DOUBLE ISSUE

NOVEMBER 27 / DECEMBER 4, 2017

TIME

THE 25 BEST INVENTIONS OF 2017

LIFE-CHANGING PHONES, DRONES, ICE CREAM, FARMS, CARS, TOYS, SHOES, BREAST PUMPS

& JIBO, THE PET ROBOT

+ HISTORY'S GREATEST GENIUS

BY WALTER ISAACSON, ANN PATCHETT, CHRISTOPHER NOLAN, RIHANNA & MORE

CHEVY. THE ONLY BRAND TO EARN J.D. POWER DEPENDABILITY AWARDS FOR CARS, TRUCKS AND SUVS. TWO YEARS IN A ROW.

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The Chevrolet Sonic, Chevrolet Tahoe, Chevrolet Silverado HD and Chevrolet Camaro received the highest numerical scores in their respective segments in the J.D. Power 2017 U.S. Vehicle Dependability Study, based on responses from 35,186 U.S. original owners of 2014 model-year vehicles after three years of ownership about problems experienced in the past 12 months, surveyed in October–December 2016. The Chevrolet Malibu, Chevrolet Equinox, Chevrolet Silverado HD and Chevrolet Camaro received the highest numerical scores in their respective segments in the J.D. Power 2016 U.S. Vehicle Dependability Study, based on responses from 33,560 U.S. original owners of 2013 model-year vehicles after three years of ownership about problems experienced in the past 12 months, surveyed in October–December 2015. Your experiences may vary. Visit jdpower.com.

FIND NEW ROADS℠

CHEVROLET

TIME
VOL. 190 NO. 22–23 | 2017

The Brief

News from the U.S. and around the world

The View

Ideas, opinion, innovations

The Features

Time Off

Holiday Movie Preview

A Rohingya family arrives on the Bangladeshi side of the Naf River, after fleeing Myanmar, on Sept. 26

Photograph by Kevin Frayer—Getty Images

ON THE COVER: *Photograph by Sebastian Mader for TIME*

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What you said about ...

FRANCE'S EMMANUEL MACRON When France's President granted a rare sit-down interview with a U.S. news outlet for Vivienne Walt's Nov. 20 cover story, it generated wall-to-wall French media coverage. An editorial in the newspaper *Libération* deemed the headline ("At Home in the World") particularly spot-on, as a reflection of the feeling that Macron seems at home on the global scene but is unable to make himself heard in his own country. Although radio network Europe 1 told its audience the story's framing wasn't flattering to Macron, one American reader said the insight into his hopes for the future helped "brighten" her outlook. "I admire [him]," wrote Ann Winn Johnson of Jonesborough, Tenn., "and wish for many of the same objectives in our USA."

> 'He is the only one to propose a vision. Europe badly needs leadership.'
>
> LAURENT DEPROST, Melbourne

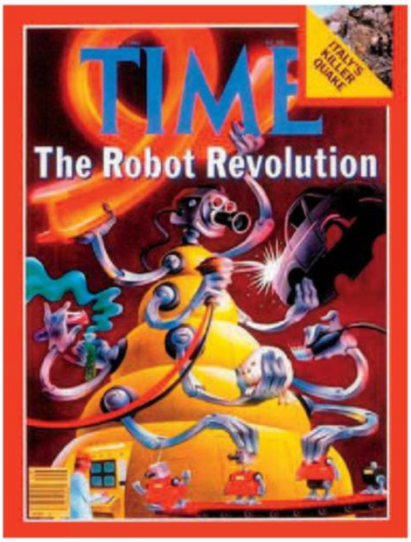
MUELLER'S MOST WANTED For Molly Ball's story about special counsel Robert Mueller's probe into alleged Russian meddling in the 2016 election, the Nov. 13 cover tempted readers by placing a blank box among the faces of the indicted men; Sanjuana Le of Emporia, Kans., sent in a collage using a past TIME cover to put President Trump's face in the open spot. Bev Wiley of Coulterville, Ill., said she saw a "double standard" in play in coverage of the investigation, arguing that Trump and his team face legal scrutiny for the same actions that Democrats are able to pass off as mere opposition research. But Donald R. Oas of Naples, N.Y., saw such scrutiny as necessary. "Donald Trump stated early on the whole election process was rigged," he wrote. "We are learning now how he knew."

> 'No matter where this investigation goes, we are reminded politics is a really nasty and dirty business.'
>
> RON PLATT, Overland Park, Kans.

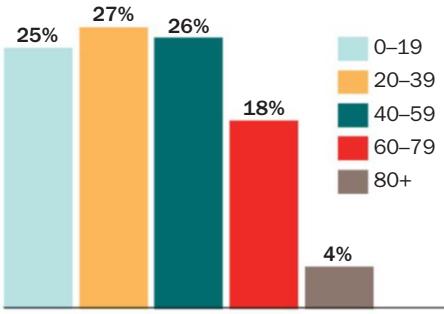
Back in TIME

Robot revolution
Dec. 8, 1980

This week's look at 2017's best inventions *(page 69)* highlights gadgets meant to improve lives—a goal as old as technology itself. But then what? That's what TIME asked in 1980 when the magazine examined how robots could alter the world. "This idea that man is destined for higher things than work—not necessarily a realistic idea or even a meritorious one—provides the green light at the end of the pier," the piece noted. Read the story at **time.com/vault**



HOW OLD ARE YOU NOW? With a new interactive from TIME Labs, you can enter your age and a U.S. city to see whether you're older or younger than most of the people who live there—and where you fit within the whole U.S. population, the age breakdown for which is shown below. Try it at **time.com/city-age**



SETTING THE RECORD STRAIGHT ▸ In the Nov. 13 issue, "The New Silk Road" misstated the Asian Infrastructure Investment Bank estimate for Asia's infrastructure needs until 2030. It is $1.7 trillion per year.

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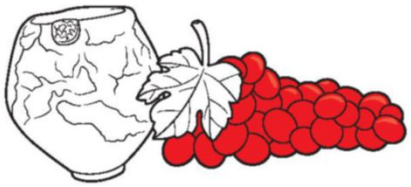
‘The cover of a magazine ... is an opportunity to show other dark, kinky-haired people, and particularly our children, that they are beautiful.’

LUPITA NYONG’O, actor, accusing women’s fashion magazine *Grazia U.K.* of editing out her ponytail for its November cover “to fit their notion of what beautiful hair looks like”; the magazine and photographer apologized

8,000

Age, in years, of wine residue in pottery fragments found at two archaeological sites in Georgia in the South Caucasus, which is the oldest chemically confirmed Eurasian grape wine in the world



$105,000

Value of two stolen **photographs that security video shows a woman mailing back to the Museum of Modern Art’s Queens location** days after they went missing, according to the NYPD

32 m.p.h.

New world record for the **fastest speed in an Iron Man–like body-controlled jet-engine-powered suit,** set by Richard Browning at Lagoona Park in Reading, U.K., for Guinness World Records Day

‘I will not accept and reject accusations that I have ever lied. That is a lie.’

JEFF SESSIONS, U.S. Attorney General, defending public statements that he didn’t talk to Russian officials during Donald Trump’s 2016 presidential campaign in House Judiciary Committee testimony

Lincoln
Abe Lincoln’s presidential papers were published online in full color

GOOD WEEK
BAD WEEK

Abe
Video captured Japan’s Prime Minister Shinzo Abe wiping out on a golf course

‘WHY WOULD KIM JONG UN INSULT ME BY CALLING ME “OLD,” WHEN I WOULD NEVER CALL HIM “SHORT AND FAT”?’

DONALD TRUMP, U.S. President, tweeting back at the North Korean dictator who called him an “old lunatic” after Trump called on him to give up his nuclear weapons in a speech in South Korea

‘I WAS SITTING WITH MY KIDS HAVING DINNER AND SUDDENLY THE BUILDING WAS JUST DANCING IN THE AIR.’

MAJIDA AMEER, who was in Baghdad when a 7.3-magnitude earthquake hit the Iraq-Iran border, killing 500 in 2017’s deadliest earthquake so far

‘No profit can be legitimate if it puts lives at risk.’

THE VATICAN, announcing that its duty-free shop and supermarket will no longer sell cigarettes

SOURCES: NEW YORK TIMES; REUTERS

ILLUSTRATIONS BY BROWN BIRD DESIGN FOR TIME

The Brief

'THINGS AREN'T GOING THERESA MAY'S WAY.' —PAGE 14

*Posters of Lebanon's leader Saad Hariri with the caption #*WE_ARE_ALL_SAAD *in Beirut on Nov. 10*

AFP/GETTY IMAGES

WORLD

The Saudi Crown Prince's plot to reshape the Middle East backfires

By Aryn Baker

EVER SINCE LEBANESE PRIME Minister Saad Hariri abruptly resigned during a visit to Saudi Arabia on Nov. 4, he has struggled to assure his people—and the world—that he was not coerced, that he is not being held in the capital Riyadh against his will and that he is not a mere pawn in Saudi Arabia's enduring quest to isolate archrival Iran. Few believe him.

That a Lebanese politician should be targeted by a foreign entity isn't so unusual. After all, Lebanon has been a proxy battleground for Middle Eastern machinations for most of its existence. The greater question is why, at a particularly tumultuous time in regional relations—wars in Syria and Yemen, ISIS still a presence, an activist Israel, a resurgent Iran—Saudi Arabia would choose to disturb what had been a rare moment of calm in Lebanese politics.

The answer can be found in the outsize ambitions of Saudi Arabia's newly ascendant Crown Prince Mohammed bin Salman. As the 32-year-old prepares to take power from his ailing 81-year-old father, he has embarked on a series of ill-fated foreign ventures, including a costly and bloody intervention in Yemen's civil war and a diplomatic freeze on the small but wealthy Gulf nation of Qatar, which he accuses of supporting Iran. Qatar shrugged and responded by deepening ties with Tehran. The Yemeni war has become a humanitarian catastrophe, one made even worse when, after intercepting a missile attack on Nov. 4, the Saudis shut the country's air and sea ports, blocking aid to some 7 million civilians at risk of starvation.

PHOTOGRAPH BY JOSEPH EID

But the intervention in Lebanon, a country comprising competing religious sects that shares a tense border with Israel, could prove to be the most ill-fated of all. In 2016, with Saudi encouragement, Hariri's Future Movement party formed a power-sharing government with militant group Hizballah, in order to end a political stalemate. But Riyadh now seems to be souring on the deal, accusing Hizballah and Iran of supporting anti-Saudi rebels in Yemen. On Nov. 6, Saudi Foreign Minister Adel al-Jubeir declared that his government would consider Lebanon a hostile state as long as the militant group was in power. The Saudis may have been hoping to provoke conflict between the group and its opponents on Lebanese soil, thus striking a blow against Iran's regional dominance.

If that was the plan, it has backfired badly. The first sign that the Lebanese were unwilling to give ground came on Nov. 10, when Hariri's top political rival, Hizballah leader Hassan Nasrallah, jumped to his defense and called for his rapid return to Lebanon. Billboards splashed with Hariri's face sprung up in Beirut's central Martyr's Square. "Waiting for YOU," they declared. Another political rival, Lebanese President Michel Aoun, told foreign ambassadors that Hariri had been "kidnapped."

In trying to set Lebanon's volatile sects against each other, Saudi Arabia seems to have achieved the near impossible: bringing them together. "It all snowballed in a way that the Saudis didn't expect," says Mohamad Bazzi, a Lebanese-American journalism professor at New York University, who is writing a book on Iran-Saudi proxy wars. "It shows that the leadership hadn't done its homework."

Salman is also unlikely to have had much support in this gambit from the U.S., even though he enjoys a close relationship with the Trump Administration and shares a personal bond with Trump's son-in-law Jared Kushner. No one in Washington wants to see Lebanon back at the center of another proxy war, officials say; after all, the U.S. has given more than $1.4 billion in aid to the Lebanese military over the past decade in hopes of stabilizing the country.

That hardly means the affair will end with a newly unified Lebanon. The opposite is as likely. The country's recent history is a tangled mess of competing alliances that has sucked regional powers like Syria, Iran and Israel into devastating wars, most recently in 1982 and 2006, often over seemingly inconsequential provocations. The youthful crown prince may have thought that by tugging a few threads of the Lebanese political knot, he could remake the region in Saudi Arabia's favor. He might consider that knots make good nooses too.

—With reporting by REBECCA COLLARD/BEIRUT *and* PHILIP ELLIOTT/WASHINGTON

TICKER

Trump Jr. messaged with WikiLeaks

Donald Trump Jr. corresponded with WikiLeaks via private messages on Twitter during and after the 2016 election, it emerged on Nov. 13. After the news broke, Trump Jr. shared the exchanges, showing that he had responded three times to multiple queries and pleas to publicize leaks.

Australia backs marriage equality

Australia voted in favor of legalizing same-sex marriage in a historic yet nonbinding postal survey. Prime Minister Malcolm Turnbull called on lawmakers to heed the "overwhelming" result when a bill creating marriage equality is considered in parliament this year.

UCLA players arrested in China

Three UCLA basketball players returned to the U.S. after they were arrested in China for shoplifting. President Trump confirmed that he had asked China's leader Xi Jinping to help resolve the case.

Minimum alcohol price for Scotland

Scotland is set to become the first country to set a minimum price for alcohol. Starting in 2018, a ¢66-per-unit minimum will be imposed to help fight alcohol misuse, despite opposition from the Scotch Whisky Association.

WORLD

The third gender revolution

Germany's top court ruled on Nov. 8 that the country must either create a third gender category or cut gender from public documents by 2019, the latest milestone in a global movement to recognize intersex individuals.

BY THE NUMBERS

The U.N. estimates that up to 1.7% of the world's population is intersex, or born without typical male or female sex characteristics, which involve hormonal, genetic or anatomical differences.

