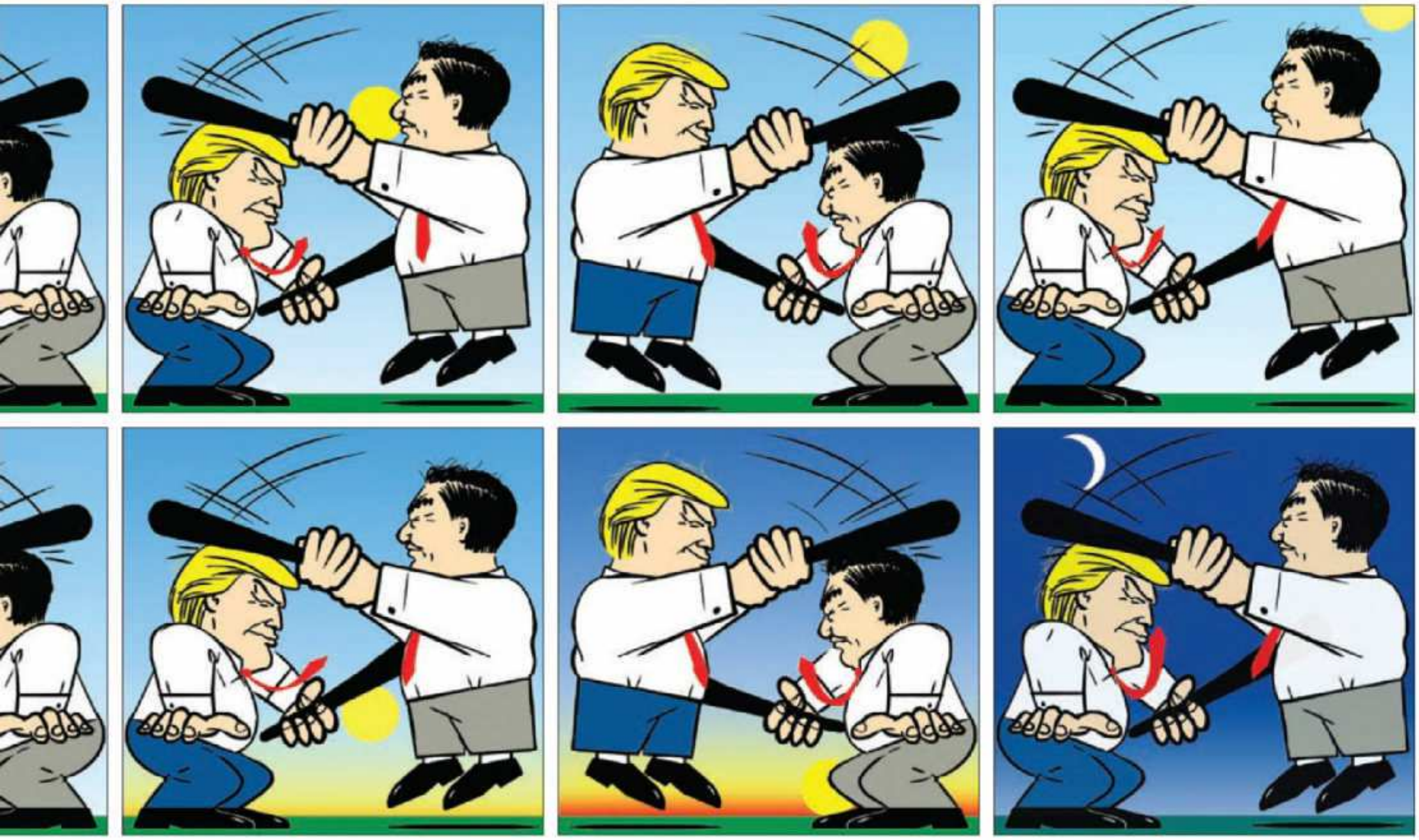
Tit: On June 15, President Trump said the U.S. would soon begin charging duties on $50 billion worth of Chinese imports in response to what he says are decades of theft of American know-how. Trump has also signaled he wants to reduce America's $376 billion trade deficit in goods with China.

Tat: China's Ministry of Commerce immediately responded with a statement saying it would counter Trump's measure with "equal scale, equal intensity." Beijing is targeting soybeans, corn, wheat, rice, sorghum, beef, pork, poultry, fish, dairy products, nuts and vegetables, and autos, among other products.

Tit: Unhappy with China's reaction, Trump on June 18 asked his staff to produce a list of $200 billion worth of additional Chinese goods that he could subject to punitive tariffs.

Edited by Cristina Lindblad

ILLUSTRATION BY MATIJA MEDVED



Tat: China said that "if the U.S. loses its senses and publishes such a list, China will have to take comprehensive quantitative and qualitative measures."

Experts surveyed by Bloomberg News lay out four scenarios for how the U.S. trade conflict with China could end: Both sides back down, which now seems unlikely in the short term; China blinks; the U.S. blinks; or both sides keep escalating.

The "China blinks" scenario assumes President Xi Jinping won't want to endure a downturn in the Chinese economy, which showed signs it underperformed in May. The "U.S. blinks" scenario assumes China calls Trump's bluff, knowing how much he enjoys a strong economy, rising stock market, and the support of voters in farm states that China could target.

The fourth scenario, in which neither blinks, is the most damaging. "We're not there yet, but it's scary, because it seems like we're on a path toward major conflict, and it's hard to see the offramp," says Michael Smart, managing director at Rock Creek Global Advisors LLC in Washington and a former international trade director on the National Security Council.

The World Trade Organization was created to prevent exactly this kind of bluffing and brinkmanship. "Trade agreements are a way of escaping from a prisoner's dilemma in which each country acting rationally is stuck doing something that is bad for it individually, but they can't get out of it without a collective agreement," says Dartmouth College economist Robert Staiger.

Trump is convinced he can do better. So far, U.S. stocks have held up pretty well, strengthening his hand. That may not last, though. "I've been amazed at the complacency of markets as Trump marches off to trade war," Paul Krugman, a Nobel laureate economist, wrote on Twitter on June 19. Chinese stocks have been sinking: The Shanghai Composite Index fell almost 4 percent, to a two-year low, on June 19. It rose slightly the next day after People's Bank of China Governor Yi Gang made reassuring remarks. "Things could get a lot worse if the trade war escalates and China fights back in an unconventional way," says Hao Hong, chief strategist with Bocom International Holdings Co. in Hong Kong.

No one's backing down yet. Says Merrill Lynch's Harris: "China thinks they can wait it out longer. Trump thinks he can hit them harder. They're not just beating each other up for the fun of it. They think they have an advantage, and they're only slowly learning that maybe they don't." *—Peter Coy, Andrew Mayeda, and Sofia Horta e Costa*

THE BOTTOM LINE There are four possible outcomes to the U.S.-China trade dispute. A lot depends on how much economic damage each side is willing to tolerate.

Southern Revival

● Greenville has hit on a successful formula for incubating new businesses. Other small cities in the region are watching

When Scott Pancoast was crisscrossing the Carolinas raising money for his health-care startup earlier this year, one of the most important stops was a country club in his hometown of Greenville, S.C. His presentation drew almost 50 angel investors, twice the number that showed up when he pitched to potential funders in Charleston, S.C., and Charlotte, N.C. "It was a very, very strong showing," says the founder of Zylö Therapeutics LLC. "Having that kind of inclination to support local entrepreneurial activities was stunning to me."

Startups such as Pancoast's have pride of place in Greenville, whose downtown is sprinkled with young businesses the way coffee shops dominate the main drag in other cities. The offices of Zylö, which develops nanotechnology that delivers medicines and therapeutic agents through the skin, are in a co-working space on Main Street that houses about a dozen other fledgling companies. ChartSpan Medical Technologies Inc., a digital medical records startup with 120 local employees, is nearby.

This city of 670,000, a onetime hub for textile and apparel production, seems to have found the answer to the question confounding the U.S. right now: How do you revive postindustrial towns and make them part of the knowledge economy?

Displaced factory workers were receptive to Donald Trump's "Make America Great Again" message during the 2016 election campaign. Yet the president's policy prescription of lower taxes, higher tariffs, and fewer immigrants is untested, while Greenville's leaders can rightly claim they have a success on their hands. In per capita terms, the city's rate of new-business creation approaches that of Boston, one of the country's hotbeds of innovation. Here's another marker of economic dynamism: Greenville's population grew almost 20 percent from 2000 to 2016.

▲The spruced-up waterfront in Greenville, S.C.

Some elements of Greenville's transformation aren't easy to replicate, including decades of political commitment to creating a community that's appealing to college graduates and high-skilled workers. The city also has access to technology and research talent from nearby Clemson University and state-of-the-art manufacturing plants turning out Michelin tires and BMWs.

● Pancoast

But Greenville's culture of risk-taking and its network of investors who fund early stage businesses are within the reach of places like Danville, Va., where tobacco warehouses and textile mills—some abandoned—attest to the difficulties the city faces in transcending its economic past.

"We look at Greenville as where we want to be—what they created downtown and all the startups," says Eva Doss, chief executive officer of the Launch Place, a company that provides consulting services and seed capital to regional companies that create high-paying jobs. One recent win for Danville: Panaceutics Inc., whose headquarters are near Raleigh, N.C., plans to open a production lab to blend medications and supplements into customized drinks. The operation will employ 70 people.

◀ A shuttered textile mill in Danville, Va.

In his 2012 book, *The New Geography of Jobs*, economist Enrico Moretti describes the rise of superstar cities and the decline of the rest as "the great divergence" that affects "cultural identity, health, family stability and even politics." To grasp the size of the chasm, consider just one metric: The mean net worth of urban families in the U.S. exceeded that of nonmetro families by $475,000 in 2016; in 1989 the disparity was $123,700, according to Federal Reserve research.

The most important driver of the phenomenon Moretti describes is the shift from manufacturing jobs to conceptual work. In the late 1970s, 22 percent of nonfarm employees toiled to transform raw materials into a product, compared with less than 10 percent now.

Meanwhile, the share of workers in high-skill service industries has grown. But these knowledge workers aren't evenly dispersed throughout the country. They're clustered in cities such as Boston, New York, and San Francisco that are magnets for college graduates, ideas, and money, all of which are integral to any ecosystem that supports startups. Twenty percent of young businesses were based in nonmetropolitan areas in the early 1980s. That figure has dwindled to less than 13 percent.

"We tell these communities, 'Don't worry: The entrepreneurs are going to put you back to work,'" says Edward Conard, who led Bain Capital's industrial group and is now an adjunct fellow at the American Enterprise Institute, a Washington think tank. "But they aren't coming." Regional economies "are falling further off the technological frontier because companies like Google and Facebook are going to scarf that talent up."

Greenville has managed to buck the trend. It had almost 5 young businesses per 1,000 people in 2014, the latest year for which data are available—close to the national total of 5.2, Boston's 5.5, and Chicago's 5.6. Danville's total, meanwhile, was 3 per 1,000 people. (None of these cities has been immune to the overall decline in U.S. startups since the 2007-09 recession.)

While pundits focus on the importance of upgrading workforce skills, kick-starting a cycle of wealth-building by attracting and retaining new businesses is a multipronged effort. Greenville has excelled at creating an appealing—and walkable—commercial district. The scenic riverfront features a park bordered by a mixed-use development, a waterfall, and a pedestrian bridge. "Twenty years ago, you didn't want to go downtown," says David Condrey, who in 1998 started Condrey Corp., a data management and security software business, with his wife, Mary. Now "we have people that live downtown and walk to work." The couple bought a building one block from North Main Street and turned it into a Silicon Valley-style workspace with exposed brick and beams.

State and local entities have been willing to encourage such efforts, with the goal of fomenting what economists call innovation clusters. Take Kiyatec Inc., a nine-year-old company that analyzes tumor cells to predict the most effective therapies for treating a patient's cancer. Greenville Health System, a regional nonprofit, provided lab space on the same floor as its flagship hospital's cancer institute, while South Carolina Research Authority, a state-chartered nonprofit, has provided more than $500,000 in grants and equity investments. While Kiyatec will never be a labor-intensive manufacturing giant, most of its 20 employees are highly compensated.

Early stage companies in Greenville can also seek funding from VentureSouth, the group Pancoast spoke to at the country club. Its 230 angel investors in North and South Carolina have funneled $28 million to 61 companies.

Jon-Michial Carter, ChartSpan's co-founder and CEO, has tapped larger venture capital pools outside Greenville in raising $22 million to scale up his electronic health records operation. Still, the early vote of confidence he got from the city has kept him loyal. He recalls that after making a pitch to almost 600 local investors, he got a message from the Greenville Office of Economic Development requesting a meeting. After talking, the agency helped him secure 100,000 square feet of office space. "Nobody in Silicon Valley would help me like this," says Carter, which is why if a potential investor tells him he needs to relocate to New York or California, "it is a short conversation."

ChartSpan's revenue grew 334 percent last year and will expand 110 percent this year, Carter ▶

● Greenville

Population
669,355

Population growth, 2000-16: 19.5%

Labor force participation, prime age workers: 80%

Median income
$51,595*

● Danville

Population
104,752

Population growth, 2000-16: -4.9%

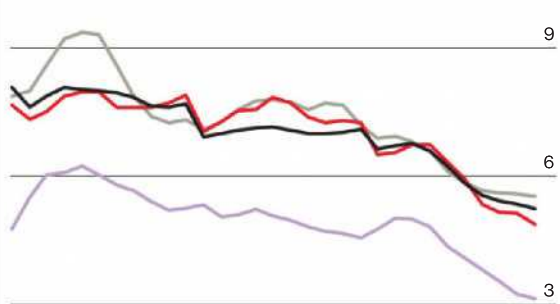
Labor force participation, prime age workers: 79%

Median income
$33,721**

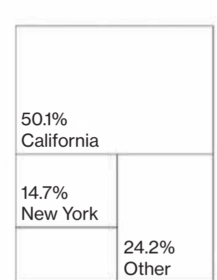
Greenville Keeps Pace

New businesses per 1,000 people†

U.S. / Boston / Greenville, S.C. / Danville, Va.



Top U.S. destinations for venture capital, 2017



PHOTOGRAPHS BY ELIOT DUDIK FOR BLOOMBERG BUSINESSWEEK; *GREENVILLE COUNTY; **DANVILLE CITY; †PER CAPITA RATE WAS CALCULATED USING THE U.S. CENSUS'S 2014 BUSINESS DYNAMICS STATISTICS FOR FIRMS AGED 0 TO 5 YEARS IN EACH METROPOLITAN STATISTICAL AREA, DIVIDED BY THE MSA'S POPULATION. POPULATION FIGURES WERE ADJUSTED TO CONFORM TO 2009 MSA DELINEATIONS. DATA: U.S. CENSUS BUREAU, PITCHBOOK, NATIONAL VENTURE CAPITAL ASSOCIATION

◀ predicts, adding he's been able to recruit staff from the largest metro areas, "people who share our view of fatigue of working in a big city."

Danville—where the median income was $33,721 in 2016, compared with Greenville's $51,595—is following the Greenville playbook closely. Authorities there have spiffed up the River District, while downtown tobacco warehouses have been remade into residential and retail space. But nearby are boarded-up houses and abandoned relics of departed industries, which give the whole place the feel of an empty movie set. Indeed, it's too soon to tell whether the recent improvements have helped arrest a slide in the local population, which shrank 5 percent, to 105,000, from 2000 to 2016.

"We are trying to do two hard things simultaneously: We are trying to create a new economy and create a new culture," says Karl Stauber, CEO of the Danville Regional Foundation. The foundation was created in 2005 with proceeds from the sale of a local health-care system. It has a $230 million endowment and has given $96 million in grants since 2006.

Danville put together a package of incentives to attract Panaceutics, including an investment in its parent company by the Launch Place, grants from the state's Commonwealth Opportunity Fund and Tobacco Region Opportunity Fund, tax exemptions, and support for employee training.

Inducements also lured Japanese manufacturer Kyocera Corp., which is building a facility that will employ 35 people making precision cutting tools. The final choice was also influenced by a work-based engineering technology degree offered by Danville Community College that replicates modern manufacturing challenges, from team building to conflict resolution to process control. Troy Simpson, the college's director of advanced manufacturing, says word of the program has spread and officials from Tennessee and Arkansas have come calling.

Simpson took a class to visit the abandoned Schoolfield plant, one of many sites that formed part of Dan River Mills, which once figured among the largest textile manufacturers in the South. Simpson knows it well. His aunt came off the farm when she was 13 and worked there until age 63. "If a company cannot remain globally competitive, they will leave," he told the class, with the mill's ruins as a backdrop. "The deciding factor will be how productive and skilled you are as a workforce. You have to be willing to change and embrace continuous improvement." —*Craig Torres and Catarina Saravia*

THE BOTTOM LINE Greenville, S.C., has enlisted local investors to fight a trend in which regional hubs are losing talent and investment to bigger cities such as Boston, Chicago, and New York.

How Spain Got Its Swagger Back

● The crisis forced smaller companies to look abroad for sales

Nine years ago, Spanish entrepreneur Javier Goyeneche was fighting a losing battle to save his footwear and accessories company from the cratering economy. Today he has a new venture making apparel from waste plastic harvested from the ocean, and he's on track to double revenue for a second straight year. "I started Ecoalf in the middle of the crisis, and it was really difficult," he says. "We have really loyal clients, and word-of-mouth has been really good for us. But it's obvious that the economic situation is positive."

