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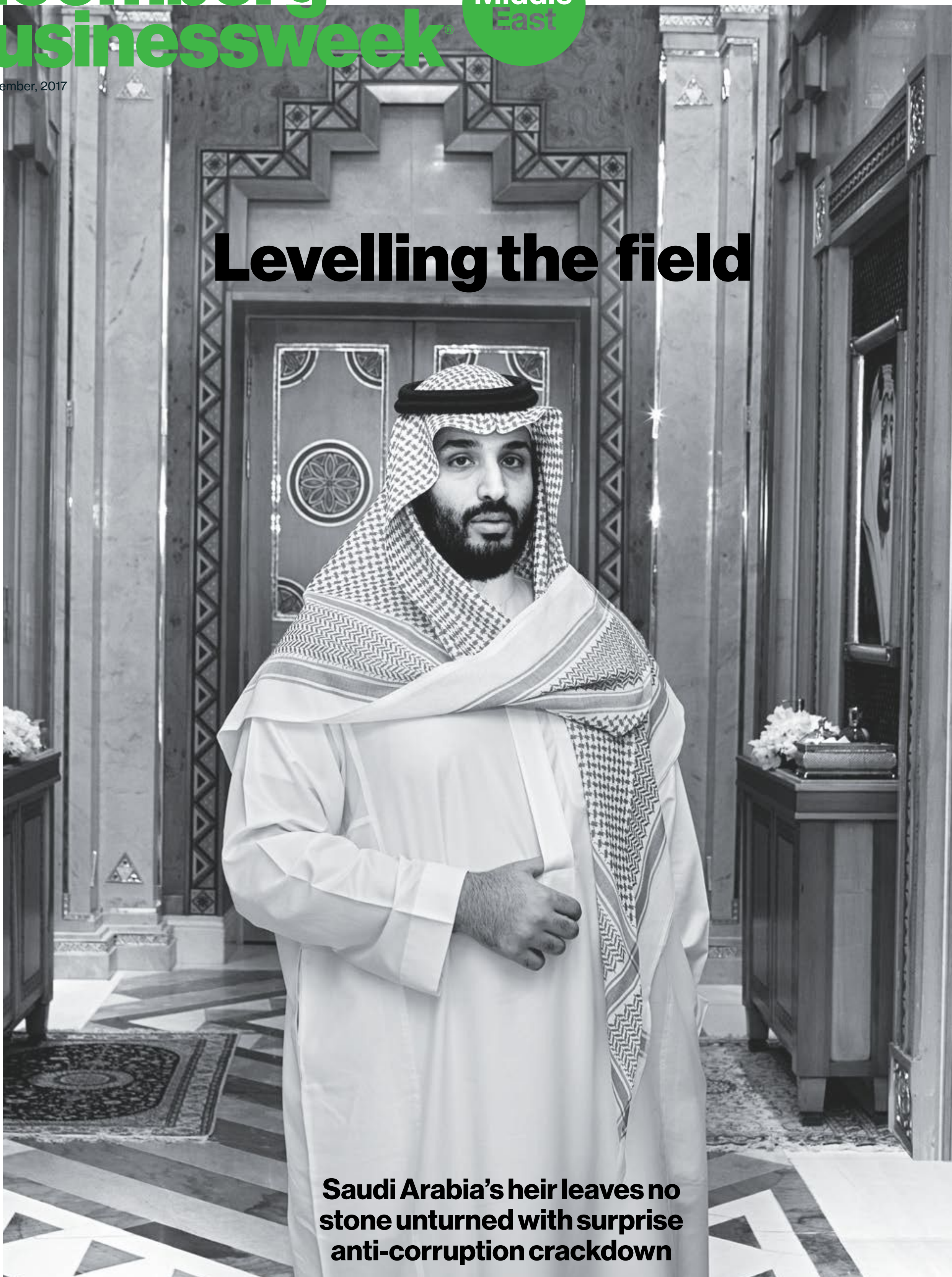
16-30 November, 2017



# Levelling the field

**Saudi Arabia's heir leaves no stone unturned with surprise anti-corruption crackdown**

p30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58 **“We are in a new world. It is a new challenge for internet communities to deal with nation states trying to subvert elections”**

# FEATURES





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# IN BRIEF

## Middle East & Asia

● Syria announced it would join the Paris climate agreement, leaving the U.S. as the only United Nations member outside the accord.

● Donald Trump sent mixed messages on North Korea during his Asian trip, saying it would make sense for Kim Jong Un to come to the negotiating table but also attacking his regime for turning the country into "a hell no one deserves."

● Lebanon Prime Minister Saad  Hariri resigned on Nov. 4, citing an alleged assassination plot against him.

● Schools were closed in New Delhi as air pollution reached levels 10 times those in notoriously smoggy Beijing.

● Tencent Holdings acquired a 12 percent stake in Snap.

The announcement came hours after Snap's shares plunged 22 percent in reaction to disappointing third-quarter earnings.

● Iran rejected accusations from Saudi Arabia that it had supplied Yemen with a missile "for the purpose of attacking" the country. The Saudi military intercepted a missile fired by Yemen on Nov. 4.

## Europe

● NATO updated its command structure for the first time since the Cold War, putting cyberdefence on the same footing as land, air, and sea defence.

● The Paradise Papers leak showed that Apple sought to preserve its low tax rate after a change in Irish law closed a loophole the company had previously exploited. The tech giant ultimately transferred two subsidiaries to the island of Jersey, which does not tax foreign companies.

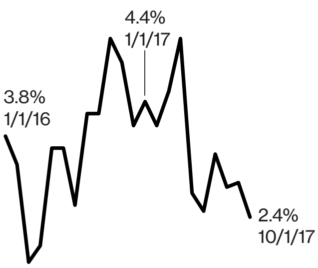
● Silvio Berlusconi  helped orchestrate a win for his centre-right coalition in Sicily.

The four-time Italian prime minister will attempt to lead the government again after general elections next year.

# Americas

● British retail had its worst October since 2008. Household spending for the month slowed to its lowest rate in more than a year.

U.K. year-over-year spending growth




DATA: BARCLAYCARD

● Republican Senator John Cornyn of Texas said he'd work with Democrats to close loopholes in background-check legislation after a Nov. 5 shooting in his home state left 26 dead.

● "Unfortunately, I am the biggest embarrassment surrounding the campaign."

Trump campaign adviser Carter Page, in early November testimony on his 2016 contacts with Russia that was unsealed by the House Intelligence Committee

● Total agreed to acquire Engie's assets in liquefied natural gas, making the French energy company the industry's second-largest player.

● The *New York Times* reported that the U.S. Department of Justice will require Time Warner to sell its Turner Broadcasting System division, which includes CNN, HBO, and other networks, before it approves the company's planned sale to AT&T for

$85.4b

● Tiffany was widely pilloried for its Everyday Objects collection, which includes a tin can made of sterling silver and vermeil on sale for $1,000.

● Democrats put up a strong showing in state and local elections on Nov. 7, especially in Virginia, where the party won a hotly contested race for governor.



● Priti Patel, the U.K.'s secretary for international development, resigned after disclosing that she'd held unauthorised meetings with Israeli officials in September. *Haaretz* reports that Patel also traveled to the disputed Golan Heights, a violation of diplomatic protocol.

● About 2,500 Nicaraguans will lose protected immigration status in the U.S. The Department of Homeland Security extended protections for Hondurans, however, and is reviewing the status of those from Haiti and El Salvador.

# Africa

● South Africa's FirstRand agreed to buy London-based bank Aldermore for

$1.4b

● Zimbabwe President Robert Mugabe ousted his vice president in an apparent move to make room for his wife, widely seen as his intended successor.

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# ■ VIEW

To read Jonathan Bernstein on Trump's 2020 prospects and Megan McArdle on the tax plan's impact on universities, go to Bloombergview.com

# Next Steps in Macron's Reforms

● The French president has made a good start, but there's a long way to go

Emmanuel Macron has accomplished more in six months than his predecessor managed in five years. Trouble is, that's a low bar—and the president will need to keep pushing if France's economy is to achieve its full potential.

Macron's first phase of reforms addressed the country's 3,000-plus pages of labor rules. The changes are aimed at lightening the burden of regulation on employers—for instance, by letting more of them negotiate terms directly with employees. The new rules are valuable, especially for the small and midsize companies that account for almost half of France's workforce. They'll also make it easier for multinationals to fire workers at struggling French subsidiaries, while encouraging them to hire more workers when times are good.

Yet these changes, welcome as they are, don't go far enough. Macron agrees, and he's embarking on a more ambitious second phase of reforms to help tackle the unemployment rate, which has stood at about 10 percent for years.

Europe's cyclical recovery has helped to get joblessness down a bit lately, but around a quarter of France's young people are still looking for work. Government spending isn't the issue. It already spends generously on finding jobs for the unemployed. The real obstacles are housing and skills.

Affordable homes are in short supply, especially in the cities where jobs are more plentiful. And the system of subsidized accommodation often ties workers to particular places—in many cases with nontransferable lifetime rights. France also needs to build more low-cost housing and supporting infrastructure in disadvantaged areas. At the moment, local authorities often block new construction.

Skills should be the other priority. The education system has failed to deal effectively with low levels of literacy and a lack of skills for the digital economy. Vocational training has also been weak—plagued by a huge number of competing approaches and run by officials who see little value in apprenticeships, which have proved effective elsewhere.

Macron is making a start on broader educational reform—reducing class sizes in poorer areas and giving universities more autonomy—but this won't yield quick results. Reforming the apprenticeship program may be the best way to improve the job prospects of the young.

The most successful apprenticeship programs, such as those in Germany and Switzerland, emphasize on-the-job training and encourage businesses to help devise the programs. France's system relies more on classroom instruction. This approach fails to reach the students who most need help, and participation of unskilled youngsters has been dropping.

Macron wants to simplify the system and get employers more involved. This might not be easy: It will mean reducing the role of France's powerful education ministry. It's essential nonetheless.

This second phase of reform, even more than the first wave, will upset some unions and a lot of civil servants accustomed to getting their way. Macron needs to stick with it. Ⓑ


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# Apple Has Big Plans for Your Little Screen

## The tech giant is making a foray into Hollywood. Initial reviews have been less than boffo

Days before Apple Inc. planned to celebrate the release of its first TV show last spring at a Hollywood hotel, Chief Executive Officer Tim Cook told his deputies the fun had to wait. Foul language and references to vaginal hygiene had to be cut from some episodes of *Carpool Karaoke*, a show featuring celebrities such as Gwyneth Paltrow, Jessica Alba, Blake Shelton, and Chelsea Handler cracking jokes while driving around Los Angeles.

While the delay of *Carpool Karaoke* was widely reported last April, the reasons never were. Edits were made, additional episodes were shot, and Apple shifted resources to another show. When *Carpool Karaoke* was released in August, it didn't make much of a splash. The early stumbles highlight the challenges ahead as Apple mounts an ambitious foray into showbiz. The company plans to spend $1 billion on TV shows over the next year and has hired a team that's already bidding for projects against the biggest media companies in the world.

With $262 billion in cash and securities in its coffers, Apple has the money to make as much TV as anyone, but some in Hollywood are beginning to wonder whether it has a clear strategy. The most valuable company in the world, Apple is under the constant glare of regulators, reporters, and competitors. Furthermore, the people who use the hundreds of millions of Apple devices have pretty mainstream views about the brand's appeal. Macs, iPhones, and iPads are also often in the hands of children–a group unsuited for much of the edgy programming that's fueled the new golden age of television.

The secretive company says little about its plans. No one in Hollywood knows where the shows will be available to watch, how much they'll cost, or even how Apple will publicise them. But in recent weeks, a visit to Apple offices in the Culver City suburb of Los Angeles has become as much a rite of passage for Hollywood producers, agents, and filmmakers as dining at Spago. So clues are beginning to emerge, based on interviews with more than a dozen people who've met with Apple executives or work there.

The company has had many fits and starts in Hollywood over the past two years, with as many as four different executives claiming to be responsible for its big move into Tinseltown. To lead the latest charge, Apple hired Jamie Erlicht and Zack Van Amburg, former heads of Sony Corp.'s TV studio. The two men have sterling reputations as key members of the studio that produced *Breaking Bad*. They've hired other industry veterans to oversee the development of new shows. They also plan to hire at least 70 staffers–including development executives, publicists, and marketers–to fill out their division. "They are professionals with deep relationships with many of the people who make some of the best shows on TV today," says Jon Avnet, who directed 10 episodes of Sony's TV show *Justified*.

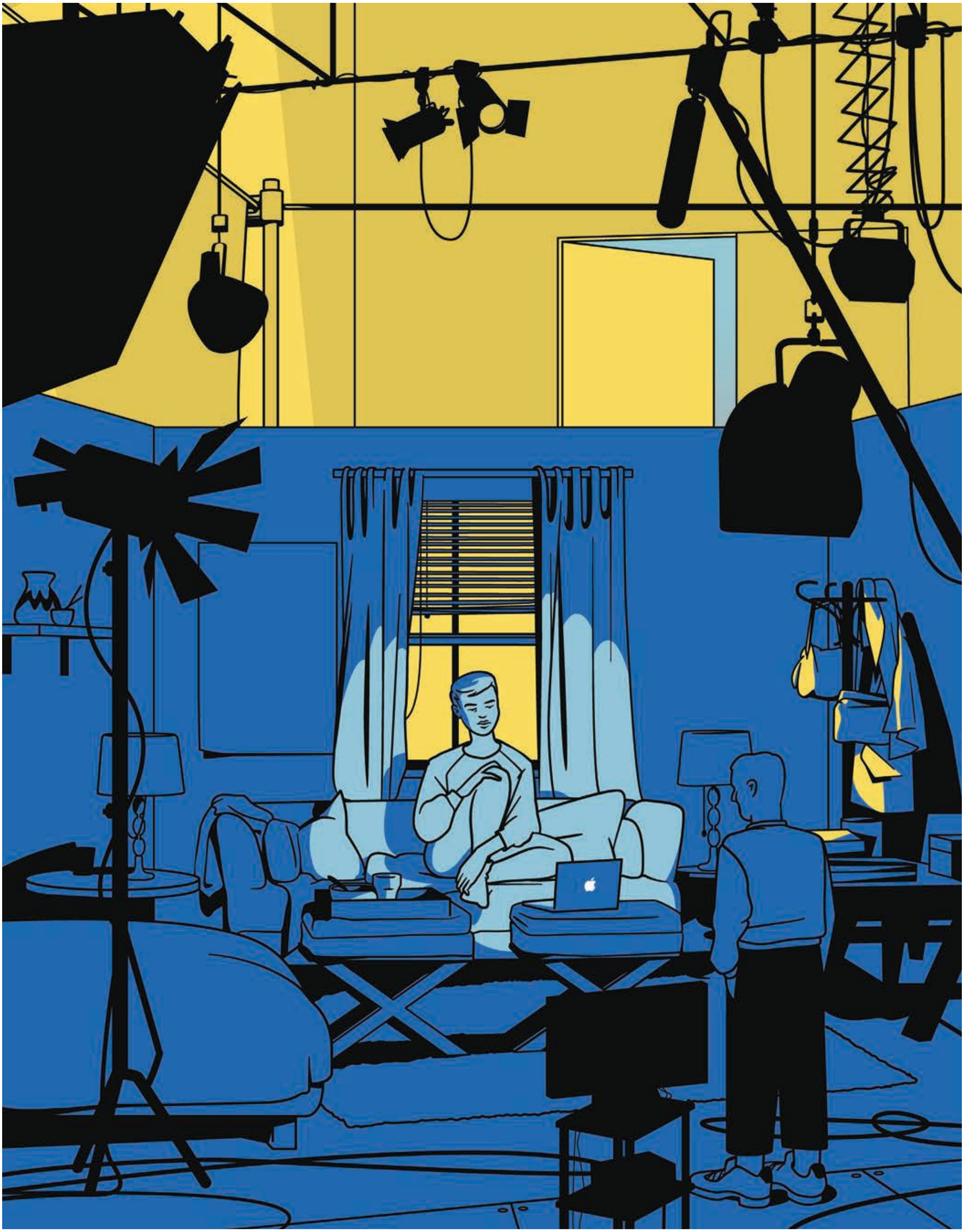
Erlicht and Van Amburg have agreed to remake Steven Spielberg's anthology series *Amazing Stories* with NBCUniversal and are in the bidding for another show, about morning TV show hosts played by Reese Witherspoon and Jennifer Aniston. Apple wants to have a small slate of shows ready for release in 2019. "I think for both NBC and Apple, it's about finding that sweet spot with content that is creative and challenging but also allows as many people in the tent as possible," says Jennifer Salke, president of NBC Entertainment.

However, Apple isn't interested in the types of shows that become hits on HBO or Netflix, like *Game of Thrones*–at least not yet. The company plans to release the first few projects to everyone with an Apple device, potentially via its TV app, and top executives don't want kids catching a stray nipple. Every show must be suitable for an Apple Store. Instead of the nudity, raw language, and violence that have become staples of many TV shows on cable or streaming services, Apple wants comedies and emotional dramas with broad appeal, such as the NBC hit *This Is Us*, and family shows like *Amazing Stories*. People pitching edgier fare, such as an eight-part programme produced by *Gravity* filmmaker Alfonso Cuarón and starring Casey Affleck, have been told as much.

Yet like Netflix Inc., Apple is thinking globally. The company hired Amazon.com Inc. executive Morgan Wandell to oversee its international division and is about to hire Jay Hunt to oversee development in Europe.

All this has led many producers to label Apple as conservative and picky. Some potential partners say they walk into Apple's offices expecting to be blown away by the most successful consumer technology company in the world only to run up against the reality of dealing with a giant, cautious corporation taking its first steps into a new industry. ▶

ILLUSTRATION BY MARTIN GROCH



◀ Apple isn't the first tech company to underwhelm Hollywood. Yahoo! Inc. and Microsoft Corp. spent millions of dollars on TV shows before pulling back within a couple of years, frustrated by the slow pace of development and their inability to attract audiences. Even Amazon, at first considered a success story, is now drawing complaints from writers and producers over casting decisions and instances of buying scripts but not producing them. The online retailer also fired its studio chief in October over allegations of sexual harassment.

Streaming video is just one of many fronts in the global battle between technology titans. After years of flirting with Hollywood, Silicon Valley companies are finally writing big checks, spurring a doubling of video production over the past decade. Amazon spent an estimated $4.5 billion this year on movies and TV shows, while Facebook and YouTube will spend more than $1 billion each. Netflix, which plans to spend $8 billion in 2018, dwarfs them all.

Yet no one arouses more interest in Hollywood than Apple. One reason it quickly climbed the list of places to pitch new shows: the almost cult-like attachment many have for its phones. "Their brand is the most important thing," says Avnet, who's made shows for Snapchat and YouTube and is in the process of making one for Facebook.

By funding original shows, the company also can remind customers to think of the Apple TV streaming device before the Roku or Amazon Fire TV Stick and to use Apple's year-old TV app instead of Amazon Prime Video or YouTube. With iPhone growth slowing, the company is looking to other divisions to deliver sales. ITunes, Apple Music, and the TV app are part of its services business, where CEO Cook wants to double revenue by 2020, to about $50 billion.

Yet Apple isn't trying to compete with Walt Disney Co. or Netflix to become the biggest backer of TV shows and movies on the planet. Instead, the company wants its shows to complement those of other networks and streaming services that consumers already watch on Apple devices. Its new shows, however, will no longer be placed on Apple Music, which will limit its focus to music-related video.

Whether Apple can channel consumer demand in TV as well as it does in smartphones remains to be seen. Around the time Apple delayed the release of *Carpool Karaoke*, its top brass also decided the TV unit should move up the release of *Planet of the Apps*, a reality competition series in which entrepreneurs pitched celebrity investors on their idea for an app, so it would make its debut on Apple Music in time for the company's Worldwide Developers Conference in June. Apple execs loved the show and thought it would endear the tech giant to software writers. The show wasn't supposed to be released for a couple of months, and there was no marketing plan in place—a vital step in the age of too much TV. Apple pressed ahead, and the show came and went with little fanfare beyond a couple of savage reviews. The show is "a bland, tepid, barely competent knock-off of *Shark Tank*," according to *Variety*'s Maureen Ryan. "There's no reason" for Hollywood to lose sleep over it, she wrote. Apple is betting the same won't be said about its broader TV strategy. —*Lucas Shaw*

THE BOTTOM LINE Apple will spend $1 billion next year on programming for television. By sticking with mainstream shows, it could miss out on viewers who increasingly favor edgier fare.

# Saudi Firms Backed by Billionaires in Probe Have $2 Billion Debt

● Government stresses it has only frozen the bank accounts of individuals as it seeks to ease tension among investors

Three Saudi companies, whose billionaire backers are caught up in an anti-corruption crackdown, have at least $2.1 billion of debt maturing over the next three years, according to data compiled by Bloomberg.

Kingdom Holding, which is 95% owned by Alwaleed and holds stakes in Twitter Inc. and Citigroup Inc., has $975 million of loans maturing in the next three years.

Nasser Al Tayyar Travel Group had $262.4 million outstanding as of August.

Saudi Binladin Group raised $634.6 million in 2014 to finance projects. The loan matures this month. Lenders including Abu Dhabi Islamic Bank, National Bank of Abu Dhabi and Samba Capital helped arrange the loan. It also borrowed $159 million in 2014 from regional banks. The project finance loan matures in 2018.

● Kingdom Holding has loans maturing in the next three years with a combined value of

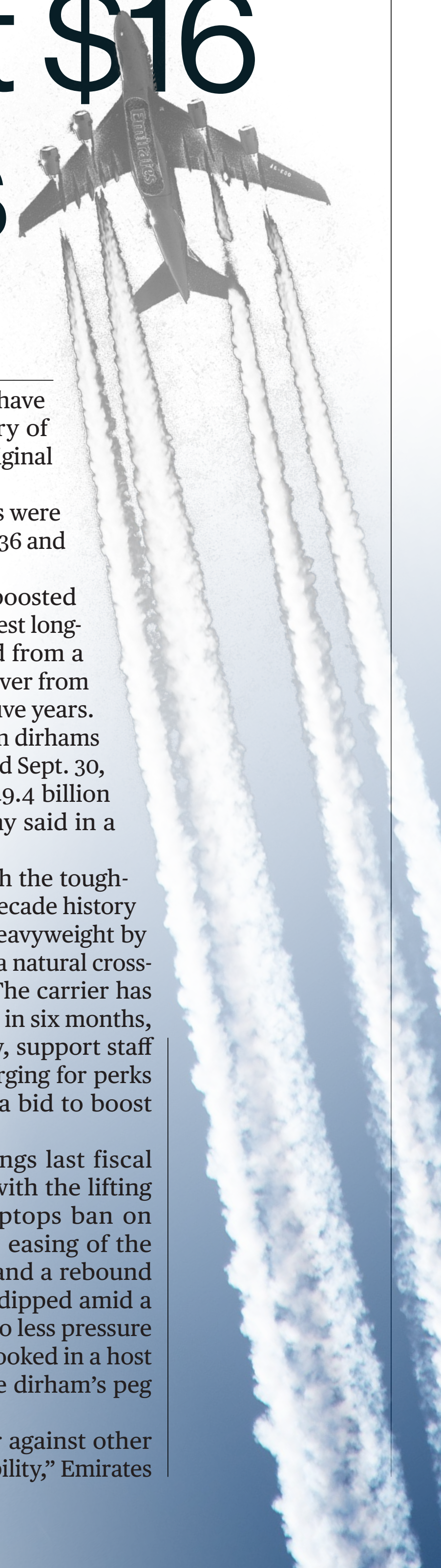
**$975m**

Among those being held are Prince Alwaleed bin Talal whose $19 billion fortune slumped by about $2 billion in the days following the crackdown. Also being detained as Bloomberg Businessweek Middle East went to press was Nasser Al Tayyar, who amassed a fortune that's tied to Al Tayyar Travel Group Holding Co., one of Saudi Arabia's largest travel agencies, and Bakr Binladin, the scion of one of the kingdom's biggest construction firms.