DECADE OF CHANGE

Nepal is believed to be among the first to legally recognize a third gender in 2007. It is one of at least eight countries, including Malta and Australia, that have agreed to recognize more than two genders on passports and ID cards.

UP NEXT

Scotland has now proposed creating a third gender, ahead of the rest of the U.K. Thailand's constitution recognizes a third gender, but it is not yet an option on government documents.

IN THE U.S.

California recently became the first state to offer a third gender choice on official state ID. Oregon and Washington, D.C., offer nonbinary residents an "X" on official documents.

DIGIT

50 ft. 1 in.

New record for highest basketball shot, by the Harlem Globetrotters' Thunder Law into a hoop atop a crane in Salt Lake City for Guinness World Records Day

DIGIT: ETHAN MILLER—GETTY IMAGES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SHORN People search through the debris of their homes on Nov. 13 in the city of Sarpol-e Zahab in Kermanshah province, Iran, a day after a powerful 7.3-magnitude earthquake hit the border area between Iran and Iraq. At least 530 people were killed and nearly 8,000 injured in the deadliest quake of the year worldwide. Iran sits on numerous major fault lines and is prone to near daily tremors. *Photograph by Abedin Taherkenareh—EPA-EFE/Shutterstock*

WORLD

The beginning of the end for Zimbabwe's dictator

ZIMBABWEAN PRESIDENT ROBERT MUGABE, 93, was placed under house arrest on Nov. 15 after the military seized control of the country overnight. The move brings closer to an end a power struggle that has gripped the country over who would succeed the world's oldest head of state after his 37 years in power.

TURF WAR The ruling ZANU-PF party has been locked in a battle over who should succeed Mugabe. On one side were supporters of his wife Grace. On the other were war veterans who freed the country from white-minority rule in the 1970s. Mugabe's undoing began on Nov. 6, when he sacked Vice President Emmerson Mnangagwa, who has close ties to the military, in order to clear his wife's path to the presidency. But the purge proved too much for the military, which stepped in to push Grace out of the picture.

TYRANT'S RULE Zimbabwe may soon be rid of Mugabe, after decades of repression. Democratically elected in 1980, the former freedom fighter slowly tightened his grip over his people with the military's backing. Opposition groups were targeted during each election, and in 2000 he let war veterans seize thousands of white-owned farms, leading to the collapse of Zimbabwe's economy and enriching its corrupt elite. Since then, inflation has periodically spiked chaotically, amid botched attempts at currency controls. More than 70% of Zimbabweans live in poverty.

BLEAK FUTURE If Mugabe does end up being removed, there may not be the ray of light Zimbabwe's beleaguered people are hoping for. The military figures and war veterans behind the "coup" are the very architects of repression who propped up Mugabe's rule.

—TARA JOHN

DATA

THE COST OF CITY LIVING

Vancouver is the costliest city in which to buy a home in North America, according to a study by Point2Homes, which ranks cites by dividing median home price by the median annual family income—effectively showing how many years it would take to buy a home with 100% of a family's income. Here's how cities ranked:

17.3 Vancouver

13.8 San Francisco

10.0 Boston

8.3 San Diego

6.1 Mexico City

5.9 Chicago

4.2 Montreal

1.8 Detroit

SIPHIWE SIBEKO—REUTERS

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TICKER

New charges over Penn State hazing

Prosecutors filed new charges, including involuntary manslaughter and furnishing alcohol to minors, against an additional dozen members of the Penn State fraternity where 19-year-old pledge Tim Piazza was fatally injured in a hazing incident on Feb. 2.

60,000 join Polish far-right march

About 60,000 people marched in a demonstration organized by far-right groups in Warsaw as residents celebrated their country's Independence Day. Some participants chanted "Pure Poland, white Poland" and "Refugees, get out!"

Americas' oldest mural destroyed

A fire reportedly caused by farmers burning sugar-cane fields destroyed what is believed to be the oldest mural in the Americas. The mural, discovered in 2007 in Peru's Ventarrón archaeological complex, dated back to 2,000 years B.C.

Barbie gets a hijab

Barbie maker Mattel unveiled its first doll with a hijab, in honor of Ibtihaj Muhammad, the first U.S. Olympic athlete to compete wearing the Muslim head covering. The doll is set for public release in the fall of 2018.

THE RISK REPORT

Theresa May's Britain is headed for a Brexit train wreck

By Ian Bremmer

THINGS AREN'T GOING THERESA MAY'S WAY. Britain's Prime Minister was already struggling to unite a Cabinet divided over how best to pull the country out of the E.U. Now she's contending with a sexual-harassment scandal that has implicated several of her Conservative lawmakers and forced Defense Secretary Michael Fallon to resign. Some 40 members of Parliament from her party have signed a letter of no confidence in her leadership. Events are spinning beyond her control.

All of this has fed speculation that Brexit might still be reversed. Yet there's no compelling evidence that those who voted for divorce have softened their stance on reclaiming control of British law and borders from bureaucrats in Brussels—or their belief that the E.U. has a bleak future. Britons can see that European leaders want member states to give up yet more sovereignty on budgets and borders. They see countries like Italy and Greece still coping with refugees, and eastern E.U. members like Poland and Hungary becoming less democratic and more fractious.

A U-turn isn't impossible, especially if the Conservatives lose their tenuous hold on government. But reversal remains highly unlikely, because the U.K.'s elected leaders have no compelling case to ignore the popular will. It's also far from clear that a second referendum would produce a different result. Even if the opposition Labour Party comes to power, a Prime Minister Jeremy Corbyn would think twice before making a case for a Brexit backtrack, even if he wanted to. Just 100 of the 262 constituencies that Labour won in the June election voted to remain in the E.U.

May's task of bringing the U.K. out of Europe won't get easier. Talks with negotiators in Brussels over the terms of departure have stalled over the "divorce bill" Britain must pay the E.U. to leave. Boris Johnson and Michael Gove, May's former rivals for leadership, have been accused of secretly pressuring the Prime Minister to push for a harder Brexit and to prepare for the possibility of leaving the E.U. without a deal.

> E.U. advocates like Macron and Merkel are more than happy to see Britain agonize over its post-E.U. future

Across the Channel, European leaders aren't trying to woo Britain back. The strongest E.U. advocates, particularly French President Emmanuel Macron and German Chancellor Angela Merkel, are more than happy to see Britain agonize over its post-E.U. future, in part to make clear to Europe's other Euroskeptics just how painful divorce can be. Nor will they miss Britain's consistent obstruction on issues like a common European defense policy, euro integration and fiscal union. And they're happy to pick up the banking business that Britain will lose as it attempts to go its own way.

Elections have consequences, and struggles over Brexit have only just begun. □

SCIENCE

When extinction isn't forever

Scientists are hoping to resurrect a 50,000-year-old cave lion found preserved in the Siberian permafrost. Here, other extinct creatures coming back from the dead. —*Kate Samuelson*

AUROCHS
European scientists are attempting to revive this ancient breed of "supercow," which died out in Poland in 1627, by breeding various cattle types and their offspring in an ambitious project launched in 2008.

QUAGGA
Using a combination of DNA extraction and selective breeding, a South African project is creating a herd of foals similar to those of the quagga, an ancient relative of the zebra that went extinct in 1883.

GIANT TORTOISE
Researchers hope to resurrect a species of giant tortoise from the Galápagos Islands that was wiped out in the mid–19th century by breeding tortoises with a similar genetic makeup.

Milestones

DIED
Boston Red Sox great **Bobby Doerr,** nicknamed the Silent Captain, at 99. Doerr had been the oldest living former Major League Baseball player.

› Russian daredevil **Valery Rozov,** the first person to skydive into a volcano crater, in a BASE-jumping incident in the Himalayas, at 52.

› Actor **John Hillerman,** best known for playing Higgins, the foil to Tom Selleck's character in the '80s crime series *Magnum, P.I.,* at 84.

FAILED
Italy's soccer team, to qualify for the World Cup finals for the first time since 1958. Italy has won the tournament four times, most recently in 2006.

NOMINATED
Former drug company executive **Alex Azar,** to lead the Department of Health and Human Services, by President Donald Trump.

TESTED
Gene editing in a human patient for the first time, in an attempt to change a man's DNA to cure him of a disease called Hunter syndrome, by scientists in California.

Smith in 1992, at the height of her fame; Donald and Ivana Trump's marriage officially ended that year

DIED

Liz Smith
Gossip's amiable ringleader

IN THE 1990S, LOS ANGELES HAD O.J., Washington had the Clintons, and New York City had the Trumps. Liz Smith, the Manhattan gossip columnist who died on Nov. 12 at 94, reported on all three. But she owned the divorce of Donald and Ivana. Her flair for conveying the skyscraping personalities in play elevated the story; it also epitomized an approach to gossip she had perfected.

Smith's namesake column ran variously in the New York *Daily News, Newsday* and the New York *Post* from 1976 to 2009. There, she combined insider access with an openhearted interest in her subjects that seemed to have followed her from her hometown of Fort Worth. She couldn't be spun, but she was willing to be wooed. In today's climate of mutual antipathy between star and media, Smith's approach would be impossible. In its long moment, though, Smith's column served as a perceptive document of the rise of modern celebrity culture. —DANIEL D'ADDARIO

THE CEO BRIEF

China's Singles Day is a shopping extravaganza heard around the world

By Alan Murray

SATURDAY WAS SINGLES DAY. IF YOU STILL don't know what Singles Day is, the time has come to learn. In short, it's a 24-hour lonely-hearts celebration turned shopping extravaganza, hosted by Alibaba and its charismatic CEO, Jack Ma, that has become the world's biggest shopping event, reaching a mind-blowing $25 billion in sales this year and dwarfing Black Friday and Cyber Monday combined.

As the Nov. 11 event ended in China, a live sales ticker showed 168 billion yuan in total sales, up 39% from last year, and more than the annual GDP of Iceland. And it's not just an Alibaba thing. JD.com, one of its biggest e-commerce competitors, said it generated $19 billion from a rival event in the days leading up to Singles Day. Some analysts question the way Alibaba calculates sales volume, but any way you count it, it's a big number.

Ma launched the event with a gala in Shanghai, and his star-studded stage included not just Chinese celebrities but also the likes of Nicole Kidman and Pharrell Williams. Over 140,000 brands offered special discounts, including P&G, Estée Lauder, Starbucks, Bose, Nike and Gap.

The event demonstrates the growing power of Alibaba's mobile payment system, Alipay, which is far more sophisticated than anything similar in the West and is the leading counter to the notion that China lags the U.S. in innovation. Indeed, Singles Day makes clear that Chinese consumers are now setting the pace for global commerce. For consumer-product companies, you can't win the world if you aren't winning in China.

I'll be interviewing Ma in early December at the Fortune Global Forum in Guangzhou, our premier CEO-level event for global business. Among other CEO attendees: Alex Gorsky of J&J, Pony Ma of Tencent, Denise Morrison of Campbell Soup, Frans van Houten of Royal Philips, Terry Gou of Foxconn, Carlos Brito of AB InBev, Stuart Gulliver of HSBC, Henry Kravis of KKR, Mark Hoplamazian of Hyatt and Chuck Robbins of Cisco. It promises to be an interesting gathering.

Murray is Time Inc.'s chief content officer and the president of Fortune

AUROCHS: GERARD LACZ—REX/SHUTTERSTOCK; SMITH: RON GALELLA, LTD./WIREIMAGE/GETTY IMAGES

LightBox

A place of worship transformed

First Baptist Church of Sutherland Springs, Texas, reopened to the public on Nov. 12 as a memorial to those who were shot dead a week earlier. The inside of the South Texas church was painted white with 26 white chairs—each with a single rose and the name of a victim, including one unborn child—placed at the location where they were thought to have been worshipping. A decision on whether to demolish the church has not been finalized.

Photograph by Rick Wilking—Reuters

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UNITED STATES MINT

The View

'WE EVOLVED TO DEPEND ON SOCIAL CONNECTIONS.' —PAGE 24

NRA CEO Wayne LaPierre speaks at the Conservative Political Action Conference in Oxon Hill, Md., on Feb. 24

REDUX

POLITICS

At the NRA's TV network, guns are a weapon in the culture wars

By Charlotte Alter

EIGHT CONCERNED AMERICANS SIT around a coffee table and talk about entertainment. One says he stopped paying for cable when everything started "turning left." Another is upset that his young daughter watches reality shows about teen pregnancy. "There's a war for our culture," says Tim Clemente, a former counter-terrorism expert turned TV producer. "And it's led by Hollywood."

No one mentions guns, but they don't have to. The coffee klatch was sponsored by Sig Sauer firearms, and the discussion took place in front of the National Rifle Association logo. This is a scene from *Defending Our America,* Season 2, Episode 5, a production of NRATV. Launched in late 2016, the online television platform of the powerful gun-rights lobby comprises two live news channels and 34 taped shows, all sponsored by gunmakers.

The NRA's primary tool of influence remains campaign spending: it shelled out more than $54 million to help lift President Donald Trump and pro-gun-rights lawmakers during the 2016 election cycle, according to the Center for Responsive Politics. But it has long sought to spread its message through media as well. Its magazine, the *American Rifleman,* dates to 1923, and in 2004 the group started its own news company focused mostly on radio broadcasts. Now, with NRATV, it is trying to use viral video segments and shareable online content to sway ordinary Americans.

The goal appears to be to encourage a sense of shared identity around gun

PHOTOGRAPH BY MARK PETERSON FOR TIME

ownership. (The NRA declined multiple requests to comment.) As NRATV's programming suggests, that identity has become about more than just personal protection, hunting or marksmanship. In an increasingly polarized America, a firearm is a symbol of its owner's cultural values. "They don't always talk about gun issues," says Robert Spitzer, an NRA member and professor at SUNY Cortland who has written five books about gun policy. "It's about beliefs and how people view the world."