That's a turnaround from Spain's deepest recession in a half-century, triggered by a property crash. Economic output shrank almost 10 percent from 2008 to 2013, prompting the country to seek a €41 billion ($48 billion) bailout from the European Union. Stroll around Madrid today, and you'll see new shops and restaurants, along with shiny, late-model cars. Seseña, a half-hour's drive south of the capital, used to be a ghost town of half-built housing developments and empty streets. Now apartments are filling up, and local officials are planning an industrial park.

"In the past, exports were treated as an option for times of crisis when you couldn't rely on the domestic market"

Even the abrupt ouster of Prime Minister Mariano Rajoy this month couldn't shake investors' faith that Spain's recovery is real, whereas Italy's looks increasingly fragile. Yields on Spanish government bonds are about where they were before parliament voted Rajoy out of office on June 1. The Mediterranean countries' divergent fortunes are reflected in the spread between their 10-year sovereign debt, which is the widest since 2012.

The labor market overhaul that Rajoy's government initiated in 2012 helped lay the foundation for the rebound, though the reform push stalled after his center-right party lost its majority in 2015. The new premier, Pedro Sánchez of the Socialist party, is friendly to markets on the whole, though he wants to strengthen the bargaining power of unions.

"This healthy growth is going to continue," says Ignacio de la Torre, chief economist at Arcano Partners, a boutique investment bank in Madrid. "The Spanish economy is immersed in a virtuous circle of falling unemployment, recovering salaries, rising consumption, and positive trends in the real estate sector."

COURTESY ECOALF

▲ A Thai fisherman who participates in Ecoalf's plastic collection program

It's true: The fundamentals haven't looked this good in years. The European Commission is predicting growth of almost 3 percent in 2018, which would mark a fifth straight year of expansion. Construction and tourism were the engines of Spain's last resurgence. This time exports are powering a lot of the growth: They reached a high of €277 billion in 2017, an almost 9 percent increase from the previous year.

Spain is home to a number of multinationals, including clothing giant Inditex and Banco Santander, but by and large its corporations have been less aggressive about seeking opportunities abroad than have companies in other European countries. "In the past, exports were treated as an option for times of crisis when you couldn't rely on the domestic market, but now companies view exports as something they have to do all the time," says Emilio Ontiveros, founder of economic consulting firm Analistas Financieros Internacionales SA.

Ecoalf is emblematic of this new attitude. After starting the company in 2012, Goyeneche began testing his concept with a group of six fishermen on the Mediterranean coast near Valencia. The men pulled waste plastic from the seabed that was upcycled into fashionable clothing, shoes, and bags. The 30-person company collected about 2 tons of plastic last year, and its line encompasses more than 300 items. Almost half of its sales come from outside Spain.

Gestamp Automoción SA, a maker of auto components, has leveraged Spain's status as home to Europe's second-biggest auto industry, after Germany, to win business abroad. The company opened research and development centers in China, Japan, and the U.S. last year, and more than four-fifths of its revenue is international.

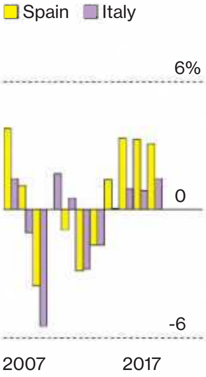
"There was a time when saying that a company had a position in Spain scared investors. I saw that firsthand," says Carmen de Pablo Redondo, who worked abroad for 11 years, including a stint as an investment banker in London with Morgan Stanley, before joining Gestamp in 2013 as director for corporate development and investor relations. "Now it's the other way around. A Spanish company is seen as part of the economic engine of Europe." In the time de Pablo has been on the job, Gestamp's workforce has increased more than 40 percent, to 41,048 employees in 2017.

Spain's recovery isn't complete. One legacy of the housing crisis is an overhang of mortgage debt, only a small percentage of which is fixed-rate. The rise in crude prices is another negative, because the country depends on imported oil. And while unemployment is 10 percentage points lower than its peak during the recession, it still exceeds 16 percent.

Yet there's no denying the economy is on a better footing. "It's surprising, especially if I look back at how we were thinking five years ago," says Nicolás López, investment director at brokerage firm M&G Valores in Madrid. "Things have worked out much better than we could have predicted." —*Rodrigo Orihuela, Thomas Gualtieri, and Ben Sills*

THE BOTTOM LINE Spain's economy appears headed for almost 3 percent growth this year, helped in part by a surge in exports by small and midsize companies.

● Gross domestic product, year-over-year change



DATA: EUROSTAT

Putin's Big Diplomatic Weapon

Russia is seeking buyers for its S-400 among some of America's most loyal weapons customers

Russia's S-400 missile system has never been used in combat. Yet it's already provoking fights around the world, as Russia searches for buyers in markets long dominated by American weapons makers. China's neighbors are fretting as the country bolsters its military reach with Russian hardware, encouraging India to follow suit. Tensions between rivals Saudi Arabia and Qatar have ratcheted up as both countries negotiate with Moscow on possible deals, while the recent decision by NATO member Turkey to buy the S-400 has drawn threats of U.S. sanctions.

With Algeria, Belarus, Iran, and Vietnam also likely customers, Russia could generate $30 billion in sales over the next 12 to 15 years, according to the *Moscow Defense Brief*, a leading publisher of Russian military information. That's all part of President Vladimir Putin's plan to use the Russian weapons industry not only to earn billions of dollars but also to drive a wedge between the U.S. and some of its key allies. "The S-400 has both commercial and geopolitical dimensions," says Vladimir Frolov, a former Russian diplomat who's now a foreign policy analyst in Moscow. "It creates an opening for Russian influence for years to come."

The Russian weapon has a few advantages over the only other comparable missile system on the market, the MIM-104 Patriot, made by U.S. company Raytheon Co., according to defense research group Jane's by IHS Markit Ltd. Both are surface-to-air systems designed to shoot down aircraft and ballistic missiles. But the S-400 has a longer range than the Patriot, 250 kilometers (155 miles) vs. 160 kilometers. An upgrade coming later this year is expected to stretch the S-400's range to 400 kilometers. It also has a more powerful radar, can destroy targets moving twice as fast, and is quicker to set up. While both systems are mounted on trucks, the S-400 can be ready for action in five minutes, compared with an hour for a Patriot battery. The S-400 is also slightly cheaper than the Patriot, on a per-battery basis.

The S-500, an advanced version comparable to the U.S. Thaad anti-ballistic-missile system that's

PHOTO ILLUSTRATION BY 731; PUTIN: LINTAO ZHANG/GETTY IMAGES

Edited by Matthew Philips

capable of downing hypersonic cruise missiles, is expected to enter production by 2022. The S-400 is manufactured by the state-run company Almaz-Antey, which has been sanctioned by the U.S. over Russia's military support for separatists in eastern Ukraine. Despite that, Almaz-Antey is opening two sites elsewhere in Russia to supplement its Moscow plant. The Russians don't shy away from talking up the S-400 to potential buyers. It "has no equal," says state arms trader Rosoboronexport's spokesman Vyacheslav Davidenko. "Russian air-defense systems don't allow anyone to attack without paying a price."

The Patriot has superior anti-ballistic-missile capability, says Omar Lamrani, senior military analyst at Stratfor Enterprises LLC, a Texas consultant. It can also be integrated into other U.S.-made missile-defense systems, increasing its effectiveness. The Patriot has a long and successful track record on the battlefield, having come to fame during the 1991 Gulf War. But its performance recently has come under scrutiny. In March video footage appeared to show a failed Patriot launch as Saudi Arabia intercepted a barrage of rockets fired by Yemen's Houthi rebels. One missile did an abrupt U-turn and crashed into the ground in the Saudi capital, and another one exploded midair. It's unclear whether the Patriots malfunctioned or the Saudi crew failed to operate them properly. Whatever the cause, it hasn't stopped Romania, Poland, and Sweden from pursuing plans to buy them. Raytheon declined to comment on the misfire footage, and says that the Patriot's "performance in testing scenarios and in combat speaks for itself."

Russia has a long history of producing strong air-defense systems, dating to the Cold War, when it needed to counter NATO's air forces. In the early 1990s the U.S. paid Boris Yeltsin's cash-strapped government $120 million for an air-defense launch complex to study the technology. Now the U.S. faces a growing threat from the sale of Russian advanced weaponry to its strategic rivals and erstwhile allies.

In 2014, China signed a $1.9 billion deal to buy 32 S-400 launchers, each equipped with four missiles, half of which were delivered last year, the *Moscow Defense Brief* says. New contracts with China may be in the pipeline, it adds; these acquisitions will allow the country to threaten aircraft in Taiwan, which Beijing regards as a rebel province, as well as challenge Japan and neighbors in Southeast Asia for control of the skies in disputed areas. "It poses big challenges for the U.S., Taiwan—which it is obliged to protect—also for American allies and anybody who challenges Chinese territorial claims in the South China Seas," says Alexander Gabuev, chairman of the Carnegie Moscow Center's Russia in the Asia-Pacific Program. ▶

Missile vs. Missile

How the S-400 stacks up against the U.S.-made Patriot

	Patriot	S-400
Range	160km	400km*
Assembly	1 hour	5 minutes
Speed	Mach 5	Mach 6
Warhead size	84kg	180kg
Price per battery	$550m-$700m	$475m-$625m

*BY END OF 2018 (CURRENTLY 250KM) DATA: JANE'S BY IHS MARKIT

◀ India, which has had sporadic skirmishes with China since the countries fought a bloody border war in 1962, is in the final stages of negotiating a $6 billion S-400 deal. According to Indian media, the contract may be signed before an October summit between Putin and Prime Minister Narendra Modi.

Turkey risks U.S. sanctions over its $2.5 billion deal, financed with Russian loans, to buy the S-400. Under a 2017 law, the White House has to penalize countries that conduct a "significant transaction" with Russia's defense sector. A defense spending bill passed by the U.S. Senate on June 18 calls for a freeze in arms sales to Turkey in response to its S-400 purchases. The bill also calls for the removal of Turkey from the F-35 joint strike fighter program, a multicountry, $400 billion plan to build and sell tactical jets to allies. Turkey was a key member of the program; it had ordered 100 F-35s and was slated to co-produce the jet. Some of its companies are the sole producers of essential parts in the supply chain. "The Turks have got to decide whether they're going to be in NATO or aligned with Russia," says Senator James Lankford, an Oklahoma Republican.

Despite the threats, Turkey's foreign minister, Mevlut Cavusoglu, says the deal to buy the S-400 is done. On June 13, Turkish President Recep Tayyip Erdogan said Turkey and Russia may also co-produce the next-generation S-500. "Russia seems to have communicated to Turkey that it's in their interest in one way or another to align with them," says Thomas Karako, director of the Missile Defense Project at the Center for Strategic & International Studies. "This is one of several ways in which they seem to be hugging their friends to the northeast." The deal is a major milestone toward improving ties between the two countries after Turkey shot down a Russian fighter jet near its border with Syria in 2015.

Although losing Turkey as a customer would mean a huge loss for F-35 manufacturer Lockheed Martin Corp., there are concerns that Russia will gain valuable intelligence—insights into U.S. air defense and aerial capabilities—if the country remains in the program. "It is in the American national interest to see Turkey remain strategically and politically aligned with the West, and we believe it is also in Turkey's interests," Assistant Secretary A. Wess Mitchell said at a congressional hearing in April.

As for Saudi Arabia, the increasingly warm ties it's enjoyed with Russia, particularly over coordination in the oil markets, have also provoked alarm in the U.S. President Trump's nominee for assistant secretary of state for near eastern affairs, David Schenker, said during his Senate confirmation hearing on June 14 that he would "tell Saudi Arabia not to do it" when asked about the kingdom's talks to buy the S-400. During an historic visit by King Salman to Russia in October, Saudi Arabia agreed on other arms purchases, including antitank weapons and multiple-rocket launchers, and licensed Saudi production of Kalashnikov assault rifles.

Neighboring U.S.-allied states Kuwait, Bahrain, and the United Arab Emirates are also acquiring Russian weapons. The advanced Russian missile system has turned into a major bargaining chip in the region as rival powers seek to cement new relations with Russia to balance U.S. influence. In a letter to the French president, Saudi Arabia warned of "military actions" against Qatar if it buys the S-400, as *Le Monde* reported in early June.

The S-400 still has an element of "hype," says Stratfor's Lamrani. Still, "it has a very promising future—there are places where opportunities are opening up for Russia." —*Henry Meyer and Ilya Arkhipov, with Stepan Kravchenko, Daniel Flatley, and Erik Wasson.*

THE BOTTOM LINE Russia could earn $30 billion from sales of its S-400 missile system over the next 12 to 15 years—and undermine traditional U.S. alliances.

"The Turks have got to decide whether they're going to be in NATO or aligned with Russia"

Detention Centers Are Big Business

● The U.S. government will pay Southwest Key more than $458 million to house immigrant kids

The Trump administration's so-called zero tolerance policy toward immigrants who illegally cross the U.S. border with Mexico was announced in April. But it wasn't until mid-June, when pictures began circulating of crying children being separated from their parents, that the impact of criminalizing what had been treated as a civil offense became apparent.

The policy calls for undocumented adults who cross the border to be arrested and prosecuted, even if they intend to petition for asylum. As a result, their children were placed in the custody of U.S. authorities—briefly with Customs and Border Protection, under the U.S. Department of Homeland Security, and then with the Office of Refugee Resettlement at the Administration for Children and Families (ACF), an agency of the Department of Health and Human Services.

PHOTOGRAPH: LOREN ELLIOTT/AFP/GETTY IMAGES

As the controversy boiled over, attention focused on a former Walmart in Brownsville, Texas, that's been converted into a detention center. By mid-June, the 250,000-square-foot facility, renamed Casa Padre, had become home to about 1,500 boys. TV cameras set up shop in the parking lot; lawmakers descended from Washington. The government's initial barring of observers, including Democratic Senator Jeff Merkley of Oregon, only deepened the controversy.

Eventually, lawmakers were let inside. Two groups of Democratic members of Congress recently toured Casa Padre. On June 18, a group of House Democrats also toured Casa Presidente, a smaller facility nearby that houses younger children. The lawmakers said they found children younger than 1 year old who'd been at the facility for more than a month. "If the president had a heart, how could he let this happen?" Representative Ben Ray Luján of New Mexico asked in an interview after the visit. On June 20, Trump signed an executive order to keep immigrant families together, reversing his insistence that only Congress could end his separation policy.

Casa Padre is run by an Austin-based nonprofit, Southwest Key Programs Inc., which, according to government data, will be paid more than $458 million by the Trump administration in fiscal 2018, the most among the nonprofits, government agencies, and companies the federal government pays to run its detention and care system for immigrant children. That compares with about $286 million the government paid Southwest Key in 2017 and $211 million in 2016, according to data from ACF, the agency in charge of caring for 12,000 immigrant children.

More than 2,000 of those children were separated from their parents or caregivers after crossing the border; the rest entered the U.S. on their own. The government expects to spend $943 million in 2018 detaining and caring for the children, according to ACF data—but that figure may be out of date and could rise as the administration apprehends more families crossing the border. The government spent $958 million in all of fiscal 2017. ACF spokespeople didn't respond to inquiries about the data and the government's detention system. Southwest Key, which also operates Casa Presidente, didn't respond to messages either. In January, Southwest Key joined dozens of other groups in signing a letter to DHS urging the agency to "abandon any plans to systematically separate children from their families."

The ACF data may not reflect an expansion of the government's detention system. For example, Comprehensive Health Services Inc., which runs a center in Homestead, Fla., doesn't appear in spending records for what the government calls its "Unaccompanied Alien Children Program." The company was paid about $216 million through 2017 under an Obama administration program to house immigrant children apprehended crossing the border. Southwest Key, which was also part of that program, was paid about $29.5 million.

Comprehensive Health's facility in Homestead was closed last year. Florida Representative Debbie Wasserman Schultz said it was reopened this year without notice and currently houses as many as 1,000 immigrant children. On June 19, Wasserman Schultz and Florida Senator Bill Nelson, both Democrats, tried to enter the facility but were turned away by officials. A spokeswoman for Comprehensive Health Services referred all questions to the ACF public affairs office. Spokespeople there didn't respond to voicemail or email seeking comment for this story.

▲ The Casa Padre detention center in Brownsville, Texas

Southwest Key, which runs about a dozen facilities in Texas, has rapidly increased the compensation of its chief executive officer, Juan Sanchez, from about $269,000 in 2010 to more than $786,000 in 2015, the most recent year for which its tax returns are available through the website Guidestar.org. Sanchez's compensation almost doubled, to $1.5 million, in 2016, according to tax records for an Austin charter school he founded. Southwest Key didn't return messages seeking comment. The nonprofit is expanding: The *Houston Chronicle* reported on June 15 that it has leased a warehouse in that city to build a detention center that may be intended for the long-term housing of as many as 240 children, most of them under the age of 12. —*Alex Wayne, Jennifer Epstein, and Jonathan Levin*

● In 2018, to detain and care for children separated from their immigrant parents, the U.S. government expects to spend almost

$1b

THE BOTTOM LINE President Trump's "zero tolerance" policy to separate children from parents who cross the border illegally led to a surge in the need for detention centers to care for them.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An AI Fix For Hospital Falls

Qventus has developed software that identifies patients most likely to take a spill

El Camino Hospital, located in the heart of Silicon Valley, has a problem. Its nurses, tending to patients amid a chorus of machines, monitors, and devices, are only human. One missed signal from, say, a call light—the bedside button patients press when they need help—could set in motion a chain of actions that end in a fall. "As fast as we all run to these bed alarms, sometimes we can't get there in time," says Cheryl Reinking, chief nursing officer at El Camino.