Saudi Arabia said it has only frozen the bank accounts of individuals and not those of the companies they own or manage, as the kingdom seeks to ease tension among global investors over the crackdown. —*Archana Narayanan*

THE BOTTOM LINE Three KSA companies backed by billionaires arrested in an anti-corruption swoop have combined debts of $2.1 billion, according data compiled by Bloomberg.

# Emirates Negotiating Order for About $16 Billion of A380s




● Multi-billion dollar deal could save Airbus A380 programme

Emirates is negotiating a deal to purchase about 36 additional Airbus SE A380 superjumbos, according to people familiar with the talks, a move that would help extend the embattled programme's life.

Executives were working to seal an accord with the goal of making a formal announcement on Nov. 12 at the start of the biennial Dubai Air Show, said the people, asking not to be named as the discussions are confidential. An order for that number would be valued at $15.7 billion at current list prices, though the tally could change as talks enter the final stage.

Airbus has been working to secure a follow-on order for the four-engine model from Emirates, which would add another 4 1/2years to its backlog, after the planemaker was forced to cut production of the aircraft to just eight a month next year from 25 in 2016 amid slack demand. Outgoing sales chief John Leahy, who is looking to Emirates for a last triumph before handing over the reins to a successor early next year, is renowned for getting orders signed in the final moments ahead of an air show.

An agreement with Emirates would allow Airbus to continue marketing the plane, pursuing a series of smaller deals that wouldn't otherwise have been viable without the new commitment from its biggest customer for the double-decker model. Representatives for Toulouse, France-based Airbus and Emirates, which is based in Dubai, declined to comment.

The planemaker in June unveiled an upgrade to the A380, dubbed the "plus" that adds wingtips and a more condensed cabin layout to improve the fuel efficiency of the aircraft. Airbus Chief Executive Officer Tom Enders restated the company's commitment to the plane in Hamburg this month when Emirates took its 100th jet of a total 142 on order.

Emirates already represents the only major customer for the double-decker, which has 317 net orders in total. Most other customers, such as British Airways to Lufthansa to Air France, have made the plane only a sub-category of their fleets or even cut back their original commitments.

Reuters earlier reported that talks were centreing around a deal for between 36 and 38 planes, citing a person familiar.

In other news Emirates Group boosted first-half profit 77 percent as the biggest long-haul airline cut jobs and benefitted from a more stable dollar as it seeks to recover from its first annual earnings decline for five years.

Net income increased to 2.3 billion dirhams ($630 million) in the six months ended Sept. 30, with sales advancing 6 percent to 49.4 billion dirhams, the Dubai-based company said in a statement November 9.

Emirates has been grappling with the toughest operating conditions in a three-decade history that's seen it become an industry heavyweight by exploiting the position of the Gulf at a natural crossroads for inter-continental flights. The carrier has reduced the payroll by 3,000 people in six months, eliminating some senior cabin crew, support staff and IT workers, and has begun charging for perks such as advance seat selection in a bid to boost revenue.

Factors that weighed on earnings last fiscal year have also begun to subside, with the lifting of President Donald Trump's laptops ban on U.S.-bound flights from Dubai, an easing of the Mediterranean immigration crisis and a rebound in European tourist visits that had dipped amid a spate of terrorist attacks. There's also less pressure from a dollar which hurt earnings booked in a host of weaker currencies because of the dirham's peg to the greenback.

"The easing of the strong dollar against other major currencies helped our profitability," Emirates

Chairman Sheikh Ahmed bin Saeed Al Maktoum said in a statement. "We are also seeing the benefit from various initiatives across the company to enhance our capability and efficiency with new technologies and new ways of working." — *Benjamin Katz and Christopher Jasper*

THE BOTTOM LINE Emirates is negotiating a deal to buy an additional 36-38 Airbus SE A380 superjumbos, worth some $16 billion, a move that could save Airbus's A380 project

# Saudi Fund Working with Klein, Evercore on Strategy

● Wealth fund brings in top advisors as it targets $2 trillion value by 2030

Saudi Arabia's wealth fund, which aims to control more than $2 trillion by 2030, is working with rainmaker Michael Klein and boutique Evercore Inc. on its global investment strategy and financing plans, according to people familiar with the matter.

Klein, the former Citigroup Inc. investment banker who runs his own boutique, is advising Public Investment Fund on its partnerships with international companies and working closely with Managing Director Yasir Al-Rumayyan, the people said, asking not to be identified because the details aren't public. Evercore is providing advice on strategic and funding options, the people said.

The roles will cement the two independent banks' position in the transformation of the Saudi Arabian economy as both are already working on the blockbuster initial public offering of the kingdom's state-owned oil company Saudi Arabian Oil Co. Klein is said to be providing strategic advice to the government for the IPO of Aramco, as it's known, while Evercore is working alongside rival Moelis & Co. as a financial adviser on the offering, people familiar with the matter said in March. The boutiques will help the oil giant pick underwriting banks, make decisions on potential listing venues and ensure the IPO goes smoothly, they said.

PIF, as it's known, is bringing international expertise as it pushes ahead with plans to transform itself into one of the world's largest sovereign wealth funds. The fund is at the centre of Saudi Arabia's efforts to diversify revenue away from oil under an economic transformation plan known as Vision 2030. The kingdom plans to sell shares in Aramco in what could be the largest IPO in history, and transfer ownership to PIF.

PIF was not immediately available for comment. Representatives for Klein and Evercore declined to comment.

Klein, 53, is a prolific force in the M&A industry, landing roles advising on some of the biggest deals in the past few years. M Klein & Co. was listed first among advisers to Dow Chemical Co. on its merger with DuPont Co., one of the largest-ever chemicals deal. He also worked as a go-between for the chief executive officers on Glencore Plc's 2012 merger with Xstrata Plc, people with knowledge of the deal said at the time.

Evercore, founded by former deputy U.S. Treasury Secretary Roger Altman, opened an office in Dubai earlier this year to tap regional opportunities. The firm now has about 10 investment bankers based in the emirate's financial hub, including new hires and some who have relocated from other offices, the people said.

PIF plans to borrow to boost returns from its investments and is targeting annual returns of 8 percent to 9 percent over the longer term, or 2025 to 2030, Al-Rumayyan said an interview in Riyadh last month. The fund will also look for more partnerships like its tie-ups with money managers Blackstone Group LP and SoftBank Group Corp., he said.

The wealth fund has agreed to contribute $20 billion to a U.S. infrastructure fund managed by Blackstone that could manage a total of $40 billion in equity commitments from other investors. It is also putting $45 billion into a global technology fund run by SoftBank. The deals are part of Public Investment Fund's plan to have 25 percent of its assets in international investments by 2030, up from 5 percent in September. — *Dinesh Nair and Ruth David*

● The sum Saudi Arabia's wealth fund is putting into a global technology fund run by SoftBank

**$45b**

THE BOTTOM LINE Saudi Arabia's wealth fund, Public Investment Fund, has brought in advisors Michael Klein and Evercore Inc. as it aims to reach a value of $2 trillion by 2030.

# Saudi Aramco Contractor Arkad Forms Venture With ABB

● Joint venture will give Arkad a foothold in Algeria, Kuwait and the United Arab Emirates

● Sales Arkad expects to generate this year

**$553m**

Saudi energy services company Arkad, which is building a nationwide pipeline network for oil giant Saudi Aramco, will expand outside the kingdom in a venture with ABB Ltd. that opens the doors ▶



PHOTOILLUSTRATION BY SJC, SHUTTERSTOCK

◀ to business in North Africa and the Gulf region.

Arkad signed a deal to acquire a majority stake in a new joint venture with ABB's oil and gas engineering, procurement and construction unit, Managing Director Hani Abdelhadi said in an interview. The project will give closely held Arkad a foothold in Algeria, Kuwait and the United Arab Emirates, he said. Both Arkad and ABB declined to disclose the size of their respective stakes and the value of the transaction, which they target for completion in December.

"It has been our goal since the beginning to become an international company," Abdelhadi said in Dubai. "Through an acquisition, it's easier market access than trying to go and set up in each country."

Arkad is expanding at a time when energy-services companies worldwide are struggling to cope with lower crude prices, which have driven oil and natural gas producers to slash investment. Crude is currently trading at about half its 2014 peak, and Schlumberger Ltd. and Baker Hughes, the two largest oil service companies, have blamed lackluster earnings on the reluctance of North American explorers to boost their spending. The oilfield services business was the worst hit in the three-year crude-market crash.

For Zurich-based ABB, a provider of power and automation technologies, the deal promises new opportunities in Saudi Arabia, where Arkad's main customer is Saudi Aramco, the world's biggest crude exporter. "We see this as a clear growth opportunity," Per Erik Holsten, managing director of ABB's global oil, gas and chemicals business, said by phone from Oslo. ABB "wasn't getting enough scale" with its existing energy contracting operations, he said.

Arkad, based in the eastern Saudi city of Al Khobar, is currently building a gas pipeline system for Aramco that will span more than 1,100 kilometers (685 miles) from Saudi Arabia's Eastern Province to Rabigh on the Red Sea. The network is part of the country's Master Gas System that aims to supply gas as a replacement for the oil currently used to generate electricity, and also to send gas to petrochemical plants.

Arkad expects to generate 2 billion riyals ($533 million) in sales this year. Abdelhadi declined to give estimates for 2017 income or projections for future sales and income. Arkad, established in 2011 as Saudi KAD, was re-named in February.

The joint venture, to be called Arkad-ABB SpA, will be based in Milan at the headquarters of ABB's existing oil and gas EPC business. Abdelhadi and Holsten declined to identify any of the venture's clients. Arkad's expansion aligns with Saudi Arabia's Vision 2030 plan of diversifying the economy and creating jobs through small to medium-sized enterprises.— *Bruce Stanley and Jinan Warrayat*

THE BOTTOM LINE Arkad and ABB Ltd will form a joint venture. The deal will help Arkad expand in North Africa and the Gulf, while helping ABB gain scale.



# Abu Dhabi's Biggest Solar Project on Track to Start in 2019

● The 1.2-gigawatt project by Jinko Solar and Marubeni Corp is due to start operating by April 2019

The world's biggest photovoltaic solar plant is set to start operating by April 2019, a managing director of China's Jinko Solar Holding Co. said.

The 1.2-gigawatt project in Abu Dhabi is "well on track and on schedule," Mothana Qteishat, Jinko Solar's managing director for project development in the Middle East and North Africa, said at the Routes to China Summit organised by Bloomberg LP and sponsored by HSBC Holdings Plc. The project is being developed by Jinko Solar and Japan's Marubeni Corp., with each company holding a 20 percent share, he said.

Government-owned Abu Dhabi Water & Electricity Authority received a then record-low bid of 2.42 cents a kilowatt-hour for power from the planned facility. Prices for solar projects in the Middle East have set successive records with first Dubai and then Abu Dhabi coming in with all-time low power pricing.

"What we have done will attract other Chinese investors" to the region, Qteishat said in an interview. There is room for solar power prices to fall even more, he said.

Saudi Arabia has received the world's cheapest offer for supply of solar power. Electricite de France SA and Abu Dhabi's Masdar made a joint bid to provide electricity for as little as 1.79 cents a kilowatt hour, the Saudi energy ministry said in October.

A combination of improving and less costly technology, free land earmarked for the plants,

ILLUSTRATION BY SJC

connections to national power grids and favourable financing have helped cut the costs.

Nations are investing in solar and wind energy to cut down on pollution from fossil fuels and to take advantage of reduced costs. In the Middle East, there is the added incentive to produce more alternative energy for domestic use and export more crude oil. Saudi Arabia plans to develop 30 solar and wind projects over the next 10 years as part of a $50 billion programme to boost power generation. — *Claudia Carpenter and Justin Carrigan*

THE BOTTOM LINE 1.2-gigawatt solar project in Abu Dhabi will open in 2018. The project once marked a record bid for cost per kwh but this has since been superseded by a project in KSA

# Iraq's Oil Exports Decline as Kurdish Fight Cuts Output

● Shipments from OPEC's second-largest producer dropped to 3.72 million barrels a day in October

● Kirkuk's oilfields were thrown into the spotlight when Kurdistan included the city in an independence referendum

Iraq's crude exports fell 7 percent in October after the Kurdish region held an independence referendum that sparked fighting with federal troops, interrupting pipeline sales.

Shipments from OPEC's second-largest producer dropped to 3.72 million barrels a day in October, from 3.98 million in September, according to Bloomberg tanker tracking. Exports from the disputed Kirkuk region halted amid the dispute, cutting sales from northern Iraq in the second half of the month to less than half their normal pace of 600,000 barrels a day, according to port agent reports and tanker tracking. Shipments were the lowest since April when pipeline disruptions in the north and jetty repairs in the south slowed sales.

Iraq's faltering exports bolstered crude prices last month, helping push Brent to a third monthly gain this year and its first close at more than $60 a barrel. Global producers have been trimming output to deal with oversupply that's cut prices from more than $100 a barrel in 2014. The Organisation of Petroleum Exporting Countries meets later this month to discuss extending output cuts that started in January beyond March 2018.

The country hadn't complied fully with its pledged output cuts until last month when fighting with the Kurds brought production down to within limits in the OPEC deal. The country pumped 4.35 million barrels daily in October, the first month this year that it's complied with the pledged output cuts, according to data compiled by Bloomberg.

Iraq has been OPEC's star performer since the start of the decade, nearly doubling crude production as it brought in international partners to develop its giant fields in the south. While smaller explorers bought up acreage in northern Iraq, production increases there have been plagued by disputes over crude revenue between the semi-autonomous Kurds and the federal government.

Those disputes and a three-year battle against Islamic State militants weren't enough to stop Iraq from boosting output to a high of 4.63 million barrels a day in December, the month before OPEC's cuts started.

Iraq sold 3.29 million barrels a day of crude from Basrah port in the south last month, down 2 percent from September, according to tanker tracking. Sales from the Kurdish region, which had included flows from fields in Kirkuk province, plunged 30 percent in the month to 428,387 barrels a day.

Kurdish forces lost control of Kirkuk and its oil fields to federal troops last month. The Kurdistan Regional Government included Kirkuk in its independence referendum, which the federal government rejected. Kurdish forces had occupied areas of Kirkuk vacated by the Iraqi military in the face of an onslaught by Islamic State militants in 2014.

China was Iraq's biggest market last month, with vessels carrying 845,101 barrels a day of crude leaving the Persian Gulf country for the Asian buyer in October, according to tanker tracking. Most crude from the Kurds went to Greece, with the European country taking 150,000 barrels a day of crude from the region, the data showed. — *Anthony DiPaola*

THE BOTTOM LINE Iraq's oil output dropped to 3.72 million barrels a day in October amid clashes between Iraqi and Kurdish forces, helping push Brent to a third monthly gain this year.

# Amazon Gets a Good Deal in Ohio. Maybe Too Good

● The jobs payoff is uncertain for millions of dollars in tax incentives and grants

The emergency responders of Licking County, Ohio, are under strain. At least once a day, a medical unit from West Licking Fire Station 3 makes a run to the Amazon.com Inc. warehouse 3.1 miles away, in the township of Etna, about 20 miles east of Columbus. The calls for routine medical issues that occur in grueling warehouse jobs come at all hours, says Steve Little, the fire district administrator. Shortness of breath. Chest pains. Myriad minor injuries. During the busy holiday season, he says, the warehouse sometimes issues multiple emergency calls a day.

Amazon isn't helping cover the costs. Under the deal the company negotiated in 2015 with local officials and the state's private economic development agency, JobsOhio, it's paying no property taxes to Licking County for 15 years. As part of a two-warehouse deal, the state gave Amazon $17 million in tax incentives, and JobsOhio handed over $1.5 million in cash, funded with income from the state's liquor monopoly. The new facilities are "almost a million square feet we have to protect, but we get no extra money," Little says. "We have no voice in these deals, and we get no cash. Our residents are being forced to pay instead." In November, voters in Little's district will be asked to approve a five-year, $6.5 million property tax levy to keep the fire department operating.

While most big companies extract tax breaks from states and municipalities where they're looking to expand, in Ohio Amazon has become something of a poster child for incentives that make it tough for public services to accommodate the added strain its facilities bring. In four deals struck through JobsOhio since 2014, the company has received at least $123 million in tax breaks, plus $2.9 million in cash grants. The terms of a fifth agreement, which Republican Governor John Kasich announced in September, haven't been disclosed because the deal hasn't yet been signed by the state's Tax Credit Authority, a five-person panel composed mostly of local business leaders.

The deals have required Amazon to create surprisingly few jobs. And JobsOhio's lack of transparency is part of the problem, says David Yost, Ohio's state auditor. He says that "$123 million is a lot of money, and you ought to get a lot for that. It's really hard to know how much the state of Ohio paid per job." Ohio's job-growth rate has trailed the U.S. average for 57 consecutive months; in August it was about 1.1 percent, compared with the 1.5 percent national rate. In 2013, after Yost, a Republican, threatened to compel JobsOhio to show him more numbers, Kasich pushed a bill through the state legislature stripping public officials of the right to audit the agency's books. A private auditor now conducts an annual review, which is partly redacted before publication.

"JobsOhio is succeeding where public efforts failed," says agency spokesman Matt Englehart. "Amazon has shown confidence in Ohio's talent by investing and creating jobs here." If a company fails to live up to its deals, Englehart adds, its incentives can be revoked, and its funding clawed back. Amazon didn't respond to requests for comment for this story.

In 2014, after negotiating with JobsOhio, Amazon agreed to spend $1.1 billion to build three data centers in the state in exchange for a 15-year exemption on state and local property and sales taxes, up to $77 million. The value of the tax breaks will increase proportionately if Amazon spends more on construction or expansion of the data centers from now to 2044. JobsOhio negotiated a $4 million tax credit to offset payroll costs in exchange for a promise of 120 total jobs at the three data centers. It also gave Amazon $1.4 million in cash.

As part of the first deal, municipalities that wanted a data center had to offer supplementary blind bids. David Meadows, economic development director of Hilliard, says the Columbus suburb gave Amazon $5.4 million in further incentives to land one. Nearby Dublin handed over $7.3 million, including 68 acres

PHOTO ILLUSTRATION BY 731; PHOTO: CAROLINE TOMPKINS FOR BLOOMBERG BUSINESSWEEK valued at $6.8 million and sold to Amazon for a buck. New Albany provided a 15-year tax exemption on $10 million in new investments. That agreement calls for 25 full-time Amazon jobs but describes the detail as a "good-faith estimate" that cannot "be construed in a manner that would limit the amount or term of the tax exemption." New Albany officials declined to comment.

The second deal, in 2015, included the jumbo warehouse in Etna and another in nearby Obetz. The following year, JobsOhio gave Amazon a $270,000 tax credit to convert a former Chrysler plant in Twinsburg, about halfway between Cleveland and Akron, into a sorting facility. Amazon promised only 10 full-time jobs, plus 300 part-time or seasonal ones. Even so, the city kicked in a seven-year, 50 percent property tax exemption, worth roughly $600,000. "About 65 percent of that money would have gone to the school district," says Larry Finch, Twinsburg's director of planning and community development, though he adds that the deal should still be considered a win. In May, Twinsburg passed a property tax levy of $6.9 million, or $241.50 per $100,000 of home value, to fund its schools.

Earlier this year, Amazon's fourth deal with JobsOhio secured $11.6 million in tax breaks to open another two warehouses. Kasich announced the fifth and latest agreement, to make a warehouse out of a shuttered mall in the Cleveland suburb of Euclid, on Twitter on Sept. 28. "Congrats to Euclid on the big win!" he wrote.

Kasich has good reason to promote JobsOhio's deals. In 2010 privatising the state's economic development agency was a big part of his campaign-trail plan to stem Ohio's loss of manufacturing jobs. He argued that a private company staffed with seasoned, well-paid executives could negotiate better than a public agency would. "They will be given the power to negotiate, all the way down to crossing the t's and dotting the i's," he said at the time. The first bill Kasich signed into law after taking office created JobsOhio.

If the agency were directly funded with public money, it would be subject to public records laws. Kasich came up with a financing scheme that allowed JobsOhio to avoid that requirement. He arranged for the state to sell to the agency its liquor monopoly, which dated to the end of Prohibition. The price: $1.4 billion, mostly in payments to bondholders, for a 25-year lease of a business that had been contributing $250 million annually to state coffers. JobsOhio also agreed to make supplemental payments if liquor profits exceeded certain thresholds, which they have. Since 2013, JobsOhio's annual salary costs have risen from $2.5 million to $11.5 million. The 83-employee agency's president, John Minor, has a salary of $445,000, three times Kasich's.

"Prior to the formation of JobsOhio, public officials had to be more open about what they were offering to companies like Amazon," says Dennis Murray Jr., an attorney in Sandusky who as a Democratic state legislator tried to fight JobsOhio's takeover of the liquor franchise. "Now, by the time the public finds out, the deals are finished. They don't have to sell it." Timothy Keen, Kasich's budget director, says the private agency is better suited to the task than its public counterpart was.

As economic development agencies have been privatised in other states, some auditors like Yost have tried to push back. Timothy Keller, auditor for New Mexico, successfully lobbied the private Governmental Accounting Standards Board to adopt a nationwide rule that requires governments to start publishing annual tax incentive totals by the end of this year to get the bond-rating benefits of GASB certification. "We have created this self-enforcing cycle of competition between state governments to lure companies," he says. "Hundreds of millions of dollars have been thrown away." But the new rule won't require states to show how many jobs they get in exchange for tax breaks or whether the jobs are ▶

## A Second Home for Amazon

Complaints about strained public services haven't hurt Amazon much in the search for its second headquarters. Some 238 cities applied for the honour, and the promised $5 billion in spending, before the Oct. 19 deadline. As the company begins narrowing its options ahead of a 2018 decision, here are 10 likely finalists.
—*Natalie Wong*

| City | Pros | Cons |
|---|---|---|
| Atlanta | ● Major flight hub; home to Amazon delivery partner United Parcel Service Inc. | ● Inadequate mass transit for a widely dispersed metro area |
| Austin | ● Low cost of living; high quality of life; young workforce; low-regulation state with no state income tax; home to recent Amazon acquisition Whole Foods Market Inc. | ● Small metro area compared with others on this list |
| Boston | ● Proximity to Harvard and MIT; flight hub; relatively low cost of living; home to Amazon's robotics subsidiary | ● Officials have refused to negotiate incentives for now |
| Chicago | ● Strong, diverse talent pool; major flight hub with access to mass transit; heavy tax incentives | ● Not a tech hub |
| Denver | ● Flight hub; high quality of life; young, educated workforce looking for tech jobs | ● Conservative on tax breaks |
| Detroit | ● Low rent; three big universities nearby | ● Conservative on tax breaks; subpar mass transit; small tech scene |
| New York | ● Young, diverse workforce; strong university ecosystem; proximity to advertising and fashion industries | ● High costs of living and housing; limited space for construction |
| Pittsburgh | ● Robotics hub; close to major distribution points; large workforce with manufacturing background | ● Far from other major metro areas and tech centers |
| Toronto | ● STEM-centric workforce with lower salaries than U.S. counterparts | ● Backlash from President Trump |
| Washington | ● Highly educated workforce; strong public transit; Amazon CEO Jeff Bezos owns the city's top newspaper and its largest house | ● Expensive housing market; limited building space |

◀ desirable. And it might not apply to private agencies such as JobsOhio, says Yost, though he acknowledges that "it is better than the vacuum we had before."