If NRATV is devoted to defining the gun owner's identity, its programming does so in some unexpected ways. Sure, its segments are anti–Black Lives Matter, pro-cop, antimedia and pro-Trump. And, yes, they've picked fights with the Women's March and the New York *Times*. But NRATV also features more welcoming content, such as stories of teenage girls gaining confidence through shooting and a middle-aged couple whose marriage is strengthened by a shared passion for hunting. In one episode, NRATV's Colion Noir explores which gun would work best against the zombies in the AMC series *The Walking Dead*.

NRATV also makes an effort to bring more women, minorities and LGBTQ people into the fold, often borrowing the language of the left. After the Pulse nightclub shooting in Orlando, NRATV urged LGBTQ Americans to arm themselves against hate crimes. Commentator Dana Loesch hailed firearms training as a form of feminism, suggesting that armed self-defense is "what real empowerment looks like." When Black Lives Matter criticized the NRA for failing to defend the gun rights of Philando Castile, a black man killed by a Minnesota police officer during a 2016 traffic stop, Noir, who is African American, argued that tighter gun laws would lead cops to "lock up even more black men" and perpetuate mass incarceration. "The NRA isn't the one telling me I shouldn't own guns because I'm black—white liberal politicians are," says Noir in a July video. "That, my friends, is white supremacy."

The overriding message is that the NRA identity is under attack. There's a tone of simmering indignation and a sense of persecution that curdles into hostility toward government, media and other cultural institutions. "Their hateful defiance of [Trump's] legitimacy is an insult to each of us," Loesch says in one video. "But the ultimate insult is that they think we're so stupid that we'll let them get away with it."

The same attention to populist resentments helped lift the President into office, a powerful sense that it's us against them. "They're mimicking the messaging content of Trump support, of Breitbart and of Steve Bannon," says Spitzer. "They're adapting themselves to the culture-war text of the moment." ◻

DIGITS

On Nov. 14, Credit Suisse issued its 2017 Global Wealth report, which analyzes data on prosperity and poverty across the world in this millennium. Here are some of its findings.

170%

Percentage increase in the number of millionaires in the world since 2000

5

Multiple by which people worth $50 million or more (known as "ultra-high net worth individuals") increased in the same time period

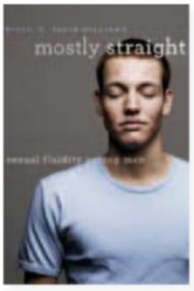
50.1%

Amount of global household wealth currently owned by the world's richest 1%

CONVERSATION STARTER

The sexual identity we don't talk about

WE HEAR A LOT ABOUT THE BIG THREE sexualities: straight, bisexual and gay. But there is a new kid on the block: the mostly straight male. To the uninitiated, *mostly straight* might seem paradoxical. Yet the evidence suggests that more young men identify or describe themselves that way than as either bisexual or gay combined.

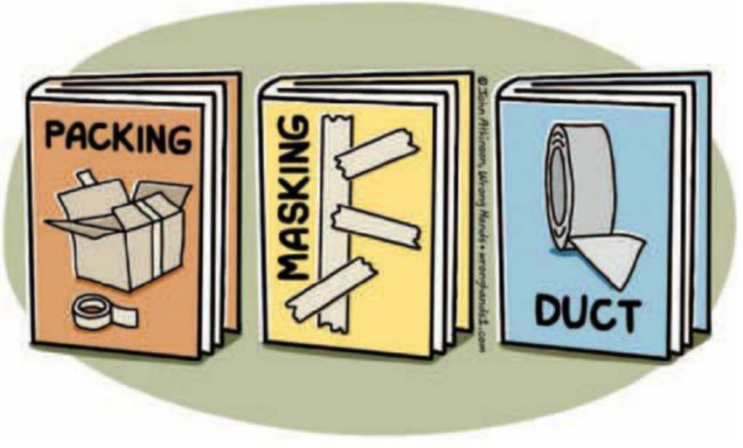


A 2011–2013 U.S. government poll found that among 18-to-24-year-old men, 6% marked their sexual attractions as "mostly opposite sex." That's nearly 1 million young men. Yet when these men were forced to choose between straight, bisexual or gay, about three-quarters marked straight, because for them *bisexual* is too gay to accurately describe their identity. These young men, 40 of whom I spoke to for my new book, *Mostly Straight,* were left with no place to truthfully register their sexuality, thus forcing them to be less honest than another identity would allow them to be.

—RITCH C. SAVIN-WILLIAMS

CHARTOON

Books on tape



JOHN ATKINSON, WRONG HANDS

For more on these stories, visit **time.com/ideas**

President Trump walks into the South Portico of the White House on Oct. 2

ANDREW HARRER—BLOOMBERG/GETTY IMAGES

BIG QUESTION

Should objectors serve the Trump Administration?

By James Stavridis

AFTER 37 YEARS OF PUBLIC SERVICE IN the Navy, I am an unabashed advocate for serving our nation, which ought to be the first responsibility of any citizen. But lately I am hearing from my students a troubling question: If I am in violent disagreement with the policies and character of President Trump, can I serve in his Administration? Does it cross a moral threshold?

I tell my students essentially three things: First, the country is more important than any one person, even a President, and thus you should continue to think of ways to serve the country in the broadest sense, including within the Administration. Second, I would counsel against taking a job that requires you to work directly for the President. None of my students are going to be offered Cabinet jobs anytime soon, but here I mean positions in the immediate orbit of the President, e.g., in the White House itself. It saddens me to say it, but the closer you are to this President organizationally, the higher the risk you carry to your reputation and integrity. And third, if you collide with a policy over which you fundamentally disagree for moral or ethical reasons, you should resign.

So I end up telling them to take that job at USAID or the CIA or the Office of the Secretary of Defense or the Department of Homeland Security. Work hard to make a difference. Often, big doors swing on small hinges—never underestimate the ability of a good, smart, articulate, young staff officer to shift a policy debate. Sadly, too many of my students are rejecting my advice and refusing to step up to public-service jobs. Of note, the State Department—which has recently lost 60% of career ambassadors—has seen a shocking 50% drop in the number of applicants to the Foreign Service. I hope that can be reversed. Secretary Rex Tillerson in particular must address these challenges in his department.

I close my advice, though, with a small tale from Greek mythology: Daedalus, a captive inventor, constructed artificial wings so he and his son could flee the island of Crete. His son Icarus loved the wings so much that he soared too close to the sun, despite his father's warning. The wax holding them together melted, and Icarus plunged to his death in the sea. The cautionary tale for my students is apt: don't fly too close to the sun of this President because the wax holding your wings together may melt all too quickly.

Stavridis is dean of the Fletcher School of Law and Diplomacy at Tufts University and a retired Supreme Allied Commander at NATO. He was interviewed for a Cabinet post by Hillary Clinton and Donald Trump

RETAIL INTEL

HOW SALES CAN MAKE YOU OVERSPEND

By Jeff Kreisler

When it comes to making financial decisions and assessing value, what should matter is the real pleasure we receive from a purchase—not a host of other things that really don't affect value: how we budget our money, the ease of payment, the list price, whether or not we already own something, how fair the price seems to be, the language describing it, our expectations about a purchase—and definitely not sales prices or "savings."

When we see a sale price, we shouldn't consider what the price used to be or how much we're saving. Rather, we should consider what we're actually going to spend. Buying a $60 shirt marked down from $100 isn't saving $40; it's spending $60.

We should also try not to think in percentages. The money in our pocket exists in absolutes. Whether it's 10% of a $1,000 sofa or 1% of a $100,000 renovation, $100 is still $100. It still buys the same 100 lottery tickets. (Also: don't buy lottery tickets.)

Kreisler is co-author with Dan Ariely of Dollars and Sense: How We Misthink Money and How to Spend Smarter

FAMILY CONNECTION

Americans of all ages are coming together in 'intentional communities'

By Jeffrey Kluger

THERE'S NOT A LOT TO DO IN SYRACUSE, N.Y., WHEN YOU'RE living alone and a storm dumps three feet of snow on the city. A dinner with friends would be nice; so would a yoga class or a shared movie. And when that's done, it would also be nice to have a bit of that wintertime solitude watching the snow fall from the privacy of your own home.

At one place in Syracuse, all of that happens on those long snowy nights. Commonspace is a cohousing community on the fourth and fifth floors of a restored 19th century office building. The community is made up of 25 mini apartments that are fully equipped with their own kitchenettes and baths and open into a larger shared chef's kitchen, a library nook, a coffee lounge and a media room. The residents live together—sort of—in private apartments that are, once they step outside their doors, no longer private. They're part of a growing trend in an increasingly lonely country: "intentional communities," or clusters of residences made up of a few dozen apartments or homes built around central squares or common spaces with the goal of keeping people connected.

> 'We evolved to depend on social connections ... if we are feeling disconnected, that places us in a physiologic stress state.'
>
> **DR. VIVEK MURTHY**, a former U.S. Surgeon General

Humans may not always get along, but the fact is, we can't get enough of one another. There are 7.6 billion of us in the world, but we inhabit only about 10% of the planet's land, and roughly 50% of us live on just 1% of that land.

"We evolved to depend on social connections," says Dr. Vivek Murthy, a former U.S. Surgeon General, "so much so that if we are feeling disconnected, that places us in a physiologic stress state." According to Murthy, that state is as dangerous to our health as smoking 15 cigarettes a day, increasing the risk of cardiovascular disease, cancer and more.

It's hard to come by a firm count of how many intentional communities exist in the U.S. Only about 160 of them have been built from the ground up, but the Fellowship for Intentional Community now lists 1,539 groups that have used existing homes to establish cohousing arrangements.

There are communities like Commonspace in many major cities. There is Milagro in Tucson, Ariz., 28 homes built around a central green with a shared community center and other facilities. There is Village Hearth Cohousing, a similar setup in Durham, N.C., intended for the LGBTQ community.

The Commonspace model is the simplest. "We set everything up with a town-square feel so that when you come out of your door there's not a long, dark hallway like in most apartment buildings," says Troy Evans, a Commonspace co-founder.

Residents of Commonspace in Syracuse, N.Y., often make dinner together

50%

Percentage increase in risk of early death among the lonely, compared with the non-lonely

42.6 million

Number of Americans estimated to be suffering from chronic loneliness

SOURCES: JULIANNE HOLT-LUNSTAD, PROFESSOR AT BRIGHAM YOUNG UNIVERSITY; AARP

Nearly all of the people who call Commonspace home are millennials, and they tend to be transitory, with the average length of tenancy just eight months. Things are different at communities like Milagro in Tucson. There, the buy-in is typically for life. The investment in house and land means an equal investment in the community.

"For families with very young children, we do baby-care trades," says Brian Stark, a married father of two who has lived in Milagro since 2003. "And having a supportive community to help as you grow older is also a wonderful alternative to assisted-care living."

The physical benefits of human connections are well established—provided they're real. Murthy worries about the number of people whose social lives are reduced to social media, which can be isolating and even dangerous. In a recent meta-analysis, Julianne Holt-Lunstad, a professor of psychology and neuroscience at Brigham Young University, found that adults who are lonely have a 50% greater risk of dying within a given period than people who are more connected. The cause is stress triggered by loneliness, which weakens the immune system and other bodily functions.

Certainly, not everyone who is lonely dies from the condition—but they hardly thrive either. Intentional communities, in their quiet way, may heal both the body and the mind with the simple balm of other people. □

BRETT CARLSEN FOR TIME

Ford + TIME

MAKE THIS THANKSGIVING MATTER

This holiday means far more than just a good meal. Spending time with family can produce emotional and psychological benefits that last long after dessert. Ford believes in going further to bring people together, so TIME and Ford teamed up to ask experts how to truly connect with the people we care about this holiday season. No matter how far apart we are during the year—geographically, politically, emotionally—Thanksgiving offers a rare chance to come together. Let's savor it.

You Can Learn From Your Family

"Avoiding conflict is a strategy that many people have used for generations, and it's not working all that well.

I think we avoid these conversations because we're afraid we're going to get into an argument. But you can have tough conversations without arguing. Ask a lot of questions. Change your intention. Instead of trying to change someone's mind, decide that you're going to learn from them. There is plenty of research proving that diversity of opinion and perspective is very good for your brain."

CELESTE HEADLEE,
author of
We Need To Talk – How to Have Conversations That Matter

Family Is Cause for Celebration

JENNY ROSENSTRACH,
author of
How to Celebrate Everything

"GET EVERYONE INVOLVED SO THANKSGIVING FEELS MEANINGFUL. MY FAMILY MAKES SURE AS MANY PEOPLE AS POSSIBLE ARE PART OF MAKING THE MEAL.

Have relatives tell stories at the table to remind kids about the history of the family, especially of hardships and triumphs, which teaches kids about resilience. Then someone needs to pull back and give a toast. Someone has to give words to it. Otherwise, all you have left to show for the meal are the leftovers."

You Can Share in Big Family Conversations

"THE THANKSGIVING TABLE CAN PROVIDE AN EXCELLENT OPPORTUNITY TO HAVE IMPORTANT CONVERSATIONS ON TOPICS THAT REQUIRE ALL FAMILY MEMBERS' INPUT.

DEBORAH CARR,
Professor of Sociology at Boston University and author of
Worried Sick

For instance, families often need to make decisions together about their aging parents' preferences for end-of-life medical care. More generally, family and friends should take Thanksgiving as an opportunity to recognize and practice gratitude. Bringing back old traditions from childhood, like saying what you're grateful for, or thanking family and friends for the specific ways they've enhanced our lives, can be good for emotional well-being."

FOOD

Top chefs serve up Thanksgiving dos and don'ts

Cooking a Thanksgiving dinner takes a lot of work, whether you're a professional chef or a first-time host. There's the risk of overcooking (or undercooking) the turkey, the potential disasters of lumpy gravy and goopy cranberry sauce—not to mention the difficulty of wrangling the dietary restrictions and varied tastes of your guests. To get a delicious dinner on the table with minimal stress, let the culinary pros step in. Here are their tips on how to make Thanksgiving easier this year.