Falls are dangerous and costly. According to the Department of Health and Human ▶

ILLUSTRATION BY KATI SZILAGYI

June 25, 2018

Edited by Dimitra Kessenides and David Rocks

◀ Services' Agency for Healthcare Research and Quality, 700,000 to 1 million hospitalized patients fall each year. More than one-third of those falls result in injuries, including fractures and head trauma. The average cost per patient for an injury caused by a single fall is more than $30,000, according to the Centers for Disease Control and Prevention. In 2015, medical costs for falls in the U.S. totaled more than $50 billion.

Like most other U.S. hospitals, El Camino had invested time and money in fall prevention efforts, such as the call lights, but the various methods hadn't been effective enough. The parameters for at-risk patients are wide enough that many are tagged as likely to fall at some point. It's even harder if a hospital has a bigger share of high-risk patients as El Camino does—about 50 percent of its patients are at risk for falls. Effectively monitoring that many people can be tough when nurses are already overworked.

Four years ago, El Camino turned to a health-care technology startup called Qventus Inc., based a few miles away in Mountain View, Calif., to help it prevent falls. The hospital had worked with Qventus the year before to devise a better system of scheduling Cesarean sections. The company created software that would predict the number of women coming in for the surgery to ensure there were enough rooms.

Qventus Chief Executive Officer Mudit Garg and his co-founders, Brent Newhouse and Ian Christopher, quickly began developing a program that predicts falls resulting from what's known as alarm fatigue—when clinicians experience sensory overload from the many hospital sounds and alerts, leading them to sometimes miss critical alarms altogether. "If I tell you everything is important, nothing is important," says Garg. "You're applying the same level of focus to everything."

Qventus came up with a program that extracts and analyzes data from call lights, bed alarms, and electronic medical records. It also pulled in other information such as a patient's age, the medication he's on and when it was last administered, and the vitals last recorded by a nurse. Analysis of the data exposed patterns, such as the time of day when most falls occur or the sequence of events that typically lead to falls. For example, patients who have changed rooms are especially vulnerable.

"I can't tell you how many late nights we spent trying to figure out how we could, in a mildly usable form, get the call light data" and then write some code to analyze it, says Newhouse.

From the data, Qventus identified several fall indicators used to predict which patients need more monitoring. If a patient meets all the indicators, an alert is sent to a special badge worn by nurses—a "nudge," as Qventus calls it, reminding them to check on the patient within the next 12 hours. "In the long run, it should cut down on those bed alarms, because they're intervening earlier," says Reinking.

Garg, Newhouse, and Christopher founded the company in 2012 to use artificial intelligence and machine learning to help hospitals improve operations. Christopher is a software engineer and Qventus's chief technology officer. Garg and Newhouse met at McKinsey & Co. in 2008 when both consulted on health-care projects, helping hospitals to become more efficient. Observing doctors and clinicians in hospitals, they say they witnessed a lot of fumbles. "That's where the focus on the process problems, rather than the clinical problems, came from," Garg says. They realized, he says, that "data would be a big part of what would anticipate, help get ahead" of problems.

That focus appealed to Steve Kraus, a partner at Bessemer Venture Partners, a fund focused on health-care and technology startups. Machine learning- and artificial intelligence-based health-care solutions have "reached peak hype cycle," he says. Qventus is a standout, because it's going after what he calls the "low-hanging fruit in health care, the operational, workflow side," which is easier to change. In May, Bessemer, along with Norwest Venture Partners, Mayfield Fund, and NewYork-Presbyterian Hospital, invested $30 million in Qventus. Since its founding, the company has raised $43 million.

The fresh cash will enable Qventus to expand to more hospitals, Garg says. The company's fall prediction platform already is in use in health-care facilities across the country, but Qventus declined to disclose how many. At MedStar Montgomery hospital in Olney, Md., the program has led to a 13.5 percent reduction in patient falls since 2016, according to Qventus.

At El Camino, where the software has been installed since 2014, head nurse Reinking says it took some convincing to get the staff to adapt new procedures. But overall, it wasn't too hard a sell, given how persuasive the fall prevention results have been. Since 2014, nurses have seen a 29 percent drop in falls. "Once we were able to demonstrate the value of the technology," Reinking says, "people kind of began to come around."
—*Emma Ockerman*

Collateral Damage

Share of hospital patients who sustain an injury when they fall*	Average number of days that a fall adds to a hospital stay	Approximate cost of a fall with an injury
35%	6.3	$14k

*HIGH END OF ESTIMATED RANGE. DATA: JOINT COMMISSION CENTER FOR TRANSFORMING HEALTHCARE

THE BOTTOM LINE Qventus is using data and predictive analytics to help hospitals improve routine functions; its fall prevention software has led to a 29 percent drop in falls since 2014 at a California hospital.

When Hearts Stop, This Computer Talks

A Danish company uses artificial intelligence to help health hotlines diagnose cardiac arrest

A woman in Copenhagen hears a loud crash in the next room and rushes in to discover her father sprawled on the floor, unresponsive. She quickly calls Denmark's health-emergency hotline, where a person answers the phone—but a computer is eavesdropping. As the operator runs through a series of questions—the patient's age, physical condition, what he was doing when he fell—the computer quickly determines the man's heart has stopped and issues an alert. "Those human dispatchers have an amazingly hard job," says Andreas Cleve Lohmann, co-founder of Corti SA, a Danish artificial intelligence software house that created the program. "This software can help them save lives."

Corti's AI employs machine learning to analyze the words a caller uses to describe an incident, the tone of voice, and background noises on the line. The software correctly detected cardiac arrests in 93 percent of cases, vs. 73 percent for human dispatchers, according to a study by the University of Copenhagen, the Danish National Institute of Public Health, and the Copenhagen EMS. What's more, the software made its determination in an average of 48 seconds, more than a half-minute faster than the humans did. False positives—mistakenly concluding that a person is having a heart attack—were the same for both, 2 percent.

With a rapid diagnosis, dispatchers can quickly give the caller instructions on how to perform CPR or where to locate a defibrillator to shock the heart back into action. That can make the difference between life and death: Danish studies have found that a patient's 30-day survival rate triples when a dispatcher recognizes cardiac arrest during an emergency call. "Seconds matter," says Freddy Lippert, head of Copenhagen's EMS, which provided more than 150,000 recorded calls to test the algorithm. "When I first saw their results, I thought this is too good to be true." He was so skeptical he asked Corti to do it again with a new batch of calls, which the software also aced. This spring, Copenhagen began a large-scale randomized trial with live calls, and if it's successful the city plans to use Corti on all its emergency hotlines.

Lohmann launched Corti with money from the 2013 sale of his first startup, which used a text-based chatbot to help medical staff schedule shifts. For his second act he wanted to create a voice-based interface to help doctors make diagnoses. But in machine learning, the data available often dictates the product you can build—and one of the best audio archives in medicine belongs to the Copenhagen EMS. Unlike many other localities, the city logs and analyzes all its emergency calls and tracks patient outcomes, and it had already studied how well its human dispatchers recognized cardiac arrest, giving Corti a good benchmark for judging its success.

This fall, Corti will begin pilot studies in five other European Union countries in conjunction with the European Emergency Number Association. And its software will soon be deployed in emergency call centers in Seattle, Singapore, and Taiwan. The installations will help Corti's software work with new languages, dialects, and accents—essential because the algorithm involves speech recognition and analysis of the words a caller uses. "Our plan is to plant flags with the best emergency medical departments in the world," says Lohmann, who's raised $3 million from Nordic venture capital firms and has 22 employees in Copenhagen, Seattle, and Paris.

Corti's software uses deep neural networks, a kind of machine learning loosely based on the human brain. These systems can ferret out complex correlations in data, but they're largely opaque even to their creators: In any individual emergency call it's difficult to determine the combination of factors that lead to the conclusion that a victim's heart has stopped. An early version of the software ran via the cloud, but Lohmann soon realized his program needed to run locally in the call center. Otherwise, the system would fall behind on recognizing and analyzing the audio, causing it to miss key moments when it needed to prompt a dispatcher to ask a question or send an ambulance. Corti is now training the system to identify other critical conditions such as strokes and milder heart attacks.

Since many emergency operators already follow a standard script and decision-tree protocol to assess calls, it might appear that Corti aims to replace humans with computers. Lohmann acknowledges such a system could make sense in places such as large cities in Asia and Africa where there's currently no emergency call handling at all. But he says the company's research indicates the best outcomes occur when the machine works together with dispatchers. "This is a human augmentation tool," he says, "not a human replacement tool." ——*Jeremy Kahn*

THE BOTTOM LINE After successful tests in Denmark, Corti's program will begin pilot studies in five other EU countries this fall, and it will soon be used in emergency call centers in Seattle, Singapore, and Taiwan.

ILLUSTRATION BY KATI SZILAGYI

Preventing a Death Spiral

Tech companies and universities build early warning systems to lower patient fatalities

Hospitals collect all manner of data on patients, from doctors' notes to test results to measurements such as pulse and blood pressure. Doctors have long known the data points can be leading indicators of potentially fatal medical emergencies. If physicians were able to analyze the data to identify when serious deterioration starts, they could save lives. Now computers have started doing just that.

Researchers are using artificial intelligence algorithms to comb through the records of patients who suffered, say, sepsis or lung failure. The software examines data points from hours or even days before the onset of a crisis to see which combinations of factors might have predicted a fatal condition. The algorithm trains itself to model the warning signs. "It's the idea that you could recognize these risk points or the point of tipping toward the cascade," says Eric Horvitz, a research director at Microsoft Corp. who, together with scientists from the University of Washington, is studying AI methods for early detection of conditions such as heart, lung, and kidney failure. They're using 10 years of data from 80,000 patients.

Several universities, startups, and tech companies are also trying to devise early prediction systems. Google in May published a research paper on an AI system it built to gather vast amounts of patients' medical data—almost 50 billion pieces—and provide a score of how likely a patient is to die soon.

A key target of several studies is sepsis, an often fatal complication of infection. According to the Centers for Disease Control and Prevention, 1 in 3 patients who die in hospitals have sepsis. It occurs when a massive immune response to fight an infection instead triggers inflammation throughout the body, causing tissue damage and organ failure. Many hospitals have added so-called Rapid Response Teams to quickly react, but by the time a team is rushed in, it's often too late. "Cases are preventable if you could actually intervene at the right time," says Suchi Saria, a computer science, math, and health policy professor at Johns Hopkins University.

Saria, who lost a nephew to sepsis, and several co-researchers looked at whether they could create a machine learning model. They had the model examine 54 readily available medical measurements and determine which were most predictive of septic shock. The software then tracked those measures to see what conditions were present at the onset of septic shock. From that, researchers were able to build a scoring system that performed better at identifying at-risk patients than other commonly used measures.

Saria and her team further refined their software, compensating for missing data and making sure doctors were notified only when the algorithm reached the right level of certainty; too many alarms might cause clinicians to ignore the alerts. They gave the software to about 300 doctors at a Johns Hopkins hospital for testing. In its first year, nurses and doctors caught cases much earlier and calls to the Rapid Response Team dropped 75 percent.

Dallas's Parkland Hospital has been running clinical trials on machine learning technology that tries to find patients who aren't in intensive care but are at risk of a heart or respiratory emergency. The results of the trials, which have not yet been published, indicate the system is faster than doctors or nurses at identifying deteriorating patients, the hospital says. The system is good enough that in 90 percent of alert cases a clinician took action, according to Ruben Amarasingham, chief executive officer of Pieces Technologies Inc., Parkland's for-profit arm.

A big gap still exists between promising research and clinical success. To be effective, the new sources of information must be well-integrated into doctors' and nurses' daily workflow and provide predictions accurate enough that hospitals and insurance companies can base expensive care decisions on them. Also, doctors, because they're using these programs to make life-and-death decisions, want what they call explainable AI, meaning systems that go beyond a simple warning to offer an explanation of why a patient has been flagged. This is difficult for some AI technology. "There's a lot of concern with these types of systems when they are black boxes that can't explain themselves," Amarasingham says. "So a big focus for us is how do we explain how the system has come to that conclusion in clinical terms." —*Dina Bass*

THE BOTTOM LINE AI algorithms are combing through patient data looking for and modeling warning signs that could help doctors respond to medical emergencies and avert fatalities.

ILLUSTRATION BY KATI SZILAGYI

Dwyane Wade

Shooting guard,
Miami Heat

'I'm in a position where I have a voice and so many others don't get the opportunity'

The NBA superstar talks to *Bloomberg Businessweek* Editor Joel Weber about the league's evolution, his business portfolio, and preparing for life after basketball

Photograph by
Malike Sidibe

You're a 12-time NBA All-Star, three-time NBA champ, 20,000 career points, 4,000 rebounds. What did I miss?

A lot. I've got 22,000 points now. An Olympic gold medal.

And a bronze.

I don't really talk about that.

What are the things that you still think you want to cross off?

From a basketball standpoint? I'm way past where I wanted to go. I just wanted to play in the NBA, and I got a chance to do that. And from there, everything else has definitely been the cherry on top of my career. I couldn't have written it any better than it's been, so I'm cool.

When you think back on your 15 years in the NBA, how has the league changed?

First of all, David Stern, our last commissioner, did an amazing job of helping us grow our game, saying "OK, we need a face-lift, and let's do this differently." He made our game global to where, in China and other countries, it's so big. The NBA wasn't one of the top leagues. It was definitely looked at as a very thuggish league, you know. They used to fight back in the day a lot, a lot of real grown-man fights. And that was one of the things that David Stern cleaned up—getting the players out, getting us involved in the community, building the brand.

He changed that. Once you hit somebody you're going to lose all your money. The guys started dressing differently. He helped the new players coming in to start thinking of the NBA as more of a business. It really changed the mindset.

The NBA finals this year, between the Golden State Warriors and the Cleveland Cavaliers, was over in a blink. Did you watch?

I did. A full-on sweep in the finals ain't really what we want as fans watching the game. Everybody was hoping that Cleveland would get a game or two. But a lot of people really believed it was going to be Golden State. Those guys are so dominant right now. They're very, very, good. Like, real good. Like, three-championships-in-four-years good.

You've played against some great teams. How do they compare?

The greatest team I've ever played against was probably the San Antonio Spurs, with Tim Duncan, Tony Parker, and Manu Ginobili. They challenged you in so many ways with the mental part of the game. It goes way beyond basketball. Golden State does that. They challenge you mentally as well as physically. And they have more talent than everybody, as well. It's going to take some special kind of medicine to put a team together to get them.

Do you need a dynasty now to win an NBA championship ring?

Right now you do. I raise my hand as a part of the problem. When the Miami Heat decided to bring the big three together—myself, LeBron James, Chris Bosh—in 2009, the game changed. Players understand their power. I don't see that slowing down. I see the next generation—my son's generation—getting even tighter.

You said it's a problem.

For other teams that ain't winning. It's not a problem for Golden State. It wasn't a problem for the Miami Heat when we went to four championships in a row. It's a problem for everyone else when they're not doing it.

Do you guys talk to each other about breaking up a dynasty like that?

Nobody's calling me at 36, like, "Yo, we need you to come lay down this dynasty." But obviously you want to take down the champs, right? People who watch the sport can't wait to see what's going to happen this summer in free agency, because you want to see a team put together that can compete against a team like that. I'm watching. I'm a fan. I want to see a big splash this summer. I would love to see some ▶

guys team up. Our game has grown. When people say Golden State is hurting our game, that's untrue. Our game is so high right now. It's so great, but we would like to see somebody else get an opportunity.

How do coaches fit into all of this now?

Huge.

Do you think Steve Kerr of the Warriors could run for president?

Yeah. I'd vote for him. I like him.

What coaches in the league are underrated?

Obviously Boston Celtics coach Brad Stevens. He's one of the best young coaches in our game, a mastermind of the game of basketball. A lot of people talk about Gregg Popovich in San Antonio, rightfully so. He's incredible. We have a good young coach in Miami, Erik Spoelstra. The New York Knicks have a great young coach now in David Fizdale. So I'm excited about what he does here in New York. There's a lot of great basketball minds, but you've got to be able to talk to the players about where they're at and know how to coach them to where they need to be.

What's next for you? How did you decide to become an entrepreneur and get into business?

My whole life was focused on the game of basketball. I wanted to be a basketball player. I lied to my mother. I told her I wanted to be a doctor. But I wanted to be a basketball player. As a young kid I was very shy. I wasn't outgoing, a little unsure of myself. But once I got to college and then became a professional, I started getting this confidence. I started believing in myself, and I started to explore a different side of me that I didn't know I had, and that now comes into business. You find these avenues, these creative juices.

What was the first business decision you made?

A bad business decision. It was a restaurant venture. It went south. It went south fast. It was some sports bar and grill type vibe. I was in court for about three years. I was 23 years old, and I thought it was something cool to do. I wanted to do it with my homies. And I paid for it. They didn't pay for it. I paid for it—big time.

What did you learn from that experience?

Get help. Don't do it on your own. Make sure you dot your i's and cross your t's. I didn't do that at that age.

And you got some advice from Magic Johnson.

I got to the point where my basketball career was going great. But I had some injuries, so it scared me a little bit that it could end fast. What can I do to focus on life after basketball? Who is the blueprint person I could turn to? For me it was Magic Johnson.