"Annual reports and redacted records aren't enough to make a judgment about how well this agency is doing," Yost says, referring to the current system of JobsOhio disclosures. "I don't think anyone outside the organisation has enough information. It's pretty much, 'This is the way it is, these are the numbers, trust us.'" In West Licking, Little says his medics and firefighters are lucky to even get that much. "We are the last ones," he says, "to find out we won't be getting any money." —*Mya Frazier*

THE BOTTOM LINE Amazon's nine-figure tax incentives in Ohio have strained local public services as the state's employment growth continues to lag the national average.



# A More Automated Gold Mine

● Barrick and Cisco say their sensor-packed system will make mining safer, cleaner, and more efficient

Surrounded by sagebrush and pinyon pine in a remote part of Nevada, the city of Elko appears out of the desert as if from another era, with its strip of 1960s neon-lit motels and casinos. But down the highway a stretch, the scene is unmistakably 21st century.

Seventy-five miles outside town, Barrick Gold Corp. is a year into the gold mining industry's most ambitious experiment to modernise digging. At Barrick's analytics and unified operations centre, a long bank of enormous screens and rows of computers analyse data collected from thousands of sensors that record virtually all activity at and around the vast underground Cortez mine. The idea is to use Silicon Valley monitoring technology to mine more gold at cheaper rates while reducing injuries and pollution. "Literally every single aspect of the business should change," says Executive Chairman John Thornton.

In the past year, Barrick's team–with help from Cisco Systems Inc.–has built Cortez's operations center, wired the mine with underground Wi-Fi and sensors, increased its use of remote-control equipment and vehicles, and created an in-house software team called C0dem1ne. Digging costs at the subterranean 1,300-worker Cortez mine have fallen from \$190 a tonne to \$140, and so far the team is under its \$50 million budget for 2017.

While that doesn't sound like much for a company with a market value of \$18.8 billion, Chief Operating Officer Richard Williams, a former officer with the U.K.'s Special Air Service, has approached the project with military precision. Drawing on his experience in Iraq, where electronic networks allowed commanders to view a whole battlefield in real time, Williams says he's working to integrate hundreds of incremental tech-driven improvements at Barrick's three Nevada mines over the next 24 months, betting that the efficiency gains will add up to more than the sum of their parts. Other mines, he says, will follow.

Barrick's bigger mines will require far more

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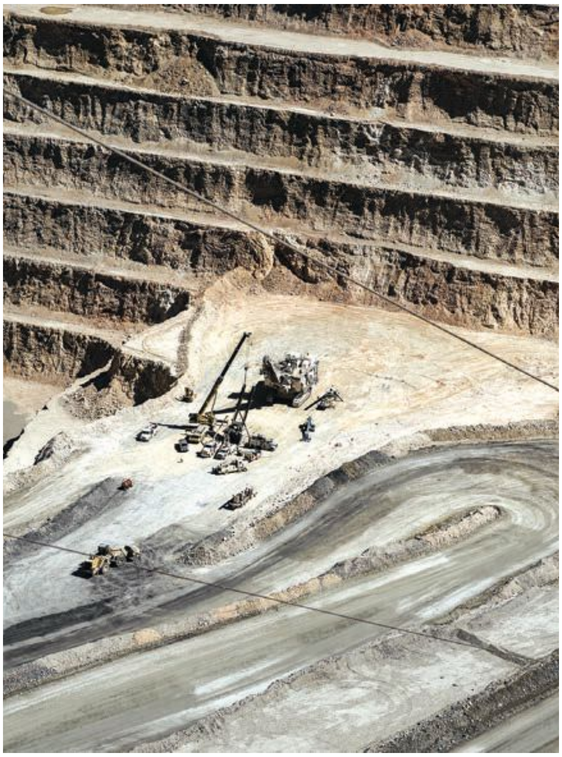


sensors—hundreds of thousands rather than the tens of thousands likely to wind up in Cortez. But Williams says the advantages over traditional walkie-talkies are obvious. Sensors track how many bolts a given worker fires each hour and how many buckets of waste rock his teammate moves. At a micro level, the mine's analysis software tells managers which workers are underperforming and whether that's because of employee error, fatigue (if, say, performance flags over the course of a shift), or a type of rock that's especially tough to handle. At a macro level, all those data feed into executive-level reports on overall production, but they also arm workers with the information to suggest changes that can be made midshift in a matter of hours rather than in days or weeks.

For example, miners might use Wi-Fi-connected mobile devices to flag a certain chemical in cases where it's being depleted faster than expected. While the system would try to figure out why, it would also generate a list of potential consequences and alert suppliers and others to head off those risks. At a mine in Argentina, where Barrick has faced pressure and criticism from local officials and the public for repeatedly spilling cyanide solution, the company is testing real-time monitoring of water quality.

At Cortez, logistics changes such as rerouting trucks and reassigning miners are relayed to work crews midshift through the C0dem1ne team's Short Interval Control app. A small fleet of underground loaders essentially runs on autopilot, continuing to work when humans can't. Another app specifically monitors the maintenance of Cortez's 350-tonne haul trucks, each of which requires enough diesel to light a small city block. The trucks moved 125 million tonnes of rock at Cortez last year, and their upkeep totaled about $60 million, so avoiding the domino effects of a breakdown can save a lot of money.

Beyond traditional predictive maintenance, such as engine-temperature and fluid-level indicators, Barrick's systems route data from each truck to the central computers to assess overall fleet issues well beyond what other software can do, according to Jamie Dwyer, who led development of the predictive-maintenance app. "Because we're building it ourselves, we can merge it all with our other data, right down to who was driving the truck when it broke down," Dwyer says.

Even so, skeptics question whether Barrick's C0dem1ne team can really outperform the professionals. Other mining companies, including Barrick's chief rival, Newmont Mining Corp., have implemented a range of high-tech upgrades but stopped short of in-house coding. "Are you better off spending $100 million for a proven tool that somebody else de-risked or gambling that you'll get it right the first time?" says Mark Mills, who specialises in energy technology analysis as a senior fellow at the Manhattan Institute, a think tank.

Barrick employees say they opted to turn off Caterpillar Inc.'s predictive-maintenance software on their trucks once it was clear their own app performed better. "Some of the vendors we were dealing with told us we were crazy to try this," says David Yazzie, a C0dem1ne project manager. "We're absolutely going to prove them wrong." *—Danielle Bochove*

THE BOTTOM LINE Barrick says its Cortez mine in Nevada has already cut per-tonne digging costs by more than 25 percent by analysing data from thousands of sensors throughout the mine.

▲ From left ● Barrick's Cortez gold mine in Nevada is being extensively wired for Wi-Fi and data analysis ● Workers are using more semiautonomous and remotely operated vehicles ● A custom app helps predict maintenance needs for the mine's fleet of 350-tonne haul trucks ● Some 1,300 workers operate beneath the desert sands ● A central operations centre can analyse data from the mine's sensors to suggest efficiency improvements midshift

# How to Profit From Human Nature

It's easier to limit your own mistakes than to exploit everyone else's

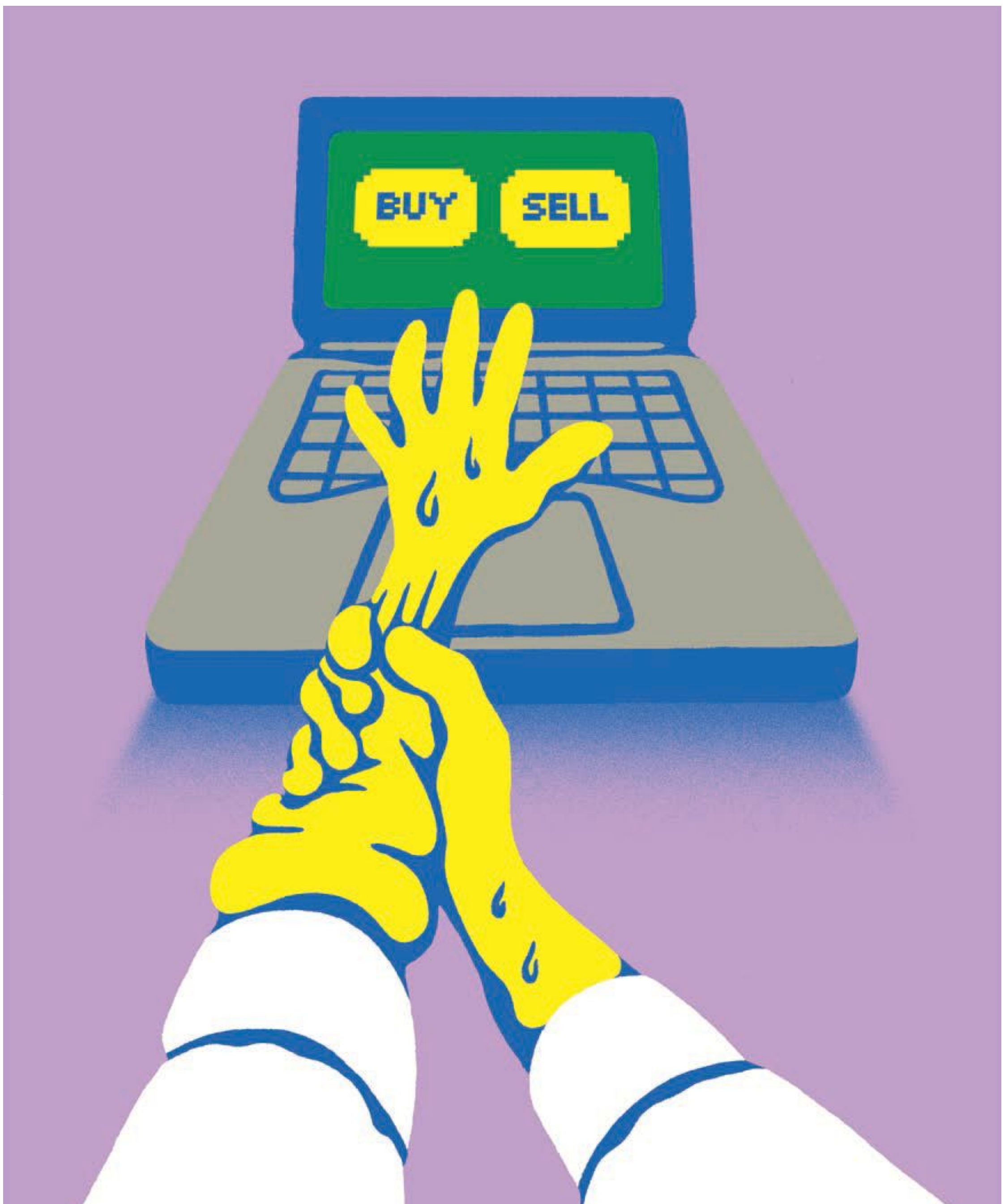


ILLUSTRATION BY PATRIK MOLLWING

When people can't understand what markets are doing, they often turn to psychological phenomena to try and explain it: Think of stock phrases such as "irrational exuberance," "greed and fear," and "climbing a wall of worry." Even economists now widely accept that investors' mental quirks mess with models of rational decision-making. On Oct. 9, the Nobel prize in economics went to a University of Chicago behavioural economist, Richard Thaler, for exploring the biases and cognitive shortcuts that affect how people absorb and process information.

For an investor, the idea that other people in the markets are making poor decisions is a tantalising one. If humans are predictably irrational, does that translate into predictable patterns in the stock market that a savvy trader can exploit? As it turns out, Thaler is a principal in a company that tries to do this. San Mateo, Calif.-based Fuller & Thaler Asset Management Inc. runs $6.1 billion in the small-cap Undiscovered Managers Behavioral Value Fund for J.P. Morgan Asset Management Inc. and $261 million in the Fuller & Thaler Behavioral Small-Cap Equity Fund. Both mutual funds have done well, earning an annual average of 15.9 percent and 17.3 percent, respectively, over the past five years. Both have bested more than 90 percent of their competitors.

The funds try to capitalise on the behavioural biases of investors. The Fuller & Thaler fund, for example, focuses on investors' overreactions and underreactions to events. "In general, people overreact to vivid, emotional stories and underreact to dull information or when they have prior strong expectations," says lead portfolio manager Raife Giovinazzo. "There's nothing quite so vivid and emotional as losing money, so when a stock goes down, people overreact." When he's looking for evidence of overreaction, his strategy includes screening for patterns of buying and selling by company insiders. If he thinks the market is out of step, he looks at the company's fundamentals and business model.

The other side of the coin, underreaction, is tied to a cognitive bias called anchoring and adjustment, which was identified by another Nobel laureate, Daniel Kahneman, and fellow behaviourist Amos Tversky. When someone settles on a number—say, an earnings estimate—they get slightly stuck on it. When they get new information, they adjust the number, but their adjustment is based around that initial number, so often it isn't big enough. "These things persist because people will always make mistakes, because they are human," says Giovinazzo.

As strong as the Fuller & Thaler funds' records are, it's not easy to untangle how much of that performance comes from cutting-edge behavioural insights. "It could be that the behavioural thing has conveniently helped them to uncover some sort of irregularity in the market that isn't strictly speaking driven by one of the classic tenets of behavioural finance," says Ben Inker, head of asset allocation at investment firm GMO LLC. For instance, in looking for overreactions, they may be finding some of the same stocks an old-fashioned value manager might have spotted. The challenge isn't just knowing that other investors can be wrong, but also having a measure that tells you when they're so wrong that the stock is underpriced. "The difference between good and bad metrics is probably the difference between success and failure," says Inker. Giovinazzo says it's true that behavioural investing and value investing are correlated. "That's the basic idea," he says. "But we're coming at it from a different perspective."

Stephen Wendel, head of behavioural science at investment research company Morningstar Inc., says he wouldn't take the outperformance of Fuller & Thaler funds "as a lesson to go do your own behavioural fund." Wendel's job title is one measure of Thaler's influence, but he warns against thinking it's easy to use behavioural ideas to outsmart others. After all, one of our behavioural quirks is that we're overconfident about our abilities. It's dangerous to think that because someone else seems to have done it, you can, too.

David Booth, founder of Austin, Texas-based Dimensional Fund Advisors, which has $548 billion in assets under management, agrees that subjective judgment can often lead investors astray. But "it is a leap from saying people behave irrationally sometimes to saying that markets are mispriced," he says. It's not that it doesn't happen, but it's devilishly hard to tell when it does, and then to take advantage of it. Booth believes some money managers can outperform the market consistently, "but since you never know if you have that person or not, you are best off behaving as though markets were efficient"—that is, that prices reflect the available information well enough that it will be hard to guess their next move. Indeed, for most investors the best use of behavioural insight isn't as a guide to spotting others' flaws, but as a reminder to stay humble. "It's much easier to imagine being successful in stopping yourself from shooting your own foot than turning you into the next great stockpicker," says Inker.

For example, it's helpful to know you have a bias toward thinking of investing (incorrectly) as a game you can easily win, says Santa Clara University finance professor Meir Statman, author of *Finance for Normal People: How Investors and Markets Behave*. On the surface, deciding to buy a stock often resembles other kinds of purchases where good research and savvy shopping can pay off. You might buy a cheap television at Costco and find that you like it, so you like the store, too. So why not buy Costco stock as well? But stock trading is more brutally competitive than consumer bargain hunting—not everyone wins. "When you buy the stock of this company, someone is selling, and that someone just may be an insider," says Statman.

Wendel says simply understanding such problems as overconfidence can help investors de-bias ▶

● Thaler

**"These things persist because people will always make mistakes"**



THALER: SCOTT OLSON/GETTY IMAGES; ILLUSTRATION BY PATRIK MOLLWING

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◀ their thinking—if they take steps in advance to protect themselves from their instincts. For example, to slow down decision-making in the heat of the moment, individuals can set rules in advance about when they can sell a stock or a fund. "If they find they don't like those rules, they have to change them and not just make an exception," says Wendel.

One of the most celebrated examples of a preset system that short-circuits bias comes directly from Thaler's work. Psychologists have found that people place a high value on saving—when they imagine doing it in the future. In the moment, the temptation to spend is often stronger. And for many everyday investors, the most difficult investment decision is to set aside the money to begin with. Along with behavioural economist Shlomo Benartzi, Thaler developed a retirement savings system called Save More Tomorrow. Participants commit in advance to contributing a higher percentage of their salary to their 401(k)s over time. A majority of large 401(k) plans now have such an auto-escalation option.

The professional investors at Fuller & Thaler also use systems to guard against their biases. They don't visit companies, says Giovinazzo—because when you meet with people, you judge them more on whether you like them than whether they're good leaders. To avoid anchoring, he and his colleagues at Fuller & Thaler don't set price targets for stocks or make quarterly earnings forecasts. It's good to know that markets can be irrational, but it can only help if you recognise that you'll be, too. —*Suzanne Woolley*

THE BOTTOM LINE Thanks to psychological biases, markets sometimes overreact or underreact to news. Figuring out which is happening and when is the tricky part.

# Aramco Raises Light Crude Pricing to Asia to Three-Year High



● Market shows signs of tightening, indicating higher prices can be absorbed

State-owned Saudi Arabian Oil Co. increased its official pricing for Arab Light crude to buyers in Asia by 65 cents to $1.25 a barrel more than the regional benchmark, the company known as Saudi Aramco said in a statement. That is the highest since September 2014 and is well above the 35-cent increase forecast in a Bloomberg survey.

Saudi Arabia has led the Organisation of Petroleum Exporting Countries in cutting crude production to shrink a global glut. The kingdom said it would be making its deepest ever supply cuts this month as it seeks to reduce the level of crude in storage. Brent crude prices have rallied 17 percent in the past two months, helped by the prospect that OPEC and partners like Russia will extend their pact to lower output beyond March.

"The Saudis are feeling pretty confident about the demand prospects in Asia even as the region is getting more competitive for crude exporters," said Edward Bell, a commodities analyst at lender Emirates NBD PJSC in Dubai. "The market is showing all the signs of tightening so that would imply the higher pricing can be absorbed."

Aramco also increased pricing for buyers in Northwestern Europe and the Mediterranean region. The company raised Arab Light and Arab Heavy crude for the U.S. by 10 cents a barrel while keeping pricing for the Medium grade unchanged and cutting Extra Light.

Global stockpiles are declining and demand is increasing, Khalid Al-Falih, Saudi Arabia's oil minister, said Thursday at a ministerial roundtable in Bangkok. Russia, which joined OPEC and other producers in the output cuts, sees "recovery" in the global oil industry, Energy Minister Alexander Novak said Thursday during a visit in Riyadh.

Still, crude inventories remain larger than necessary, meaning "the mission is not accomplished yet" for OPEC and its partners, Al-Falih said. Ministers from Kuwait and the United Arab Emirates in Bangkok also said OPEC is discussing whether to extend the production cuts and will review progress at its Nov. 30 meeting in Vienna.

Middle Eastern producers compete with cargoes from Latin America, North Africa and Russia for buyers in Asia, its largest market. Producers in the Arabian Gulf region sell mostly under long-term contracts to refiners. Most of the Gulf's state oil companies price their crude at a premium or discount to a benchmark. For Asia the benchmark is the average of Oman and Dubai oil grades.

● Aramco increased its official pricing for Arab Light crude to buyers in Asia by 65 cents. The price is now above the regional benchmark by

**$1.25**

THE BOTTOM LINE Saudi Aramco raised its official pricing for Arab Light crude to buyers in Asia by 65 cents, the highest since September 2014.

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# The Coming Bipolar Economy

● China is creating its own international ecosystem. That may not be good for everyone

After the fall of the Berlin Wall, many economists and policymakers assumed the world would become one happy, prosperous economy. Aided by the spread of capitalism and technology, countries would be increasingly knit together by trade, finance, and the internet. There would, of course, be the occasional setback—such as the 2008 financial crisis. But ultimately the forces of globalisation would prove irresistible and ever-tighter integration inevitable.

A serious obstacle has emerged to that vision. It's not Donald Trump's threat of trade wars or Brexit or terrorism. It's China.

If we tease out the trends taking shape in China and its relations with the U.S. and other developed countries, we can foresee an unhealthy schism forming and widening in coming years. The global economy could be split into two giant parts. One would be centered in the U.S. and the European Union; the other would revolve around China.

Listening to the rhetoric streaming out of Beijing, it's easy to believe that China remains intent on melding itself into the global economy. In his speech to open the latest Communist Party congress, President Xi Jinping promised to give foreign companies wider access to China's markets and protect their rights and interests. "China will not close its door to the world; it will only become more and more open," he told the delegates. Xi has also painted himself as a champion of free trade and an international statesman, eager to take the lead on global issues such as climate change, in contrast to an isolationist, "America First" Trump.

Don't be fooled. The problem with Xi's version of globalisation is he wants to control it. Instead of integrating China into the existing world order, he is creating a separate economic bloc, with different dominant companies and technologies, and governed by rules, institutions, and trade patterns dictated by Beijing.

Xi's government is in the midst of a national drive to develop or acquire its own technology and promote its own companies to rival the West's, in industries of the future ranging from robotics to electric cars, often backed by a torrent of state aid. The goal is ultimately to squeeze foreign companies out of the gargantuan Chinese market, then use it as a launchpad for Chinese powerhouses to expand and compete globally. The scope of Beijing's ambitions is detailed in an industrial program called "Made in China 2025" that's been widely reported on. As Xi told the party congress: "China will support state capital in becoming stronger, doing better, and growing bigger, turn Chinese enterprises into world-class, globally competitive firms."

A possible unintended consequence of such policies could be the emergence of a distinct Chinese market. While Beijing might be successful at pushing foreign competitors out of China—a market it can control—wooing foreign customers could prove much tougher. Burdened by a shoddy reputation and probably little or no technological advantage, Chinese brands will have trouble displacing more established ones in major markets, while security concerns could keep international companies from buying Chinese-made chips and other IT gear. The top four Chinese makers of smartphones now command two-thirds of their home market; but their combined market share abroad is less than 15 percent, according to second-quarter data compiled by Strategy Analytics Inc. And despite all the subsidies and investment lavished on the Chinese automotive industry, it exported fewer vehicles in 2016 than in 2014.

We can see the process of cleavage most clearly in China's digital sphere. While most of us share baby pictures on Facebook, tweet on Twitter, and search on Google, Chinese communicate over WeChat, run by Tencent Holdings; microblog on Sina Weibo; and search on Baidu. That's because the giants of the worldwide web are either severely restricted or blocked in China.

Although it exists primarily for political purposes, the so-called Great Firewall also acts as a nontariff barrier, allowing Chinese companies to flourish in the absence of international competition. Meanwhile, these same Chinese players have struggled to attract an international audience. An attempt by e-commerce titan Alibaba to start a U.S. online marketplace lasted only a year, before it sold control of the site in 2015. WeChat, which almost a half billion people will use this year in China—according to an estimate by research outfit eMarketeer, has had trouble expanding abroad beyond Chinese communities, despite aggressive marketing efforts. Heightened concerns about the use of private data will likely limit the ability of China's tech giants to become global players, since it seems almost impossible that they could resist demands by the Chinese government for such information. In a 2016 report, the human rights advocacy group Amnesty International ranked Tencent dead last among 11 messaging-service providers in protection of personal data through encryption.