By Mahita Gajanan

INA GARTEN

Host of Food Network's **Barefoot Contessa**

DO: Cook your stuffing separately from the turkey to avoid overcooking the bird.

DON'T: Deep-fry your turkey. "Nobody wants a trip to the hospital. It's dangerous. You're dealing with a huge cauldron of hot fat, and you're lowering this turkey into it. Just put it in the oven."

BOBBY FLAY

Food Network host, chef, restaurateur

DO: Incorporate current events into your dinner. Along with turkey, Flay will prepare a Puerto Rican–style pork roast to start a conversation about Hurricane Maria's aftermath.

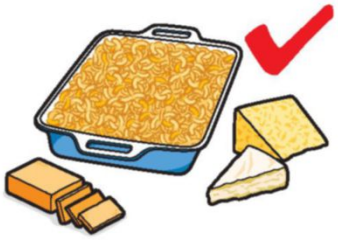
DON'T: Go with canned cranberry sauce, if you can help it. Flay has to buy it for a cousin who loves it, but he leaves the sauce in the shape of a can "so everybody knows" where it came from.

APRIL BLOOMFIELD

Chef at The Spotted Pig and The Breslin in New York City

DO: Make side dishes in advance to avoid last-minute scrambling. "Prep what you can before the day, so that you can spend time with family."

DON'T: Drench sweet potatoes with marshmallows. "It's adding sweet on top of sweet. I prefer the natural sweetness of the sweet potatoes with a touch of acidity to balance it out."

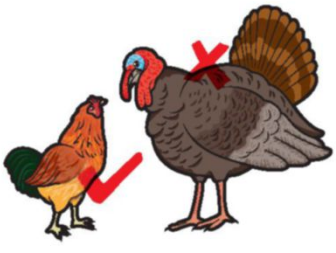


MASHAMA BAILEY

Chef at The Grey in Savannah, Ga.

DO: Remember Thanksgiving is the perfect holiday for macaroni and cheese. "I don't really indulge in that dish often. But somebody has to make it."

DON'T: Give up on Thanksgiving traditions, like watching football with family—the people you love won't be around forever. "I don't get to break bread with my family and friends often. Not to be corny, but just be in the room in the moment."



MICHAEL SOLOMONOV

Chef at Zahav in Philadelphia

DO: Consider replacing the turkey with other types of fowl, like capons—castrated roosters known for their flavorful, juicy meat. "It's kind of like a super-chicken."

DON'T: Try to heat up all the food at once—you risk overcooking some dishes, and your stove won't have enough room. "Be O.K. with things being a little room temperature."

ALEX GUARNASCHELLI

Chef at Butter in New York City, recurring judge on Food Network's **Chopped**

DO: Offer vegan options, like cauliflower steak marinated in coconut milk, so every guest feels included. "You'll find that the meat-eating crowd digs in as well."

DON'T: Set out to make too many dishes if your kitchen can't handle it. "Make a menu, and then cross off half of it and make that."

ILLUSTRATIONS BY BROWN BIRD DESIGN FOR TIME


"A magical Broadway musical with
BRAINS, HEART
and COURAGE."
Time Magazine
WICKED
WickedtheMusical.com
On Broadway and on Tour across America

Olympic gymnast Aly Raisman opens up about sexual abuse

By Alice Park/Needham, Mass.

ALY RAISMAN SAYS THE KNOCK CAME AT 8 P.M. THE FUTURE Olympic gold medalist was competing at the world championships in Rotterdam, the Netherlands, in her first year at the senior level, the group from which national teams are selected. She was thousands of miles from home, nervous about the competition and without her family. She opened the door and saw Larry Nassar, the USA Gymnastics team doctor. "I thought you could use a massage," she says he told her. She was 16.

It wasn't the first time Nassar had appeared at her door at night, offering a massage under the guise of therapy. And it wouldn't be the last, as Raisman disclosed in an interview with TIME and in her new book, *Fierce*.

It first happened several months earlier, when she was competing in Melbourne. At that meet, an official with USA Gymnastics, the sport's governing body, saw Raisman wincing through practice and suggested that she see Nassar for her injuries. She was told he was a great doctor, and she should consider herself lucky that he would work with her. So when Nassar came to her room in Rotterdam, she let him in to "work" on her, the term that USA Gymnastics used for Nassar's treatments.

> 'I didn't really know it was happening ... I would never have imagined that a doctor would abuse me or manipulate me so badly.'
>
> ALY RAISMAN

Those treatments, it turns out, weren't anything of the sort. According to Raisman and other gymnasts who have described the encounters, Nassar's methods consisted primarily of invasive massage, touching the girls around their pelvic areas and vagina. The athletes were sent to Nassar for all types of pain, and he often suggested massage as the treatment. He rarely used gloves when working with the girls, instead touching them with his bare hands and penetrating their vaginas with his fingers, according to their accounts.

Raisman is the latest high-profile gymnast to accuse Nassar of sexual abuse. In October, McKayla Maroney, her teammate on the gold-medal-winning squad at the 2012 London Olympics, said Nassar abused her for years, beginning when she was 13 years old. In all, more than 100 athletes have filed suits against Nassar. Some also name USA Gymnastics, alleging that the organization was complicit in not addressing reports of sexual abuse adequately. Some plaintiffs in the lawsuits also include athletes at Michigan State University, where Nassar had been employed.

Nassar pleaded guilty to federal child-pornography charges in July and is awaiting sentencing in Michigan. He was expected to plead guilty to several counts in state court of sexually assaulting former patients, some of whom were minors at the time. In the summer of 2015 he resigned from USA Gymnastics. His attorney said a gag order in his client's pending case prevented him from commenting on Raisman's claims.

6

Number of Olympic medals won by Raisman, making her America's second-most decorated female Olympic gymnast

Raisman after winning silver in the all-around event at the Rio Olympics in August 2016

29

Number of years that Larry Nassar worked for USA Gymnastics, during which athletes in his care say they reported him to the organization for sexual abuse

RAISMAN, 23, opened up to TIME about her experiences in an interview at her family home in a quiet wooded neighborhood in Needham, Mass., outside of Boston. A rec room off the kitchen is filled with mementos from her record-setting career: with six medals won at the 2012 and 2016 Games, she's the nation's second most decorated female Olympic gymnast. As her mother Lynn lit a fire in the living room, Raisman settled into a deep brown leather couch and talked about how her career could have all been derailed by abuse.

She says Nassar often closed his eyes and would be out of breath while working on her. Still believing she was receiving medical treatment that would help her, she attributed his behavior to his being tired or jet-lagged from the trips to competitions around the world.

"People will say, 'Why didn't she tell her mom? Why didn't she say anything?' But those questions are unfair," she says. "I didn't really know it was happening to me. I would never have imagined that a doctor would abuse me or manipulate me so badly."

For years Raisman excused what she calls Nassar's "weird" behavior. But in July 2015—three years after winning three medals at her first Olympics—after she met with an investigator from USA Gymnastics, she says she finally realized that Nassar had been sexually abusing her. Raisman said she met with the investigator at the request of then USA Gymnastics president Steve Penny, who didn't tell her what the visit was about. The investigator asked if she felt safe and if anyone had been making her feel uncomfortable. Then she was asked specifically about Nassar, about what he did, how he treated her, how many times and whether other people were present during the treatment sessions.

At first Raisman made excuses for Nassar. But after the investigator left, Raisman thought back on her encounters with Nassar and realized that the treatments had not been medical in nature but that she had been sexually

Aly Raisman with her mother, Lynn, at their home in Needham, Mass.

abused. (She declines to go into detail about the nature of the abuse.) When Raisman called USA Gymnastics back the following day and asked to speak to the investigator again, she says she was told the investigation was ongoing. She also received a text from an official asking her to stop talking about her experiences with Nassar, so as not to jeopardize the investigation.

Now, after having time to process what happened, Raisman faults the culture of success at all costs and USA Gymnastics' power over the gymnasts and their families, who are vying for coveted Olympic spots. She says many victims feel that it's easier and potentially beneficial to stay quiet. Raisman says she now feels betrayed, by both Nassar, whom she trusted as a doctor, and USA Gymnastics, whom she trusted not to put her in harm's way.

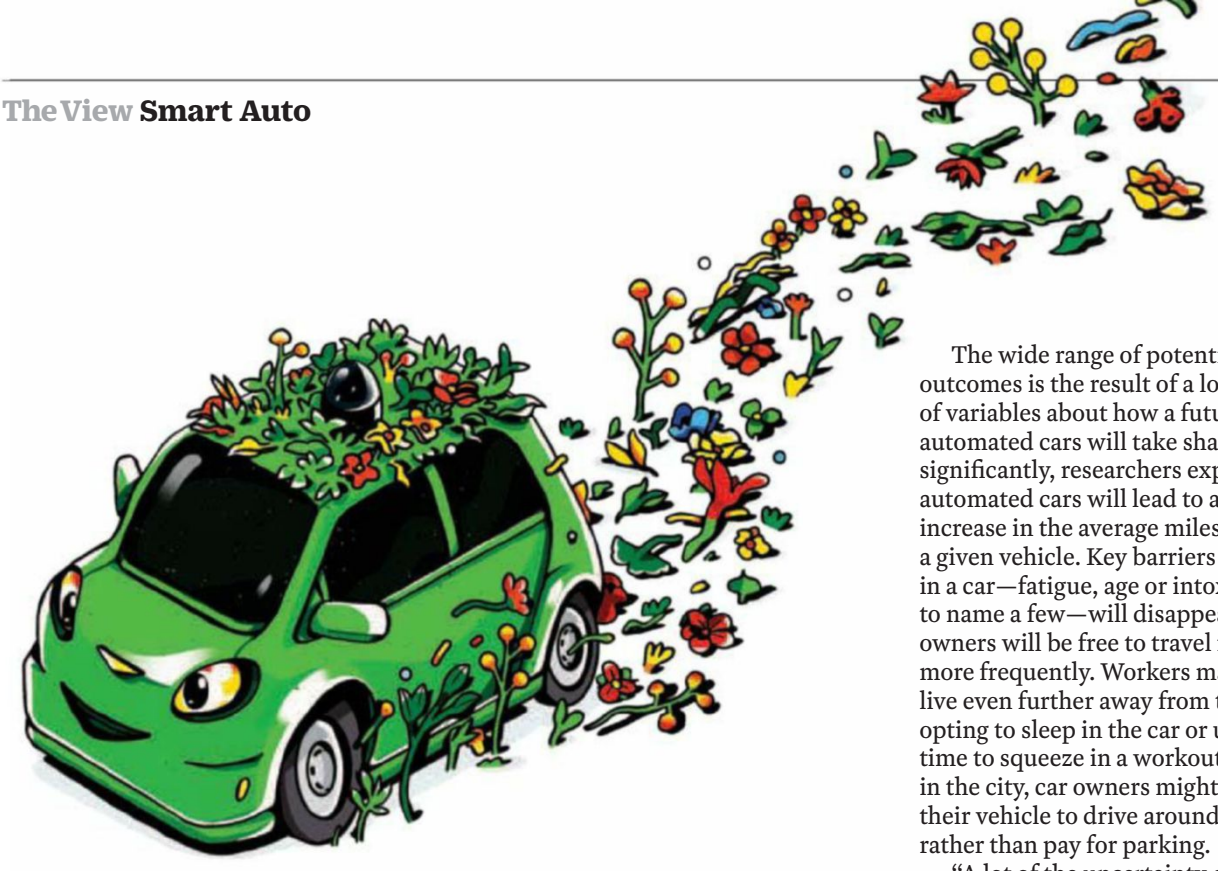
Nassar went out of his way to exploit that trust, according to Raisman and others who worked with him. He attended many of the elite training camps at the Texas ranch run by the influential coaches Bela and Martha Karolyi, who led the U.S. Olympic team. There, the gymnasts were away from their families and lived in spartan dorms, their days consisting of little more than training, eating and sleeping.

In that setting, Raisman says, Nassar became their confidant and cheering squad, bestowing gifts and sweets as well as much-needed encouragement and support. For young girls whose entire lives consisted of hours and hours of performing to impress others, Nassar seemed like an ally. "He was always, always, always on my side," says Raisman. "He was always that person who would stick up for me and make me feel like he had my back."

In response to Raisman's claims, USA Gymnastics said in a statement, "We are appalled by the conduct of which Larry Nassar is accused, and we are very sorry that any athlete has been harmed during her or his gymnastics career. We are committed to doing what is right, and we want to work with Aly and all interested athletes to keep athletes safe." The organization has adopted policies meant to prevent similar instances of abuse. Penny resigned as president in March, and his replacement was appointed in November. An attorney for Penny did not respond to requests for comment.

Those decisions are not sufficient, says Raisman, who has not ruled out trying to make a third Olympic team at Tokyo 2020. She wants to see other steps, including the creation of a separate body independent of USA Gymnastics that is responsible for handling reports of sexual abuse. "One day, when I have a daughter, I want to put her in gymnastics," says Raisman. "I want to make the sport fun and make it safe. I love the sport, but winning doesn't make the abuse O.K." □

OLYMPICS: EMMANUEL DUNAND—AFP/GETTY IMAGES; RAISMAN AND FABER: SAGE SOHIER FOR TIME



Why self-driving cars might not lead to a huge drop in fuel consumption

By Justin Worland

AUTOMATED CARS—ONCE A FAR-OFF DREAM—HAVE IN recent years left the realm of science fiction and leapt closer to the American garage. Leading U.S. automakers say that bona fide self-driving cars are coming within two decades and they're fighting to stay competitive, from Ford's $1 billion investment in an artificial-intelligence company earlier this year to Uber's 2016 purchase of self-driving truck company Otto.

These advances promise relief to drivers sick of two-hour commutes and bumper-to-bumper traffic, but they leave open questions for a society shaped for the past century around the automobile. Perhaps no area is more quantifiably uncertain than the environmental impact of automated vehicles. One report from the Department of Energy found that automated vehicles could reduce fuel consumption for passenger cars by as much as 90%, or increase it by more than 200%.