I got an opportunity to go and meet with him, and I just asked him a lot of questions, took a lot of notes, met with him a few times, and it just kind of helped me get my creative juices flowing.

What did he tell you?

No idea is a stupid idea. You have things inside that you want to do. You might not know how to do them, but just write them down. When you're on a plane, in the back of a car, whatever comes to your mind, just write it down and send it over. Send it over to the people who can get the job done. He said, "You have a great team around you." And I did. I sent like 10 things over on a plane to my business team. It started from there.

How did you put that team together?

I started with my base agent when I came out of college. From there, he said, we need somebody to work with you on a day-to-day basis. I was able to find my business manager, who is still my business manager today. The NBA was changing, and I wanted to start dressing better, so I found my stylist. I just kept building it, depending on how I was changing, how the game around me was changing, how the world was changing. I signed with Creative Artists Agency. I started finding the right people.

And your portfolio now includes your wine, Wade Cellars, compression gear, and more. This morning I even got an alert that you've got Away luggage coming out. And here's a new one: socks.

Ultimately, I just want to build a lifestyle brand. All these things are part of a lifestyle. Do I think it can go far? I hope so. It's a lot of learning involved, but it's been pretty cool signing with Stance, the sock company, and then being able to sit down with Stance and say, "Let's start another sock company. Let's do something that's a little bit more affordable, a little bit more for the masses." Now, I'm CEO of that brand and want to see where it can go.

What was it about Stance? Why was that a brand you wanted to partner with?

At the time I wanted to start my own sock company. I was sure my team was rolling their eyes behind my head. But they went out and found a great partner. Stance was at a point where they were looking for a face for the brand. We just clicked, and it worked, and we've had some good success. Then, OK, how do we build off this? How do we keep going? My initial want was to be able to have my own sock company and make it more affordable. Stance is top man on the price. Now I get to focus on what the real passion is.

Talk about your sons, Zaire and Zion, and how they feel about basketball.

My older son, Zaire, plays. My 11-year-old doesn't. He doesn't care about basketball at all. But my 16-year-old, it's a part of him. I had him when I was at school at Marquette. We didn't have babysitters. We didn't have any extra money, so I had to take him to the gym with me. I would be in the gym working—11, 12 at night—and I think it just kind of became a part of him. I was a young parent, just being in the gym, talking to myself, and he just was there. That's a part of him, and it's cool for me right now to kind of see him be in a position where college is the next thing that we're focusing on. I hope his dreams come true just like mine.

My son is similar to me. He's a late bloomer. But now

'I just want to build a lifestyle brand. Do I think it can go far? I hope so'

the colleges are starting to see his talent and his ability, and he got his first couple of college calls the other day. He decided to wait a couple of hours to tell me. I wanted to know right away. He put me on ice. I had to call him like, "Yo, what's going on?" But it's cool, man. I know how that has to feel for him because obviously he has my last name. You're in the shadows of your dad or whatever the case may be. So for him to be trying to make a name on his own—I enjoy seeing it.

We have a story on the G League in this issue...

Gatorade league, by the way. I'm sponsored by Gatorade.

There's a really talented player who's going from high school into the G League and bypassing college, getting paid at 18. This might be a harbinger of things to come. How do you view the G League, and how do you talk to your son when that's an option?

First of all, I love the G League. It's like a farm system for players. Baseball's been doing it for a long time, and I think the NBA is now focused on it because there's so many good players coming out of the G League. I wasn't for the NBA changing the rule and making kids go to school, anyway. So I love the fact that this young man has decided to step out on faith on his own. Someone has to be first.

College isn't for everybody. Certain kids want to make money for themselves and for their families, and they have the ability to do that with the G League and playing overseas, etc. So I'm all for it.

I feel like if a kid is talented enough, if an NBA franchise wants to take a chance and give him an opportunity to come in the league at 17, 18 years, like Kobe Bryant, LeBron James, Kevin Garnett—all great players—why not?

What's been the effect of the rule that kids have to be 19 and have a year playing in college before declaring for the NBA draft?

I don't really think "one-and-done" has changed the league. They're coming at 19, so they're just going to school for a year and then they're coming right to the NBA. They're going to school because they have to, but they're so good and they're so talented that they can just come out of high school. Sometimes you say, well, what if they get hurt? Obviously you can pick up insurance, but these kids have been dreaming about this their whole life, and if you're good enough to do it, then why not have the ability to be able to do it?

There's a lot of players who came out of high school and didn't get drafted. What if they were to go to college? There's many things you can do, definitely, to try to improve the rules. It's a bigger conversation that needs to be had with both the NBA and the NCAA.

When you think about your next act off the court, would you ever consider buying a team?

I definitely want to be a part of ownership in the NBA. I'm not going to try to buy a team. I don't have that kind of bread, but I definitely want to be a part of a great ownership group. NBA Commissioner Adam Silver is all about players being involved in an ownership capacity. You've got players like Grant Hill involved in the Atlanta Hawks. Shaquille O'Neal is involved in the Sacramento Kings. It's definitely something that I've talked about, some of my friends have talked about. But, first of all, I'd have to be retired. When that time comes...

Which team do you want?

Seattle. I want Seattle's team, the Sonics, to come back. I think Seattle is a great basketball town. I would love to be a part of that. But I'm open—if you know somebody...

You've evolved as a role model. One of the young people killed in the school shooting in Parkland, Fla., was buried in your jersey. How did you find out and how has it affected you?

Joaquin Oliver. I found out about it like everyone else, through the media. It's unreal to even think about—that tragic moment for his family when they're sitting there and going through all his likes, his wants, and the way they want to celebrate his life, and for them to say that they want to bury him in Dwyane Wade's jersey. That was just way beyond why I started playing the game of basketball.

That really hit me in the heart. I'd just got traded back to Miami from Cleveland a couple of days before that. Everything happens for a reason, so it was the perfect timing for me to come back and be able to hopefully shed some light, be a part of the message.

How involved have you remained with supporting those kids?

We're in touch with them. These kids are 16, 17, 18 years old and aware of their power. They understand their voice—not just for themselves but for other communities. I'm from Chicago, so it really made me feel good that they were involved with the kids from the inner city of Chicago, which is too familiar with gun violence. I really want to step up and be the voice for them as well.

How can you advance your message about social issues?

You find certain issues you're passionate about. You find issues that hit home. As I've gotten older, I definitely understand it's no mistake I'm in a position where I have a voice and so many others don't get the opportunity to say the things they want to say because they're being muted in a sense. I owe it to the community that supports me, supports my family. I've been all in with it. B

The NBA has plenty of young talent.

The question is what to do with it

By Ira Boudway **Photo illustration by Pelle Cass**

Darius Bazley, who turned 18 earlier this month, is one of the best basketball players his age in the country—a 6-foot-9 forward with ball-handling skill rare for his size. Along with a few peers in the elite ranks of high school basketball, Bazley faces a peculiar problem: His talents are worth millions in the NBA, but he can't cash in because the league bars players who aren't at least 19 years old. Since he isn't eligible to walk the stage at the NBA's June 21 draft in New York, he had to consider his options.

Most kids in his shoes go to one of a handful of universities (see: Duke, Kentucky, Kansas) that have made themselves into extended-stay residences for NBA draftees-in-waiting. They play in nationally televised games, then leave after a year. All the while, the National Collegiate Athletic Association insists they're "student athletes" who can't be compensated beyond scholarships and modest stipends. Occasionally, top prospects go to Europe, where they play professionally for six-figure salaries.

Ultimately, Bazley chose to do neither. He backed out of a commitment to Syracuse University to go to the NBA's minor league circuit, the G League. He's not the first player to join the league straight from high school. Latavious Williams did it in 2009, but Williams, who never made it into an NBA game and now plays in Europe, had been deemed academically ineligible by the NCAA. Bazley is the first player to turn down scholarships in favor of the G League. "This kid's decision was a little startling," says Michele Roberts, executive director of the National Basketball Players Association.

If basketball fans think about the G League at all, it's usually as a place where nobodies play for no money in front of no one. In April the NBA raised the G League's minimum salary from $19,000 to $35,000 for the five-month season that will start in November, which mainly underscored how little the league has paid since it started in 2001. Bazley's decision may help prove that the G League is an untapped asset: If others follow his path, the league could go from afterthought to destination, unlock tens of millions of dollars in revenue for the NBA, and help college basketball rid itself of its recruiting scandals.

The NBA is cruising at a time when other U.S. sports leagues have begun to sputter. Revenue for its 30 teams is expected to hit $8.5 billion for the just-completed season, up more than 7 percent from 2016-17. Ratings for nationally televised NBA games rose 8 percent from last season, while NFL ratings fell almost 10 percent in 2017, according to Nielsen Holdings Plc. The NBA's median viewer is 43, compared with 51 for the NFL and 57 for MLB. The NBA doesn't have the player safety problems that plague the NFL, nor has it faced—and fumbled over—player protests during the national anthem; its fast-paced games fit better into the social media age than baseball's slow-building drama; and it has international popularity the NFL, MLB, and NHL can only dream of.

This year's NBA Finals, the fourth consecutive matchup between the Golden State Warriors and the Cleveland Cavaliers, averaged 17.6 million viewers in the U.S. despite ending in a ho-hum Warriors sweep. The last time the Finals ended in four games, in 2007, average viewership was less than 10 million. The series served as a showcase for three global celebrities—LeBron James of the Cavaliers and Kevin Durant and Steph Curry of the Warriors—who rank second, seventh, and ninth, respectively, on ESPN's recent "World Fame 100" list. Tom Brady, the list's top NFL player, comes in at No. 38; no baseball player makes the cut. Even the NBA's most urgent issue—an overstuffed talent pipeline—is a sign of health.

The NCAA, which supplies the vast majority of NBA players, is grumbling about its role as a finishing school. The trouble goes back to the 1995 draft, when the Minnesota Timberwolves selected Kevin Garnett with the fifth pick—at that time, teams could draft as young as 18. Garnett, the first high schooler picked since 1975, was an all-star by his second season. Kobe Bryant made the jump in 1996, and soon high school gyms were crawling with NBA scouts looking for the next superstar. Sometimes they found him—James came straight from high school in 2003—but more often they fooled themselves into thinking they had. Kwame Brown, a Georgia high schooler picked first overall in 2001, failed to live up to expectations and bounced around the NBA for 12 seasons.

Brown's story is hardly a tragedy—he made about $65 million during his career—but for the league and its owners, it was a problem. High schoolers were hard to evaluate and, with rare exception, not ready to contribute. Teams were spending tens of millions of dollars and getting nothing in return. In 2006, as part of a collective bargaining pact with the National Basketball Players Association, the league instituted the 19-year-old age minimum. "It was very much business-driven," says David Stern, the NBA commissioner at the time. "The whole notion was that it allows us to make a better judgment."

The rules reshaped college basketball, filling rosters at powerhouse programs with so-called one-and-done players who left for the pros after a year. These teens have become prime targets for NCAA coaches, player agents, and sneaker reps who are willing to pay under the table. This shadow economy has been part of college basketball recruiting for decades, with the NCAA handing out fines and suspensions now and again. Federal prosecutors raised the stakes in September, however, unveiling criminal charges against 10 coaches at seven schools, as well as agents, shoe company executives, and their go-betweens, who were accused of making illicit payments to players and their families. A month later, with the investigation ongoing, NCAA President Mark Emmert formed a commission to examine college basketball's woes. In April it issued a 53-page report. The first suggestion was to end one-and-done.

By making this the central plank of its reform plan, the NCAA is kicking the problem back to the NBA and admitting that black-market college recruiters need competition. In the last few months, says a source familiar with the discussions who declined to be named, NBA Commissioner Adam Silver has been talking with players, owners, and execs about what to do with high schoolers. "This issue has become front and center," says Roberts of the players union. "There'll be some resolution, either way, within the next six to nine months." Whatever is decided, the new rules likely won't go into effect for a few years.

Just lowering the age limit won't resolve things. "Everybody

“You’ve extended the best league in the world to the two best leagues in the world”

acts like all our problems surfaced when players couldn’t go [pro] out of high school,” says Jay Bilas, an ESPN analyst and former Duke center. “We had scandal and problems before that, and we’re going to have them after that.” If 18-year-olds are again allowed to go straight to the NBA, he says, it won’t change the number of players who bolt college after a year. The top 15 prospects in a high school class will go directly to the NBA, and the next 15 will go a year later. High school gyms will once again be full of NBA scouts. Unscrupulous college coaches will still break rules to get the best available talent.

The G League began as eight teams owned by the NBA and known as the National Basketball Development League. The idea was to give players who’d been cut from NBA rosters before the season began somewhere to play other than Europe. The league was a common pool of talent; any NBA team could sign any player. In 2005 the NBA rebranded it as the D-League and shifted toward an affiliate model, allowing NBA teams to stash first- and second-year talent on rosters while maintaining exclusive rights.

By 2014 the organization had grown to 18 teams. Malcolm Turner, a former sports marketing executive, took over as president and pushed to expand the league to 30 teams and create a one-to-one affiliation for each NBA franchise. Last season, when Gatorade became the official sponsor—changing the “D” to a “G”—the league had 26 teams, 23 of them owned by their NBA affiliate. A 27th is set to join next season, and Turner expects to hit his “30 for 30” goal by 2020. “It’s taking matters in our own hands and trying to get talented young players NBA-ready as quickly as possible,” he says.

Last year the NBA added slots to every team’s roster for “two-way” players who split time between the NBA and the G League and can earn as much as $385,000 during the season. Turner says that next season, with the raised minimum, the two-way contracts, and other NBA call-ups, more than a quarter of G League players will make at least $75,000—on top of housing and health insurance. The most important indication of the league’s progress, he says, is that at the end of the regular NBA season in April, 53 percent of players on rosters had G League experience, marking the first time a majority of the NBA had spent time in the minors.

Most G League vets in the NBA aren’t boldface names. They’re role players and end-of-the-bench guys like Andre Ingram, the 32-year-old Los Angeles Lakers rookie who made his NBA debut in the team’s second-to-last game of the season after spending most of the past decade playing for the now-defunct Utah Flash and the South Bay Lakers. “You get one sweat suit. You’ve got to keep that for the year,” Ingram says of his time with the Flash. His three days with the Lakers, prorated at the $816,000 league minimum, earned him $13,824, more than he made in his entire first season in the G League.

The simplest way to make the minor league more attractive to elite prospects is to pay more. The NBA could try funneling them to the minors in other ways—forcing players drafted out of high school to spend a month or two there or making players who go to college ineligible for the draft until they’re juniors—but such moves are unlikely to get past the union. A $75,000 starting salary, however, could make the G League at least as appealing as the black market.

Last summer, according to one of the complaints federal prosecutors filed in September, an Adidas AG exec and a Louisville assistant coach conspired with fixers to pay $100,000 to the family of a five-star recruit, later identified as Brian Bowen, to persuade him to enroll at the school. Adidas has a $160 million sponsorship deal with the university. If $100,000 is the going rate for an elite prospect, the G League can probably get away with paying less because it offers better preparation for the NBA. College coaches are focused on winning and keeping their jobs—and bound by NCAA rules limiting practice time—whereas everything about the G League, from the coaching to the schedule to the officiating, is designed to develop professional talent.

That’s why Bazley turned his back on Syracuse. “Spending a year in the G League is going to prepare me for the NBA in a way that no other setting can,” he wrote in the *Players’ Tribune* in April. Bowen, for his part, left Louisville and is trying to figure out what’s next. Although he wasn’t charged with a crime and has said he was unaware of any alleged payments to his family, the NCAA ruled that he can’t play in college next season. He could wind up in the G League. If he’d been able to earn $75,000 there, he might have chosen it in the first place and saved himself a lot of trouble.

The investment would be worth it for the NBA. A G League that attracts the best high schoolers and other top young players from around the world would command tens of millions of dollars in global media rights, says Daniel Cohen, a media rights consultant at Octagon sports agency. The G League has distribution deals with ESPN, Facebook, NBA TV, a startup network called Eleven Sports, and Twitch Interactive, an Amazon.com subsidiary that streams video games and esports competitions. Eleven, Cohen estimates, pays about $1 million a year. (Turner wouldn’t comment on the league’s finances.) “If I could tune in and watch LeBron James and Kobe Bryant go play their first year for a G League affiliate, it opens up a lot more interest,” he says. “You’ve extended the best league in the world to the two best leagues in the world.”

The NCAA, which charges more than $1 billion per year for broadcast rights to its March Madness men’s tournament, is proof of concept that the American appetite for basketball runs deep. And while much of the attraction of the college game is in its being, or at least pretending to be, for amateurs—kids playing their hearts out for a taste of athletic glory—some of the fun is in seeing tomorrow’s stars today. If the NBA gets it right, fans who once tuned in to watch James Harden play for the Arizona State Sun Devils will soon be watching the next James Harden play for the Rio Grande Valley Vipers. **B**

THE LEGEND OF NINTENDO

Once again, the 130-year-old Japanese gaming giant has turned reports of its demise into Nintendo Mania

By Felix Gillette
Photographs by Brian Finke
Illustrations by Khylin Woodrow


Nintendo

For anyone who's ever marveled at Nintendo's vivid, phantasmagoric, zoologically ornate video games, visiting the company's understated home in Kyoto, Japan, can be disorienting at first. That such an outpouring of kaleidoscopic products comes from a place so devoid of color can be momentarily hard to fathom. The headquarters are housed in a stark white cubical building surrounded on the perimeter by a sturdy white wall. The lobby is minimally decorated. The sidewalls are sheathed in cool white marble. No Donkey Kong posters. No Mario cutouts. No Pikachu plush toys. The rare sprinkling of color comes from a series of small, framed art pieces: a serene procession of birds and flowers. One Tuesday morning in April, the place gave off the reflective vibe of a monastery or, perhaps, a mental asylum.