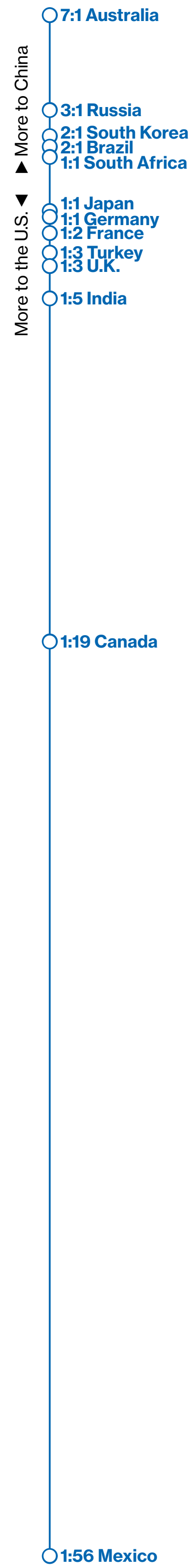
In reaction, the West is slowly pulling back from China, too. Washington policymakers have traditionally preached that economic openness always wins the day, but as the alarm over Chinese practices slowly grows, sentiment is turning toward protecting American interests. In September the Trump administration nixed a bid by a China-backed investor to acquire a U.S. chip company, while the government-appointed committee that reviews foreign acquisitions for national security threats hasn't cleared the purchase of U.S. payment services outfit MoneyGram International Inc. by Alibaba founder Jack Ma's Ant Financial Services Group. Across the Atlantic, European Commission President Jean-Claude Juncker in September laid out his own plans for scrutiny of sensitive acquisitions in Europe by, for instance, "a foreign state-owned company."

Meanwhile, U.S. companies, feeling less and less welcome amid Xi's new economic nationalism, are souring on China. In its latest survey, the American Chamber of Commerce in China found that 56 percent of its members consider the country a Top Three priority for investment, down from 78 percent in 2012, while a full quarter said they've moved operations out of China in the past three years or are planning to do so.

China has no intention of becoming isolated. Beijing is crafting alternatives to the institutions and norms of the West, aiming to foster a Chinacentric system of economic relations. For instance, Beijing spearheaded the creation of the Asian Infrastructure Investment Bank, a multilateral lender to rival the World Bank. Xi is also promoting the massive "One Belt, One Road" infrastructure-building program to tie economies across Asia and Europe more closely to China. Projects will likely be financed by China-backed banks and executed by Chinese companies.

Washington is certain to fight to preserve the current global economic system. "We will not shrink from China's challenges to the rules-based order," Secretary of State Rex Tillerson said in an October speech. ▶

● Exports to China as a ratio of those to the U.S., 2016




DATA: UN COMTRADE DATABASE. FIGURES ARE ROUNDED.

◀ The separation between China and the West will probably never become as complete as the bipolar world of the Cold War. Chinese will likely continue to sip Starbucks lattes and wear Nike sneakers, and Americans will still find Chinese-made goods in their local Walmart. But as China asserts its growing clout and the U.S. and Europe defend their companies, technology, and institutions, the chasm will widen. Countries that have their own issues with the West, such as Russia, will get sucked more and more into China's orbit. Others, wary of China's escalating power, such as India or Japan, could move closer to the U.S.

A split would have terrible consequences for the global economy. Companies in both blocs would find access to key markets restricted, hindering profits, productivity, and job creation. Cut off from much-needed technology and markets, Beijing could struggle to raise the incomes of its 1.4 billion people, still poor and rapidly aging. The odds of a military confrontation between China and the West could increase sharply.

This bipolar future isn't inevitable. Perhaps Beijing will realise that it's better off supporting the current order than undercutting it. After all, China's integration with the rest of the world has been the key driver of its economic success since the 1980s. The U.S. and its allies may step back from protectionism and continue to work with Beijing to meld China into the existing system. But the trajectory China and the West are hurtling down doesn't bode well. If a new wall rises across the world, everybody loses. —*Michael Schuman*

THE BOTTOM LINE Xi Jinping's vision of a world dominated by Chinese technologies and brands is one that threatens to split the global economy into two distinct blocs.



# Mexico's Irresistible $12.43-an-Hour Pay Gap

● Despite the threat of Nafta's demise, a host of companies are sticking with relocation plans

It wasn't supposed to be like this, but the companies that specialise in helping U.S. businesses set up production in Mexico say they're having a solid year.

Tecma Group says this is the busiest it's been in three decades. The relocation specialist, which has offices on both sides of the U.S.-Mexico border, helped a maker of cleaning equipment and a packaging company move south in the past few weeks. Chicago-based México Consulting Associates has three new prospects interested in the country. Keith Patridge, president and chief executive officer of McAllen Economic Development Corp., expects at least 12 companies to set up shop in Reynosa this year alone. And Tacna Services Inc. has assisted two businesses that recently relocated to Baja California.

While President Donald Trump's vow to scrap or revamp the North American Free Trade Agreement was expected to scare off companies considering moving to Mexico, many are sticking with their plans. Lots of factors go into the decisions, but these companies have made a simple calculation: Cheap labour in Mexico—as much as $20,000 a year less per worker compared with the U.S.—is enough to offset the costs of any tariff increase resulting from Nafta's demise.

"If they just wiped out Nafta and went back to normal trade tariffs, I think that's manageable," says Ross Baldwin, CEO of Tacna, which is based in San Diego. "Life would continue on, because the labour rate is so dramatically different."

The latest rounds of talks on the future of the 23-year-old trade treaty wrapped up on Oct. 17, with Mexico and Canada rejecting controversial U.S. demands on dairy, automotive content, dispute panels, and government procurement. Another bone of contention has been the Trump administration's proposal that the revamped pact include a so-called sunset clause, causing it to expire every five years unless all three countries agree it should be extended. Negotiations will resume in November, but the ministers agreed to put off any resolution of that question until next year.

Some economists predict a less rosy future than do the relocation firms, which have reason to put a gloss on their prospects. According to a study by ImpactEcon, a consulting firm based in Boulder, Colo., the end of Nafta would cause the loss of more than 250,000 jobs in the U.S. and almost 1 million in Mexico, whose economy has been transformed by the pact. Mexico's trade with the U.S. totaled

● Direct investment by U.S. companies in Mexico almost doubled in the first half of 2017

**$3b**

CREDITS CREDITS CREDITS

$524 billion last year, up from $82 billion in 1993, the year before the pact took effect.

After his election, Trump used the bully pulpit to shame executives at U.S. companies that intended to move manufacturing to Mexico. The campaign worked for a few months, with some companies freezing their Mexico plans. But the flow of jobs south resumed earlier this year. New direct investment by U.S. companies in Mexico was $3 billion in the first half of 2017, recovering from a drop to $1.57 billion in the first half of 2016, according to Mexico's Economy Ministry.

Under Nafta, companies in the U.S., Mexico, and Canada pay no duties on almost all goods that cross the borders. Even if Trump decides to kill the agreement, any tariffs the nations wanted to impose would be subject to limits set by the World Trade Organization. On average they are less than 3.5 percent for Mexico and about 7 percent for the U.S., says Benito Berber, a senior economist for Latin America at Nomura Holdings Inc.

Many companies would still come out ahead because of the wage gap. A starting salary for a Tijuana factory worker, including benefits, is the equivalent of about $2.50 an hour, according to Tacna's Baldwin. The average hourly wage for U.S. assemblers is $14.93, with the lowest-paid 10 percent in that group earning $9.24, Bureau of Labor Statistics data show.

Plus, Mexico's labour costs have barely changed over the past couple of decades, while those in China—a rival for manufacturing jobs—have steadily risen. Intermex Industrial Parks, which provides real estate and services for factories, says on its website that a U.S. corporation can save $20,000 annually per worker and touts Mexico as "among the best in labour stability."

Kongsberg Automotive ASA, an auto-parts maker based in Norway, has announced that early next year it will close a factory in Easley, S.C., that makes hoses and tubes and move production to Mexico. The plant employs 97 workers. "There is a strong need to become more efficient and reduce costs, which can only be achieved by relocating the Easley manufacturing operations," Kongsberg said in August.

Halyard Health Inc. is closing a plant that makes medical devices in Buffalo Grove, Ill., and moving some production to Mexico, according to federal filings. Layoffs of 85 Illinois workers began at the end of September. Halyard has factories in at least four Mexican cities, according to a company filing. A spokesman didn't respond to a request for comment.

Tecma CEO Alan Russell sees no letup in activity. "Every client is expanding, and we have signed more new agreements," he says. "People have gotten used to listening to the politics, and so it's not as scary as it was." —*Thomas Black*

THE BOTTOM LINE Higher tariffs wouldn't be enough to offset Mexico's labour-cost advantage, which is why foreign manufacturers continue to shift work there.

# Egypt's Sisi Expects Pound to Strengthen After Float

● Decision to float the currency last year eased a hard currency shortage

● Abdel-Fattah El-Sisi

Egyptian President Abdel-Fattah El-Sisi said earlier this month he expected the pound to strengthen because the decision to float the currency and lift most capital controls a year ago had eased an acute hard-currency shortage.

Even if the exchange rate "hasn't reached a level that we can say is fair, at least in less than a year we solved a lot of problems. Will it drop a little in the coming period? I expect that," El-Sisi told a media briefing, referring to the price of the dollar relative to the pound. "Because all the measures and problems due to the protected exchange rate, especially in the three years before the float, I think all these problems have been solved."

Egypt floated its currency in November 2016, lifting most capital controls in an effort to end a hard-currency shortage that nearly crippled trade and investment. Egypt's foreign currency reserves have recovered since the float, and foreign funds have invested heavily in Egyptian debt. The pound has halved in value, however, helping push inflation above 30 percent and squeezing the country's substantial middle classes and causing pain for millions who live a paycheck from hunger.

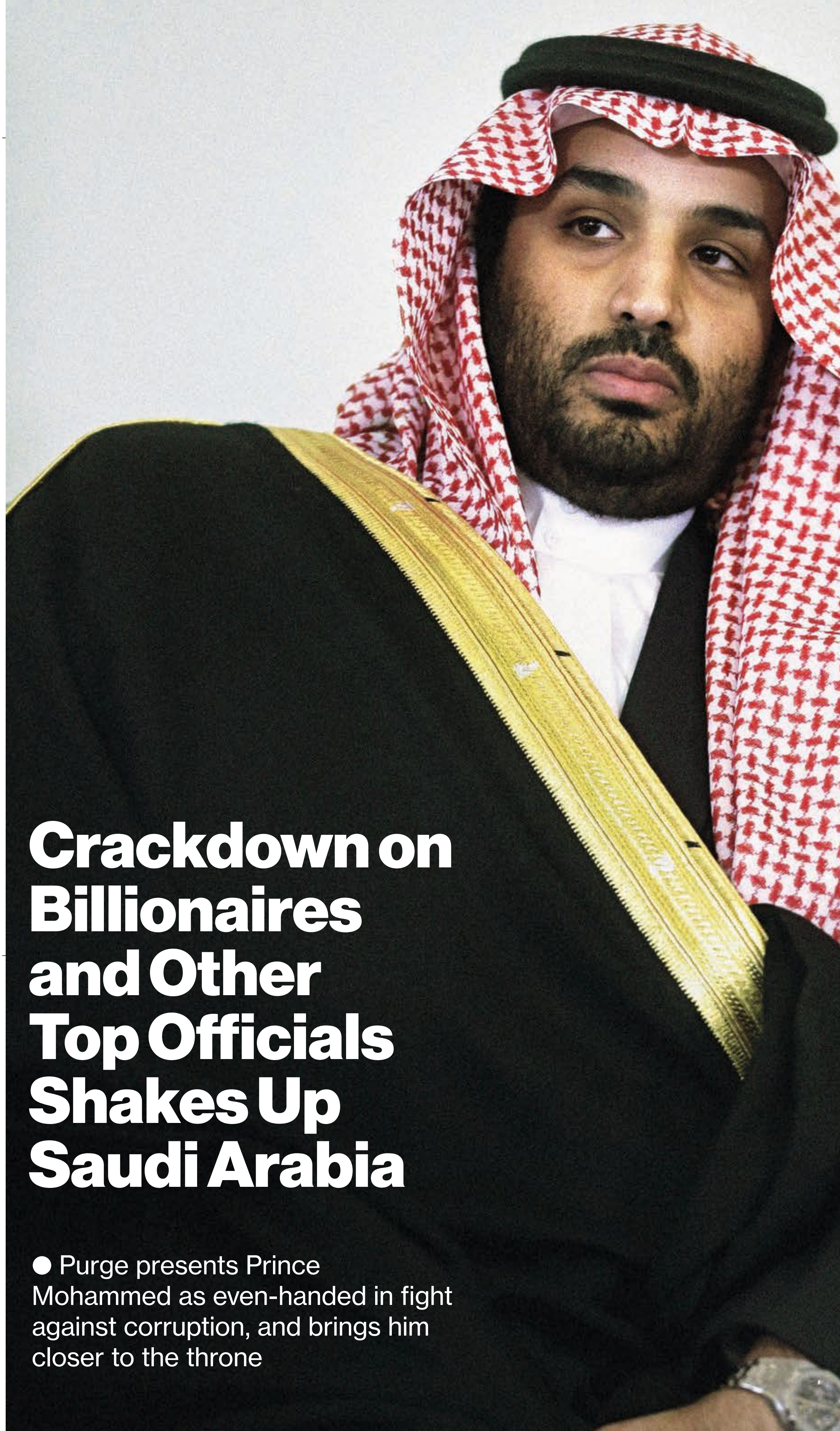
Fearing public anger, Egyptian governments had for decades shied away from considerable changes in the country's exchange rate regime as well as from the deep subsidy cuts that Egypt has implemented in tandem with the float as part of a reform program backed by the International Monetary Fund. But El-Sisi's government has plowed ahead with structural reforms and Egypt secured a $12 billion IMF loan package days after the flotation.

Speaking in January, as the Egyptian public smarted from a sudden collapse in the value of the pound, El-Sisi said it would likely strengthen over the next six months. Still, the currency has hovered stubbornly around 17.5 to the dollar for months. El-Sisi in November reiterated the view that the pound would recover, but did not say what exchange rate he would consider fair or how long it might take to get there. "What is coming is that we will see an exchange rate that is different than the number we see now," he said.— *Ahmed Feteha*

● Since its flotation in November 2016 the Egyptian Pound has fallen in value by about

**50%**

THE BOTTOM LINE Egypt's decision to float its currency last year eased a hard currency shortage, but the Egyptian Pound has remained stubbornly low against the dollar.



# Crackdown on Billionaires and Other Top Officials Shakes Up Saudi Arabia

● Purge presents Prince Mohammed as even-handed in fight against corruption, and brings him closer to the throne

Even by the standards of Crown Prince Mohammed bin Salman, whose meteoric ascent has put him on the cusp of the Saudi throne at the age of 32, the crackdown on the night of October 4 was stunning.

In just a few hours, security forces arrested princes, billionaires, ministers and former top officials as soon as King Salman announced a sweeping anti-corruption drive. Those detained included billionaire Prince Alwaleed bin Talal, who was picked up at his desert camp outside Riyadh, according to a senior Saudi official. Before midnight, the suspects' names were already being leaked to local media, first as initials and later in full.

> **"Anti-corruption is definitely a new campaign in Saudi Arabia and it's an effort by Mohammed bin Salman to present himself as a reformist"**

The king also relieved Prince Miteb bin Abdullah from his post as head of the powerful National Guard, taking out one of the last senior royals to have survived a series of cabinet reshuffles that promoted allies of his son. Prince Mohammed became heir to the throne in June when his cousin was removed in a palace shakeup.

The scale of the campaign fits into the style of the royal -- known overseas as MBS -- with a knack for shock and awe. Since 2015, the prince has embarked on an unprecedented shakeup to prepare the economy for the post-oil era, entered the kingdom into war in Yemen and severed diplomatic and transport links with neighbouring Qatar. In the meantime, he has taken control of every lever of power from defence to oil policies.

"Anti-corruption is definitely a new campaign in Saudi Arabia and it's an effort by Mohammed bin Salman to present himself as a reformist, as a popular figure who cares about the people, but there is certainly a political dimension to this," Ayham Kamel, head of the Middle East and North Africa department at Eurasia Group, told Bloomberg TV.

Sidelining powerful opponents has long been part of the plan to pave Prince Mohammed's rise to the throne, and "he is only a few steps away from that now," Kamel said. The purge also aims to deliver a wider message to those implicated: "Mohammed bin Salman will require loyalty."

The round-up risks overwhelming local and foreign investors struggling to get their heads around the rapid changes shaking the kingdom.

Two weeks ago, he unveiled a blueprint for Neom, an envisioned megacity on the Red Sea backed by more than $500 billion in investments. A conference last month held at a convention centre adjacent to the palatial Ritz Carlton in Riyadh, drew some of the world's top bankers and financiers, including Blackstone Group LP Chief Executive Officer Stephen Schwarzman.

On the morning of Sunday October 5, a reporter who tried to visit found the compound completely shut -- the massive gates uncharacteristically closed -- without a security guard in sight amid speculation the suspects from the overnight actions were being held there. A duty manager reached on mobile said that the 492-room hotel was closed and guests ▶

METZEL MIKHAIL/TASS/ZUMA PRESS

◀ were told the hotel had been taken over for government use.

The arrest of Prince Alwaleed, a major shareholder of companies including Citigroup Inc. and Twitter Inc., "could well dampen international interest in investing in the crown prince's much-heralded Vision 2030 to make the non-oil private sector the new motor of the economy," said David Ottaway, Middle East fellow at the Wilson Center.

Overseas investors weren't MBS's main audience, though. The prince's move appeared designed to tap into a popular vein among young Saudis who are bearing the brunt of low oil prices and complaining, privately and on social media, that the kingdom's elite were above the rule of law.

Many shared a clip from a television interview earlier this year in which the crown prince said nobody was above the law. Trending Saudi hashtags on Twitter, a key barometer in a country where polls are banned, on Sunday 5 included one celebrating the purge as the "November 4 Revolution."

The decision "made us proud as Saudi citizens," Fatimah Al-Qhtani, a resident of the eastern city of Khobar, said in an interview. "Our leadership has ensured that we are equal, that corruption has no place among us and that we are all accountable for what we do."



Conversations with seven other Saudis who asked not to be named showed a more mixed reaction. Some viewed the announcement as a sign that even the powerful could be held accountable even as it smacked of a power grab; others saw it as a pure political play.

On Saturday October 4, the king also replaced Economy and Planning Minister Adel Fakeih with Mohammad Al Tuwaijri, his deputy. Removing Fakeih, who was close to MBS, helps "prevent the move from being seen as a witch hunt of critics or potential rivals," said Miriam Eps, regional security analyst at risk-management consultancy Le Beck International. "He cannot be seen as a critic or obstacle to MBS."

Al Tuwaijri, a former HSBC Holdings Plc banker, was already a member of the crown prince's inner circle in charge of steering the economy through the transition away from oil. In the past two years, the government has cut subsidies and slashed capital spending to lower a ballooning budget deficit. Authorities also plan to introduce value-added taxes for the first time next year.

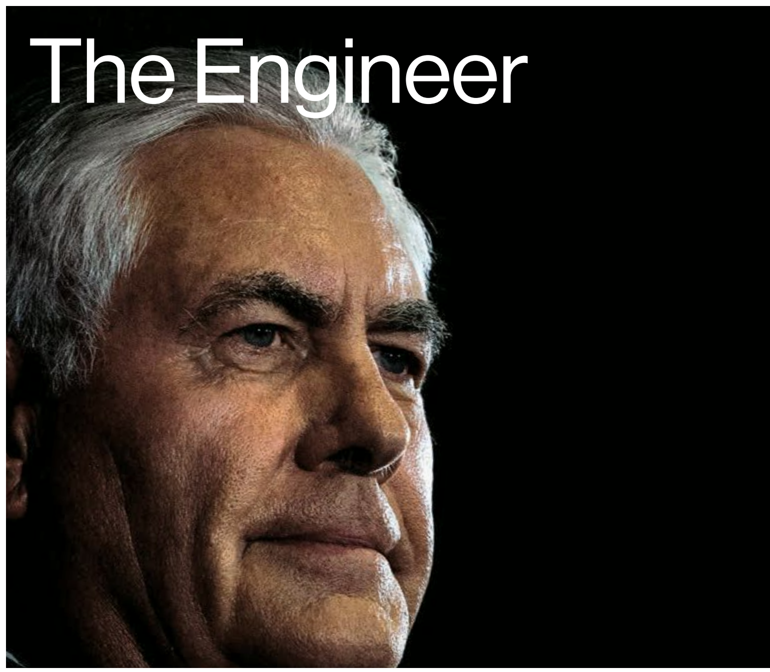
As austerity measures undermine a decades-old social contract based on exchanging welfare in return for unquestionable loyalty, "a visible crackdown on corruption tells the country that they can trust the government to not misuse their money," Eps said.

In the short run, however, the scale of change may prompt businesses to pause before committing more in the biggest Arab economy.

"The attack on major figures in the Saudi economy is really puzzling," said Gregory Gause, a professor of international affairs at Texas A&M University and a Saudi specialist. It's "a time when the kingdom is encouraging investment both from the local private sector and foreigners." . — *Vivian Nereim, Alaa Shahine, and Sarah Algethami*

THE BOTTOM LINE Saudi Arabia's anti-corruption drive demonstrates that the wealthy and powerful are not above the law, and also strengthens the hand of the heir to the throne.

# The Engineer



● Can Rex Tillerson retool the State Department and save his job?

Secretary of State Rex Tillerson doesn't know what to make of news reports that morale is low at his agency and that he's not doing a good job running it. "I walk the halls, people smile," he says in a recent interview in his spacious office in Washington. "If it's as bad as it seems to be described, I'm not seeing it, I'm not getting it."

That's exactly the complaint many Department of State employees have about Tillerson: He's not getting it. Early on, many career diplomats were optimistic when the former chairman and chief executive of Exxon Mobil Corp. took over the 75,000-person agency. He knew his way around the world and had decades of experience running a large, sprawling organisation. He'd negotiated deals with heads of state in some of the toughest places in the world to do business, and he understood the delicate balance between using soft and hard power. Those skills would be put to the test by the array of urgent global issues awaiting him–including Iran, North Korea, and increasing tensions with China and Russia—when he arrived for his first day on the job in February.

Instead of focusing all his attention outward, though, Tillerson has indicated that some of his top priorities are more inward-looking. He wants to cut costs and reorganise the department, in part to meet a White House goal of reducing the agency's budget by 30 percent. In the eight months since he took over, Tillerson has spent considerable time immersed in the minutiae of head counts and organisational charts while ensconced in his executive suite on the seventh floor of the Harry S Truman Building, where he sat for an interview with *Bloomberg Businessweek* on Oct. 19. So far he's traveled less than half as much as John Kerry and Hillary Clinton had at this point in their terms.

In Tillerson's view, the State Department needs a dramatic private-sector-style makeover—a "redesign," as he calls it. An outline of his plan sent to Congress in September is written in the opaque jargon of corporate management consultants: Tillerson envisions "an evidence-based and data-driven process to enhance policy formulation and execution, as well as optimise and realign our global footprint."

In a speech to the staff in September at the U.S. Embassy in London, Tillerson acknowledged the five-alarm fires in the world—North Korea, a soured relationship with Russia, the war in Syria, and the lasting violence of Libya's civil war. But those problems, he said, weren't as crucial as getting State's house in order. "The most important thing I can do is to enable this organisation to be more effective, more efficient, and for all of you to take greater satisfaction in what you do day in and day out," he said. "Because if I accomplish that, that will go on forever, and you will create the State Department of the future."