That's a significant difference given that more than a quarter of U.S. greenhouse-gas emissions come from the transportation sector, according to the Environmental Protection Agency. And scientists and policymakers say reducing that figure will be key to addressing man-made climate change.

And it's happening quickly. Tesla, Nissan and BMW all say they will have fully driverless cars by 2021. And a report from the Boston Consulting Group suggests that by 2030 more than 5 million conventional vehicles could be replaced by automated ones.

"There's a dramatic energy impact possible," says Jeff Gonder, a transportation researcher at the National Renewable Energy Laboratory. "But there remains dramatic uncertainty in magnitude and even direction."

$80 billion
The investment in autonomous-vehicle technology since 2014

217%
The increase in fuel demand as a result of self-driving cars in the most extreme projection

60%
The potential cost savings for consumers associated with shared autonomous electric vehicles

SOURCE: BOSTON CONSULTING GROUP, BROOKINGS INSTITUTION, U.S. DEPARTMENT OF ENERGY

The wide range of potential outcomes is the result of a long list of variables about how a future with automated cars will take shape. Most significantly, researchers expect that automated cars will lead to a sharp increase in the average miles traveled by a given vehicle. Key barriers to hopping in a car—fatigue, age or intoxication, to name a few—will disappear, and car owners will be free to travel further and more frequently. Workers may choose to live even further away from the office, opting to sleep in the car or use that time to squeeze in a workout. And, once in the city, car owners might instruct their vehicle to drive around in circles rather than pay for parking.

"A lot of the uncertainty comes from not knowing how the value of people's time is going to change," says Don MacKenzie, a researcher at the University of Washington who studies automated driving. "There will be some kind of cost associated with the travel, but it's much less than it is today."

Researchers have sought to model how humans might respond to automated driving using surveys, driving data and lab experiments, but ultimately the sheer number of choices and assumptions involved in transportation has made reaching concrete conclusions about driving behavior difficult.

Beyond changed driving patterns, simple technology advances will reduce the environmental toll of automated cars. Most important, engineers say that the largely accident-free vehicles can eliminate safety equipment, such as antilock brakes and airbags, that has increased the weight—and fuel consumption—of vehicles. Automated cars can also travel closer together, allowing them to take advantage of aerodynamics. Trucking fleets are already trying to take advantage of this fuel-saving measure.

Regulation represents the obvious way to protect against the potential environmental downsides of automated vehicles. The government could require cars take the most efficient route or even push consumers away from private car ownership toward ride sharing. ◻

ILLUSTRATION BY JACKIE FERRENTINO FOR TIME

'TORAY'
Innovation by Chemistry

www.toray.com

Dale Earnhardt Jr. is going out on his own terms

By Sean Gregory

NASCAR IS NOT THE FIRST PLACE ONE WOULD LOOK TO FIND a voice of the resistance. Yet after Donald Trump railed against NFL players' kneeling during the national anthem, the biggest name in the sport took to Twitter with a rebuttal. "All Americans R granted rights 2 peaceful protests," Dale Earnhardt Jr. posted, adapting a John F. Kennedy quote to 140 characters. "Those who make peaceful revolution impossible will make violent revolution inevitable."

This was not exactly a popular sentiment among a fan base that tracks closely with the voting bloc that put the President in office. Indeed, Richard Petty, a former NASCAR star and current team owner, said the protesting players "ought to be out of the country. Period." But Earnhardt, 43, has long been willing to take stands at odds with racing's core supporters. In 2015 he spoke out against the Confederate flag, which many fans fly atop their RVs at races. Earlier this year, after Trump barred people from seven Muslim-majority countries from entering the U.S., Earnhardt tweeted that his family came from Germany in the 1700s to escape religious persecution.

"I just thought it was important to remember that this country was built on the hard work of a lot of people who came from overseas," Earnhardt tells TIME in an interview ahead of his final career race, on Nov. 19 at Homestead-Miami Speedway. His support for the right to protest was rooted in a similar perspective. "I just don't want to be quick to judge someone who wants to raise awareness," Earnhardt says. "You have to be open-minded and compassionate."

That Earnhardt says this while remaining NASCAR's marquee star speaks to his skill on the track, personality off of it and a family legacy like no other. The grandson of NASCAR pioneer Ralph Earnhardt and son of Hall of Fame driver Dale Earnhardt Sr., who died in a crash at the 2001 Daytona 500, he acknowledges inheriting much of his appeal. "I'll put it to you straight," Earnhardt says. "My dad was very popular, so there's no denying that when I came into the sport I had a lot of fans automatically because of his notoriety and celebrity." Thanks in part to his everyman demeanor, Earnhardt expanded that fan base despite never winning a championship. The same fans who may disagree with his views have voted Earnhardt the sport's most popular driver for 14 years running. This year will be the last: Earnhardt is retiring after 19 years on NASCAR's top circuit, with 26 career wins, including a pair of Daytona 500s.

Fans have voted Earnhardt the most popular driver in NASCAR for 14 straight years

LOSING EARNHARDT will be a blow for NASCAR at a fraught moment (though he'll stay involved and is joining NBC's racing coverage). In recent years stock-car racing has suffered ratings and attendance declines. Viewership for an Oct. 8 playoff race, for example, was down 44% from 2014, according to *Sports Media Watch,* and admissions revenue for the International Speedway Corp., which owns a dozen NASCAR tracks, fell 47% between '05 and '16.

Earnhardt says his decision was made easier by a concussion suffered in a wreck in June. He missed 18 races and had symptoms like blurry vision and a lack of balance. "You get a concussion and forget your keys—you wonder if it has anything to do with your head," Earnhardt says. "You self-analyze everything. You've got that in the back of your mind, and you can't get rid of it." Earnhardt has said he will donate his brain to concussion-related research.

Retirement is well-timed: he and his wife are expecting their first child, a girl, in May. Earnhardt says he hopes his daughter passes on the family trade. "Following in my dad's footsteps was really a challenge," he says, adding that he would support her if she wanted to become the fourth generation on the track. He would be uniquely equipped to help. "I don't have the statistics that live up to my father," says Earnhardt, whose dad won seven championships. "There's only one him. So you've got to enjoy who you are, love yourself and be proud of what you can accomplish. That's just the only way to go." □

SEAN GARDNER—GETTY IMAGES

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VIEWPOINT

What does Vladimir Putin fear? His own people

By Marvin Kalb

VLADIMIR PUTIN APPEARS TO STRIDE THE GLOBE like a political goliath, a mix of Peter the Great and Joseph Stalin. Whether in Syria or Ukraine, the Russian President flexes his muscles and the world seems to quake with anxiety. There is now little doubt that Putin has skillfully maneuvered Russia back into a position of global prominence following the 1991 collapse of the Soviet Union, which he has called the "greatest geopolitical catastrophe of the century." He poured billions of dollars into modernizing his military machine and plunged into the exciting but murky world of new media technology, transforming it into a formidable weapon of political warfare.

At home he has reached deep into Russian history, religion and mythology to strengthen his image and grip on power, associating himself with successful czars such as Peter and Catherine in the 18th century; with the Orthodox Church, which stresses "traditional values" of faith and patriotism; with conservative philosophers like Sergei Uvarov, whose writings in the mid-19th century stressed "orthodoxy, autocracy and nationality"; and even with Stalin's discredited dictatorship.

In projecting an image of expansive personal power and influence, Putin leaves little to chance. He wears a large cross, given to him by his mother, that he swears was blessed in the Holy Land. He speaks with reverence of the year (988) when Prince Vladimir of Kievan Rus led the Christianization of the Russian people. On special occasions, he rides horses bare-chested across the Russian tundra. He knows in his gut the Russian people admire such a strong *vozhd,* and he is determined to be their hero.

BUT IS HE? While Putin's successes have been made obvious, his failures have been placed on the back burner, where they simmer in anger and disappointment.

Start with the economy. It has been stagnating from slipping oil prices and the Western sanctions imposed in 2014, after Russia seized Crimea and instigated a revolt in southeastern Ukraine. Across the country, strikes (which are increasingly illegal) have sprung up—short, spontaneous and a sign of deepening labor unrest. Meanwhile, salaries have been withheld, sometimes for months. Families have been denied financial compensation for children who die on duty; this was once a given.

By now the revolt in Ukraine has stalemated, with the conflict a costly continuing endeavor. The Russian intrusion into the Syrian civil war did embarrass the U.S.—and save Bashar Assad's regime—but it also carries the danger of wider conflict, possibly involving the U.S. Russians have begun to ask, Is it worth it?

Still, if pollsters say Putin's approval ratings are in the 80s, the question is: Why worry? But Putin does worry, and deeply. The evidence lay in the creation, on April 5, 2016, of the Russian National Guard, a domestic force numbering an estimated 350,000 troops that is loyal only to Putin. The general in charge of the guard is Viktor Zolotov, who for many years was Putin's personal bodyguard. When he decides to employ his troops, he is not obliged to receive approval from anyone other than Putin—not parliament, not the established military, no one. He and his troops operate as an independent force.

Why would Putin need a powerful praetorian guard? He already has a sophisticated, re-equipped military force. A study of the man strongly suggests that, whatever polls may say, Putin nurses a deep fear of his own people. He is afraid that one day they will rise up against him, as they did against the government 100 years ago on Nov. 7, 1917. One similar uprising looms large in his own biography. Putin was a KGB officer in Dresden in the late 1980s when a mob of angry Germans stormed his headquarters after the fall of the Berlin Wall. As he tried desperately to burn official papers, he telephoned Moscow for instructions. No one answered his call. Stunned, he vowed, never again.

In power, Putin has seen other popular uprisings. A "color" revolution in Ukraine in 2004 frightened him, and he was at the time unable to suppress it. In '08, Georgia exploded; this time Putin used military force to crush it. Ukraine surged again in '14, so Putin—concerned that the Ukrainians' embrace of freedom and independence might spread to the Russian people—took military action. He occupied Crimea, and soon thereafter moved into southeast Ukraine, which still smolders.

Putin may strut on the global stage, but the creation of his guard betrays consuming doubts about his political longevity. Czar Nicholas II had such a guard too, called the *okhrana.* It protected that ruler up until 1917, when the Russian people said "enough." That is one word Putin does not want to hear anytime soon.

Kalb is a senior adviser to the Pulitzer Center on Crisis Reporting, the Murrow Professor Emeritus at Harvard and the author of The Year I Was Peter the Great—1956: Khrushchev, Stalin's Ghost, and a Young American in Russia

Czar Nicholas II
A century ago, the Russian Revolution forced "Bloody Nicholas" to abdicate his emperorship, leading to Russia's collapse and the Soviet Union's rise

Unease lies ahead
Putin, in power by election or proxy since 1999, enjoys high ratings, yet has hired a private army—perhaps fearing a fate like Nicholas'

NICHOLAS II: HULTON ARCHIVE/GETTY IMAGES; PUTIN: MIKHAIL METZEL—TASS/GETTY IMAGES

Roy Moore, Donald Trump and the GOP's moral compass

By Molly Ball

THE ALLEGED CHILD MOLESTER OR THE DEMOCRAT? Alabama voters face that choice in a few weeks' time, and it's not clear which they'll find more odious. There are several reasons to think Roy Moore, the Republican nominee who has been accused of making sexual advances to teenagers, could lose the special Senate election scheduled for Dec. 12. But there's one big reason to think he could still win.

Washington Republicans were always leery of Moore, a crusading Christian conservative who was twice elected to the Alabama supreme court—and twice booted off it for refusing to abide by higher courts' rulings on the Ten Commandments and same-sex marriage. But the recent revelations that Moore "dated" girls as young as 14 when he was an unmarried local prosecutor in his 30s have sent the national GOP into a moral and political panic. Moore has denied the allegations by five women, including one who said that he assaulted her in a locked car when she was 16. In his defense, he said he didn't recall "dating any girl without the permission of her mother."

Alabama is an overwhelmingly Republican state where President Trump got 62% of the vote. But Moore is not as universally popular as his two election wins might suggest. He previously lost two Republican gubernatorial primaries, and in his last judicial election he got just 52% of the vote, underperforming that year's GOP presidential nominee, Mitt Romney, by 9 points.

Moore has a committed base of religious voters, particularly in rural Alabama. But when I traveled to the state earlier this year, I found many business-minded Republicans in suburban areas who disliked Moore's disregard for legal authority and his extreme positions on social issues. Some fretted that Moore validates the worst stereotypes outsiders hold about Alabamans as a bunch of barefoot, Bible-thumping rednecks. A GOP strategist following the race says private polling showed it within the margin of error even before the allegations of sexual impropriety.

The Republican National Committee and National Republican Senatorial Committee have cut ties with Moore—proof, he says, that he is a threat to the D.C. establishment. But for all Moore's bluster, his poorly funded, skimpily staffed campaign may struggle without institutional support. That happened in the 2012 Senate campaign of Missouri Republican Todd Akin, who lost the red state by 16 points after he said "legitimate rape" was unlikely to cause pregnancy and backers bailed.

In the Akin race, many Republican voters decided they would rather elect a Democrat than someone they regarded as a misogynist. The question in Alabama is whether enough Republican voters will not only believe the accusations but find them serious enough to override partisanship. There's evidence this can happen. The current Democratic governor of Louisiana, John Bel Edwards, won in 2015 after then Senator David Vitter acknowledged patronizing prostitutes. (That election also proved Democrats can turn out to vote in off-year elections.) Even in the South, plenty of voters preferred a Democrat to a scoundrel.