On the top floor of the building, Tatsumi Kimishima, Nintendo Co.'s president, took a seat in a wood-paneled conference room, next to a translator. A crescent of handlers settled into chairs nearby while a server brought out cups of hot green tea. She padded quietly about the room, making sure not to obstruct anyone's line of sight to the president, shuffling sideways here, dipping there, like a spy limboing past a laser-triggered alarm system. Not a drop was spilled.

As the tea was served, Kimishima eased into a laconic summary of Nintendo's affairs. The past year and a half had been eventful, with the company vaulting back from the brink of irrelevance to reclaim its position atop the global video game industry. Kimishima summed up the triumphant drama with monkish self-restraint: "Certainly, we have been pleased."

In March 2017, the company released the Nintendo Switch. People were skeptical that the console, which can be used as a portable gaming device or docked to a television set, would succeed. It had been more than a decade since Nintendo's last hardware megahit, the Wii, and the world of home entertainment had destabilized. Smartphones, some analysts maintained, were the future of video games—not sleek, meticulously crafted $299.99 devices with curious motion-sensitive, detachable controllers.

But from the start, gamers loved the Switch's originality, versatility, and design. This April, Nintendo announced that during the previous fiscal year it had sold more than 15 million units and more than 63 million games. A strong lineup of reimagined classics had helped drive the frenzy. *The Legend of Zelda: Breath of the Wild* had sold more than 8 million copies and been named Game of the Year by the Academy of Interactive Arts & Sciences. New iterations of the *Mario Kart*, *Super Mario*, and *Splatoon* franchises had performed similarly well. Nintendo's revenue had more than doubled from the previous year, to $9.5 billion, and its share price had shot up 81 percent.

The under-water theme from* Super Mario Bros. *signaled the end of lunch hour

With the company once again bear-hugging youthful brainstems around the world, marketers of kid products are rushing to license its characters and start joint ventures. Nintendo is working with Illumination Entertainment, the studio behind *Minions* and *Despicable Me*, to develop a feature-length Mario movie. And it's teaming up with Universal Studios to create theme-park attractions based on Nintendo characters, the first of which will open in Osaka in time for the 2020 Tokyo Olympics.

In September, the company will start an online service for Switch users, and some feverishly anticipated games are in the works. Investor skepticism that they'll truly be hits has lately caused shares to dip, but Nintendo projects it will sell upwards of 20 million more Switches and 100 million more games by next April. "We think of the second year and beyond as being especially important," Kimishima said. "We have to start thinking about how to plan our game releases in order to attract the interest of our audiences worldwide." In a few months, he would be strategizing at a remove, mentoring a younger apprentice who would take over as president.

As Kimishima spoke, sunlight flooded the conference room. It was a warm spring day in Kyoto. The cherry trees were in full bloom. The subways were clotted with tourists. Elsewhere in Japan, the firefly squid were returning to Toyama Bay. Police in Miyagi prefecture were investigating what had happened to a black-headed gull found wandering around, alive, with a small arrow mysteriously lodged in its skull, as though escaped from a Nintendo game.

Kimishima took a sip of tea. Next year, Nintendo will turn 130 years old. Once again, the outside world is wondering how a company periodically left for dead keeps revitalizing itself. But seesawing is nothing new for Nintendo. It has long alternated between fallow periods, in which the media churns out reports of pending doom, and boom times, during which Nintendo Mania is cast as an unstoppable force. What remains constant is the company's understated and zealously guarded culture—the system at the root of its unusual ability to recalibrate, with some regularity, to humanity's ever-evolving sense of play.

Most of Nintendo's hardware and game builders work alongside one another at its research and development headquarters in Kyoto, a few blocks from its main office. The R&D building is white and minimalist, too. The company is protective of the game makers who labor there, keeping them well out of visitors' sight. A request to see the cafeteria was politely declined on the grounds that developers might be there, eating. But hints of Nintendo's creative class were in evidence here and there around the campus. A neon poster beckoned passers-by to attend a concert by the Wind Wakers, a symphony orchestra made up of Nintendo employees. Several times a year they give live performances drawn from the Wagnerian amounts of game melodies written by the company's composers. The selections vary depending on the season.

Near 1 p.m., the underwater theme from *Super Mario Bros.* played over the loudspeakers, signaling the end of lunch hour. Shortly after, Shinya Takahashi and Yoshiaki Koizumi emerged from the protected zone and sat down for a joint interview. Takahashi, 55, a top executive and member of the board, is an art school graduate who grew up in Kyoto and emerged in the 1990s as a particularly skillful game producer. He wears horn-rimmed glasses and has the infectiously delighted demeanor of a puppeteer, in contrast to the more painstaking playwright's bearing of Koizumi, 50, the deputy general manager for the entertainment planning and development division. Among other roles, they oversee the game designers charged with dazzling players on the Switch.


Koizumi and Takahashi play with the Switch

Nintendo's game creators come from a variety of academic backgrounds. Historically, most were Japanese men, though in recent years the company has hired more women and brought in talent from overseas. The increased diversity helps to replenish Nintendo's wellspring of creativity, executives say, and ultimately to spawn a heterodox array of games that appeal to consumers who aren't necessarily fervid gamers (read: not just young men).

The expectation is that new hires will learn the craft from senior producers and spend the rest of their careers at Nintendo, continuously honing their command. The setup is reminiscent of the apprenticeship system underpinning the rich, artisanal culture for which Kyoto has long been renowned. In studios throughout the city, apprentices work alongside master craftspeople, producing ceramics, paper fans, tie-dyed prints, cutlery, tea canisters, embroidery, bamboo work, and lacquerware. Kyoto's artisans pride themselves on never letting their handiwork grow stale; each generation of apprentices is expected to absorb the methods of their predecessors while pushing classical practices forward.

Nintendo's master artisan, its most revered producer, is Shigeru Miyamoto, 65, who joined the company in 1977 and designed its first globally beloved game, *Donkey Kong*, a few years later. Miyamoto is still at the company, and all its senior game makers, including Koizumi and Takahashi, have worked extensively at his side. "I'm not young myself," Koizumi said. "But as a developer working on some of these 30-year franchises, one thing that I do recognize is that just because it's been around for 30 years doesn't mean that's necessarily a strength on its own. What you need are fresh ideas. You need young people with interesting takes."

The company's creative methods—and, more precisely, why its best games verge on the sublime—have always been something of a mystery. Over the years, Miyamoto has offered some hints. He's often told a story about how, when he was young, he discovered a cave in a bamboo forest outside his village of Sonobe, northwest of Kyoto. Initially afraid, he pushed deeper into the subterranean world, marveling at the feelings of mystery and soulfulness that washed over him. That sense of astonishment and animism persisted, helping to inspire hit games such as *Donkey Kong*, *Super Mario Bros.*, and *The Legend of Zelda*. Miyamoto's cave tale is to Nintendo acolytes as Plato's cave allegory is to students of Greek philosophy: a way of framing the inherent challenge of perceiving reality. How to create a naturalistic gaming environment that opens a player's mind to the transcendent elements within? In *The Legend of Zelda*, Miyamoto's 1986 masterpiece, one moment you're exploring a serene waterfall; the next, you're summoning a powerful whirlwind with a shamanistic flute.

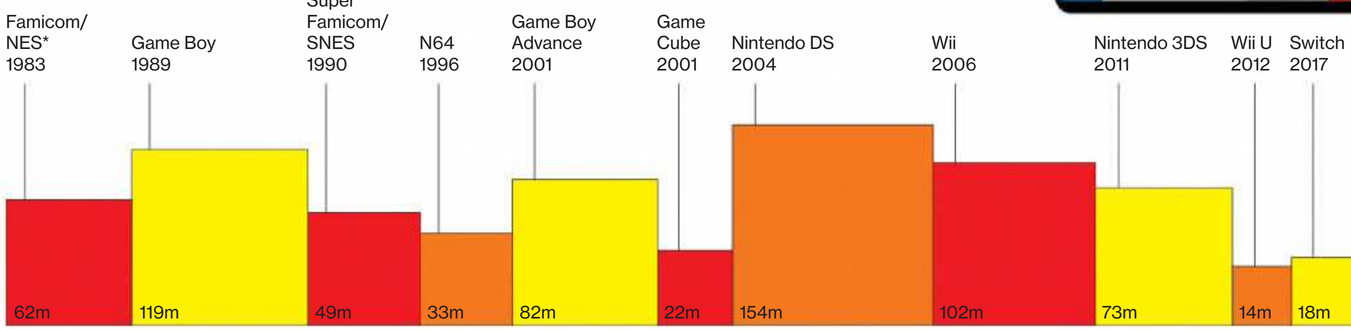
Koizumi invoked a recent example of primordial revelry from *Splatoon 2*, a squid-and-humanoid-based shooter game for the Switch, in which gun-wielding players spray opponents with blasts of colorful ink rather than bullets. "If you look on the screen, you'll see all of these messy splatters," he said. "This goes back to something basic and universal: kids making mud pies, that feeling of splashing mud and water around." It's a quintessential Nintendo riff on the perfunctory crutches of video game design, replacing the visceral spectacle of violence with the elemental joy of mud-shed.

The interplay of the particular and the universal also extends to Nintendo's home city—you can find hints of Kyoto amid the designers' flights of imagination. Fans have previously drawn the aesthetic connection between the abundant arches in *Star Fox*, for example, and the iconic vermilion torii gates at the Fushimi Inari Taisha Shrine. Last year, shortly after the debut of *Legend of Zelda: Breath of the Wild*, players realized that the fantasy realm of Hyrule essentially maps to Kyoto. But, Takahashi said, "We've definitely always had the attitude that we can't make products only for Japan." Games created in Kyoto and voiced in Japanese must be translated and sold in countries around the world. ▶

Game On

Nintendo console release dates and worldwide unit sales through March 31, 2018

Average number of games sold per system: 4 to 5 / 6 to 8 / More than 8



◀ Over time, the company has built up localization teams in Europe and the U.S. that include scores of translators and Japanophiles. Their job is to scour the game scripts and rework anything potentially confusing. Few people who play Nintendo games are likely to notice their fingerprints, though there are pious aficionados who vigilantly assess their work, bridling at signs of impurity like Tolstoy devotees picking over a new translation of *War and Peace*.

Even when Nintendo's fastidious development system gets everything right, successfully introducing and selling games into multiple cultures demands an additional, elaborate choreography. Before the Switch's arrival, there were plenty of doubts about whether the traditional sales model would work, whether the company could get its consoles to market without exasperating users—and, above all, whether, in an age of endless digital distractions, Nintendo Mania was still contagious.

In the fall of 2012, the company was in one of its periodic slumps. It had just released the Wii U, the sequel to the phenomenally popular 6-year-old Wii. The console featured HD graphics and a touchscreen controller, but from the start it felt off-kilter. The branding, for one thing. Wii U sounded so much like Wii, critics said, that it came across as a minor upgrade rather than an enthralling advance. Compelling games were slow to arrive, and sales were sluggish.

When things click for Nintendo, a new console triggers a slew of good fortune. The metronomic release of exclusive, tantalizing titles draws gamers to buy the console, which in turn increases sales. Then the console achieves critical mass among hardcore fans, and other companies scramble to adapt their most popular titles for Nintendo's system. Third-party games from major and independent publishers attract new console buyers. Marketers seeking licenses—for apparel, cereal, children's toothpaste—rush in, desperate to capitalize on the delirium. The resulting surge of revenue pumps up Nintendo's profits and replenishes its R&D coffers to start the process anew.

Or not. With the Wii U, the cycle stalled immediately, and Nintendo sank into a multiyear slump. By the spring of 2014, it was posting its third consecutive year of losses, and people were comparing it to relics such as Sega, Nokia, and BlackBerry. Some suggested that Nintendo stop designing consoles altogether and focus instead on licensing its games for rival systems.

The notion of abandoning a core craft was anathema to Nintendo's culture, though—the company was, after all, still selling packs of *hanafuda,* the flower-adorned playing cards that it set out with in 1889. The only place to play Nintendo games was on Nintendo devices. "If we think 20 years down the line, we may look back at the decision not to supply Nintendo games to smartphones and think that is the reason why the company is still here," Satoru Iwata, then the company's president, told the *Wall Street Journal* in 2013.

But investors' faith continued to dim, and Nintendo shifted course. In the spring of 2015, it took a 10 percent stake in DeNA Co., a Japanese company that specialized in smartphone games and services. Several months later, it invested an undisclosed sum in Niantic Inc., a San Francisco-based app developer that had been spun off from Google. Nintendo was preparing to let Mario roam free.

Around that time, Iwata passed away from complications stemming from bile duct cancer, and Kimishima took over. Where Iwata was an accomplished game developer, Kimishima had spent more than two decades working for Sanwa Bank Ltd. He was known internally at Nintendo as a strong logistical planner and a generous mentor to younger executives.

The following year, Niantic released *Pokémon Go*, a mobile game that thrust Nintendo back into the news. In the 1990s, the company had paired Miyamoto with Pokémon's creator, Satoshi Tajiri, to help him design the original Pokémon games. It now co-owns Pokémon Co., which handles licensing and marketing for the multiheaded entertainment hydra of TV shows, trading cards, comic books, and toys based on seemingly endless permutations of the fictional creatures.

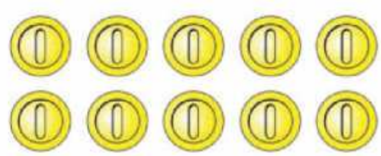
Within hours of its arrival, *Pokémon Go* was a sensation. The game sent countless players wandering giddily around neighborhoods, shopping malls, and parks to capture Pokémon who'd been digitally embedded around the

*THE NINTENDO ENTERTAINMENT SYSTEM LAUNCHED FIRST IN ASIA IN 1983 UNDER A DIFFERENT NAME BEFORE COMING TO THE U.S. IN 1985
DATA: NINTENDO

Earth, appearing on users' screens when they drew near. Technically, Nintendo had played a peripheral role in the advent of *Pokémon Go*, but the phenomenon had some investors diagnosing early stage Nintendo Mania.

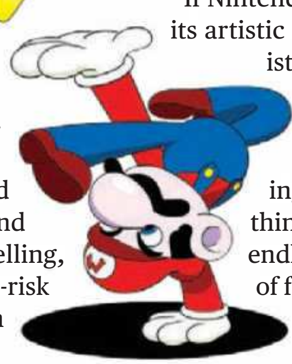
More symptoms emerged in November, when the company released the NES Classic Edition, a miniaturized, rebooted version of the Nintendo Entertainment System, the console that had made the company a household name in Europe and America in the '80s. The updated version was carefully calibrated to rekindle the latent passion of lapsed fans, with 30 of the most popular NES games built in. (Unlike the original, there were no cartridges.) From the start, supplies were scarce. Stores were constantly sold out, so customers lined up for hours to await shipments of even a few units. But what seemed to some like a supply-chain disaster looked to others like a calculated strategy. At $59.99 per unit with no additional games, NES Classics were a low-margin item; much more important for the company was to whet the world's appetite for Nintendo games in preparation for the Switch. To that end, Nintendo and DeNA also released *Super Mario Run* for iOS and Android, giving hundreds of millions of people an opportunity to help Mario scamper across their smartphones or tablets.

When things click, a new console triggers a slew of good fortune



The strategy worked. By the time the Switch arrived in the spring of 2017, legions of people had been enticed to reconnect with their favorite childhood game characters on a proper Nintendo device. Over the next fiscal year, the Switch accounted for $6.8 billion of revenue. Nintendo's existing handheld platform, the 3DS, kicked in an additional $1.7 billion, and sales of smartphone games rose 62 percent, generating $354.9 million.

Behind the white walls in Kyoto, Nintendo executives were already pondering how to stave off the next bust. At a news conference this April, Kimishima announced that he would step aside on June 28 and that Shuntaro Furukawa would succeed him. It was time, Kimishima said, for the next generation to take the lead. Furukawa, 46, had grown up in Tokyo playing Nintendo games; where Kimishima unwinds on the golf course, the new president plays *Golf Story* on the Switch. He joined the company in 1994, after completing a degree in political science, and spent 11 years at Nintendo of Europe before returning to Kyoto to take over corporate planning, working closely with Iwata and then Kimishima.



When it was Furukawa's turn to speak, he noted that Nintendo makes "playthings, not necessities" and that if consumers stop finding its products compelling, the company could be swiftly forgotten. "It is a high-risk business," he added. "So there will be times when business is good and times when business is bad. But I want to manage the company in a way that keeps us from shifting between joy and despair."

Nintendo has a few plans in motion: a partnership with Cygames Inc., a Japanese developer specializing in mobile games, and the launch in September of an online subscription service for the Switch, which will allow gamers to compete against one another and play a slate of retro titles. The latter will help executives make the most difficult evolutionary step in the console life cycle: winning over the broader market of people who don't typically play video games.