The comments stunned many department employees who already felt besieged by proposed budget cuts and a president whose tweets frequently contradict Tillerson's diplomacy. Did the secretary really feel his biggest job was optimising managerial efficiencies? "Regrettably that's the way it got construed," Tillerson says in the interview.

Few would argue the State Department is a model of operational excellence. Its technology is antiquated. Its priorities appear to reflect a different age—it has more consulates in France than in China. Along with old-fashioned diplomacy, it has its hands in a grab bag of issues, from humanitarian aid to democracy development to drug interdiction to protecting the oceans and managing energy resources. And its reach includes almost 300 embassies, consulates, and diplomatic missions around the world.

Tillerson's predecessors also tried tinkering with the ever-growing agency, which has doubled in size since 1995. Colin Powell sought to overhaul the department's aging IT system, and Clinton launched the grandly titled Quadrennial Diplomacy and Development Review, intended to modernise the department. Modest changes resulted.

But for Tillerson, applying the methods of corporate downsizing to the federal government is more than just a side job, it's *the* job—one he considers essential to the nation's ability to conduct foreign policy. "There's a widespread American belief that if you can just bring business practices to government, it would work better. And with that, there's a widespread belief that this is easy to do," says Ronald Neumann, a former ambassador to Afghanistan who now runs the American Academy of Diplomacy. "I suspect that he marched in with a businessman's 'I know how to reorganise things and make them run better,' and then he finds he's walked into quicksand."

Tillerson's approach has put him at odds with Congress and the staff he leads. His hot and cold relationship with Trump hasn't helped, as rumors persist that Tillerson is already plotting his exit and that United Nations Ambassador Nikki Haley is eagerly waiting in the wings. In the interview, he says his relationship with Trump is "good" and that he intends to stay in the job "as long as the president lets me."

Coming off 11 years as the unquestioned boss of America's biggest oil company, Tillerson was always going to have to change to fit his new role. The question was whether he could. "I think Rex's background has led him to keep an arm's length, and I think it's hurt him," says John Hamre, the head of the Center for Strategic & International Studies, who's known Tillerson for more than a decade.

Usually cautious and taciturn, Tillerson gets excited discussing his reorg plan. "When you do organisational redesign, it has a number of elements to it. There's the organisation chart itself, the boxes, and who reports to whom, but the most important aspect is always the process by which the work gets done," he says. A successful structure is one where people are "interfacing with others" without obstacles. Tillerson's redesign is expected to cut spending by $5 billion to $10 billion and slash about 8 percent of career staff. The department has studied closing some consulates and embassies around the world, including in Basra, Iraq, and Alexandria, Egypt, a controversial notion considering the U.S. is trying to exert its influence in the Middle East.

Tillerson's belief in the power of a good reorg stems from his time at Exxon, where he oversaw two major reshuffles. "We had very long-standing disciplined processes and decision-making. I mean highly structured, that allows you to accomplish a lot," he told reporters aboard his official plane in July. "Those are not the characteristics of the United States government."

His effort to gain acceptance for his redesign stumbled from the start. In March, Trump mandated massive cuts at all agencies, with the State Department set for the biggest hit, more than 35 percent. Tillerson opposed the size of those cuts but eventually acquiesced on the condition they not be so drastic and that he would get to choose how to carry them out. That led to a "listening ▸

● Thomas-Greenfield

**"There was initially a kind of buzz of excitement, that we finally had a secretary who was willing to look at how the organisation functions"**

◀ tour" conducted by consulting firm Insigniam Performance LP at a price of $1 million. That struck many staffers as egregious, since the department was being asked to cut costs. Particularly galling was that while the consultants flew business class to visit embassies, State staff travelling with them flew coach.

Tillerson has identified several strategies–such as putting IT infrastructure into the cloud, overhauling procurement, and possibly extending staff rotations overseas. He's also cut the expanding ranks of special envoys. Some of those moves, however, irked members of Congress, including Republicans, who were skeptical of Trump's proposed cuts and moved to assert their authority over the State Department's spending. Draft legislation for State highlighted concerns that "the administration has a predetermined outcome for the reorganisation or redesign." In an interview with Bloomberg News in May, Senate Majority Leader Mitch McConnell called deep cuts to State "highly unlikely" and defended its budget with the kind of language Tillerson would appreciate: "I think the diplomacy part of what we do overseas is a lot cheaper than the use of the military and frequently has a pretty good return on investment."

Tillerson's critics also say that the departure of senior diplomats, coupled with a hiring freeze, has hamstrung the agency. According to Neumann, that's led to a slowdown in visa-processing times and made it impossible for spouses of diplomats–normally a pool the State Department has tapped for critical jobs–to fill posts. Tillerson has also seemed to contradict his public statements. He says his top priority is security, yet the assistant secretary for diplomatic security and his acting replacement were let go. The position has yet to be filled. Tillerson also hasn't filled out the top ranks of his agency, including officials in charge of Southeast Asia, Europe, and arms control.

Despite the shortages, the department's director general (essentially the head of personnel) was dismissed. Tillerson has further angered staff by focusing on nondiplomatic priorities. A recent email to staff said he would boost hiring to clear a backlog of Freedom of Information Act requests, while thinned-out bureaus would be expected to help. At the same time, foreign counterparts are being frozen out. This summer, for example, the foreign minister of a top European ally canceled a visit to the U.S. because Tillerson, after weeks of failing to respond to messages, offered only a 20-minute meeting.

Tillerson has also missed a chance to cultivate allies at State, especially career staffers who agreed it needs an overhaul. "To a person, we felt the department was in need of reform–there was initially a kind of buzz of excitement, that we finally had a secretary who was willing to look at how the organisation functions," says Linda Thomas-Greenfield, a former assistant secretary of state for African affairs who retired in September after 35 years. "We came later to understand that it was not to improve the organisation but to deconstruct it." Thomas-Greenfield says she confronted Tillerson about staff reductions in March, assuring him that people in senior positions were nonpartisan and "ready to mold ourselves" to help him. Tillerson thanked her for her service, she says, and she never heard from him again.

And it's in that department that he admits he's fallen short. "That's the one thing I wish, if I could do it different, would be to do a better job communicating back out to the organisation what this redesign effort is," he says. "As a leader, that's my responsibility." —*Nick Wadhams*

THE BOTTOM LINE Secretary of State Rex Tillerson is inwardly focused on overhauling the State Department, despite a proliferation of foreign policy dilemmas around the world.

# Another Pipeline Of Russian Influence

● Oligarch-owned Evraz lobbies against Trump's Buy American agenda

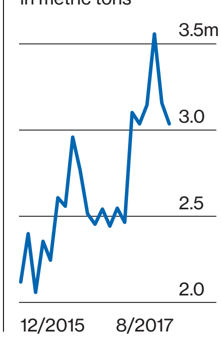
Four days after his inauguration, Donald Trump signed a handful of executive memos to advance the Keystone XL pipeline and revive the U.S. steel industry. He invited builder TransCanada Corp. to reapply for a permit denied by Barack Obama and ordered up fast-track rules forcing not only Keystone but also all new U.S. pipelines to be made from American steel. "From now on, we're going to be making pipeline in the United States," he said.

Made-in-America Keystone was a stunt. Most of its pipes had already been manufactured, a fact the White House grudgingly admitted when it exempted the project from any new Buy American rules a few months later. While some of Keystone's pipes were made in the U.S., at least a quarter of them came from a Russian steel company whose biggest shareholder is an oligarch and Trump family friend. The company, Evraz North America, supplied Keystone from its steel plants in Canada and for years has lobbied in Washington against Trump-style protectionism.

Ten months after his Keystone event, Trump has yet to deliver on his pledge to boost the fortunes of American steel. Two self-imposed deadlines for trade action, one in June and one in July, have come and gone. Meanwhile, the prospect of tariffs has led to a surge of cheap foreign steel into the U.S., with imports rising 24 percent in 2017, the fastest increase in years.

As federal and congressional investigators probe Moscow's interference in the 2016 U.S. election, Evraz North America shows that Russians are also involved in pressing against one of Trump's main campaign promises. The company is a wholly owned

● U.S. steel imports in metric tons




DATA: U.S. CENSUS BUREAU

◀ Ivanka Trump and Dasha Zhukova watch tennis at the 2016 U.S. Open

subsidiary of Evraz Plc, Russia's second-largest steelmaker. It has two factories in the U.S., in Colorado and Oregon, and four in western Canada, where it produces steel and large-diameter steel pipe. The company's top shareholder is Roman Abramovich, a billionaire who owns 31 percent of Evraz's stock. In 2005 he was the first oligarch allowed to sell his oil company to the state, taking in $13 billion in a deal approved by Vladimir Putin.

Abramovich's ties to the Trumps stem from a friendship between Ivanka Trump and Abramovich's wife, Dasha Zhukova, from whom he announced a separation in August. Jared Kushner and his brother, Joshua, invested in Zhukova's art collection business. The Russian couple hosted Ivanka and Jared in Russia in 2014, and Zhukova attended Trump's inauguration as Ivanka's guest. White House Deputy Press Secretary Lindsay Walters called Ivanka's relationship with Zhukova unrelated to American trade policy and said mentioning it was "incredibly irresponsible and misleading."

Evraz won its share of the Keystone XL business in 2009 and hired a Washington lobbyist named John Stinson the next year, according to disclosures collected by Bloomberg Government and Open Secrets, a nonprofit that tracks money in politics. Over the next seven years, Stinson lobbied the House, Senate, U.S. Department of Commerce, and Office of the U.S. Trade Representative, earning $2.2 million for representing Evraz's interests. He fought Buy American language in federal spending bills for transportation, water infrastructure, and defence, as well as in a bill specifically about Keystone in 2015–the same year Obama denied its cross-border permit.

According to federal disclosures, Evraz paid Stinson $100,000 in the first half of 2017 to persuade Congress and the Commerce Department to exclude its Canadian products from Trump's steel import crackdown. Stinson declined to comment. Christian Messmacher, the company's vice president for development, says its lobbying efforts are typical for the industry. "We, like all other North American companies, work to provide public officials with our insights on issues that affect us and our ability to provide good North American jobs," he says.

In late May, Evraz won a contract with liquefied natural gas company Cheniere Energy Inc. to supply the steel pipe for a 200-mile pipeline to bring natural gas from Oklahoma to the Gulf Coast. The contract, worth an estimated $100 million, was expected to go to a Florida-based company, Berg Steel Pipe Corp., according to the American Line Pipe Producers Association. The association put out a press release in June arguing that Evraz was undercutting U.S. companies. It asked the Trump administration to act quickly on new rules and stop "Russian-owned Evraz" from "aggressively" seeking U.S. contracts ahead of any new tariffs or quotas on imports.

The Cheniere contract shows how hard it is to differentiate between foreign and U.S.-made steel. While losing out to Evraz cost Berg 216 jobs, or 42 percent of its workforce, company Vice President Jonathan Kirkland told the Mobile, Ala., *Press-Register* in June, Berg makes pipelines using steel from Germany and France. U.S. steel supplies aren't reliable enough, Chief Executive Ingo Riemer told the U.S. International Trade Commission last year.

In September, Commerce Secretary Wilbur Ross said the administration will defer a decision to impose tariffs on foreign steel so it can focus on tax reform. The industry is getting impatient. Steel executives have been meeting with administration officials. More than 60 steelworkers met with members of Congress on Sept. 21 to tell them of their growing frustration with the White House's delays. "The president makes his policy decisions based on what is best for the American people," says spokeswoman Walters.

Given the promises Trump made in the campaign, there may be political blowback if he doesn't deliver. Although the United Steelworkers union endorsed Hillary Clinton, many of its members voted for Trump, helping him to narrow victories in the Midwest. "Those workers absolutely won't forget if they are empty promises," says Dan Simmons, president of Steelworkers Local 1899 in Granite City, Ill. "Like Elvis says, we want a little less talk and a little more action." *—Margaret Newkirk and Joe Deaux*

THE BOTTOM LINE Foreign steel imports into the U.S. are up 24 percent in 2017. As the industry grows angry at Trump's lack of trade action, Russia's Evraz continues winning pipeline contracts.

LEFT: ELSA/GETTY IMAGES; POLITBURO; BLOOMBERG (1); GETTY IMAGES (9)

SPECIAL REPORT: TURKEY

# TURKEY: BRIDGING THE DIVIDE FOR BUSINESS



**TURKEY'S ECONOMY HAS PROVED TO BE MORE THAN JUST RESILIENT IN RECENT YEARS, SHOWING STRONG GROWTH EVEN AS DEVELOPED COUNTRIES AROUND THE WORLD EXPERIENCE STAGNATION.**

Turkey has long benefitted from its position as a bridge between Europe, the Middle East and Asia. From ancient times when Turkey (then known as Anatolia) served as a major link to Europe near the end of the Silk Road trade route, to its more recent position as the seat of power of the Ottoman Empire, the country has enjoyed a privileged trading position.

Today this is a legacy that the government of the Republic of Turkey is keen to advance as it seeks to expand and diversify its international trade. In particular, Turkey is looking to the Middle East, and particularly the GCC countries, as key partners for bilateral trade and investment.

Although European countries are the largest export market and the largest trading partners for Turkey, trade with other markets has been an important element of the country's diversification strategy. As a country with a trade deficit, Turkey was keen to develop a strategy to diversify its export markets and products. Over the past 14 years, exports to the Middle East have increased sevenfold while Turkey's overall exports have increased threefold during the same period, according to Rahim Albayrak, country advisor, Investment Support and Promotion Agency of Turkey. Moreover, diversity became a pillar of Turkey's trade planning in the wake of the financial crisis or 2008-9, and policies to boost Turkey's trade and business ties with the GCC have already proven they're worth.

"It was an important step for the Turkish economy as it faced declining external demand from its traditional trading partners during the global financial crisis of 2008-2009," Albayrak says.

The numbers prove the point: As a result of Turkey's diversification policies, the share of exports to the Middle East increased from 12% in 2002 to 26% by 2016. Likewise, Turkey's trade volume with the MENA region has increased significantly.

It is not just Turkey's close proximity to Europe and the Middle East that gives the country an edge. It also has a diverse economy and this is reflected in the goods and services it trades with the GCC. As of 2016, the

# More than **56,000** companies have **INVESTED IN TURKEY**


## how about you?

average annual real GDP growth rate

**5.6%**

2003-2016

**13th** largest economy in the world

GDP at PPP prices, 2016

University graduates

**800,000**

per year

average annual real GDP growth rate forecast in OECD

**4.9%**

2015-2025

**$863** billion of GDP at current prices

Population

**79.8 million**

with half under the age of 31

**INVEST IN TURKEY**

## SPECIAL REPORT: TURKEY

DP World comissioned a $650 million container terminal in Turkey in May 2016.



main export products of the GCC countries (comprising Saudi Arabia, United Arab Emirates, Qatar, Bahrain, Kuwait, and Oman) to Turkey were: precious metals ($3.2bn), plastics and related articles ($1bn), aluminum and related articles ($441mn), and organic chemicals ($327mn), according to data from the Investment Support and Promotion Agency of Turkey.

Also in 2016, the main import products of the GCC countries from Turkey were precious metals ($3.0bn), iron and steel ($594mn), tobacco and substitutes ($516mn), electrical machinery and equipment ($384mn), mineral oils and products ($356mn), and machinery and mechanical appliances ($346mn). Precious metals, along with natural or cultured pearls and precious and semi-precious stones, are mainly traded with UAE, whereas trading of the other items is well-diversified among the GCC countries.

### TRADE INFLOWS

In terms of trade inflows to Turkey, the UAE is one of the biggest investors from the Middle East. Between 2005 and 2016, total FDI flows from the GCC to Turkey amounted to $13 billion. As of 2016 there were 1,835 GCC companies operating in Turkey. Tracking Turkey's FDI from the GCC offers an interesting perspective on just how much investment has increased during the past 12 years, from less than $1.7 million a year in 2005 to $445 million in 2016.

With regard to FDI, the stock of UAE companies in Turkey exceeded $4.6bn in 2016, and there are more than 400 companies with UAE capital operating in Turkey. These include DP World, DAMAC, Emaar, Etihad, and Dubai Islamic Bank. A recent example of a major FDI contributor would be DP World, which commissioned a $650mn container terminal in Turkey in May 2016. Gulf countries plan to invest in projects other than oil by 2030, and it will be possible for Turkey to take advantage of this in the coming period.

**"Turkey's foreign trade volume to the UAE has increased steadily over the years, reaching $8.6bn in 2008 stemming from the rise in exports of Turkey"**

– Rahim Albayrak, country advisor, Investment Support and Promotion Agency of Turkey

Bilateral trade volume is another indicator of the health and growth of business between the GCC. Turkey's foreign trade volume to the UAE has increased steadily over the years, reaching $8.6bn in 2008, stemming from the rise in exports of Turkey, Albayrak says. In 2009, the trade volume between the two countries fell to $3.5bn under the influence of the global crisis before peaking in 2012 at $11.7bn. "It is a fact that the trade volume declined to $6.9bn in 2015; however, even that volume was above average for the past decade, and it recovered quickly the following year, growing 36% in

SPECIAL REPORT:TURKEY

The proposed new airport in Istanbul will have six runways and is expected to be operational by 2028.



**26%**

Turkey's share of exports to the Middle East as of 2016

**$1bn**

Value of plastics and related articles exported from GCC to Turkey in 2016

**28%**

Turkey increased its employment rate by 28% between 2008-2016

2016 to reach $9.1bn," Albayrak says. He adds that Interim trade figures in 2017 also show considerable year-on-year increase, which can be taken as a signal of recovery between the two countries.

Turkey has a trade surplus with the UAE as it does not import oil or gas from the country and there are no trade policy measures or investigations carried out by the UAE against products originating from Turkey. Considering these trends, the Investment Support and Promotion Agency of Turkey believes that the country's trade with the UAE will continue on an upward trend. There are clear reasons to believe this is the case, with the Turkish government implementing some reforms to attract more investors from and accelerate trade with the UAE. To this end, the Turkish Exporters Assembly, with the support of the Ministry of Economy, commissioned a Turkish Trade Center in Dubai in 2016, the first of a series of trade centres worldwide.

There are other incentives for big investors; in January 2017, with an amendment made to the Turkish Citizenship Law, foreigners that have acquired an immovable property in Turkey worth a minimum of $1 million are now eligible to acquire Turkish citizenship.

Taking a step back from the number crunching, Turkey has many advantages for international companies. "Turkey is a dynamic and growing G20 economy that links east and west in a unique way. In addition to being one of the world's fastest growing economies, Turkey also supports international investors' growth via a business-friendly agenda and through access to a large domestic market and neighbouring international markets," Albayrak says.

Strong market fundamentals, such as a young and dynamic population with an average age of 30, a well-educated work force, increasing rates of employment over the years, a growing middle-class, and a unique geographical location, have all helped transform Turkey into the fastest growing OECD member country, Albayrak adds. Turkey has performed particularly well in terms of job generation, with more than 6 million new jobs created since the global financial crisis of 2008-2009, which means the country has increased its employment rate by 28% between 2008 to 2016.

As of end-2016, Turkey was the 13th largest economy (GDP at ppp) in the world, with an average annual growth rate of 5.6 percent since 2003.

Turkey's location at the crossroads of Europe, Central Asia, and the Middle East, provides easy access to the European, Middle Eastern, North African, Central Asian, and Gulf markets. These markets comprise more than 1.6 billion people and account for a total GDP of $28 trillion. More than half of the world's trade takes place within a four-hour flight radius of Turkey – a key reason why multinational companies have chosen Turkey as a strategic regional hub for their operations.

Turkey also stands to benefit from Saudi Arabia's bold plans to diversify and develop its economy as part of the government's Vision 2030 plans. Albayrak stresses that Turkey has already developed solid ties with Saudi Arabia and that this relationship should continue to grow.

"There has been a rapid increase in Saudi investments in Turkey over the past 14 years. The FDI amount of Saudi companies in Turkey has reached $2bn since 2002. As of June-2017, more than 1,000 companies operate in Turkey with Saudi capital," he says. "Turkey and Saudi Arabia remain, and will continue to remain, important and strategic economic partners."

In 2016, the trade volume between the two countries stood at $5bn. While this figure is the average of the past 5 years, it is still far below the potential of the two countries.

**BRICKS AND MORTAR**

Ozan Demir, operations and research manager, Reidin, a real estate information service, says that despite the recent political and economic unrest in the MENA region and areas close to Turkey, the country has succeeded in remaining "politically and economically stable", a factor which has helped contribute to the average GDP growth rate is 7% in the last 15 years.

Moreover, real estate has remained a star performer among Turkey's industries, even amid economic dips.

"Despite a lower growth rate (2.9 percent) in 2016 when compared to previous years, Turkish real estate maintained its momentum," Demir says. "1.03 million house sales transactions took place in the first 9 months of 2017 which is 10% more than the same period in 2016."

Furthermore, the underlying demographics also point to a sustained growth in the real estate sector: Turkey's population has just crossed 80 million and around 35 million are between the productive age group of 20-55 years and 49% of the population is under 30 years, so based on the population statistics, there is a high local demand for housing. "More than 400 thousand marriages and nearly 150 thousand divorces taking place every year are fueling the demand for real estate as many need to move to their new homes," Demir adds.

"When we look at the prices as of September 2017, according to REIDIN Turkey price series, residential sales prices registered 11.5 percent increase in the last year and prices increased 44 percent in the last 3 years. On the other hand, rents increased 4.89 percent in the last year and 32 percent in the last 3 years. Average gross rental yield for an average house is 5.5 percent as of September 2017," he says.

Other factors also look set to encourage demand, not least the fact that a significant proportion of the housing stock in Turkey is in need of replacing. "There is currently an urban regeneration in the Turkish real estate industry and around 7.5 million units have to be demolished and rebuilt within the next 20 years which will create a market value of around $1.5 trillion."

## TURKISH AIRLINES ON THE UP

**With Turkey's economy performing above the global average, the country's aviation industry has been just one of the beneficiaries. Turkish Airlines is one example. The company, which maintained tight financial discipline in recent years, posted record net profit in each of the three quarters of 2017 so far. The company posted operating net profit of $956 million for the first 9 months of the year, while average revenues for the first 9 months of 2017 reached $8.2 billion, marking an 8 percent increase over the same period last year.**

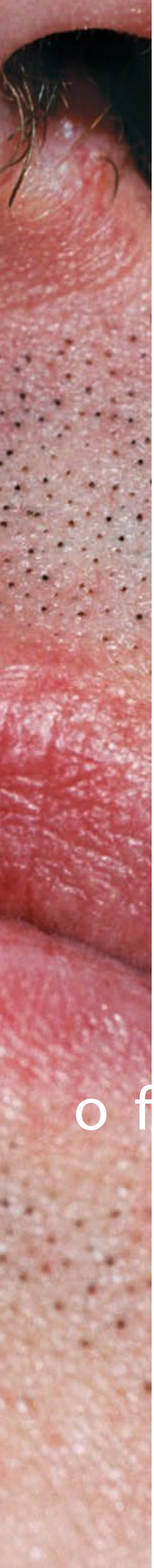
**"With our common aim to become one of the leading five star airlines of the world, we will continue this growth trend."**

**-Iker Aycı, Turkish Airlines Chairman of the Board and the Executive Committee**



# The Botox Margin

The most valuable supply chain in the drug business is also the deadliest. By Cynthia Koons




# Error

There's no easy way into Allergan's Botox laboratories in Irvine, Calif. And once you're inside there's no quick way out. But first things first: Here's a waiver acknowledging that within 18 to 36 hours of entering the secured labs, you could develop symptoms including double vision, difficulty speaking, arm or leg weakness, and eventual paralysis of your respiratory system. Try not to worry.