WHY MOORE MAY WIN

President Trump's rise revealed a change in the way religious-right voters judge the relevance of private morals on public service

THERE'S A BIG CAVEAT that hangs over any post-2016 political analysis, however: Donald Trump. The President's rise scuttled much of the old conventional wisdom about how voters behave. It revealed a change in the way religious-right voters judge the character of candidates. Six years ago, just 30% of white evangelical voters believed a candidate who acted immorally in private could still behave ethically in office, according to the Public Religion Research Institute. Asked again last fall, 72% thought candidates' private morals were irrelevant.

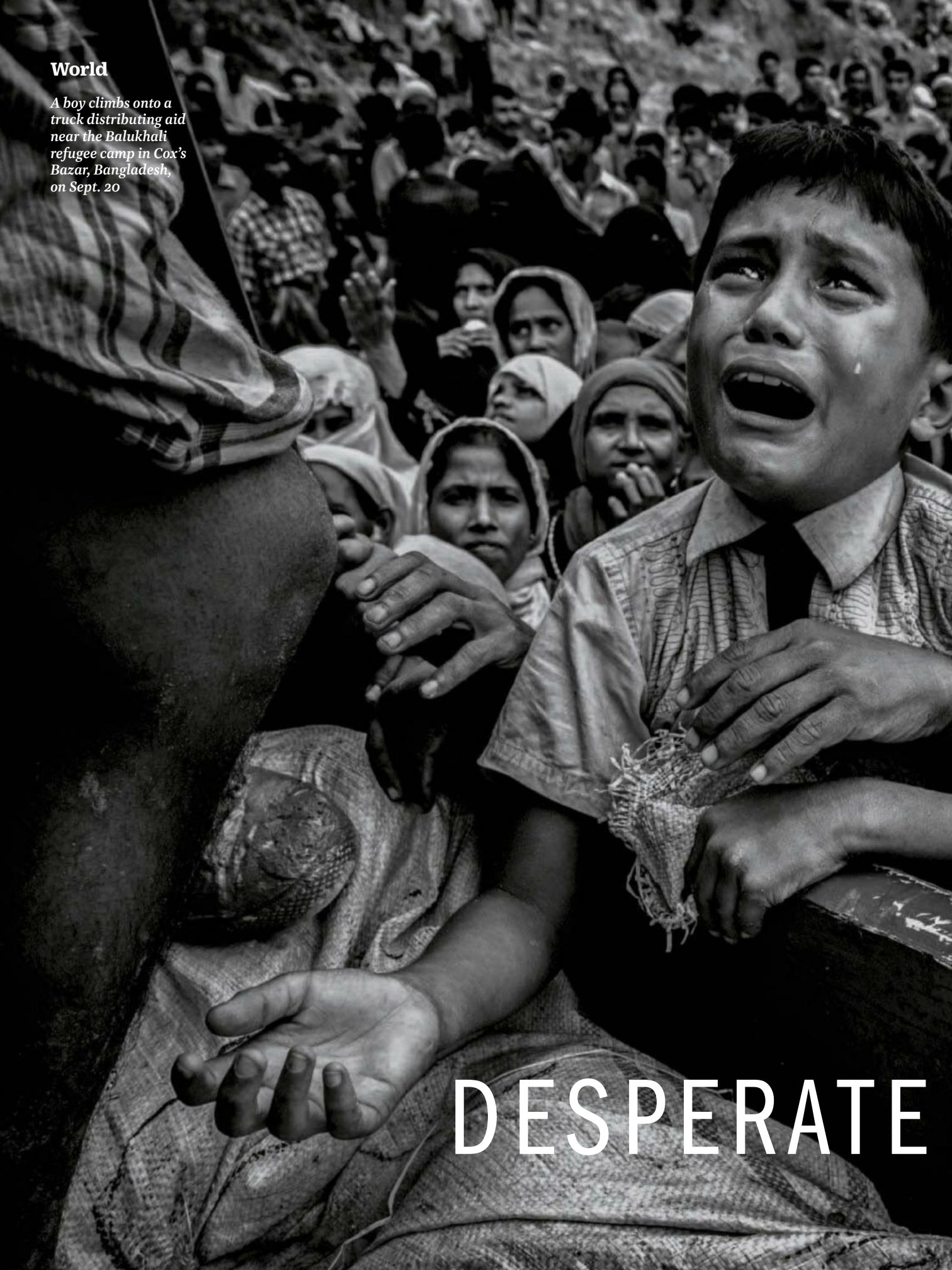
What happened in between, of course, was Trump. White evangelical voters backed him by a huge majority in 2016, rationalizing his louche personal life and his boasts about sexually assaulting women in the *Access Hollywood* tape. Evangelical leaders like Jerry Falwell Jr. argued that God chose mysterious instruments to work his will, that immoral people could still govern morally and that the U.S. faced a spiritual crisis from which only Trump could deliver the nation.

Polls in Alabama show a close race, with neither candidate topping 50%. The Democrat Doug Jones is a well-credentialed former prosecutor who has begun airing ads about the Moore allegations. "There are plenty of Republicans in Alabama who don't like Roy Moore," says David Mowery, a Montgomery-based independent consultant. "Will they actually hold their nose and vote for a Democrat?" In the age of Trump, that's a harder judgment than ever to make. ◻

BILL CLARK—CQ ROLL CALL/GETTY IMAGES

World

A boy climbs onto a truck distributing aid near the Balukhali refugee camp in Cox's Bazar, Bangladesh, on Sept. 20



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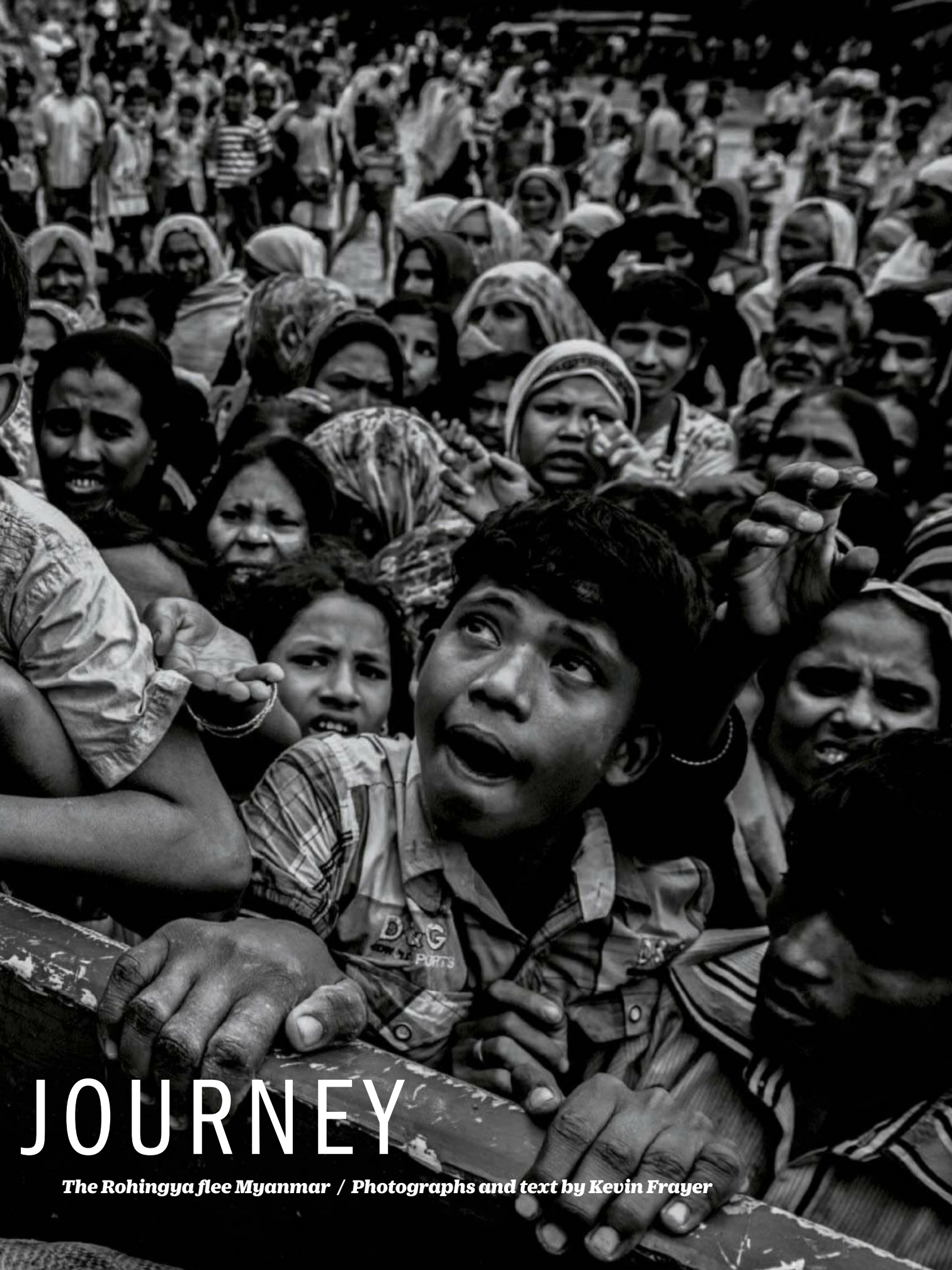


JOURNEY

The Rohingya flee Myanmar / Photographs and text by Kevin Frayer

An exhausted woman is helped from a boat as she arrives on the Bangladeshi side of the Naf River on Oct. 1

Refugees make their way through the water after crossing the Naf River from Myanmar to Bangladesh on Nov. 1

THE BOATS USUALLY ARRIVE AT NIGHT BECAUSE IT'S SAFER IN THE DARK.

Occasionally they come during the day, when a situation is urgent enough to risk fire from Myanmar border guards, or a window for safe passage opens up. The majority arrive at the southern tip of Shah Porir Dwip, an island where the Naf River meets the Bay of Bengal. The water can be rough, but when a boat capsizes there is no search party or rescue effort, just a wait for the bodies to wash up on shore. The anonymity of it is tragic.

When boats make it, there is a scramble to get people out. Babies are handed off to make sure they don't get dropped in the water; the elderly are lifted and

A man and woman carry their children as they walk along an embankment after crossing the Naf River to Bangladesh on Nov. 2

GETTY IMAGES

carried, and often people are so weak and exhausted and overwhelmed that they just collapse. What's striking is that it's so quiet. There may be someone sobbing or a baby crying, but usually the moment they arrive is almost silent.

I first arrived in Bangladesh in mid-September, a few weeks into the newest phase of the crisis named for the people on the boats: the Rohingya are fleeing their homes in neighboring Myanmar, seeking safety across the boundary river that widens into the Bay of Bengal. I had been moved by the images and stories from colleagues—an exodus of some

600,000 people with no rights, who spoke of being burned, raped and driven from their homes.

The Rohingya are Muslim, and the rest of Myanmar, which is heavily Buddhist, has never accepted them as citizens. The constant friction flared into conflagration in August, when a militant Rohingya group attacked police and military posts. The government replied with a campaign that scorched the earth—satellite imagery shows hundreds of Rohingya villages burned to the ground. The U.N. termed it a "textbook example" of ethnic cleansing,


Fresh

Rohingya who walked for more than a week to cross the Naf River wait to proceed to refugee camps on Nov. 2

A woman carries the body of a boy to be prepared for burial after their boat capsized on Sept. 29

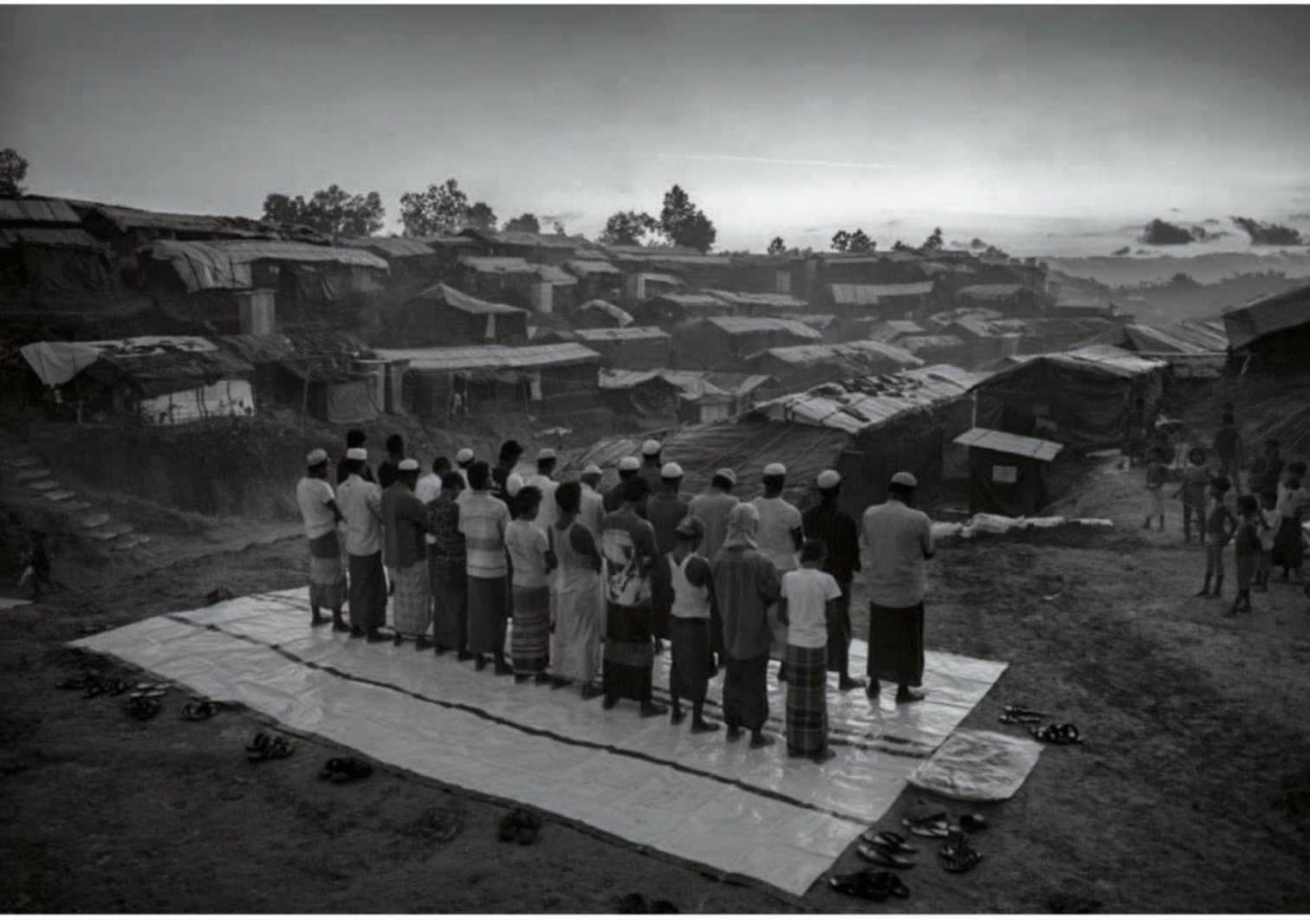
and Myanmar's de facto leader, Nobel laureate Aung San Suu Kyi, has been pilloried for defending the government, which claims it is targeting insurgents. In the text of the last speech on his Asia trip, President Donald Trump supported efforts "to ensure accountability for the atrocities committed." Meanwhile, the exodus continues.