More radically to that end, in April Nintendo began selling a toy line called Labo, which consists of cardboard assembly kits that gamers can use to transform the Switch's detachable controllers into rudimentary motion-sensitive objects such as fishing rods or mini pianos. The contraptions can then be used to play accompanying games on the TV screen, by catching sharks with the rod, say.

The games' code is somewhat customizable, so precocious kids can program new uses for each of the accessories. The concept feels like a cross between origami, Lego, and the block-assembling video game *Minecraft*. The goal in part is to win over parents who might otherwise balk at buying their kids a Switch—writing code being the most parentally acceptable form of screen time. "We want to create something that mothers and parents can have a sense of relief about their children playing," Kimishima said.

In early June, Nintendo released a free online demo of the upcoming *Mario Tennis Aces*—a tournament game expected to be one of the first major attractions for its network service. Frustrated gamers complained on social media that connection issues were making the game unplayable, and Nintendo's shares dipped 10 percent over a two-day stretch. "When we do a trial event ... we are learning about the technical infrastructure," Nintendo of America President Reggie Fils-Aimé told Bloomberg Television at the time. "When we launch the game, it's going to perform." But the stock kept falling amid concerns about the Switch's game lineup. By mid-June, it was at its lowest point in nine months.

If Nintendo, as a company, has long benefited from its artistic temperament, it suffers, too, from an artist's restless insecurity. No matter how many times outsiders marvel at its work, its game designers must wake up each day, bike into the ivory cocoon of the R&D building, face the blank screen, and make something for the world. As it is for Mario, striving endlessly to reach Princess Peach, the prospect of fortune or failure is reborn each time a console powers up anew. **B**

TROUBLE AT ONETASTE

BY ELLEN HUET

The company is pushing its sexuality wellness education toward the mainstream. Some former members say it pushed them into cycles of sexual servitude and five-figure debts

When Michal got married in August 2015, her family and longtime friends didn't attend. The woman who walked her down the aisle, the dozens of beaming onlookers, her soon-to-be husband—all were people she'd met in the preceding 10 months. Wearing a loose, casual dress borrowed from one of her new friends, Michal spent the ceremony in a daze.

She knew she didn't want to get married like this, in the living room of a rented San Francisco house without her family's support, yet she felt compelled to do it. That uneasy feeling could apply to most of her experiences in OneTaste.

OneTaste is a sexuality-focused wellness education company based in the Bay Area. It's best known for classes on "orgasmic meditation," a trademarked procedure that typically involves a man using a gloved, lubricated fingertip to stroke a woman's clitoris for 15 minutes. For Michal, like those at her wedding, OneTaste was much more than a series of workshops. It was a company that had, in less than a year, gained sway over every aspect of her life.

Since taking her first class, Michal had started working on OneTaste's sales staff and living in a communal house in Brooklyn with her co-workers. Seven days a week, they gathered for multiple rounds of orgasmic meditation, or OM. (They pronounce it "ohm.") They spent hours calling and texting people who'd come to a OneTaste event, trying to sell seats for the next, more expensive classes. The company-hosted evening OM circles in Manhattan sometimes held 30 or more pairs of strokers and strokees in one room, the fully clothed men concentrating on their moving fingertips while the women, naked from the waist down, moaned, wailed, and sighed. Afterward, Michal and her co-workers would run that night's OneTaste event, where they set up chairs, jogged the microphone over to attendees, and chatted up more sales leads. It was exhausting.

Michal had been drawn to OneTaste because she felt unfulfilled sexually and in other parts of her personal life. The group seemed full of glowing, attractive people confident they could feel profound sexual pleasure whenever they wanted. She believed her new life would bring her closer to the center of OneTaste, where those who were experts in OM—especially the company's co-founder, Nicole Daedone—seemed to hold the key to sexual and spiritual enlightenment.

In OneTaste, Michal was constantly surrounded by people who were her colleagues, roommates, sexual partners, and, suddenly, closest friends. She was also $20,000 in debt from buying its classes. She was married during a two-week, $36,000-a-person retreat called the Nicole Daedone Intensive. By the time she and her husband left OneTaste a few months later, they'd spent more than $150,000. "The deeper I went, the more courses I did, the more I worked for them, the closer I got to Nicole—I knew I was doing something that later would be very difficult to unravel," she says. "I knew I was losing control. In OneTaste, I'd done that again and again and again."

Michal's story is far from unique among those who venture deeper into the organization, though it's almost unknown to the outside world. OneTaste pitches itself to the public as a fast-growing company teaching connection and wellness to an increasingly mainstream audience. But many who've become involved in the upper echelons describe an organization that they found ran on predatory sales and pushed members to ignore their financial, emotional, and physical boundaries in ways that left them feeling traumatized. Even given the recent flurry of stories about groups known for fringe sexual activity—Nxivm, whose founder, Keith Raniere, is awaiting trial in New York along with his alleged deputy, actress Allison Mack; Rajneeshpuram, the community featured in Netflix's *Wild Wild Country*—OneTaste stands out for its conventional appeal to wellness.

Bloomberg Businessweek interviewed 16 former OneTaste staffers and community members, some involved as recently as last year. Most spoke anonymously because they signed nondisclosure agreements or fear retribution. Some, including Michal, asked to withhold their last names because they don't want to be publicly associated with the company.

Many of the former staffers and community members say OneTaste resembled a kind of prostitution ring—one that exploited trauma victims and others searching for healing. In some members' experiences, the company used flirtation and sex to lure emotionally vulnerable targets. It taught employees to work for free or cheap to show devotion. And managers frequently ordered staffers to have sex or OM with each other or with customers.

OneTaste calls this characterization "outrageous" and says its goal has always been to help victims. It says it never directed employees to engage in sexual acts with anyone nor did it have the ability to do so, though it paid a six-figure out-of-court settlement in 2015 to a former employee who said she suffered sexual assault and harassment, as well as other labor violations, while on the job. That settlement hasn't been reported until now because it was confidential.

OneTaste says that until 2016 it was more of an edgy lifestyle community that's become a legitimate business. The company no longer organizes group OMs among students or leases communal homes in its own name. It has added teaching centers in London, New York, and Los Angeles alongside the one that sits across from Uber's headquarters in San Francisco. It says it made $12 million in revenue in 2017 and will expand to Atlanta, Chicago, Minneapolis, and Washington over the next two years.

The company has hired executives and advisers who worked at CrossFit and the juice maker Odwalla, and OM has won endorsements from Khloé Kardashian and Tim Ferriss (*The 4-Hour Body*). OneTaste's nonprofit arm has commissioned a study on the health benefits of OM and expects to publish findings later this year. "OneTaste is the Whole Foods of sexuality—the organic, good-for-you version," says Chief Executive Officer Joanna Van Vleck, the former head of Trunk Club LLC. "The overarching thing is, orgasm is part of wellness." OneTaste didn't make Daedone available for interviews, nor did she respond to requests for comment.

OneTaste has also begun targeting businesses as customers—not teaching their employees how to stroke one another, but how to apply OM principles such as "feel over formula" and ▶

◀ "stay connected no matter what" to running a company. "We're having conversations with companies about #MeToo and how to teach connection as preventive health for companies rather than treating the disease of sexual harassment," says Van Vleck. She says the National Hockey League is among the businesses that have expressed interest, though the NHL says it can't confirm any record of a conversation.

A decade's worth of periodic OneTaste press coverage hasn't really gotten past the titillating veneer of OM. Reporters have occasionally used the word "cult" jokingly because of the practice's inherent kookiness and fierce devotees, but Michal and others say OneTaste deserves the term's full weight. "I lost my understanding of money," Michal says. "There was a lot of psychological manipulation. This is an organization that really preys on people's weaknesses."

ACCORDING TO THE STORY SHE REPEATS ONSTAGE and in YouTube videos, Daedone founded OneTaste in 2004 after she met a monk at a party who showed her a version of the technique she developed into OM. For years her company remained a far-fringe oddity, teaching small classes in San Francisco and running a residential warehouse where dozens of members and residents experimented sexually.

In 2009, though, the *New York Times* put OneTaste on the front page of its style section, and the brand took off. Daedone, who'd previously run an art gallery, published a book called *Slow Sex* in 2011, and in 2013 she gave a speech at South by Southwest called "Female Orgasm: The Regenerative Human Technology." In a 2011 TEDxSF talk that's been watched almost 1.5 million times on YouTube, she describes an essential hunger for connection that especially plagues Western women, who eat too much, work too much, shop too much, and still feel empty. The fix, Daedone says in the video, is OM. The practice helps men and women "lose that sense of hopelessness that you will ever be reached deep inside."

OM has strict rules, and it's supposed to be separate from sex, meaning it's not foreplay. The pitch to women is 15 minutes of meditative focus only on their pleasure and sensation, with no obligation to reciprocate. Men are told it will help them learn to be more sensitive to women's needs, though former members say it's often strongly implied that fellow OneTaste students will be open to sexual experimentation beyond OM.

Many students' first encounters are casual: They spot a free or almost-free event with a title such as "Tired of Swiping Left? Let's Talk Real Intimacy!" or "You Do Yoga. You Meditate. Now try #OrgasmicMeditation." At that event, OneTaste staffers tell them about the $199 Introduction to OM class. While attendees are no longer invited to try OMing during the intro class, it still features a live OM demonstration between staffers, right before lunch. The way to learn more, the intro students hear, is to take more classes.

Currently, students pay $499 for a weekend course, $4,000 for a retreat, $12,000 for the coaching program, and $16,000 for an "intensive." In 2014, OneTaste started selling a yearlong $60,000 membership, which lets buyers take all the courses they want and sit in the front row. Staff also encourage students to repeat courses, telling them the experience changes as they progress. OneTaste says about 1,400 people have taken its coaching program, 6,500 have come to an intro class, and more than 14,000 have signed up for online courses and its app.

Some students take a course or two and drop off. But often, those with a core yearning—to overcome anxiety or resolve a sexual trauma—are drawn in deeper. Volunteering at events can lead them to work for OneTaste full time, usually in sales. Former staffers say they were trained to target young, beautiful women and awkward, wealthy tech guys. They set up booths at life hacking conferences and Daybreaker early-morning dance parties, serving coffee in shirts with slogans like "The Pussy Knows" and asking passersby, "How's your orgasm?"

At OneTaste events, attendees often played games prompting them to share vulnerable stories. Former staffers say they took notes that might help them sell later—maybe a student was recently divorced and lonely—and senior staff assigned subordinates to home in on wealthy students who seemed attracted to them or had experiences in common. They say female employees were told to wear lipstick, heels, and short black skirts.

OneTaste denies that its policies targeted specific groups and says it only ever required workers to dress "professionally." That said, last month, around the time *Bloomberg Businessweek* started asking OneTaste about its sales practices, onetime sales chief Rachel Cherwitz resigned. "I've realized not everyone makes decisions as fast as I do. I've realized sometimes I've given my opinion when I should not have," Cherwitz said in a statement forwarded by the company. "For now, I am focused on taking some time to reflect."

Cherwitz was Daedone's top lieutenant for most of the 11 years she spent with the company, according to several former employees. She's in many of OneTaste's public videos, calmly explaining how people who OM daily, like her, can gain confidence, feel energized, and have better sex. Former staff

Daedone's 2011 TEDxSF talk has been watched on YouTube almost 1.5 million times

"WE TOOK MONEY FROM PEOPLE THAT WE SHOULDN'T HAVE"

Tayeb was a OneTaste "priest of orgasm"

say they were drawn to Cherwitz's intense charisma and terrified of getting on her bad side, especially by not hitting sales goals. Before events, sales staff often watched one of her favorite YouTube videos, a clip of lions hunting in a pack. Some former staffers say they called customers "marks" and referred to themselves as "lions," "tigers," and sometimes "fluffers," a term borrowed from porn sets. "You fluff someone to get them energetically and emotionally hard," one former salesperson says. "You were the dangled bait, like 'You can have more of this if you buy this $10,000 course.' "

FORMER STAFFERS AND MEMBERS SAY TO MAKE parting with thousands of dollars easier, OneTaste taught members that money is just an emotional obstacle. It encouraged students to take out multiple credit cards to pay for courses, and some turned to such sites as GoFundMe and Prosper Funding for help. "We took money from people that we shouldn't have," acknowledges Van Vleck, the CEO, adding that OneTaste has revised its policies to make sure customers don't feel pressure to take on debt along with their courses. The company denies manipulating students to buy courses.

"The first time I didn't cover my credit card bill, it broke something in my mind," says Ruwan Meepagala, who went to his first OneTaste event in 2012 at age 24, worked for the company for about two years, and left owing $30,000 on his credit cards. "I was no longer afraid of debt," he says. "Once you break that barrier, $3,000 is the same as $30,000." At one point, Meepagala complained that he and his co-workers hadn't been paid in two months; he says he was publicly shamed for having a "scarcity mindset."

Even though OneTaste's management pushed employees to stop caring about their own money, they used the workers to bring in more of others' cash. And despite the strict rules the company claimed to have separating OM from sex, initiates soon realized the divisions could be porous when money was on the line. Meepagala says managers told him to OM or have sex with older, wealthy women right before Cherwitz or another staffer called to sell them another course. Some members asked others to pay for their courses, often suggesting they'd offer sex or attention in exchange. They even called it hooking, former staff say. "A lot of women would be like, 'I'm going to hook this guy for money,'" Meepagala says. "They would brag about it." The company denies using staff for bait and sex for sales and says Meepagala now teaches pickup-artistry-esque techniques and isn't a moral authority.

When Laurie, a 53-year-old private nurse in Los Angeles, started taking classes and joining daily OM circles in 2014, she was overwhelmed by the community's affection. Young women treated her like a confidante, and men half her age paid attention to her. She moved into an OM house in Santa Monica and signed up for the coaching program. Her new life felt good for a while, but staffers sometimes turned cold, especially when students hesitated to buy more classes. When frozen out, she grew desperate to regain their affection.

Laurie and other former students say they were taught that once they started down the OneTaste spiritual path, they would feel tortured and lost if they left. She says that kind of peer pressure helped keep her in the coaching program starting in early 2015, even after traumas related to her childhood sexual abuse resurfaced. "I was afraid of losing my soul if I left," she says. "This sounds so dramatic, but in my vulnerable state I believed it. I thought I would be f---ed spiritually." OneTaste denies that it taught anyone they'd suffer if they stopped taking courses and says it hired a trauma adviser in late 2016.

For some committed OMers, the experience became even more complicated and bizarre. Hamza Tayeb, 33, was part of OneTaste for about a decade. He started working for it to leave behind an uninspiring Bay Area software job, he says. He also felt tied down by his young son, born while he was still in college. Daedone heard Tayeb's story and said the mother's choice to have the child shouldn't dictate his choices. She absolved him of responsibility toward his son, he says: "I thought, I'm not going to hear that from anywhere else." He began teaching courses and eventually married Cherwitz. OneTaste says Daedone never told members to separate from their families.

In 2015, Tayeb took part in a five-day, $6,500-a-head OneTaste event called Magic School, held near Northern California's Mount Shasta. The year before, the final evening featured temporary ceremonial piercings and performers who danced with snakes draped over their shoulders. This time, Daedone named a handful of men and women, including Tayeb, "priests and priestesses of orgasm." The new clergy, dressed in white, conducted a group OM overseen by Daedone in front of the hundred or so attendees. "It was a religion," a former employee says. "Orgasm was God, and Nicole was like Jesus or Muhammad." OneTaste says the ceremonies were "play" and compared Magic School to Burning Man.

OneTaste teachings were often used to justify sexual manipulation and abuse, several former members say. "Aversion practice" is the company's teaching that you gain power and expand your orgasm—within the group, a broad term for sexual energy—by performing sexual acts you don't want to do, or doing them with people you find disgusting. Meepagala says Cherwitz once saw him bickering with a co-worker and told them they had to leave work and couldn't come back until they'd slept together. "Sometimes they'd assign someone to be your sex manager for the week," another former employee says. "That person would go on Tinder or ask the community and line up a person for you to sleep with each day, do all the texting, and tell you who to ▶

PREVIOUS SPREAD: TIMOTHY ARCHIBALD. THIS SPREAD, LEFT: GABRIELA HASBUN. RIGHT: PHOTOGRAPH BY SIMONE LUECK FOR BLOOMBERG BUSINESSWEEK

◀ meet when.... The authority figure would say, 'You're f---ed up,' and sex was always the solution."

Although few members say they were forced to do something they explicitly refused, consent in this setting was a gray area. "You're pushed to do it, and cornered," says a former employee. In 2015 the company paid $325,000 to settle a labor dispute with former sales rep Ayries Blanck, according to a person familiar with the matter. Blanck had said Cherwitz and others ordered her to sleep with customers and managers, and two people familiar with the matter say she considered the experience sexual assault. Blanck declined to comment for this story.

OneTaste says the settlement was confidential but that it has never required any employee to engage in a sexual act. Van Vleck says supervisors may have suggested such things to employees in the context of their friendships, but that the company wasn't involved. It referred *Bloomberg Businessweek* to nine former staff and customers who say the company's courses brought them close relationships and new comfort with their sexuality. "People find OneTaste because they're deeply searching for something," says former membership coordinator Elyna Anderson, "and we often pass over a fair amount of our own judgment and responsibility into the hands of people we hope are going to turn our lives around."

Former staffers say there were multiple cases of domestic violence between employees in relationships, which were sometimes characterized as one partner letting out his or her aggressive desire, or "beast," former staffers say. In one case, an executive repeatedly slapped his girlfriend during a 2014 fight in the company's Market Street headquarters in front of employees, according to one eyewitness. The executive was fired but has since been rehired. OneTaste says the incident was unacceptable, but that it rehired the executive because of a belief in rehabilitation. It says it's unaware of other cases and has never promoted or tolerated violence.