Assume you sign the form and move on. The initial entryway is fitted with keycard-activated doors, beyond which are more doors guarded by PIN pads, followed by still more keycard entry points and more PIN pads. There are only a few people at work or walking around. Deep inside, behind double-paned windows, are still more glass barriers and, finally, metal-enclosed workstations. Everything is under video surveillance. All activity is measured and monitored. Guards watch the comings and goings from a room filled with banks of screens.

All this scrutiny and precaution isn't there to protect Allergan's wildly popular drug from competitors, though it is worth protecting—last year, Botox generated $2.8 billion in sales. Rather, the security exists because the drug that can take years off a person's appearance by erasing wrinkles also happens to be made with one of the most toxic substances known to science.

Botox is derived from a toxin purified from Clostridium botulinum, a bacterium that thrives and multiplies in faultily canned food (and sometimes prison-made booze). The botulinum toxin is so powerful that a tiny amount can suffocate a person by paralysing the muscles used for breathing. It's considered one of the world's most deadly potential agents of bioterrorism and is on the U.S. Centers for Disease Control and Prevention's select agent list of heavily regulated substances that could "pose a severe threat to public, animal or plant health." Because of that, Allergan must account to the CDC if even a speck of the toxin goes missing, and when it's sent to Allergan's manufacturing facility in Ireland, its travels bring to mind a presidential Secret Service operation—minus literally all of the public attention.

A baby-aspirin-size amount of powdered toxin is enough to make the global supply of Botox for a year. That little bit is derived from a larger primary source, which is locked down somewhere in the continental U.S.—no one who isn't on a carefully guarded list of government and company officials knows exactly where. Occasionally (the company won't say how frequently), some of the toxin (the company won't say how much) is shipped in secrecy to the lab in Irvine for research. Even less frequently, a bit of the toxin is transported by private jet, with guards aboard, to the plant in Ireland.

Scientists differ over how much of the toxin would be required to inflict massive damage. Data on the topic is scarce, and that may be intentional. But a study published in 2001 in the *Journal of the American Medical Association* said that a single gram in crystallised form, "evenly dispersed and inhaled, would kill more than 1 million people." Experts are divided over what it would take to effectively weaponise the toxin, but the mere possibility of a botulism bomb has the U.S. government on edge. That puts Allergan in a remarkable position. The government's vigilance enhances the company's own secrecy, and together they give Botox a near-monopoly that is almost unassailable. Allergan says Botox has more than 90 percent of the market for medical uses of neurotoxins and 75 percent of the market for cosmetic uses. "I used to say, 'How often do you see that distribution of market share in any category—not just drugs, just in anything?' " says David Pyott, chief executive of the company from 1998 to 2015. "People used to laugh and say, 'I see what you mean,' because it's just unheard of."

There are hundreds of botulism poisonings annually in the U.S. alone, and a couple of times a year someone dies. In a typically random case, a man passed away earlier this year after eating tainted nachos at a gas station outside of Sacramento. It was the cheese sauce.

Around 1820, Justinus Kerner, a German doctor and poet famous for his supernatural and melancholy romantic verse, published the first accurate description of the symptoms of what he termed *Wurstgift*, or "sausage poisoning": drooping eyelids, accompanied by difficulty swallowing and breathing. Near the end of the century, a group of musicians playing at a funeral developed double vision and muscle paralysis after eating a ham. At least three died. From that tragedy, Emile Van Ermengem, a microbiology professor in Belgium, identified C. botulinum. He is credited with giving the pathogen its name, deriving it from the Latin word for sausage, "botulus."

U.S. government concern about the weaponisation of botulinum isn't fanciful. After prodding by United Nations inspectors, Iraq admitted to refining large quantities of the toxin prior to 1991 for use in some of its 25 Al-Husayn warheads, part of a biological weapons program. Earlier, fears that Nazi-era Germany had a stockpile of botulinum led to the development of a vaccination for Allied troops. It was readied in advance of D-day, but intelligence reports ruled out the use of botulism-tipped weapons and the vaccine wasn't administered. It was also during World War II that the U.S. started studying the toxin for biological weapons of its own, work that indirectly led to the creation of Botox.

Botox is largely the brainchild of two scientists, Alan Scott and Ed Schantz, who approached the toxin with completely different goals. In the 1960s and '70s, Scott, an ophthalmologist, was looking for a treatment for people with strabismus, or crossed eyes. Schantz's focus was more military than ▶

◀ medical; he'd done work purifying the botulinum toxin in the Chemical Corps at Fort Detrick in Frederick, Md., home of the U.S. biological weapons program, before moving to the University of Wisconsin, where he perfected the process. Schantz became a supplier of the toxin to Scott after a colleague put the two in touch.

Back then, controls for shipping botulinum were next to nonexistent. Schantz sent the stuff, in crystalline form, to Scott via the U.S. Postal Service in a metal tube slipped inside another metal tube. It was Scott who turned the toxin into a pharmaceutical. He then formed a company around his breakthrough, called Oculinum Inc.

The drug, also called Oculinum, was approved in 1989 for strabismus and blepharospasm, or twitchy eyelid. Allergan licensed it from Scott, then bought it outright in 1991. (The name was changed to Botox the next year.) From the start, Allergan took a cautious approach to a substance it recognised had the potential for grave harm if misused. "It's always been an issue. We've certainly known it's one of the most potent drugs in the world," says Gavin Herbert Jr., former longtime CEO and son of the company's founder. "It was an issue when we initially made the raw material batches in Irvine and would fly those small batches in a private chartered jet with a security person. We've always treated it very carefully."

Mitchell Brin, Allergan's chief scientific officer for Botox, has played a critical role in the drug's development almost from the beginning. In the 1980s he was a neurologist at Columbia University specialising in movement disorders. He and his colleagues got their supply from Scott, who'd gotten U.S. regulatory approval to evaluate the use of his drug on human subjects. Brin began testing it on patients with severe muscle contractions in the face, jaw, neck, and limbs. His awe over its power hasn't waned—he still enjoys showing old before-and-after films of patients whose spasm disorders were quelled by Botox in some of the earliest days of the drug. His office is like a Botox museum, housing mementos he's gathered along the way, including a set of matryoshka dolls from a trip to Russia to introduce the drug there. Botox is Brin's life; he has a California vanity license plate that reads BOTOX.

The drug works like this: A person's muscles are controlled by motor nerves, which release a chemical that instructs the muscles to contract. Botox blocks the release of that chemical. Today it's approved for nine different medical uses—including treatment for chronic migraines, overactive bladders, and severe muscle spasms—and is in trials for use in treating depression and is being studied for atrial fibrillation, or AFib. Cosmetic uses are likewise expanding: The next frontier is the saggy neck and the too-square jaw. Herbert says that when Allergan first acquired Botox, he thought it could do $10 million in annual sales. Now it's on track to grow to almost $4 billion by 2020.

Allergan never set out to become a neurotoxin powerhouse. It got its start in the 1950s mixing batches of anti-allergy nose drops, called Allergan, in a family-run pharmacy in Los Angeles. The founder, Gavin Herbert Sr., had also tried and failed to develop a solution to stop thumb-sucking. A friend suggested the company formulate drops to treat allergic conjunctivitis, and Herbert developed the first antihistamine eyedrop in the U.S. It was Allergan's first big success.

When Herbert Jr. took over in 1957, he moved the company into an old theater. The projection booth was used as a sterile filling area, and the balcony and stage were used for storage. By the 1970s, Allergan was a thriving public company, making eyedrops and contact lens solutions and looking to expand. It

Part of what prote

was then that Herbert Jr. discovered Westport, Ireland.

At the time, the northwestern coast of Ireland was deep into an economic tailspin, and unemployment in Westport was 30 percent. A local politician persuaded the Westport industrial council to build a factory designed to attract American companies. It stood empty until Herbert showed up. It was tax breaks that first drew him there—he was looking for a second place to make his contact lens solution.

Westport, a town of 6,000, gets its Irish Gaelic name, Cathair na Mart, from a castle that once served as the headquarters for a 16th century pirate queen named Grace O'Malley. Ten years ago she was the subject of a Broadway musical; in Westport today, tour guides tirelessly retell the lore—O'Malley and her ragged band fighting off the British navy and extorting booty from passing merchant ships. Her descendants made up part of the family that planned the modern-day town, with its quaint centre surrounded by emerald sheep and cattle farms. Whereas once the economy ran on agriculture and fishing, now it revolves around two other sources. One is tourism: Westport has won Ireland's coveted Tidy Towns award three times in a decade, an honour "almost unheard of in the modern era of the award," according to town architect Simon Wall. The other is Botox.

As is often the case with blockbuster drugs, Botox's story has a chapter on an entirely accidental discovery. It was a doctor couple, Jean Carruthers, a Vancouver ophthalmologist, and her husband, Alastair, a


The Allergan facility in Westport, Ireland

PREVIOUS SPREAD: ELINOR CARUCCI/TRUNK ARCHIVE; LEFT: COURTESY ALLERGAN dermatologist, who stumbled on Botox's anti-aging properties. Jean was treating a patient with eye spasms. The woman protested at one appointment when she wasn't given a shot in her brow; she said injections in that spot gave her a "beautiful, untroubled expression," Jean Carruthers recalled in a TEDx Talk in 2012. At the same time, Alastair was looking for a better treatment for deep frown lines. The two teamed up to examine the use of Botox in forehead creases. Their receptionist was the first patient. Within days, she had a smoother forehead and a "refreshed, open, younger expression," as Jean puts it now. But finding customers willing to be injected in the face with poison wasn't easy. So Jean decided to use the drug on herself, and soon there was no shortage of takers. "I haven't frowned since," she says, laughing.

Full list price for Botox is roughly $600 per treatment, according to the research firm SSR LLC, and this drug sells at full price more often than most. Roughly 55 percent of the business, by revenue, is for medical treatments. The other 45 percent is cosmetic procedures, which aren't covered by insurance. Patients pay full fare for the drug, plus what their doctor charges to administer it.

Some of the world's largest pharmaceutical companies have tried and failed to develop their own neurotoxin-based drugs.

cts the Botox empire is the sheer complexity of the drug

In 2009, Johnson & Johnson paid $1.1 billion to purchase Mentor Corp., which among other things was developing PurTox, an experimental drug also derived from botulinum. Five years in, J&J stopped work on it. Potential competitors have since been encouraged by the Food and Drug Administration to develop so-called biosimilar drugs, compounds that are almost biologically identical to the reference drug. But no one has taken up the challenge with Botox. Mylan NV, which is in one of the strongest positions of any company to attempt a Botox biosimilar, signaled an interest to investors in March but has not fully committed to trying.

Part of what protects the Botox empire is the sheer complexity of the drug. The recipe isn't patent-protected—it's a trade secret, like the formula for Coke. As long as Allergan can protect it, would-be duplicators have to start from scratch. Even if the procedure were out in the open, Brin likens Botox manufacturing to making a fine wine—a winemaker can't necessarily replicate a rival's vintage. "The fundamental process is an anaerobic fermentation process," he says. "The amount of time, the purification process, the reagents that are used with it, these are very, very important, and they're heavily controlled."

Allergan was bought in 2015 by Actavis Plc for about $66 billion. Actavis took the Allergan name, a testimony to the strength of the Botox brand. The new company has had its troubles. A year ago, CEO Brent Saunders had emerged as the affable face of an enlightened Big Pharma when he promised to cap drug price increases. That ended in October, when Allergan paid an American Indian tribe, which enjoys sovereign immunity, to hold the intellectual property on its second-biggest drug, the dry-eye treatment Restasis, a move designed to thwart one type of patent challenge. Critics jumped all over Allergan. Bloomberg View's Joe Nocera labeled it "sleazy ... sneaky, unscrupulous, and just plain wrong." For a profit-minded corporation, this is when it's especially comforting to have a drug like Botox, whose monopoly is made unassailable by government-assisted operational secrecy.

It's probably from somewhere near Irvine that the botulinum toxin starts its journey to Westport. The company won't say where in Ireland the toxin makes landfall or how it makes its way from there to Westport. "It never leaves Allergan's control," says Paul Coffey, general manager of Allergan's Westport facility. "There would be a very small number of people who are aware of the shipment." And it would be a rare event—there can be a year or more between deliveries.

The company has "no concerns about our security processes despite the madness that's happening in the world at the moment," says Coffey. "It just reminds us that if we ever were thinking we didn't need to have that kind of security, well, yes you do." As for whether Saunders has ever visited Westport's most secure production area—or even has the clearance to enter—Coffey answers, "Absolutely not."

If Saunders were to try, he'd start by turning off one of the few roads that leads out of Westport, looking for a small brown sign that bears the company name. It points down a narrow lane that gives way to a long, winding driveway. The toxin arrives along this lane, through meadows and brilliant gardens, passing by a small building that houses a 24-hour security staff. Beyond that is a campus whose beautiful grounds are a testament to Herbert Jr.'s love of gardening, a facet of both the Westport and Irvine facilities. (Herbert Jr., 85, retired in 1995 and is now an owner of Roger's Gardens, a home and garden centre in Newport Beach, Calif., among other pursuits.)

Coffey likens the security inside the facility to the layers of an onion. "Where we store our purified toxin is in the middle of the onion," he says. The storage room for the toxin is monitored by cameras that, in addition to guarding the company's greatest asset, are used to help engineers diagnose equipment problems remotely. The rare few employees who have access to the room do so only after they've stripped off their street clothes and suited up in full surgical garb.

From the core of this security onion, the toxin begins its trip back into the world, in a busy plant that employs more than 800 people. The first step in making the drug is to combine saline solution with an almost incomprehensibly minuscule quantity of the purified toxin. The liquid flows through a series of pipes into a sterile filling room. These rooms are monitored for temperature, humidity, differential pressure, nonviable particulates, and other factors. The company takes some 16,000 samples a month across these "cleanrooms" to test for bacteria in the air. Should even a single bacterium show up, an investigation ensues.

It's a largely automated process that's tracked by microscopic cameras embedded in the machinery. In the final steps, the saline solution is shot into tiny glass bottles and then reduced to a fine powder. Those bottles, individually boxed, are what doctors around the globe receive. One of the most feared substances on Earth is now largely neutered, immensely valuable, and ready to be injected into a wrinkled brow or a sweaty palm. No need for guarded private jets now. FedEx will do. B


Follow the Snaps

# Snapchat needs some good news right now. Here’s some: It’s free of fake news

## By Max Chafkin

To get a sense of how rough things are for Snapchat, consider the Dancing Hot Dog. In June the disappearing-messages app began letting users overlay their videos with a squat-legged cartoon wiener. It quickly became an internet sensation. Not that investors cared.

On parent company Snap Inc.’s quarterly earnings call in August, Chief Executive Officer Evan Spiegel boasted that the break-dancing tube steak had been seen more than 1.5 billion times on Snapchat, calling it “likely the world’s first augmented-reality superstar.” This goofy glory didn’t do much to soften the bad news: The company had brought in less than $200 million in ad revenue and lost more than $400 million. After Spiegel answered a question about Snapchat’s slowing user growth, an analyst, who apparently didn’t realise his line was live, said, “I didn’t even understand his response,” sounding as if he were about to burst out in laughter. This was before the 27-year-old CEO said investors should have faith in Snap’s chances against much bigger rivals because “we’ve always been last to market.”

In the runup to its initial public offering in March, Snap was considered one of the tech industry’s most promising unicorns. Now its share price is down almost 50 percent from a Day-Two peak, and on Oct. 20 the company said it was laying off 18 recruiting staffers, signalling that its 2,600 employees are likely to meet far fewer new co-workers. Analysts say the problem is the near-monopoly power of Google and Facebook Inc., which together control the most popular social networks and most of the mobile ad market. It’s also tough for Snapchat to add to its 173 million daily users when Facebook, with a daily audience almost eight times that size, relentlessly copies its best features.

For people who expected Snap to be the next Facebook, its stumbles appear ►

◀ disastrous. But while Snap hasn't figured out how to be a profitable advertising business, it's proving to be a much more competent media company than either Facebook or Google—and not just because it knows from dancing meats.

Since September, Facebook and Google have acknowledged selling political ad space to Kremlin-affiliated groups that spread false stories about the 2016 U.S. presidential election. While company representatives prepare to testify before the House and Senate intelligence committees on Nov. 1, Robert Mueller, special counsel for the U.S. Department of Justice, is reviewing the ad buys for evidence that Russian agents colluded with the Trump campaign. There are signs of Russian activity on almost every American social network of any consequence, including Twitter, Reddit, Tumblr, Pinterest, LinkedIn, and even the smartphone video game *Pokémon Go*. (Bloomberg LP is developing news programming for the Twitter service.) Snapchat, however, has found no evidence of political ad buys by anyone in Russia. In fact, Snapchat appears to have no fake news at all.



The secret? "Humans," says Nick Bell, Snap's vice president for content. "We only work with authoritative and credible media companies, and we unashamedly have a significant team of producers, creators, and journalists."

Whereas Facebook deliberately blurs the line between personal status updates, news articles, and ads—sticking all three in its constantly updating, algorithm-driven News Feed—Snapchat has taken a more old-fashioned approach. The app's news section, Discover, is limited to professionally edited content, including dozens of channels maintained by old-media outlets such as the *Wall Street Journal*, the *Daily Mail*, the *Economist*, and *People*. Snapchat's coverage of college campuses is overseen by a group of student-run daily newspapers. Its three regular newscasts come from CNN, NBC, and E!. Peter Hamby, a reporter hired from CNN, anchors its weekly in-house political documentaries.

As with Facebook and YouTube, part of Snapchat's appeal is watching videos unmistakably shot on cell phones by regular people. Sometimes those videos become newsworthy; when that happens, Snapchat includes them in Our Stories, short-form news updates that combine user-generated material with professional camerawork. But unlike newsy user-created videos on Facebook and YouTube, Snapchat's are vetted before they can reach a wide audience. Staff reporters and producers edit Our Stories, check facts, and clear the stories with lawyers, like a traditional broadcast team. Much of Snap's revenue comes from ads that appear in its professionally curated videos, and the company is betting that trustworthy content will ultimately prove more appealing to viewers and advertisers alike.

While Snapchat has embraced its role as a curator of news, Facebook has strenuously objected to suggestions by members of Congress—or anyone else—that it's in the media business. "When you cut off speech for one person, you cut off speech for all people," Facebook Chief Operating Officer Sheryl Sandberg told news site *Axios* in October. "The responsibility for an open platform is to let people express themselves. We don't check the information people put on Facebook before they run it, and I don't think anyone should want us to do that." Translation: You, the consumer, bear the responsibility for distinguishing which items in the News Feed are actually news, and which are paid messages from whoever can afford them.

Sensing a rare chance to make Facebook look bad, Snap is playing up its commitment to traditional news values. If it can steal a few ad dollars from its competitors and rectify its earnings setbacks, so much the better, but the company says recent events are simply proof that it's been on the right path all along. "From the very beginning," says Chief Strategy Officer Imran Khan, "we've felt a responsibility to make sure our community knows where their news and information is coming from."

Even when Snapchat was mostly known as a sexting app, Facebook appeared to be watching it closely, with more than a little jealousy. Since 2013, when Spiegel rejected Mark Zuckerberg's $3 billion buyout offer, the joke in Silicon Valley has been that Snap runs Facebook's R&D lab. Facebook's four main products—its namesake service, Messenger, Instagram, and WhatsApp—all include features almost indistinguishable from ones that made Snapchat famous, such as self-destructing messages, a video-diary feature called Stories, and augmented-reality gimmicks along the same lines as the dancing hot dog. Instagram Stories, rolled out last year, attracts close to 50 percent more viewers than all of Snapchat. (Snap says those numbers don't tell the whole story.)

Despite their products' similarities, the corporate cultures of Facebook and Snap are very different. Zuckerberg, the earnest-sounding if awkward Silicon Valley geek, speaks in lofty terms about Facebook's ambition to "bring the world closer together." He makes policy proclamations in the mode of a world leader and regularly talks up Facebook's voter registration efforts during the 2016 election. Spiegel is a creature of Los Angeles, more likely to crack wise than rhapsodise about the grand sweep of history. He calls Snap "a camera company" and doesn't talk publicly about politics.

These different aims helped define the companies' divergent philosophies about the media. Where Facebook treats news as just more crumbs for its enormous content maw, leveraging its audience size to compel press outlets to give up their product for free, Snap has aggressively courted conventional gatekeepers and tastemakers. "This is not social media," a 2015 company blog post reads. "Social media companies tell us what to read based on what's most recent or most popular. We see it differently."

Every time you visit a Facebook property, the company's algorithms crunch through an enormous trove of data about you and everyone you know, everything you've clicked on, and everything that people like you are likely to click on; then you're shown the posts and ads you're most likely to consume and share. This is how Russian agents were able to reach, by Facebook's estimation, 10 million Americans with just $100,000 worth of ads.

Snap, on the other hand, is all about privacy. Instead of encouraging users to build big audiences by interacting in public view with people they don't know in real life, Spiegel has said he wants you using Snapchat mainly to riff with "your very close friends." This has produced a whiff of unsavoriness—Snapchat's disappearing messages have been used by child pornographers and insider traders—but it has also largely insulated the service from fake news.

Snapchat Stories can't be publicly shared unless you take a screenshot and

**"Snap is first and foremost about your friends, not about building a large following. If an individual story gets hundreds of thousands of views, a team of our editors looks at it"**

post it on, say, Facebook or YouTube. On Snapchat itself, even the public Stories feature is designed to make individual clips hard to find unless you know exactly what you're looking for. Snapchat doesn't use algorithms to try to keep people clicking on new material; the only posts you see when glancing at the app have either come from your friends or been vetted for Our Stories. As a result, posts by individuals almost never reach more than a few hundred viewers. "Snap is first and foremost about your friends, not about building a large following," says Bell, the content chief. "If an individual story gets hundreds of thousands of views, a team of our editors looks at it, including me." Any post with more than a few thousand views is typically reviewed by at least one Snapchat journalist and, if necessary, fact-checked for inclusion in Our Stories.

Snap has proven it can get a scoop without sacrificing reliability. During the white nationalist rally in Charlottesville, Va., in August, Bell's team assigned a producer in New York to create dispatches for Our Stories. That meant scanning public Snapchat posts from within a few blocks of the protests, and gathering video and interviews from Snapchat-using journalists on the scene. Around 3 p.m. on Aug. 12, a short video clip posted on Snapchat appeared to show police arresting James Alex Fields Jr., the man who allegedly drove a car into a crowd of counterprotesters, killing 32-year-old Heather Heyer and injuring 19 other people. On Facebook, Twitter, or YouTube, the footage would have gone viral before it could be confirmed; and, in fact, screenshots of the Snapchat video appeared on other social networks almost immediately. But rather than post the clip widely, a Snapchat producer spent hours comparing its time and location data with other users' footage of the attack, and repeatedly called and texted Charlottesville Police Department officers in an attempt to verify the arrest.

The clip appeared in Our Stories at about 7 p.m., after the Snapchat producer spoke to police. Even then, the producer replaced the user's caption ("got em") with a more cautious statement that the video "appears to show an arrest" of the suspected attacker. Snapchat anchor Hamby and the head of original content, Sean Mills, both signed off on the post. "It's not just humans making judgment calls," Hamby says. "We make phone calls."