TYPICALLY, NEW ARRIVALS sit on the beach and just rest. A few locals may be around, but there is no coordinated reception. The refugees walk on their own toward the village and madrasahs, or religious schools, where they are given shelter and food and a bit of money by local charities. They will spend at most a day there before crossing to the mainland and climbing onto trucks for the journey north to Cox's Bazar. Once known for its resorts, the area is now home to half a million refugees.

MORE THAN 600,000 ROHINGYA HAVE FLED MYANMAR INTO BANGLADESH SINCE LATE AUGUST

Once new arrivals find a space, they get bamboo poles and tarpaulin to build a shelter. Aid organizations construct latrines and dig wells for clean water, but the sheer number of people makes it a challenge to maintain sanitation and stave off disease. The monsoon rains are

Men pray at sunset on the site where a new mosque was being built, on a hillside at the Balukhali camp, on Oct. 22



heavy and frequent, and the ground is incredibly wet and muddy.

Still the makeshift camps are becoming a permanent part of the landscape. When I visited in late October, there was far more aid than a month earlier, and more international agencies to help. But the flow of people persists, and the camps grow at a staggering rate—some days by a few hundred, other days by thousands.

One afternoon in September, I went to an area where a crowd of people were looking for aid. I could feel the anxiety as the crowd shifted. I was struggling to work, so I wanted to get above it. As I climbed on a truck, women were shouting and people were distraught, since they were obviously exhausted and hungry.

That's when I saw this small boy to the left of my view. He had pulled himself up onto the truck and was weeping. I couldn't hear much because the scene was so loud, but at one point the boy reached out his hand and tapped the leg of the man standing over the food. He then wrapped his arms around the man's leg, begging with tears rolling down his cheeks. I was struck by it: this vulnerable child in a massive crowd had clawed his way onto the truck in complete desperation. It is hard to compare that magnitude of sadness to anything else I have seen.

Leaving was not easy. I had gone with the hope of making a contribution to telling the story, yet you always feel like you never photograph enough. Or see enough. Or hear enough. If the pictures—no matter how fleeting—can cause people to be moved to care in some way, then it is worth it. For this kind of story, the more photographs, the better.

Frayer is a Getty Images photographer based in Beijing

Rohingya carry their belongings as they walk along the Bangladeshi side of the Naf River, after crossing from Myanmar, on Oct. 2

SPECIAL REPORT

Dignity, death and America's crisis in elder care

By Haley Sweetland Edwards

BY LATE 2014, CHABELA LAWRENCE WASN'T DOING well. She had mostly stopped cooking and cleaning for herself and began, every so often, to get lost on her way home from the neighborhood coffee shop—the one she'd been to a least a hundred times. The following March, the 74-year-old former catering manager was diagnosed with dementia, and it was clear she needed help. But it was then that she ran headlong into one of the most crushing failures of the U.S. health system: there's no good way to pay for extended long-term care. Medicare doesn't cover it. Private health plans don't cover it. And for most, paying roughly $80,000 out of pocket, the average annual cost for a shared room at a skilled nursing facility, is simply out of the question.

Those in need of prolonged care face a dilemma. They have to be either poor enough to qualify for Medicaid or rich enough to shoulder the cost alone. Anyone who falls between those income extremes is out of luck. And that leaves many Americans vulnerable: 47% of men and 58% of women who are retirement age or older will experience a need for long-term care in the future, according to a February 2016 study by the Department of Health and Human Services. "It's an insane situation," Chabela's daughter Ruby Lawrence says, recounting her mother's experience. "You either have to be super-rich or super-poor to get benefits."

The danger of losing one's life savings to long-term care may be the first challenge families face as their parents and grandparents age, but it isn't the only one. As 76 million baby boomers creep into retirement, America's system of looking after its old folks faces a broad, multipronged crisis. From senior living centers to hospice, the country is struggling to adapt a rickety system to handle the demographic wave that is crashing over it. At stake are the health, wealth and dignity of a generation.

The existing safety net for older Americans—a mixture of Social Security, Medicare and Medicaid—was built for a society that no longer exists. When Congress created Social Security in 1935, the average life expectancy in the U.S. was 61; now it is nearly 80. When Congress created Medicare and Medicaid in 1965, it was still common for people to die of acute medical issues, like heart attacks; now many survive those traumas and go on to live, with some assistance, for decades longer. In 1960, the U.S. was overwhelmingly young: just 10% of the population was over 65. By 2040, 1 in 5 of us will be eligible for that senior ticket at the theater.

As more people live longer, the social and economic systems designed to care for them are changing. In midcentury America, women had yet to join the traditional workforce en masse and so were widely expected to keep doing what they'd always done: provide unpaid care to children and ailing relatives at home. Moreover, in the 1960s, a large portion of families had access to stable, fixed pensions in retirement, and about a quarter of all workers were covered by generous, union-negotiated contracts. Staying in the same job for decades was common.

None of that is true anymore. Some 40% of households with children under 18 are now headed by women who are the primary breadwinner. Those women can no longer stay home to care for children or ailing relatives without risking their family's financial stability. Meanwhile, fixed pensions have all but disappeared, and union membership has fallen by more than half. Nearly 1 in 3 nonretired Americans has no retirement savings at all. "Our current system doesn't reflect how we've changed as a society," explains Dr. Bruce Chernof, president and CEO of the SCAN Foundation, which advocates for older adults. "So it's being asked to do all kinds of things it wasn't designed to do."

MUCH OF THE U.S. ECONOMY rides on how this crisis plays out. Spending on long-term care is expected to more than double from 1.3% of GDP to 3% by 2050 as demand increases alongside an aging populace. America's entrepreneurial system is coming up with myriad new ways to serve this growing demographic of gray-hairs. But in an era of deregulation, companies that profit from the natural, but often unsettling, process of aging and dying aren't always scrupulous. The result is a social tension: As health care companies seek to reap not only efficiencies but also profits from a jury-rigged, outdated and overburdened system of elder care, how do we protect those who are often most vulnerable to exploitation?

When things don't work, the results are ugly. In nursing homes and assisted-living centers, ever more ubiquitous arbitration agreements leave the elderly without access to a basic civil trial. Hospice care, beloved by many, is seen as a potential profit center by companies seeking government contracts while providing diminished service to those at the end of their lives. And Medicaid, once intended to be a last-ditch safeguard for the poorest of the poor, is creaking under the weight of new obligations. Medicaid is now the default payer for 61% of all nursing-home residents in the U.S., according to a June 2017 Kaiser Family Foundation report—a demand that's likely to continue to increase. Meanwhile, adult children already contribute $7,000 to $14,000 a year to caring for an aging parent, according to a 2016 AARP report; that number will likely see an uptick too.

Chabela Lawrence, who passed away in November at 76, won't bear witness to the worsening crisis. But millions of U.S. families may find themselves facing the same calculation that she and her daughter did. When loved ones need long-term care, how are they going to pay for it? "It's madness," Ruby says. "People need to know that this can happen to them." ◻

GROWING DEPENDENCY
As baby boomers enter their twilight years, they will require more health services and facilities, like nursing homes.

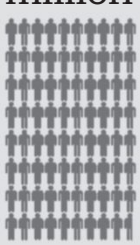
IN 2010
Number of Americans age 65 and older

40.3 million

21
Number of elderly people per every 100 working-age people

IN 2040
Projected number of Americans age 65 and older

79.7 million



37
Number of elderly people per every 100 working-age people

SOURCE: CENSUS

HEALTH

Hospices promise peace at the end of life—but many don't deliver

By JoNel Aleccia and Melissa Bailey

AS HER HUSBAND LAY MOANING IN PAIN FROM THE cancer riddling his body, Patricia Martin searched frantically through his medical bag, looking for a syringe. She had already called the hospice twice, demanding liquid methadone to ease the agony of Dr. Robert E. Martin. A family-practice physician known to everyone as Dr. Bob, the 66-year-old had served the small, remote community in Wasilla, Alaska, for more than 30 years.

But the doctor in charge at Mat-Su Regional Home Health and Hospice wasn't responding. Staff said that he was on vacation, then that he was asleep. Patricia had waited four days to get pain pills delivered, but her husband could no longer swallow them. Now, they said, she should just crush the drugs herself, mix them with water and squirt the mixture into his mouth. That's why she needed the syringe.

"I thought if I had hospice, I would get the support I needed. They basically said they would provide 24/7 support," she says, still shaking her head in disbelief, three years later. "It was a nightmare."

Patricia had enrolled her husband in hospice when the metastatic prostate cancer reached his brain. She expected him to receive the same kind of compassionate, timely attention he had given his own patients. But Bob had the misfortune to require care during a long holiday weekend, when hospices are often too short staffed to fulfill written commitments to families. The consequences, as documented through a review of official records and interviews, were dire.

It took six days and three more calls before he received the liquid methadone he needed. Hospice denied Patricia's requests for a catheter, and she and her son had to cut away Bob's urine-soaked clothing and bedding, trying not to cause him additional pain. A nurse who was supposed to visit didn't show up for hours, saying she was called for jury duty. The supervising hospice doctor never responded.

Bob died just after midnight on Jan. 4, 2014. "It was just sheer chaos," Patricia says. "It makes me wonder about other people in this situation. What happens to them?"

The Martins had entrusted the ailing doctor's final days to one of the nation's 4,000-plus hospice agencies, which pledge to be on call around the clock to tend to a dying person's physical, emotional and spiritual needs. It's a nearly $20 billion business that served about 1.4 million Medicare patients in 2015, including over a third of Americans who died that year, according to industry and government figures.

Yet as the industry has grown, the hospice care

that people expect can disappear when they need it most. Across the country, families have sought help in times of crisis and been met with delays, no-shows and unanswered calls, a Kaiser Health News investigation published in collaboration with TIME shows.

The investigation analyzed 20,000 government inspection records, revealing that missed visits and neglect are common. Families or caregivers have filed over 3,200 complaints with state officials in the past five years. Those complaints led government inspectors to find problems in 759 hospices, with more than half cited for missed visits or other services they had promised to provide.

The reports, which do not include patient names, describe a 31-year-old California woman whose boyfriend tried for 10 hours to reach hospice as she gurgled and turned blue, and a panicked caregiver in New York calling repeatedly for middle-of-the-night assistance from confused hospice workers unaware of who was on duty. In Michigan, a dementia patient moaned and thrashed at home in a broken hospital bed, enduring long waits for pain relief in the last 11 days of life, prompting the patient's caregiver to call nurses and ask, "What am I gonna do? No one is coming to help me. I was promised help at the end."

Only in rare cases were hospices punished for providing poor care, the investigation showed.

Six weeks after Bob Martin died, his wife filed a complaint against Mat-Su Regional with the Alaska Department of Health and Social Services. The agency's investigation concluded that the hospice failed to properly coordinate services, jeopardizing his end-of-life care. Hospice officials declined interview requests for this story.

Hospice is available through Medicare to critically ill patients expected to die within six months who agree to forgo curative treatment. The care is focused on comfort instead of aggressive medical interventions that can lead to unpleasant, drawn-out hospital deaths. The mission of hospice is to offer peaceful, holistic care and to leave patients and their loved ones in control at the end of life. Agencies receive nearly $16 billion a year in federal Medicare dollars to send nurses, social workers and aides to care for patients wherever they live. The vast majority of hospice is covered by Medicare, though some is paid for by private insurance, Medicaid and the Department of Veterans Affairs.

To get paid a daily fee by Medicare, hospice agencies must lay out a plan of care for each patient, ensuring they'll treat all symptoms of the person's illness and be on call 24/7. There is no mandate spelling out how often staff must show up at the home, except for a bimonthly supervisory visit. Hospices must stipulate in each patient's care plan what services will be provided, when and by whom, and update that plan every 15 days. Hospices are licensed by state health agencies and subject to oversight by federal Medicare officials and private accreditation groups.

Although many people think of hospice as a site where people go to die, nearly half of hospice patients receive care at home, according to industry figures. At its best, hospice eases patients' pain and worry, while tending to the whole family's concerns. For the 86% of Americans who say they want to die at home, hospice makes that increasingly possible.

But when hospice fails, it leaves patients and families horrified to find themselves facing death alone, abandoned even as agencies continue to collect taxpayer money for their care.

'The one thing I promised him is that he wouldn't be in pain, he wouldn't suffer.'

LAURE FUERSTENBERG

IN ST. STEPHEN, MINN., Leo D. Fuerstenberg, 63, a retired Veterans Affairs counselor, died panicking and gasping for air on Feb. 22, 2016, according to his wife, Laure Fuerstenberg. She says a shipment from Heartland Home Health Care and Hospice included an oxygen tank and boxes of eye and nose drops but no painkillers.