Laurie says she risked feeling "f---ed spiritually" to leave OneTaste and spent months on disability afterward

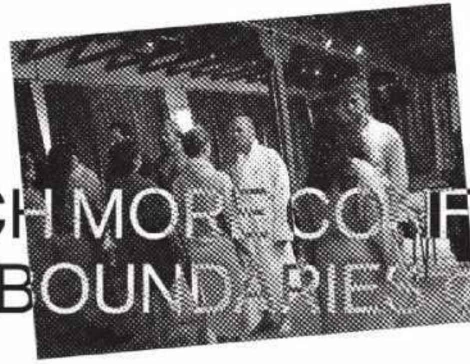
Policy changes since 2016—no more hosting group OM circles, no more student OMing in classes or staff OMing in the office—have lessened OneTaste's liability. While OneTaste says these changes were meant to position it for a more mainstream audience, several former staffers say management was also worried about legal consequences. No leases are officially connected to the company, but staff still live and OM together in private, says Tayeb. All of this is in keeping, he says, with how the changes were framed: "Often it was, 'We all know that this stuff is actually good, but the world isn't going to see it that way. So we're going to adapt and comply, but all the while keep the core of what we really want to do sacred and hidden.' "

AT AGE 28, MICHAL HAD BEEN IN A FEW LONG-TERM relationships, but she always felt self-conscious about her body and about asking for what she wanted during sex. She'd also never had an orgasm. So even though she thought OM sounded weird, she went to a free OneTaste event one evening in late 2014 to see if it could help. She chatted with staffers who seemed open, ate the right food, and did yoga every day. Unhappy in her job as a teacher's assistant in a Jewish school, she started attending regular OM gatherings in New York and responded to the open flirting from the men she met there. "This thing seemed to offer friends, potential mates," she says. "Also, I was on this whole high where there were so many men interested in me. It was weird to feel that power."

OneTaste quickly swallowed Michal's life. She quit her teaching job, gave her dog to her parents, and moved into a crowded OM house in Brooklyn to sell OneTaste classes. OMing did allow her to reach orgasm, but only rarely. Instead, the draw gradually became more about community and purpose. A few months in, she wanted to sign up for the coaching program but didn't have enough money. When she went to talk to Cherwitz about it, Cherwitz took out her laptop and helped her apply for a new credit card. Michal had never been in debt before. Her parents were worried, but "I was so swept in by that point," she says. "I wouldn't listen to anything that said, 'Wait, take a moment.' "

Life at the OM house was relentlessly scheduled. Every morning at around 7 a.m., staff convened for two rounds of OM, switching partners midway. Then came an AA-inspired "fear inventory," writing out and sharing their worries with a partner. Former staffers say they were encouraged to report to management if they heard others express doubts about OneTaste. They all went to Bikram yoga, cooked, cleaned, then spent several hours making sales calls around a table, tracking their progress with Salesforce.com. After an afternoon round of OM, they left to run the evening's public session.

Michal, like many of her co-workers, was classified as an independent contractor, earning commissions on the courses she sold. She says she was lucky to make $200 or $300 a month, which supplemented the $900 monthly stipend she received from a manager's personal account. She says she spent more than 80 hours most weeks working on the group's formal and informal activities. Meepagala says he worked



OneTaste says it no longer organizes group OMs

"I FELT SO MUCH MORE CONFUSED ABOUT SEX AND THE BOUNDARIES OF MY BODY"

around 100 hours per week, on a schedule similar to Michal's, but was told to log 30, and that his salary as a "part-time" worker was about $15,000 a year. Blanck, in her settled labor dispute, said she was misclassified as an independent contractor because OneTaste dictated what she was doing most hours of the day. She'd also said she was paid less than minimum wage and was owed overtime.

Workers exhausted by the long hours were told they should OM more, that orgasm is an endless energy resource. Some former staffers say frequent OM sessions left them in a constant state of emotional and physical rawness that, combined with a lack of sleep, blurred their ability to think.

During morning check-ins, Michal and her co-workers chirped about feeling "turned on." If they didn't, Cherwitz or someone else would drill down on why they weren't feeling excited to sell. Someone who wasn't hitting sales goals chanced being deemed "tumesced" or "off the rails"—in need of OM or sex. Staffers were rarely alone even at night, because they typically slept two to a bed. Their phones would buzz with 100 texts an hour from OneTaste group chats.

"Like many startups, employees worked long and varied hours at times," OneTaste said in a statement. The company says workers' lifestyle choices were optional, that fear inventory was confidential and wasn't used to harm people, and that in 2016 it started using time sheet service TSheets to track and pay work hours, including overtime. It says it pays workers properly.

As Michal picked up more internal jargon, it began to make sense why OneTaste called outsiders "asleep," "Muggles," or "in the Matrix." The stranger the experience became, the more thrilling it felt, like she was gaining access to something the rest of the world couldn't see.

At the end of a whirlwind week of ritual at the Magic School where Tayeb was initiated, Michal says, a OneTaste executive took her by the hand and led her to a sales table to talk about putting down a $12,000 deposit for the upcoming Nicole Daedone Intensive. She didn't have the money, so a senior staffer suggested she ask another OneTaste member, a man who worked in tech and had paid part of her Magic School tuition. "I remember in those moments, you have this exhilarating feeling," she says. "You want to do [the intensive], because the people who do it are much better off than those who don't. You also know Rachel would love you more and think better of you."

Michal and her parents began to argue more about OneTaste, especially when she told them she'd be marrying a fellow member—the one who'd been helping pay for her classes. Around the same time, Michal's OneTaste life started to break down. Her closest co-worker left the company, and Michal began to think of leaving as the right, albeit terrifying, move. She regularly woke up screaming from nightmares.

Eventually, Michal persuaded her husband to leave OneTaste with her in September 2015, shortly after their wedding. Under the stress of adjusting to life outside, they divorced soon after. She moved in with her parents in New York, depressed and occasionally suicidal. "I thought, Why do I want to kill myself? I can't control my emotions," she says. "I thought I was cursed."

ON TOP OF EVERYTHING ELSE, FLEEING ONETASTE can be brutally lonely. Laurie, the nurse, spent months on disability after leaving and moved to Boulder, Colo. She's in the process of divorcing a man she met and married in OneTaste. Tayeb divorced Cherwitz after he left and is trying to rebuild his relationship with his son, who's now 13. "There's just a lot of confusion and pain and anger," he says. "I leveraged myself financially, emotionally. I was married. I was all into this thing. When it doesn't work out, it's devastating."

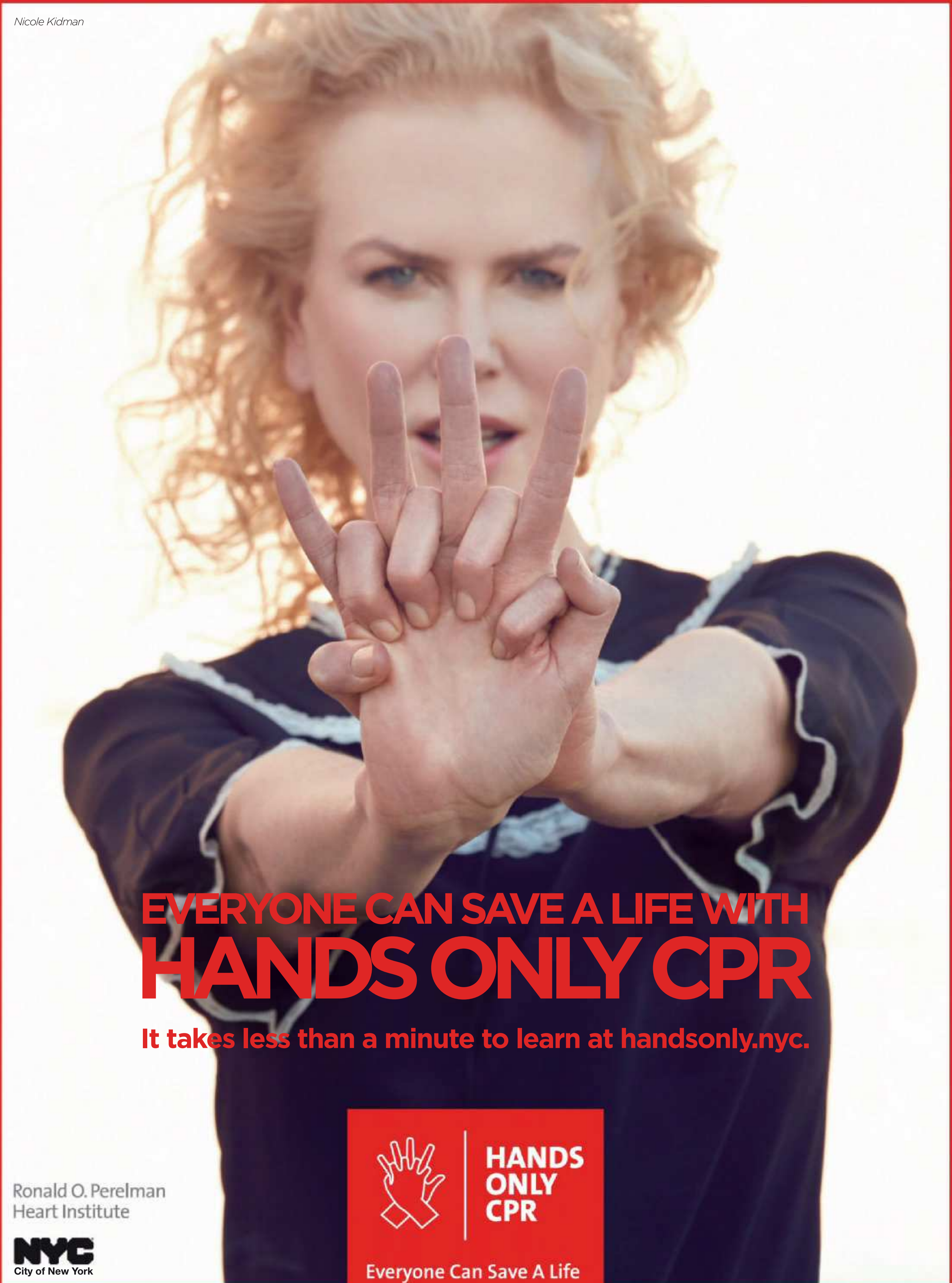
Like other apostates, Tayeb is conflicted about his years in OneTaste, which he says taught him practical leadership skills and exposed him to useful spiritual teachings. Even OneTaste's harshest critics often say OM can help people. But Tayeb also says the company exercises "undue influence" over those inside, and he regrets that he saw it happen for years and never said anything. The threat of spiritual ruin is too powerful and is wielded without a moral compass, he says.

OneTaste says the company has changed, especially since Daedone stepped down as CEO last year to work on her next book and teach the occasional class. (She also sold her stake in the company to a trio of OneTaste members.) Van Vleck says OneTaste isn't a cult, but that it's common for people to use the term when something "changes their internal perspective."

The newish CEO is betting that the study OneTaste has funded on the health benefits of OM, which has taken brain-activity readings from 130 pairs of strokers and strokees, will draw fresh crowds. Led by researchers from the University of Pittsburgh, the study is expected to yield the first of multiple papers later this year. "The science that's coming out to back what this is and what the benefits are is going to be huge in terms of scaling," Van Vleck says.

For more than two years after leaving OneTaste, Michal continued to struggle with her relationship to sex. Daedone and her disciples had prescribed sex with as many people as possible as a way to achieve enlightenment, according to several former staffers. "You don't realize until after what a damaging idea that is. I feel really disgusted that I put myself through that," Michal says. By the end, "I felt so much more confused about sex and the boundaries of my body, even though that's what they say it helps you cultivate." She hasn't OMed since leaving OneTaste, and she says she never will. Ⓑ

LEFT: PHOTOGRAPH BY SIMONE LUECK FOR BLOOMBERG BUSINESSWEEK. RIGHT: GABRIELA HASBUN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PURSUITS

The Greatest Martinis in the World

A comprehensive list from a cocktail master
By Naren Young

Photograph by Carol Sachs

Martini with olive at the Connaught Hotel in London

June 25, 2018

Edited by Chris Rovzar

Businessweek.com

The Manhattan and Negroni may currently be at the top of bar menus, but the martini is still king of all cocktails. The drink, which some say evolved from a whiskey and sweet vermouth concoction around the 1880s, hasn't gone out of style. But more so than any other beverage, it's a product that demands exquisite attention to detail. When a cocktail is as simple as a combination of two ingredients–in this case, gin and dry vermouth with a few more optional ones–those details are key. A great martini transports you on a smooth and seductive wave of aromatic spices and bitter flowers.

As a martini obsessive, one who's scoured the world over a 20-year career tending bar, I've spent an excessive amount of time (and money) thinking the minutiae that goes into making a perfect one. To reach that point, one needs to consider technique (stirred always, please), temperature (chillingly cold), choice of glass, and ingredients–principally the gin and vermouth but also the garnish–that give the imbiber a sense of place. Your company, music, and location might also make a difference.

Proportion is important but also personal. The current vogue is 3 to 1, but I prefer a less-high-proof martini made with equal parts gin and vermouth. A drink with little or no vermouth is simply a glass of cold gin. A great martini is a conversation between two people, bartender and guest, who are both passionate about the outcome. Some of the ones on this list may sound unlikely, yet they share the same DNA. Each will make you stop and remember why you started drinking a martini in the first place.


A house martini at Atlas in Singapore

THE CONNAUGHT HOTEL
LONDON

Quite simply, the Connaught delivers the world's top martini experience. Renowned bartender Agostino Perrone (or one of his acutely trained staff) wheels the custom-made martini trolley to the table and begins a dialogue about how you'd like yours prepared. There are six house-made tinctures to accent the drink; I'm a sucker for the ginseng. The server will typically reach for Tanqueray No. 10, but I always request Fords gin for its subtle notes of jasmine and coriander. On go the mixologist's white gloves, and the seemingly simple act of making a drink becomes a choreographed show. Close your eyes as you take your first sip, then open them and regard the stunning room, designed by the late David Collins. It's one of London's truly great bars, hotel or otherwise.

THE NORMANDIE CLUB
LOS ANGELES

Purists like to hate on vodka, but at the Normandie Club, cocktail experts Alex Day and Devon Tarby argue that a vodka martini deserves the same consideration as one crafted from gin. The base for their martini is a peculiar wheat-based vodka called Aylesbury Duck, which has a full-bodied texture and a hint of sweetness. They also stir in a touch of bone-dry fino sherry to add salinity and a curious nuttiness, a teaspoon of raw white honey for delicate viscosity, and the mist of a gray salt solution. These ingredients are measured in small enough quantities to keep the drink in the realm of

PHOTOGRAPHS CLOCKWISE FROM TOP LEFT: COURTESY EK YAP AND ATLAS; COURTESY TONGUE-CUT SPARROW; COURTESY STUDIO HER AND FOUR SEASONS HOTEL SEOUL

At Houston's Tongue-Cut Sparrow, two types of vermouth go into the glass

a martini, but they give the finished product a sublime complexity.

THE LIBRARY BAR AT THE NOMAD HOTEL
NEW YORK CITY

You would think that New York's famous hotel bars would mix an exemplary martini. They don't. An anomaly is the Nomad's Library Bar, where the specialty is a version of a Gibson, which is essentially a martini with a fancy onion. Their Walter Gibson includes London dry gin, vodka, and vermouth, served cold and poured directly from a bottle lined with beeswax and edible gold. The result is a drink that mimics a great dessert wine. An added bonus: It's served with vibrant house pickles from chef Daniel Humm's kitchen.

ATLAS
SINGAPORE

This high-concept, luxurious bar in the lobby of the Parkview Square pours rivers of Champagne for its well-heeled crowd. But it also serves an unforgettable martini. The menu includes more than 1,100 gins to choose from, displayed on an absurdly high back bar with upper shelves that only can be reached by a brave soul on a pulley. The house martini is made with Fords gin. Ambrato vermouth, orange bitters, and drops of Champagne vinegar create a flavor profile that Atlas describes as "strong, cold, and floral, with a little lick of the wild." The crystal coupe with paper-thin sides is almost too beautiful to hold. A list of pricier vintage gins and vermouths lets you mix and match your own.

MORI BAR
TOKYO

Some of the world's best bars are hidden behind the flashing lights and expensive boutiques of Ginza. There you'll find bartending legend Takao Mori, now in his 70s, who's trained many of Japan's finest in the business. You'll be greeted with a warm towel and a small cup of beef consommé. Mori typically uses Boodles gin, though on occasion he'll pour a local one called Ki No Bi. It's worth observing the thoughtfulness Mori puts into mixing his martinis; many people, including me, have made a pilgrimage to drink them.

The Hoffman House #2 at Charles H. in Seoul

TONGUE-CUT SPARROW
HOUSTON

Noted barkeep Bobby Heugel says of his martini: "It is just a classy piece of work. Nothing in particular that is overtly distinguishing, just a perfect example of what it should be." He reaches for classic Tanqueray for the base, then stirs in equal proportions of a mix of two types of dry vermouth. He garnishes it with a Castelvetrano olive (unpitted to maintain its density) and a lemon twist. Heugel sourced the same long-stemmed, wide-bowled glass used at London's famed American Bar at the Savoy. The room is dark, sultry, and decorated with a couple of massive Chesterfield sofas: Take advantage of them.