That this qualifies as a boast is a testament to how poorly other tech companies have acquitted themselves in presenting news. In the days after the Aug. 12 attack, Facebook, Google, and Twitter were flooded with evidence-free stories suggesting that Charlottesville was a "false flag" attack perpetrated by left-wing extremists, Jews, and/or extreme left-wing Jews. Later that week, Facebook began deleting links to an article published by the neo-Nazi website the *Daily Stormer* that circulated widely on the social network. The article called Heyer a "fat, childless … slut."

In October, after the murder of 58 concertgoers at a Las Vegas country music festival, Google News featured a story that identified an innocent man as the shooter. The publisher of that story: 4chan, an anarchic online forum known for allowing racism, misogyny, conspiracy theories, and trolling. Google apologised, promising it would "make algorithmic improvements to prevent this from happening in the future."

That kind of material wouldn't make it far on Snapchat, Hamby says, because "we're in essence a walled garden." As an example, he says, if somebody tried to post a phony video of a shark swimming through the streets of a hurricane-devastated city, Snapchat's editors would catch it and make sure it didn't find a wider audience on the service. "You can't introduce a shady article without hitting a layer of editors," he says. The urban shark example wasn't hypothetical. In September a video that purportedly showed sharks flagrantly violating Miami traffic laws after Hurricane Irma racked up thousands of mentions in Facebook's News Feed, despite being repeatedly debunked by Snopes.com and others. It has been viewed more than half a million times on YouTube.

As they've tried to ward off Washington regulation, Silicon Valley executives have made Russia's meddling in the 2016 election sound like a problem of almost unimaginable scale. Zuckerberg's halting response to concerns about "election integrity," as he put it in a Facebook Live video on Sept. 21, included a nine-point plan and a caveat about the enormity of the task. "We are in a new world," he said. "It is a new challenge for internet communities to deal with nation-states attempting to subvert elections." Facebook's own disclosures, however, suggest that the Russian tactics were hardly more sophisticated than those of 4chan trolls and could've been easy to spot had the company made a concerted effort.

Many of the Russia-linked ads and Facebook posts, which the company hasn't released but which have been made public by the *New York Times* and others, included the sorts of grammatical errors and spelling mistakes you might associate with your ill-informed cousin or perhaps a non-native English speaker. In some cases the buyers paid in rubles.

Putting human eyes on user-generated content isn't cheap, of course, but Snap has managed to do it on a reasonable budget, thanks to design decisions that limit the spread of propaganda. Its entire content operation is staffed by fewer than 100 people. Adopting similar changes might cost Facebook, especially at its larger scale, but the adjustments wouldn't have to be extreme. For now the company has said it plans to add 1,000 employees to keep an eye on its ads. That's a start, but Facebook could also easily create its own Snapchat-like news product, walled off from the rest of the service, overseen by editors, and populated exclusively by reputable news organisations.

Facebook had something like this, a human-curated sidebar called Trending Topics that lived next to its News Feed. But the company laid off the small team of a dozen or so Trending Topics editors in August 2016, after conservatives claimed the section was biased. In retrospect, the decision to fire editors months before an election in which foreign agents gamed its algorithms was, to put it gently, poorly timed. Facebook and its peers can use all the human help they can get. Ⓑ



PREVIOUS SPREAD: PHOTO ILLUSTRATION BY 731; PHOTOS: GETTY IMAGES (3)

# WORKING OUT A FAT BURNING MUSCLE GROWING EXERCISE FREE COMPLETELY MIRACLE PILL



**The drug still has a lot to prove before it makes it to your local pharmacy, but a biology pioneer believes a decade of research has solved that pesky tumour problem. By Adam Piore Photograph by Emily Berl**

RONALD EVANS realised the word was out when scores of strangers, some fit and some fat, started showing up at his biology lectures around the country. Soon, via email and voicemail, they were hounding him at all hours. Was it true, some wanted to know, that he had pills that could vapourise fat? Could the pills really, others asked, increase athletic endurance by 70 percent? Would he be interested in coming over and doping a racehorse?

During a lecture for a crowd of 200 in Montreal, a pair of college athletes took the mic and peppered Evans with questions about the pills' potential impact on the effectiveness of human growth hormone and erythropoietin. They ignored his interjections that those two performance-enhancing drugs were banned by most athletic rule-making bodies.

That was 2007. Evans was finishing up a study showing that mice taking the drug, an experimental GlaxoSmithKline Plc compound called GW501516, vastly increased their fat burn and athletic performance, even with minimal exercise. Some mice demonstrated the kind of endurance that would normally require intense training. Evans, a researcher at the Howard Hughes Medical Institute and the Salk Institute for Biological Studies, warned repeatedly that the pills weren't ready for human consumption when he published the study in 2008. They were just a proof of concept, he said, using some potentially dangerous substances. There were no studies showing they'd work on humans, no data on possible side effects.

His caveats didn't make it into the headlines. By 2009 enough athletes had been caught using GW501516 (aka Endurobol) that the World Anti-Doping Agency banned it. By 2013 so many had been caught that WADA took the rare step of issuing a health notice. Human trials with the drug had been abandoned because of "serious toxicities," the oversight body noted. Among the side effects in mice: cancerous tumours. "For a lot of athletes, winning is more important than their intrinsic health or the risk they are taking," says Evans, who at 67 has a lean runner's build, tight black curls, and a thin goatee that's peppered with a lot more grey than it was in '08. "So I guess I'm not surprised they were taking it. They want to win."

His story is an object lesson in what happens when the world can't wait for the science to catch up with the hype. "The drug companies got way ahead of our understanding of the biology," says Daniel Kelly, director of the Cardiovascular Institute at the University of Pennsylvania. "That kind of soured the field. The biology now has caught up."

Just about, Evans says. In July, almost a decade after that first study, his company, Mitobridge Inc., in partnership with Astellas Pharma Inc., began testing MA0211, a new drug that he's betting can safely upgrade human cellular metabolism. The six-year-old company has received $45 million in venture funding to make it happen, much of it earmarked for development and trials targeting those in the greatest need. The first treatment is aimed at Duchenne muscular dystrophy, a genetic protein mutation that affects 1 in 5,000 men, causing a progressive loss of muscle and killing most by the age of 26. Given the severity of the disease, Mitobridge and Astellas can expect speedy approval from the U.S. Food and Drug Administration if their study, the first phase of which will be finished within a year, shows even some promise of building muscle in Duchenne sufferers.

Seated in his third-floor office at Salk on the bluffs of La Jolla, Calif., where he's had a stunning view of the Pacific for 38 years, Evans is already thinking about what comes next. "A drug that promotes the benefits of fitness could have widespread applications," he says with more than a little understatement. Beyond tackling obesity, a pill that replicates the benefits of exercise could help reduce the risk for chronic inflammation, diabetes, even cancer. From behind a desk buried in a pile of awards, DNA models, and photos of his twentysomething daughter, Lena, Evans insists the previous efforts failed only because they were based on incomplete pictures of the human body. "When you're gaming a genetic system, if you overgame it, you activate genes outside your target, causing side effects," he says, rising from his chair. He walks past the two acoustic guitars in his office and picks up a recent scientific paper. "Our molecule is completely different."

Evans's record sets him apart from the hucksters who've been peddling get-fit-quick schemes and weight-loss pills since the dawn of footwear. A pioneer in molecular biology, he was the first, three decades ago, to discover nuclear receptors. These microscopic proteins, sticking out from the surface of a cell's nucleus like antennae, can be triggered to switch cellular processes on and off. These switches became the principal means by which scientists learned to manipulate genes. Ten years later, in 1995, Evans found the receptor that appeared to control the storage and metabolisation of fat, known as a peroxisome proliferator-activated receptor, or PPAR-alpha. A few years after that, he identified PPAR-gamma and PPAR-delta, related receptors that appear to activate fat-burning.

The study published in 2008 started there. In 2003, Evans and his team tweaked mouse genes to turn the fat-burning switches on permanently in fat tissue, and their mice slimmed down dramatically. A year later he flipped the fat burners on in muscle tissue, and the mice developed Type 1 muscle, the kind found in marathon runners and endurance cyclists. These mice lasted an hour longer on the treadmill than normal ones and ran twice as far. The downside was burnout, says Michael Downes, a senior scientist who's been working with Evans since the 1990s. Permanently flipping all of the cellular switches on made the mice's muscles grow faster than any known medication had.

Big Pharma had seen all it needed to charge ahead. "Drugs were built pretty quickly, because there was enthusiasm for new targets," says Evans, meaning such targets as obesity and heart disease. For the 2008 study he principally used GlaxoSmithKline's GW501516, along with a less potent drug that worked in a similar way. GW501516 allowed the mice to run 75 percent farther than normal mice before collapsing from exhaustion. But by the time Evans published the study, bringing a stream of obsessive athletes to his door, Glaxo had abandoned efforts to test GW501516 on humans. Only later did published papers link its testing in mice to development of tumours in the liver, bladder, stomach, and skin.

By then, however, the drug was already available from shady overseas suppliers, and a number of websites were hawking the active ingredient in a wide array of powders, pills, and other products. And athletes kept taking it. (You can still find sellers on Amazon.com.) WADA began catching cheaters almost as soon as it employed a detection test Evans designed; it suspended five pro cyclists for using the drug during one week in 2013. “Most of the time, as soon as a drug gets into clinical development, China does the reverse development and gets some powder out there,” says Oliver Catlin, president of the Banned Substances Control Group, a nonprofit that certifies health supplements as dope-free. During his years at the UCLA Olympic Analytical Laboratory, where he helped oversee drug-testing programs for the U.S. Olympic Committee, the NFL, MLB, and the U.S. military, Catlin regularly saw drugs become more popular among athletes after they were banned.

PPAR drugs in general have fallen out of favour because of side effects or related questions about their effectiveness, says Penn’s Kelly. There have been no publicly documented cases of athletes developing cancer linked to GW501516 and no systemic studies of their effectiveness or side effects in humans. But after approved PPAR drugs used to treat Type 2 diabetes were linked to possible side effects in heart tissue, many pharma companies abandoned development programs involving them. Evans, however, maintained that the right drugs could be created once the biological pathways they targeted were better understood.

“They were too potent,” he says of the 2008 study’s pills. “The natural physiologic way in which drugs work should be similar to what happens in your body. If you don’t manipulate the system exactly right, then it gets messy.” He says his new PPAR drug, the first he’s involved in making and commercialising himself, will be different. It won’t just flip all the switches to the on position; he’s spent the past decade learning how to fine-tune his controls.

As he strolls through his 4,000-square-foot La Jolla lab, Evans passes rows of gloved assistants hunched over microscopes and test tubes, holding liquid-filled droppers and scribbling furiously. On one counter a series of machines topped with rows of sealed test tubes is vibrating at high speed, separating the proteins inside so gene expression patterns can be analysed. Inside a rectangular glass enclosure nearby, robotic arms are moving compounds among machines 24 hours a day, testing how rodent and human cells respond to various compounds.

By 2011 these tools and others had taught Evans enough to start creating a drug without the carcinogenic side effects. He’d also identified an ideal business partner: Kazumi Shiosaki, a founder of several successful biotech startups and a managing director at venture firm MPM Capital. Evans first met Shiosaki in 2008, when she recruited him to serve on the scientific advisory board of Epizyme Inc., a Cambridge, Mass., company developing anticancer drugs. After one board meeting, the two began discussing the potential for Evans’s design. Shiosaki had already been thinking about the need for drugs that more discretely target similar pathways. “I thought, Wow, why isn’t anyone starting a company in this?” she recalls. She co-founded Mitobridge in 2011 and became its chief executive officer.

The Mitobridge team, including a handful of researchers, works out of a lab a few blocks from Harvard Yard, while Evans and his team consult from La Jolla. Together they’ve built a drug to activate the genes involved in burning fat while leaving most dangerous, unrelated genes safely off. Their testing process was much easier than the one that yielded GW501516, Shiosaki says, because contemporary diagnostic tools gave the scientists a much better sense of which genes had been turned on or off, and in a post-Human Genome Project world, they had a much better sense of what each one did. “We know what negative or adverse signals that could lead to the negative results—like cancer—look like,” she says. The drug appears to increase endurance in mice with Duchenne muscular dystrophy, without the markers associated with higher risk of cancer.

After the Phase I safety trial is done, likely by July 2018, the next phase will involve people with Duchenne. “Our current intent here is to focus on rare diseases where there is unmet need,” Shiosaki says. Keeping the drug’s initial target narrow also makes it far more likely to win FDA approval. The FDA declined to comment because the study is pending.

Like Shiosaki, Evans stresses that his first priority for MA0211 is treating Duchenne sufferers, and it’s too early to say when the pill could be approved for other uses. In his office, though, he’s less measured about his endgame. Everyone should experience the health, cognitive, and other benefits of consistent minimum exercise, he says, clad in mesh shorts and a tight-fitting Under Armour shirt after a trip to the gym.

Evans isn’t quite ready to say he believes everyone, even the healthy, should be prescribed the exercise pill. But it’s clear he doesn’t think it’s a bad idea. “The challenge for this kind of drug is deciding who should get it,” he says. “I’m mindful that the FDA can only approve drugs that can actually treat a disease. This is a new concept.”

Athletes are probably already conducting their own off-the-books studies, says Catlin of the Banned Substances Control Group. “As soon as it is gets into clinical trials,” he says, “it will be in the hands of some doper.” But if an exercise pill is safe enough for everyone to use—safe enough that everyone should use it—is that still cheating? B

**“The challenge for**


**is deciding who should get it. I’m mindful that the FDA can only approve drugs that can actually treat a disease”**


Ho Ho Holiday
La La Latte
Enjoy the great taste. Hot or blended.
LOTUS LATTE
CREATED WITH
Lotus
Since 1932
Biscoff
Caribou COFFEE
Caribou COFFEE®
Available from 6th November for a limited time only
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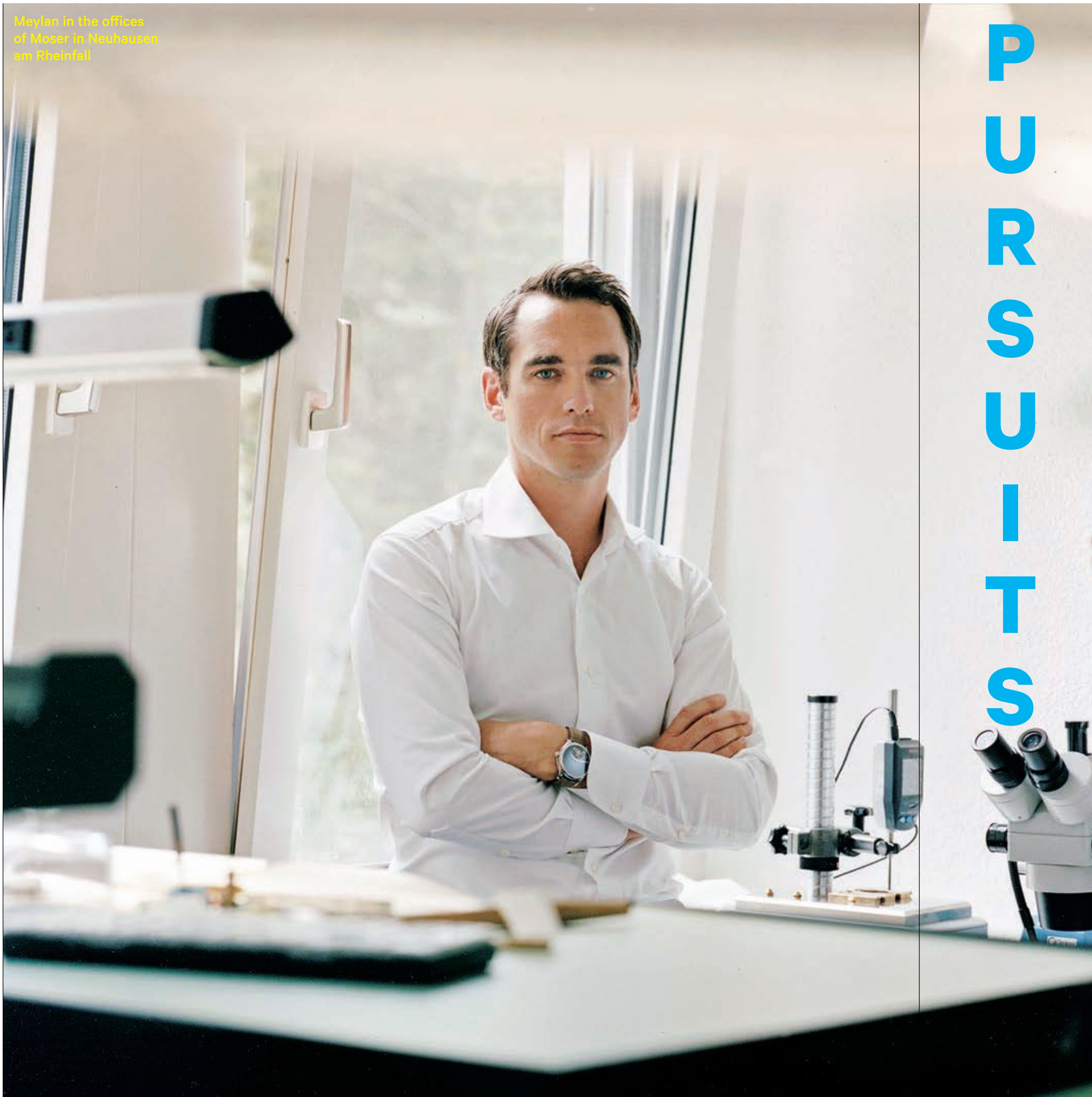


Meylan in the offices of Moser in Neuhausen am Rheinfall



# SWISS MISCHIEF

In the risk-averse Swiss watchmaking industry, keeping young buyers interested is key to survival. For Edouard Meylan, that means trying everything except playing it safe. *By Corinne Gretler*
*Photographs by Mark Peckmezian*

"Even if you're small, you have a voice," says Edouard Meylan, the chief executive officer of Swiss luxury watchmaker H. Moser & Cie.

For Meylan, "small" means running a family-owned company that makes about 1,500 watches a year with an average price of about 33,500 Swiss francs ($34,327). An analyst at Bank Vontobel AG puts the company's 2016 revenue at 14 million francs—a tidy business but a mere drop in the Swiss milk bucket compared with the estimated 4.7 billion francs Rolex SA raked in during the same year.

Yet the 40-year-old has played an outsize role in a heated debate over the Swiss watchmaking industry, a fusty métier that's been upended in recent years by currency fluctuations, changing tastes, and competition from Apple, Google, Garmin, Fitbit, and other smart device makers. "He is applying a very disruptive and intriguing communication—and social media—presence, which is quite unusual for such a small artisan," says Jean-Claude Biver, president of LVMH's watch division and CEO of megabrand TAG Heuer. "He attracts much more attention than his turnover and dimension would suggest."

In a reserved society such as Switzerland, sometimes just speaking up is enough to get yourself heard. And with stunts like making a watch out of Swiss cheese and selling a mechanical version of Apple's smartwatch, Meylan has earned himself a reputation as the prankster in the jewelry shop.

In January 2015, the Swiss National Bank roiled international financial markets when it abolished the three-year currency cap that had prevented the franc from appreciating beyond 1.20 per euro. Immediately upon its release, the franc soared as much as 41 percent, reaching its strongest level on record. The Swiss stock market plummeted, and luxury goods exporters saw prices for their wares unintentionally increase around the world. It was a serious blow to the watch industry, already dealing with the second year of a slowdown caused by a strict crackdown on political gifting in China. Swiss watch exports slipped for the first time since the U.S. financial crisis in 2008 curbed global consumption. (They are just now showing signs of recovery.)

At the time, Moser was on the way to profitability, and the news sent Meylan racing back to Zurich from a ski trip in the Valais Mountains. Unlike most of his competitors, who were part of larger watch groups such as Richemont and LVMH, Meylan would have to withstand these ill winds alone. It would be devastating. He pulled over alongside Lake Lucerne and typed an open letter to the president of the Swiss National Bank.

"Over 95 percent of our watches are sold to people outside of Switzerland, and the first retailers called the same day to cancel orders," he wrote, warning that small businesses like his would be encouraged to leave the country. "Why not just move 2 kilometers into Germany and continue business as usual in the EU?"

Meylan smiles proudly as he retells the story at Moser's headquarters in Neuhausen am Rheinfall, a five-minute drive from Europe's largest waterfall. Cleanshaven and elegantly dressed, he wears a prototype watch called Endeavour that goes on sale in November. The watch features a tourbillon, a hard-to-produce watch complication the brand makes in-house. As with all Mosers, the watch has a distinctive, slightly audacious, colourful look. Like Meylan, the timepieces tend to make a statement.

Moser was founded in St. Petersburg, Russia, in 1828 by Swiss native Heinrich Moser. It quickly grew to be the dominant force in Russia's watch trade but moved to Switzerland after the October Revolution in 1917. The company traded hands a few times during the 20th century, and the Meylans bought it in 2012 from dental-implant billionaire Thomas Straumann.

The brand's tag line is "Very rare," a nod to its small production numbers and its practice of finishing every timepiece by hand. A Moser hallmark is a fumé dial, with a bright centre and darker outer edges, that often lacks numerals. It's a simple, striking visual effect. The brand's 54,000-franc Endeavour Perpetual Calendar won the Geneva Watchmaking Grand Prix in 2006. Moser has sold timepieces for 1 million francs, but its core collection ranges from 11,900 francs to 100,000 francs.

Many Moser watches feature a distinctive shaded fumé dial

Delicate watch components are kept safe from dust in the Moser workshop

Seeing the attention his letter to Swiss National Bank President Thomas Jordan drew within the industry, Meylan decided to address another threat, the smartwatch, with a stunt. In early 2016, Moser unveiled a spoof of the Apple Watch, which had made its debut months before. The 24,900-franc Swiss Alp Watch was a mechanical replica of Apple's device without any functionality other than telling time. (It was also a creative way to use some leftover rectangular cases Meylan was trying to get rid of.) In the low-budget video that promotes the timepiece, Meylan encourages people to "get a life and upgrade to a mechanical watch." Because it can't make phone calls or send messages, he argues, the Alp reconnects people face-to-face. How's that for functionality? Moser sold about 200.

Meylan says his love of timepieces and his sharp tongue were both inherited. Raised in Le Brassus, a little town that's home to watchmakers Blancpain and Audemars Piguet, he spent his teenage summer holidays working at the latter, where his father, Georges-Henri, was CEO for almost a decade. "Being born into watchmaking gives me more legitimacy to criticise. It's like self-criticism," Meylan says. "I got that from my father: to be direct and provoke a discussion."

That contrarian attitude at first led ▶

The Swiss Mad (left) and the Swiss Alp

◀ Meylan away from watchmaking. After obtaining a degree in micro engineering from the Swiss Federal Institute of Technology in Lausanne and dabbling a bit at PwC, he returned to the industry in 2003 to manage distribution of high-end independent watch brands in Asia. His travels there led him to understand its swiftly growing market. After getting a master's degree at the Wharton School of the University of Pennsylvania, he co-founded in 2008 Celsius X VI II SA, a pioneering company in the luxury mobile phone sector. In 2012 he returned to help his family at Moser and took the helm the following year.

The warmth of a family-led company can be felt in the Neuhausen am Rheinfall office where Moser employs 55 workers. When Meylan walks in, he switches among French, German, and English in an instant, and his talking-with-his-hands style means his elegant Moser watch is never far from view. He says he considers the brand to be a startup and expects everyone to pitch in and come up with creative ideas. Twice a year he summons a group of employees and friends to brainstorm—and it's out of these sessions that his marketing ideas are born.

Earlier in 2017, Meylan took on another issue: For the past decade, for a watch to be sold with a "Swiss Made" label, at least half the value of its movement had to come from and be assembled in Switzerland. Starting this year, the percentage was increased to 60 percent of the value of the entire watch to encourage more companies to bring production to the small country. The Swiss government made much fuss about this—but critics such as Meylan see it as mumbo jumbo that encourages brands to deceive customers. With so many watch parts sourced globally, it's almost impossible to call a given watch truly Swiss Made, he says.

In protest, Meylan had his watchmakers create a truly 100 percent Swiss timepiece—out of Swiss cheese. He named it the Swiss Mad watch, and it came with another video, in which Meylan appears as William Tell and throws punches at various products that have Swiss Made labels, like chocolate. (Have you met any cocoa growers from the Alps?) Throughout, he wears a familiar red cap that proclaims, in white lettering, "Make Swiss Made Great Again."

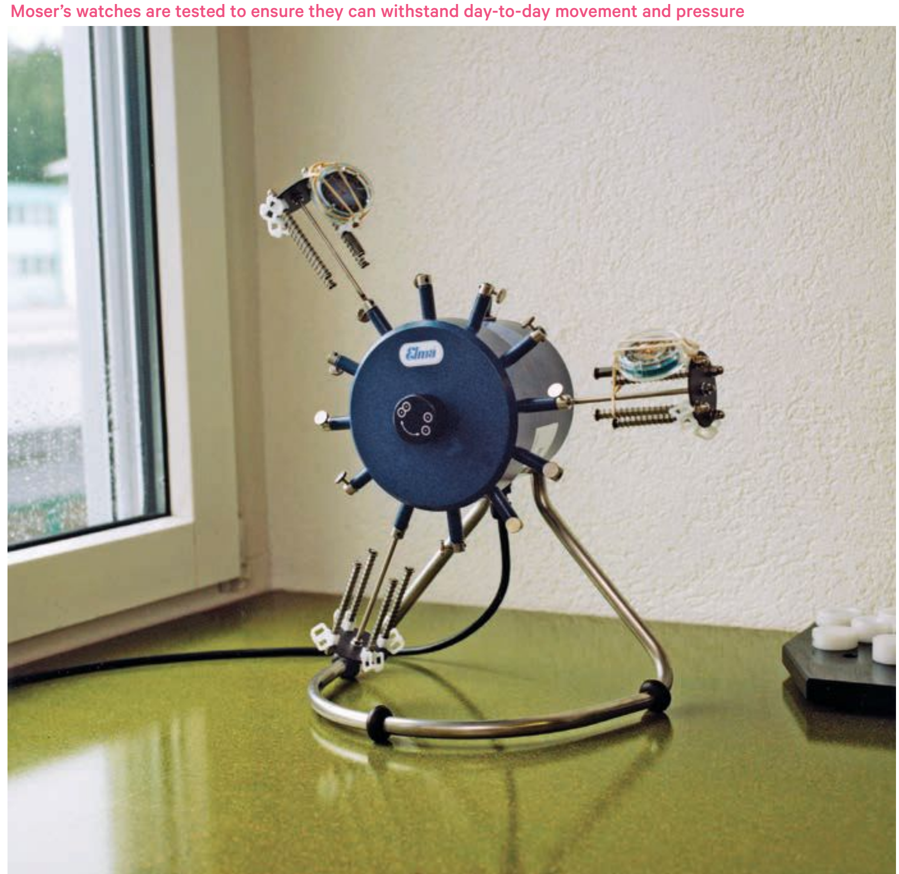
Moser also removed the Swiss Made label from its timepieces. The Swiss Mad and a prototype of the Swiss Alp went under the hammer for 125,000 francs in a May Christie's auction, with proceeds donated to the Foundation of Swiss Watchmaking Culture.

Since the Meylans took over Moser, the business has almost doubled the number of watches it builds per year. There are plans to open boutiques in Zurich and Hong Kong in the next 24 months. Meanwhile, in the past two years, the average age of the buyer has dropped precipitously: It now ranges from about 25 to 45, compared with a previous range of 55 to 65, Meylan says. Part of the reason for the change was the introduction of a lower-priced entry-level timepiece at 11,900 francs, down from 15,000 francs; another part is Meylan's panache. Youth is key to longevity in the watchmaking world. Loyalty is high; a person who owns one watch from a brand is much more likely to buy another.

"Moser is still a small brand in the Swiss watch industry, but it has found its niche and is getting more attention thanks to the marketing stunts like the Swiss Alp Watch," says Rene Weber, an analyst at Bank Vontobel AG. "Edouard is fully aware of this and takes brilliant advantage of it," adds LVMH's Biver.

"We need to be different," Meylan says. "We need to ask ourselves, What are the others not doing? And with our marketing campaigns, edgy, sexy, provocative have become our trademark." Things have changed over the past five years, he says. "When I started here, friends would say, 'Moser who?' Now we're on the map." B

Moser's watches are tested to ensure they can withstand day-to-day movement and pressure




WATCH PHOTOGRAPHS COURTESY OF H. MOSER & CIE.

# The Startup For Sitting Down

Maiden Home aims to upend the furniture industry by creating custom pieces for a grand, in six weeks or less
*By James Gaddy*

Maiden Home's Leroy chair, from $1,175

For those on the hunt for that perfect–and perfectly affordable–chair, "it feels like you have three choices, and that everyone is shopping from the same store," says Nidhi Kapur, the founder of Maiden Home Inc., a furniture startup that launched in March.

A 30-year-old entrepreneur who runs her business out of an understated but charming showroom in Manhattan's Tribeca, Kapur began her career at Google before becoming head of business at beauty subscription service Birchbox Inc. Then she got married and discovered a gap in the home décor category.

"When I got my first place with my husband, we wanted to invest in a nice set of furniture," she says. They could afford to spend "$2,000-ish" on a sofa, "not $6,000. We weren't hiring a designer." But that price point lacked options. "I knew people above me were fine, because designers are taking care of them," she says. "And below, I had been there too and felt it was very well-served. There are not that many brands serving this particular market. You feel it when you're shopping."

What came next is familiar to anyone who's followed the e-commerce disruptions of the past decade: Find an out-of-touch industry–whether glasses (Warby Parker Retail Inc.), mattresses (Casper), or clothing (Everlane)–then bypass the middlemen, go straight to the source, build a website, and save people money at the same time. Kapur says shoppers are more ready than ever to buy furniture online–and not only smaller housewares but big-ticket purchases such as armchairs and sofas. And by skipping the catalogues, marketing, and production that other stores rely on, she can deliver a custom piece of furniture made by skilled North Carolina craftsmen in six weeks.

The first challenge was getting manufacturers to sign up. In 2015, Kapur went to High Point Market, a biannual trade show that draws more than 2,000 exhibitors and has an estimated $5.39 billion impact on the state's economy. Ashley, Stanley, and other local giants show their collections, but so do local craftsmen. "They are highly skilled but stuck in this outdated business model," Kapur says. "They show it at High Point and sell it to three middlemen who eventually sell it to some consumer at a high-end boutique."

On her first trip to North Carolina, she cold-called about 25 manufacturers. "Some people got it immediately," she says. "They know that their business model is changing and that the modern consumer is looking for things that have an online presence. A store like Restoration Hardware is eating their lunch, in terms of quality furniture and a modern buying experience."

Kapur ended up working with three artisans in the area, establishing zero-inventory, no-minimum arrangements, but the one thing she wouldn't compromise on was lead times. "That is what we do: deliver custom furniture in six weeks anywhere in the country. That's unheard of right now."

In the startup spirit of making fewer things of better quality, the collection is limited to four styles per offering: chairs, sofas, and larger sectionals. The price of the chairs, which run about $1,000–sofas are roughly $2,000–is comparable to those of big-box chains West Elm Inc. and CB2 Inc. Each Maiden Home piece is available in 37 fabrics, including putty-coloured chevrons, charcoal tweeds, a navy leopard print, and, for $675 extra, an aniline leather produced by a fifth-generation Italian tannery. So far, the company has shipped almost 500 pieces.

The service is hands-on. Every week a "build update" email alert is sent to customers. In one, a seamstress might be adding "details like welts or tufted buttons." In another, an upholsterer is doing "the most nuanced and artistic work of the process."

Despite that extra attention, the online custom furniture market faces significant barriers. "Big items like a sofa are different from a $75 pair of glasses that have a return policy," says Seth Basham, a hardline equity research analyst at Wedbush Securities. "These are tactile goods, and people want to try them out first." Even so, Kapur says the core goals of her startup and other online darlings are more alike than not. "Everlane is known for simple, timeless design and is for someone who wants to avoid trends and have something high-quality," she says. "When we talk about design, we're talking about an aesthetic that will last for years, not something you'll get sick of." B

COURTESY MAIDEN HOME



# Heavy Hitter

After more than a decade, Rolls-Royce is relaunching its flagship Phantom. The result is a $450,000 hunk of power and opulence. *By Hannah Elliott*

Reaching 7,976 feet above sea level, Switzerland's spindle-thin Furka Pass is one of the highest mountain roads in the world. Its sheer edges are so abrupt they make professional drivers sweat. The climb is suited for something small and athletic, such as a Porsche 911, or the Aston Martin DB5 James Bond drove here during an epic chase scene in *Goldfinger*. It's not typically where you'd land a 5,754-pound, 20-foot-long coach that's meant to be enjoyed from the back seat.

Yet that's exactly the spot Rolls-Royce Motor Cars Ltd. chose to introduce its latest effort, the eighth version of its Phantom flagship sedan. For the first time since 2003, the carmaker has orchestrated a complete update on the model—only the second time it's done so under BMW Group ownership. The Phantom is the marque that John Lennon and Elvis Presley drove, the one Queen Elizabeth commissioned as her preferred mode of travel. First designed in 1925 by Henry Royce himself, it's the oldest automotive model still produced today. Last year, Phantom sales generated about 15 percent of Rolls-Royce's revenue in the Americas; it's the company's single-biggest money-making series.

It's also the largest vehicle Rolls-Royce makes, with a 6.75-liter, 563-brake-horsepower, V12 engine powerful enough to run a tank. The Phantom can hit 60 mph in just over five seconds—remarkable for a car of its heft.

PHOTOGRAPH BY YANN GROSS FOR BLOOMBERG BUSINESSWEEK

To appreciate the $450,000 vehicle's full glory, start with its outside and admire the sheer wall of the grille, from which designer Giles Taylor has made all the other elements flow. Each steel prong has been hand-polished to mirrored deco glory; the rectangular headlights are the only ones in the world frosted in Lalique glass.

Climb in the back. With a gentle pull, the rear-hinged door closes toward the front of the car. The interior is specifically designed to dazzle with its inch-thick dyed lambswool carpeting; high-gloss polished wood panelling; drinks cabinet with whiskey glasses, decanter, Champagne flutes, and chilled compartment; and a ceiling glittering with tiny lights.

Rolls-Royce says the new Phantom is the quietest car on Earth. After three days spent winding through mountain passes and visiting rural retreats near Zurich, I believe it. Engineers tested 180 prototypes of the tires alone—they're filled with noise-cancelling foam—and inserted thick layers of felt between alloy skins inside the cabin floor and along the bulkhead. The result is a suite that's officially 10 percent quieter than its predecessor when moving at high speeds.

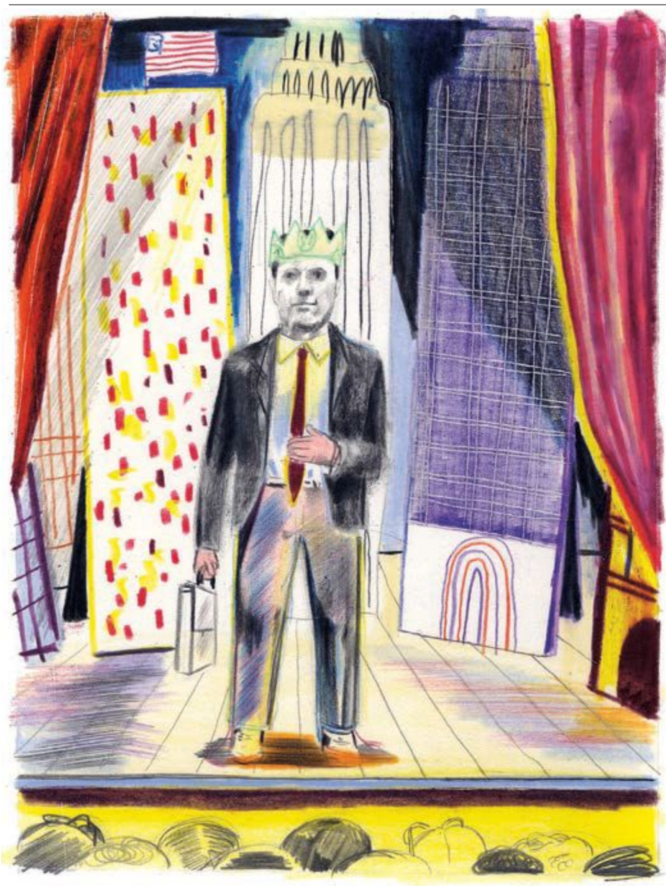
Today's wealthy, many of whom are relatively young and newly affluent, expect these comforts. The average age of the Rolls-Royce buyer is 44, down from 56 seven years ago and younger than the average age of 50 among all luxury car buyers, according to Kelley Blue Book. (In Rolls-Royce's second-biggest market, China, 38 percent of all new luxury car buyers are under the age of 40.)

A foot on the pedal reveals that BMW's full engineering resources have made the car lighter, stiffer, and more technologically advanced than anything that's come before.

Rolls-Royce is very proud of a new double-wishbone suspension coupled with an air ride system that makes the car as smooth as a magic carpet, as executives will say to you often. Excuse the cliché this time—they're right. Push the gas pedal, and the Phantom uses its massive power to surge effortlessly forward with authority and elegance.

Most impressive is the car's novel four-wheel drive. It allows each wheel autonomy to choose traction and vector over any change in direction. This was the secret to breaking the Furka: Even as the Phantom thrust forward like a bullet train, it danced across the pass like a much smaller car, surprising at every turn.

This bodes well for the Project Cullinan, the much anticipated first-ever SUV from Rolls-Royce, which arrives late next year. It had better be good. That is, if you need another Rolls.



# Tragedy of A Bond King

A Broadway show about the dark side of the financial wizards of the 1980s. *By David Gura*

"This is the story of how kings are made," a jaded journalist proclaims at the start of *Junk*, the latest play from Pulitzer Prize winner Ayad Akhtar. "Or what passes for kings these days."

Financiers who lived through the dizzy 1980s will remember the era of Wall Street royalty, when a new guard of dealmakers began to see debt differently, as a thing of value. As investors chased yield, they embraced risk with zeal—and the most voracious among them were rewarded with mountains of cash. In Akhtar's cautionary study of the period, in previews at New York's Lincoln Center Theater, an older financier can't get his head around the core of what came to be called "creative financing." "Debt is not an asset," he declares. "Debt is debt!"

We meet Akhtar's protagonist, Robert "Bob" Merkin (Steven Pasquale), after his coronation. The cover of *Time* magazine labels him "America's alchemist," a man who forges multimillion-dollar deals out of debt and equity. He's driven by avarice but also titillated by risk, insulated by a sense of invincibility. Merkin sees himself as a modern-day J.P. Morgan. "We're going to change history," he confides to a colleague. "We're going to change the world."

We have certainly learned the lessons that came with these changes, more than once now. But the subject matter seems especially relevant today, as we reckon with the consequences of this kind of dealmaking. Akhtar himself was a student of the junk bond boom. When he moved to New York in 1995, his dad offered to pay his rent if he agreed to read the *Wall Street Journal* every day. "I started to observe how all this stuff was transforming our lives," Akhtar says after a recent performance. "Or at least I believed it was."

In *Junk*, Merkin's unsuspecting takeover target is Everson Steel in Allegheny, Pa., thousands of miles and a world away from West Los Angeles, where Merkin is based. Here, the conflict crystallises. Thomas Everson Jr. (Rick Holmes), presiding over a small empire of mills and smelters, feels responsible for his thousands of employees. When an outside investor amasses a sizable position in Everson Steel, he sees barbarians at the gate. The company has been struggling, but Everson hasn't been looking for a lifeline.

Performing sorcery depends on secrecy and subterfuge. The artist knows that if a viewer fully understands what happens behind the scenes, magic becomes, well, less magical. Financial wizardry has some of the same mystique, which makes the playwright's job difficult: How do you make a complex financial transaction comprehensible—and, better still, compelling—to theatregoers?

"It is incumbent on me, as a writer, to provide enough information for the audience, through action and context and dialogue, to understand at least what the basic concept is," Akhtar says. The play isn't overly didactic, though. You don't have to understand all the jargon to grasp the implications of what happens. That said, viewers familiar with the ways of Wall Street will be grateful to Akhtar for doing his due diligence. Two of his closest friends are in finance, and one of them edited an early draft.

"Finding a way to write about business, where the human stakes do have consequence, is really the challenge," Akhtar says. "Getting a deal done is about getting a deal done, but it is not always about whether someone is going to live or die."

It helps that so much in the show—and the plight of Everson and his employees—feels familiar and real. The financiers, investors, reporters, and lawyers in *Junk* are Akhtar's own creations, but he acknowledges that Bob Merkin's resemblance to Michael Milken extends beyond their near-rhymed surnames. And Akhtar suspects there will be ticket holders who are acquaintances of some of the men who inspired his characters. But, he cautions, "there isn't a consistent line to be drawn" between Merkin and Milken. His advice? See Merkin as a metaphor.

*Junk* focuses on a pivotal moment in American history, when the country's value system started to shift, along with the definition of "success." Three decades later, it's worth reflecting on what changed and what's happened. At one point, Merkin and his colleagues raise the specter of "Dow 20,000." I heard laughter in the audience as the characters debated its inevitability. The Dow Jones industrial average crossed that threshold earlier this year, and in October, the index set a new high. B

ILLUSTRATION BY YANN KEBBI


# Dyson V7 Trigger

This is the ultimate dust-busting cleaner

*Photograph by Ted Cavanaugh*

**THE CHARACTERISTICS**
Inspired by a centrifuge used to separate paint particles from the air, James Dyson came up with the world's first bagless vacuum cleaner in 1983 after famously going through 5,127 prototypes. Fast-forward a few decades, and his namesake company now uses the same "cyclone" technology to make the pinnacle of handheld vacuums. The V7 Trigger is a cordless cleaner that weighs a mere 9 pounds and operates for 30 minutes on a rechargeable battery. And at 100 air watts, it comes with the strongest suction available in an unplugged nonupright model.

**THE COMPETITION**
Those who grew up with Dustbusters will hardly recognise the rugged looks of Black+Decker Inc.'s latest cordless vacuum, the $100 SmarTech Pet. It uses the same motorised brush head as the $199.99 Dyson, but, with its 35 air watts, it lacks roughly two-thirds of the V7's suction power. Both the Black+Decker and Hoover's $250 cordless React Advantage have "floor-sensing technology," which automatically optimises performance based on floor type. The Hoover weighs almost twice as much as the Dyson, however, making it less practical for a quick cleanup.

**THE CASE**
The V7 tackles the unexpected mess as ably as it excels at fastidious cleaning. A multitude of accessories, including a narrow-crevice tool and dusting brushes, mean it's versatile enough to get into tough-to-reach places. And Dyson's suction power is the real deal: If you're used to having one machine for heavy-duty jobs and another for quick pickups, you'll be pleasantly surprised by its ease and all-in-one power. An extra $65 gets you a home cleaning kit, which comes with a multi-angle brush, a soft dusting brush, and a stiff bristle brush for caked on mud. *Dyson V7 Trigger; dyson.com*

PROP STYLIST: CHLOE DALEY

GAME CHANGER

# Roger Crystal

The doctor turned pharmaceutical executive is figuring out how to treat addiction on a mass scale. *By Darius Rafieyan*



**ROGER CRYSTAL WAS THE** on-call surgeon at University College Hospital in London on July 7, 2005, when a series of explosions in the Underground killed 56 people and injured more than 700. Terror victims streamed into his operating room. Even so, his toughest case that day, he says, was a heroin addict who'd contracted a flesh-eating infection from a dirty needle. "He was lying there with his liver and intestines exposed, and all he wanted to do was shoot up on heroin," Crystal says. "That's when I realised just how bad a disease addiction can be, how dysfunctional the circuitry of the brain can become."

He could provide care at the individual level, but the problem of addiction required a population-level solution. Crystal quit his medical career to pursue an MBA from London Business School, then did a stint at Goldman Sachs Group, worked on acquisitions and licensing deals at GE Healthcare, and consulted for companies that treat diabetics. When the opportunity arose to become chief executive officer of Lightlake Therapeutics in 2009, Crystal saw his opportunity.

Researchers at Lightlake—now called Opiant Pharmaceuticals Inc.—were developing a version of the drug naloxone, which blocks addiction pathways in the brain, that could be administered as a nasal spray. Naloxone had been used since the early 1970s to reverse heroin overdoses, but per U.S. regulations it could only be marketed for use intravenously, making it relatively hard to use—one study found it to be effective only 59 percent of the time when administered by a layperson.

The intranasal formulation is easy to administer and can be counted on to work every time. "It's as user-friendly as it gets," says Dr. Nora Volkow, head of the National Institute on Drug Abuse, which helps fund Opiant's research. "People don't realise, because it's not sexy—you're just changing the delivery system—but to be able to deliver the drug at concentrations equivalent to injection is a big, big deal." In 2015 the company received U.S. Food and Drug Administration approval for its naloxone product, Narcan, which is now available over the counter in most states. Crystal's next goal is a heroin vaccine: a one-time treatment that would trick the body into thinking heroin molecules are a disease, prompting the immune system to destroy the drug before it reaches the brain.

In the past, it's been difficult to secure funding for clinical trials of a drug that would most benefit people who tend to be incarcerated or uninsured and likely unable to afford expensive treatment. With the income from Narcan to bolster it, Crystal thinks Opiant can be a critical bridge between scientists and the world of retail medicine. "You have the most brilliant minds, who are restricted by being in a government or academic setting," he says. "Then you have our company: We're that transition zone out of clinical development."

b. 1976, Manchester, England

-

Is an amateur triathlete

-

Still owns the headlamp he used as an ENT surgeon

ILLUSTRATION BY SAM KERR


Jumeira
Rotana
Dubai

**Christmas Tree Lighting** - 7th December 2017, Jumeira Rotana Lobby
Featuring Colleagues´ Choir and appearance of Santa.

**Turkey Takeaway** - 1st to the 31st of December 2017
**AED 449** per turkey with all trimmings. **20% Off** on pre-orders between 15th and 30th November.

**Christmas Eve Dinner** - 24th December 2017, Olive Oil Restaurant
**AED 119** per person with non-alcoholic beverages and **AED 179** with alcoholic beverages.

**New Year´s Eve Dinner** - 31st December 2017, Pool deck
**AED 370** per person at the Pool Deck overlooking the iconic Burj Khalifa.

**Disco Inferno** - 31st December 2017
Go back to retro at the Boston Bar.

For more information, please call **+971 (0)4 345 5888**,
email **jumeira.hotel@rotana.com** or visit **rotanatimes.com**

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