CHARLES H.
SEOUL

Tucked away behind an unmarked door in the basement of the Four Seasons Hotel, Charles H. is a leader in Seoul's burgeoning bar scene. The room, from design pros Avroko, is preposterously beautiful, finished in dark mahogany with brown leather and white tile. The Hoffman House #2 martini is a fusion of two bold gins—Hayman's Royal Dock Navy Strength and Beefeater London dry—with Mancino vermouth secco, drops of jasmine water and local plum wine, and a spritz of house-made oak tincture laced with smoky Lagavulin Scotch, all of which lend the drink subtle Asian accents. Poured directly from a bottle in the freezer, it has a delightful viscosity and supremely elegant flavor.

The Gadget On Two Wheels

Giant's Quick-E+ is a smart bike for the masses

By Josh Petri

CHARGE
Giant says its 36V lithium-ion battery gives riders a range up to 25 percent greater than competitors' bikes. Neatly integrated into the frame, it locks to prevent theft.

POWER
The SyncDrive motor produces as much as 500 watts of power, enough to help propel a rider to 28 mph with only minimal effort.

Today's high-end bikes are increasingly designed as complete systems: Computers run the power meters, turn on the lights, and even shift gears. But the race to adopt each innovation as fast as possible doesn't always produce a tidy package for consumers. "Right now on a high-end bike, there are probably four to five batteries you have to charge," says Chris Yu, director of integrated technologies at Specialized Bicycle Components. "A lot of them have a connected app experience. If done poorly, it's bad for the rider."

But one segment of the market where big bike companies are getting it right is e-bikes, which are marketed toward those who may not be expert cyclists and prefer a simplified experience. These models look and function like a traditional bike but integrate an electric motor so you don't work as hard.

Already huge in Europe, e-bikes are beginning to take hold in the U.S., where advocates hope they'll persuade more people to ditch their car during the morning commute. The industry sold $77.1 million in e-bikes in 2017, up 91 percent from the previous year, according to market researcher NPD Group Inc., and sales have grown more than eightfold since 2014.

I recently tested Giant Bicycle Inc.'s city-oriented Quick-E+. Built into an aluminum frame is a rechargeable 36V lithium-ion battery, which powers a similarly integrated 500 watt electric motor, an onboard computer, and automatic lights. (Yes, like your car, automatic safety lights come standard on many e-bikes.) Everything else a daily commuter would want is

CONTROL
Use the pad on the handlebars to toggle among three levels of assistance: eco, normal, and power. The soft-touch rubberized buttons also control the bike's computer and lights.

DISPLAY
The Quick-E+'s onboard screen allows you to track battery level, speed, and distance traveled. There's even a micro-USB port so you can charge your phone.

ASSIST
Using four sensors, the bike can tell the amount of power you're putting into the pedals and the speed you're traveling, then control the motor to match.

here: fenders, a kickstand, and a rack. At $3,115, the Quick-E+ is what's known as a pedal-assist model. The motor senses how quickly you're pedaling and how fast you're going, then produces the right amount of power to match your effort and propel you along at up to 28 mph.

The computer controls are intuitive and easy to work with your left thumb, even when you're weaving through city traffic. You can choose the level of assistance you'd like from the motor: Eco mode delivers the least power; normal provides, well, a normal amount; and if you're in a hurry, there's power mode. The beeper-size computer screen displays the drive mode, speed (current, average, and max), ride time, and range left in the battery. That range varies depending on terrain, drive mode, and your weight; I found the Quick-E+ went about 70 miles before it needed to be plugged in using the included wall charger.

There is no other way to put this: The bike is stupid fun to ride. Step on the pedals, and soon enough you'll be cruising along with all the joy of two wheels but none of the drawbacks—you know, things like physical exertion and sweat. Still, as with most new technology, every plus comes with a minus: The Quick-E+ is heavy and hard to lug around. The handlebars are wide, giving the rider an extra bit of control, but for me they were a bit too wide for navigating city traffic. It's not perfect, but it's the early days. Hey, your Palm Pilot was unwieldy, too—but you still loved it. B

PHOTOGRAPH COURTESY GIANT BICYCLE

Welcome to Posh Panama

A booming economy ushers in daring restaurants and sumptuous resorts, including the romantic Islas Secas, just off the Pacific coast

By Nikki Ekstein

"Islas Secas—I've heard of that place," says Richard Cahill, my guide.

We're roaming through the historic center of Panama City, Casco Viejo, a jumble of pastel colonial-era buildings bordered by a seaside promenade. He's just asked me what's brought me to Panama, and I've told him I'm on my way to a new hotel on an archipelago miles away in the Pacific—one so hidden, not even my travel-expert colleagues have ever heard of it. The excursion is part of my mission to explore how the country's surging economy is creating exciting luxury businesses.

Cahill, the co-founder of the Panamanian ecotourism outfit Ancon Expeditions, rattles off what he knows about the enigmatic place. "Gorgeous, undeveloped islands," he says. "It was owned by Michael Klein, the famous hedge funder, until he died in a plane crash. Mick Jagger used to go all the time, since it was so under the radar."

Unintentionally, Cahill is presenting two truths and a lie. The 14 islands are a largely unknown natural wonder surrounded by vast marine biodiversity. And Klein, the onetime chief executive officer of hedge fund management company Pacificor LLC, did own them for six years. But the Rolling Stones singer never hid out there. (He did have a home in the country, in

Scattered across the archipelago, the nine blissfully private villas of Islas Secas have expansive decks, outdoor showers, and plunge pools

PHOTOGRAPH COURTESY ISLAS SECAS RESERVE & LODGE a compound 220 miles from the nearest town.)

Until his sudden death in 2008, Klein ran his version of the resort, which shares the name of the island chain, as a passion project. It was an exclusive, no-frills fishing lodge, with a handful of comfortable yurts scattered across its largest land mass, Isla Cavada. It was then purchased by American billionaire conservationist Louis Bacon, whose intention was to protect the marine ecosystem while developing the resort as a playground for high-end travelers. (The name Islas Secas, or "dry islands," refers to the area's extreme low tides, when the water level can drop more than 12 feet, exposing long stretches of sand.)

After a five-year-long overhaul—which brought nine villas, 1,556 solar panels, and a water treatment plant—Islas Secas Reserve & Lodge soft-opened early this year. It will officially open in January 2019, with rooms starting at $1,000 per person a night, all inclusive.

Panama City is in the midst of a development boom

A day after my tour with Cahill, I hop on a 45-minute flight from Panama City to the coastal town of David, near the Costa Rican border. "If you're here, you're here for a real adventure," says Rob Jameson, a lanky Brit who greets me and my friend. His job at Islas Secas is to uncover the thrills and scientific appeal of an island chain that, before Klein built his yurts, is thought to have been uninhabited since the 15th century.

During the hourlong boat ride to the lodge, the sleepy mainland gives way to the wide-open Pacific. Then a series of primeval islands emerges: all ashy, basalt rock jutting out of the sea floor and topped with tangles of green. Over some, pterodactyl-like frigate birds circle ponderously.

Jameson rattles off the activities ahead of us: Snorkeling and diving are common ways to spend the day; you'll see spiky blowfish, "blunthead" triggerfish, and iridescent parrotfish. If you're lucky, you might find bright-blue starfish off the coast of Granito de Oro, an island whose name means "nugget of gold." Catch-and-release fishing trips led by television personality and award-winning angler Carter Andrews usually turn up marlin, jackfish, and various types of snapper. On dry land, guests can hike to promontories and visit towering geysers that blast out of small caves and inlets.

It's while zooming around on a Seabob—imagine a child's swimming kickboard but jet-powered—that we encounter one of Islas Secas' few weaknesses: jellyfish. They're never visible, but their stingers are a frequent nuisance, leaving small red marks on our ankles and wrists. (The staff offers reef-safe sunscreen that includes jellyfish protection, along with spandex rash guards and bottles of vinegar to treat stings.) "It's not an adventure unless there's a certain element of risk," says Jameson, who never once asks us to wear life jackets on the boat. "But it's managed risk. And I'm there to catch people if they fall."

In the coming months, the resort will add more science-based activities on dry land, including archaeological digs to uncover pre-Columbian pottery from almost 1,000 years ago. By 2020 there will be a field station for scientists to study the humpback whales that migrate here in the summer, and visitors will be able to participate in research work. "We want to keep linking back to the conservation ethos and involving guests in our mission," Jameson says.

Another thing the resort is gaining is competition. Not far from Islas Secas, on Isla Palenque, the Costa Rica-based Cayuga Collection has just opened a resort near 400 acres of protected jungle. Its 14 rooms and suites run upwards of $770 per night. And just a few nautical miles from Panama City, a portion of the virginal Pearl Island is being developed into a resort by Ritz-Carlton Reserve, Marriott International Inc.'s most rarefied brand, slated to open in 2020. Developer Hart Howerton, which also designed Islas Secas, intends to bring four or five more top-end resorts to the island.

Back in Panama City, I can feel the buzz of the country's booming economy in the restaurants, nightlife, and urban development. The country was seen globally as a safe place to invest during the U.S. banking crisis, and an expansion of its famous canal is also boosting growth. Down the street from Ace Hotel's American Trade Hotel, I slide into one of six stools at the chef's counter of Donde José. Rapturously creative chef José Carles builds modernist dishes here out of his childhood stories, his grandparents' recipes, and Panama's native ingredients. A skewer of almost caramelized duck is presented with a bouquet of aromatic, indigenous herbs on a yucca shell to be eaten like a taco; a smoked quarter-chicken is served with a shot of golden, umami-rich broth that's simmered like mole for a month.

The restaurant, similar to Islas Secas, is reason alone to plan a trip. Although small, both brim with secret delights, just waiting to enchant you. B

The Links That Bind Us

Fifty-seven days in Scotland, 111 rounds of golf, and one writer coming to grips with a game that's less than perfect. *By Michael Croley*

Americans have been trained to think of golf courses as the province of the elite and the effete, but to hear Tom Coyne tell it, in the British Isles, and specifically Scotland, golf is the birthright of every man, woman, and child.

Coyne, whose books include the best-selling *A Gentleman's Game*, has spent 20 years writing about playing golf seemingly nonstop. His last book, *A Course Called Ireland*, serves as a travelogue for the country's great links destinations, peppered with his own ruminations on family, friends, and the camaraderie that grows out of a day on the greens.

His latest, *A Course Called Scotland*, follows the same fairway, so to speak, as he embarks on a dizzying tour of 111 rounds over 57 days in the game's ancestral home. The journey takes him not just to famed courses such as St. Andrew's, where more than 230,000 rounds of golf are played on the seven courses each year, but also to the "Golf Coast" near Edinburgh, where the clubs have names like Gullane, Kilspindie, and Archerfield.

Fatigue isn't the only thing on Coyne's mind as he hauls his body through 54-hole days. He discusses personal struggles, such as his sobriety, and acknowledges that he may have traded one addiction for another. But he finds kindred spirits in the Scots: Once, when he's pulled over for speeding on his way to Aberdeen, he's let off with a warning after the officer asks, "Are you playing Cruden Bay?"

Coyne's ambling takes him to golfing outposts in modest towns with modest B&Bs. In the Highlands, he plays Brora, a course that "found its way through the landscape and let nature create new shots for you," and Castle Stuart, which "feigned punishments but offered playability." At Murcar, which shares land with Royal Aberdeen, he discovers "a jewel…that out-joyed its royal neighbor." He takes three flights and two ferries to get to Whalsay Golf Club in the Orkney Islands, where the club manager greets him by saying, "You must really love golf to be all the way up here."

Other stops are more lavish. On the west coast, he spends a soulful few days at the Ugadale Hotel in Machrihanish, whose real luxury is "American attention to detail where you wanted it most—namely, your giant shower head." The vista from the ninth hole at Royal Dornoch "rivaled Royal County Down's for the best view in golf."

But it's at Askernish, a purist's dream in the Outer Hebrides "unaltered by greens committees and updaters," that Coyne comes closest to the sublime secret he's searching for. "As I climbed each dune to discover another perfect golf hole that seemed to have no business being there, I couldn't help but feel providence all over this place." Coyne emphasizes that anyone with the desire to get to Askernish can play its links.

Many of us dream of a trip to Augusta National that will never happen, but in Scotland he finds that members at most clubs don't pay exorbitant fees; at some of the world's best and oldest courses, there are often open times for the general public.

He marvels at the wealth of options for ordinary players: 9-hole gems such as Traigh Golf Course or the 12-hole layout—Coyne's ideal number for a round—at Shiskine Golf & Tennis Club. "It struck me as strange that the game came from a place where class and exclusivity seemed so entrenched," he writes. "Yet it was in America, the everyman land of bootstraps, where golf became truly exclusive: We took the open game from the closed place and made it a closed game in the open place."

There is a purity in the Scots' game that isn't about manicured greens or a ball's "spin rate." Coyne admires their "homemade" swings that merely focus on getting the golf ball around the course and in the hole. He becomes convinced that perfection is an illusion, though a powerful one. He slowly accepts his limitations, one day at a time, swing after swing. B

ILLUSTRATION BY CARI VANDER YACHT

A Cult Classic You Can Afford

Rolex fanatics have dreamed for years of a stainless-steel GMT-Master II with a red-and-blue bezel. Now they're fighting to get one

Photograph by Joyce Lee

Rolex SA is the master of iteration. By changing minuscule elements of its beloved watches over the years, the Geneva-based company has created hundreds of variations to chase, collect, and compare. But the GMT-Master II, which arrived this year at the Baselworld watch expo in Switzerland, is no small update: It's a major new version of a colorful timepiece the company started producing in 1959 and later discontinued. Iterations of the earlier model became collectors' favorites for their distinctive red-and-blue bezels, which evoke the Pepsi logo. (Another iconic brand, Pan Am, adopted the GMT as its official watch.) In 2014, Rolex reintroduced the watch and its iconic bezel in a white-gold version for $36,750. This model is stainless steel, a tougher metal better suited to rugged travel, and retails for a more wallet-friendly $9,250.

THE COMPETITION
For true Rolex fans, the only alternative is another stainless-steel watch from the company, such as the "Batman" GMT-Master II ($8,950), which has a blue-and-black bezel, or the $9,050 all-green "Hulk" Submariner. Sister brand Tudor released its own $3,900 GMT watch with a blue-and-red bezel as part of the Black Bay line. Outside the family, Tag Heuer's $2,100 Formula 1 Calibre 7 was introduced in 2014 in a partnership with the racing series.

THE BOTTOM LINE
This distinctive watch has a lot to offer. The bezel is made of cerachrom, a ceramic compound resistant to fading and scratches; the case metal is another extra-hard Rolex invention called oystersteel. The watch comes with a 70-hour power reserve, convenient for travelers on long plane rides who may not be able to move enough to charge it. At 40mm, it's not huge, but it will make a substantial impact on your wrist. *$9,250; rolex.com*

Anna Auerbach

A pioneer of flexible work schedules gets companies and employees on the same page. *By Arianne Cohen*

ILLUSTRATION BY SAM KERR

If you want to know who's fixing the workplace for ambitious women, look no further than Anna Auerbach of Werk Enterprises Inc. The company, which she co-founded in February 2016, seeks to reinvent the workday by helping businesses create executive-track jobs with flexible formats, including the ability to work part time or remotely or to not have to travel. "I couldn't quite understand why there were so few women in leadership," she says. "It's so obvious and in your face."

Part of the problem is that companies spend billions on things that don't actually solve problems for people, Auerbach argues. "They've rethought everything–furniture layouts, communication, branding–but not about why the workday is thought of as 9-to-6." She says employees typically need flexibility for one of three reasons: caretaking commitments, disabilities, and productivity habits (such as being a night owl). Werk's two products are FlexMatch, a survey for employees that helps companies figure out needs, and FlexCert, an online training for human resources staff and managers on the nuts-and-bolts of language and practice.

"Often, individuals don't understand their own needs well enough to articulate them," says Kim Williams, senior director for employee experience and corporate affairs at Credigy Solutions Inc. "We already had a flexibility policy saying to just let us know [about scheduling issues], and we'll do our best to meet those needs. But we still had a gap in what employees felt they had access to." Williams took the FlexCert training in October and recently collected the FlexMatch survey results, which the company is incorporating into long-term planning.

Auerbach, who came to the U.S. as a 6-year-old from the Soviet Union with the help of a charity organization, has always wanted to create opportunities for others. After attending Harvard Business School, she worked for a time at McKinsey & Co. Werk began shortly after Auerbach returned to work following the birth of her now 5-year-old son. She found the job market awash with semiflexible jobs for hourly employees, such as call center representatives and part-time assistants, but not the director-level positions she was seeking. She met Annie Dean, a real estate lawyer working 16-hour days and raising a special-needs son. Together they created Werk, initially as a job board aimed at women nationwide about to quit something because of workplace inflexibility. "We wanted to save each and every one of those women from making a decision they don't want to make," Auerbach says.

Theirs is still the only major job board that's searchable by flex options, but it became clear Werk needed to address the problem from the other side. It's since helped 225 organizations. "Companies say they have flexibility, people say they want it," Auerbach says. "And yet nobody's getting access to it."

b. 1983, Kiev, Ukraine

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Is an avid scuba diver

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Her superpower is having a mental repository of facts, statistics, and life hacks

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Loves adventure travel: Recent trips include Greenland and the Galápagos Islands

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