"They were prescription drugs, but it didn't say what they were or how to give them," she recalls. "I just panicked. I called the hospice, and I said, 'We're in trouble. I need help right away.' I waited and waited. They never called back."

For more than two hours, Laure tried desperately to comfort Leo, who had an aggressive form of amyloidosis, a rare disease that can lead to organ failure. But he died in her arms in bed, trapping her under the weight of his body until she managed to call neighbors for help. "That last part of it was really horrible," she says. "The one thing I promised him is that he wouldn't be in pain, he wouldn't suffer."

Later, state investigators determined that Heartland's on-duty hospice nurse had muted her phone, missing 16 calls for help. Hospice officials did not respond to repeated interview requests.

"They never followed their protocol, and I've never had anybody from there say, 'We failed. We were wrong,'" says Laure, a school counselor who says she relives Leo's death daily. "If that had been me on my job, I'd be fired."

Her account was among more than 1,000 citizen complaints that led state investigators across the U.S. to uncover wrongdoing from January 2012 to February 2017, federal records show. But the complaints offer only a glimpse of a larger problem. "These are people who got upset enough to complain," says Dr. Joan Teno, a researcher at the University of Washington who studies hospice quality.

Officials with the National Hospice and Palliative Care Organization (NHPCO), an industry trade group, say such accounts are inexcusable—but rare. "There are an exponential number of positive stories about hospice that would overwhelm the negative," says NHPCO's Jonathan Keyserling, who adds, "When you serve 1.6 million people and families a year, you're going to

VIEWPOINT

The cruel math of finding a nursing home for my father

By Susanna Schrobsdorff

My dad was a little vain. Even at 80, he wore clothes with the ease of a man who had always been handsome and slim. When I was a kid, he would often wear ascots and tweedy jackets to drive me to work at the McDonald's in the tiny rural town next to our tiny rural town. Dad had grown up with money and behaved as if that were still true, no matter how little we had at the time. This wasn't always a good thing, but it was endless fodder for jokes.

When we moved him into an assisted-living place near my apartment in Brooklyn, he introduced himself to every aide by bowing and pretending to kiss the tops of their hands. And because of dementia, he'd forget meeting them and do it all over again the next week with a flourish and his German accent. They loved him. He'd wander around the halls with his white hair combed, a bit unsteady even with a cane. It was as if he were always searching for the dining car on a European train.

This particular residence was pretty—the interior still had a bit of prewar elegance, much like Dad. But when I signed the papers guaranteeing the rent and extra "Memory Care," he was already on borrowed time. Unless you're particularly well resourced, anyone with an elderly parent knows the cruel math you have to do when choosing a nursing home or assisted-living residence. It goes something like this: personal savings plus Medicare, minus the level of disability, multiplied by the rate of decline.

That last variable is what gave me nightmares. Would he run out of money before he ran out of time? Most private homes don't have to keep residents who just have Medicare, no matter how long they've lived there. If a parent is low on cash and getting less able, you have to look for a place that will provide even more care at less than half the price. There's no way that equation adds up. Something has to be sacrificed, but what? Would it be the time to get him out of bed and into a chair? Or would it be the 30 extra minutes it now takes to feed him a whole meal?

I was a nursing-home aide in high school, and I know how hard it is just to do the basics—bathe, feed and change beds for everyone before the lunch trays come around. That math is tough on everyone: residents, aides and families. Well, everyone but the owners of these facilities, who are, thanks to forced arbitration clauses, often as unaccountable as they are hard to track down.

In Dad's final year, there were dark hours when I wished pneumonia would take him before we had to take that last step of finding a nursing home. In the end, we had to. My sister spent months trying to locate a place that would take him. Hard enough for his generation. And if government predictions are correct, there will be such a shortage of caretakers when I'm 80 that no one knows how we'll manage.

In that institutional hospital bed, Dad looked his age for the first time. He lasted there only a few months, and even that seemed too long to be in such a state. Surely, America, we can do better than this.

have instances where care could be improved."

Still, hospices should be held accountable for lapses, says Amy Tucci, president and CEO of the nonprofit Hospice Foundation of America. "It's like medical malpractice. It's relatively rare, but when it happens, it tarnishes the entire field," she says.

The problem, however, may not actually be rare. In a recent national survey of families of hospice patients, 1 in 5 respondents said their hospice agency did not always show up when help was needed, according to the Consumer Assessment of Healthcare Providers and Systems (CAHPS). "That's a failing grade," says Teno.

HOSPICE CARE in the U.S. started in the 1970s, driven by religious and nonprofit groups. Today many providers are part of for-profit companies and large, publicly traded firms. It's a lucrative business: for-profit hospices saw nearly 15% profit margins on Medicare payments in 2014, according to the Medicare Payment Advisory Commission.

Most families are happy with their experience, according to the CAHPS survey. In data collected from 2015 to 2016 from 2,128 hospices, 80% of respondents rated hospice a 9 or 10 out of 10. Kaiser Family Foundation polling conducted for this story found that out of the 12% of the public with hospice experience, 9% were "dissatisfied" and 89% "satisfied" with hospice. (Kaiser Health News is an editorially independent project of the foundation.)

Many people give hospice glowing reviews. Lynn Parés gushed about her experience from 2013 to 2014 with Family Hospice of Boulder, Colo. When her 87-year-old mother cut her leg, her wound was treated daily by a nurse. In her last week of life, a nurse came every day. The hospice also provided family counseling, spiritual guidance and volunteers who surrounded her mother's bedside, singing old-time songs. "They were in constant contact with us," Parés says. "It's amazing to me how much heart there is involved in hospice care." After her mother died, Parés and her siblings donated part of their inheritance to the hospice.

In 2015, the small, family-owned company was acquired by a large regional chain, New Century Hospice, part of a larger wave of consolidation in the field.

As the industry grows—hospice enrollment has more than doubled since 2000—some companies are not following through on their promises to patients. For instance, government reports show that many hospices fail to provide extra care in times of crisis. To get Medicare payments, hospices are required to offer four levels of care: routine care, which is by far the most common; respite care, to give family caregivers a break for short periods of time; and two levels of so-called crisis care—continuous care and general inpatient care—when patients suffer acutely. But 21% of hospices, which together served over 84,000

patients, failed to provide either form of crisis care in 2015, according to the Centers for Medicare & Medicaid Services (CMS).

Other research has found troubling variation in how often hospice staff members visit when death is imminent. A patient's final two days of life, when symptoms escalate, can be a scary time for families. In a study, Teno and her co-authors found that 281 hospice programs, or 8.1% of hospices, didn't provide a single skilled visit—from a nurse, doctor, social worker or therapist—to any patients who were receiving routine home care, the most common level of care, in the last two days of life in 2014.

Regardless of how often staff members visit, hospices collect the same flat daily rate from Medicare for each patient receiving routine care: $191 per day for the first 60 days, then $150 thereafter, with geographic adjustments as well as extra payments in a patient's last week of life.

Overall, 12.3% of patients signed up for routine home care received no skilled visits in the last two days of life, the study found. Patients who died on a Sunday had it worst: they were more than three times as likely to not have a skilled visit as those who died on a Tuesday. Teno says this points to chronic understaffing, since hospices often have fewer staff members on weekends.

In Minnesota, Laure Fuerstenberg's pleas for help went unanswered on a Sunday night; her husband died just after midnight on Monday. She was appalled when she received a bill for care the agency said occurred on that day. "When they got paid for nothing, it was like a slap in the face," says Fuerstenberg, who filed a complaint with Minnesota health officials last year. She heard nothing about the case from hospice officials and didn't learn that it had been investigated until she was contacted by reporters for this story.

In St. Paul, Va., a small town in the Appalachian Mountains, Virginia Varney enlisted Medical Services of America Home Health and Hospice, a national chain, to care for her 42-year-old son, James Ingle, who was dying of metastatic skin cancer. On his final day, Christmas of 2012, he was agitated and vomiting blood, and his pain was out of control. Varney called at least four times to get through to hospice. Hours later, she says, the hospice sent an inexperienced licensed practical nurse who looked "really scared" and called a registered nurse for backup. The RN never came. Ingle died that night.

Varney says she felt numb and angry and was "very disappointed" in the hospice care: "It's like they just didn't do anything. And I know they were getting money for it." She adds, "They told me 24 hours a day, seven days a week, holidays and all. I didn't find that to be true."

An investigation by Virginia state inspectors, which corroborated Varney's story, revealed that the hospice nurse changed the records from that night after the fact, altering the time she reported being at the home. The registered nurse was fired in February 2013. The hospice declined to comment for this story.

'They told me 24 hours a day, seven days a week, holidays and all. I didn't find that to be true.'

VIRGINIA VARNEY

JUST HOW OFTEN are hospice patients left in the lurch? Inspection reports don't give a clear answer, in part because they happen so infrequently. Unlike nursing homes, hospices don't face inspection every year to maintain certification. CMS tightened the rules in 2014, requiring states to increase the frequency to once every three years by 2018.

The Office of Inspector General at the Department of Health and Human Services has called for stricter hospice oversight for a decade, says Nancy Harrison, a New York City–based deputy regional inspector general. One problem, she says, is that there is no punishment short of termination—barring the hospice from receiving Medicare payments—which is disruptive for dying patients, who lose service.

CMS records show that termination is rare. The agency identified deficiencies in over half of 4,453 hospices from Jan. 1, 2012, to Feb. 1, 2017. During that same period, only 17 hospices lost eligibility to receive Medicare reimbursements.

In Alaska, Patricia Martin filed a complaint against Mat-Su Regional with state regulators six weeks after her husband Bob's death. An investigation concluded that the hospice failed to properly coordinate services, jeopardizing his end-of-life care. Hospice officials declined to comment about his case, citing patient-privacy rules. In an email, Mat-Su administrator Bernie F. Jarriel Jr. said the hospice "strengthened our policy and procedures" as a result of the investigation and that "members of our caregiving team have been re-educated on these practices."

In Minnesota, officials with the local Heartland Home Health Care and Hospice agency referred questions to its corporate owner, HCR ManorCare of Toledo, Ohio. Officials there did not respond to multiple requests for comment. CMS documents indicate that the nurse who missed 16 messages "was re-educated on responsibilities of being on call."

In August, CMS launched a consumer-focused website that includes hospices' self-reported performance on quality measures; next year it will include family ratings. Until that happens, there's little information available for families trying to pick a hospice that will provide services when it counts.

In Alaska, Patricia Martin urges other families enrolling patients in hospice to be vigilant. "It is my hope that no other family or patient will ever have to go through the nightmare that we did," she says. "If they promise you they're going to do something, they should do it."

This story was produced in collaboration with Kaiser Health News. JoNel Aleccia and Melissa Bailey are Kaiser Health News reporters.

It is the intention of the parties to this Agreement that this Ag
parties and their respective personal representatives, heirs, su
affiliates, and servants of the Facility, any management compa
persons whose claims derive through, or on behalf of, the Resi
executor, administrator, legal representative, or heir of the Res
any person who previously assumed responsibility for providi
clothing or medicine, and any person who executed this Agree
except as may be required by law, her neither party, nor the Ar
arbitration hereunder without the prior written consent of the

HEALTH

The parties understand and agree that by entering into waiving their right under applicable law to have any cla

XII. Severability

If any term, provision, subparagraph, paragraph or section of t
unenforceable in whole or in part, this adjudication shall not a
including any other term, provision, subparagraph, paragraph
may sever any term or portion of this Agreement, and such sev
Agreement. The provisions of the Maryland Arbitration Act wi
contrary to the terms of the Agreement.

XIII. Rights of the Resident

The Resident acknowledges and understands that (1) the Resid
opportunity to read it and ask questions about it before signin
concerning this Agreement; (3) if the Resident does not accept
services from this Facility; (4) this Agreement may be rescinde
30 days of the signing hereof by the Resident; (5) if not so resci
this Agreement shall remain in effect for all care and services r
contractors; and (6) by signing this Agreement, the Resident ar
Disputes decided in a court of law before a judge and/or jury.

In Witness thereof, the parties have signed and sealed this Agr

reement shall inure to the direct benefit of and bind the
uccessors and assigns, including the agents, employees,
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this Agreement they are each relinquishing and
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By Haley Sweetland Edwards

this Agreement is adjudged by any court to be void or
ffect the validity of the remainder of this Agreement,
or section. To the extent unenforceable, the Arbitrator
verance shall not affect the validity of the remainder of this
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g below; (2) the Resident has the right to seek legal counsel
this Agreement, he or she can still move into and receive
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nd the Facility are giving up and waiving the right to have

reement as of the day and Year first above written.

SIGN HERE ×

Signature

Date

SISTER IRENE MORISSETTE ALWAYS LOCKED HER DOOR AT night. Maybe it was force of habit from her decades teaching at an isolated missionary school in Africa, or maybe it was, as she told a police detective later, just that she didn't want "anyone coming in."

Either way, there was no sign of forced entry on June 23, 2014, when the 87-year-old Catholic nun told a staffer at Chateau Vestavia, an assisted-living facility near Birmingham, Ala., that she'd been raped in her bed the night before.

Police and medical records paint a disturbing scene. Police investigators found two semen stains in Morissette's bed and blood on the "inside rear area" of her green-and-pink-flowered pajama bottoms, which had been shoved underneath the mattress. A sexual-assault examiner at a local hospital reported that Morissette had sustained multiple abrasions inside and outside her vaginal canal, wounds that could be consistent with rape. "The genital exam was very painful for the client," the examiner's report said.

In the days after the alleged rape, Morissette told police that she remembered someone pinning her 5-ft. 2-in., 140-lb. frame to the bed by her shoulders. She recalled the "terrible experience of being penetrated," according to a recorded police interview reviewed by TIME. "I was so scared," she said. But when her attacker left, she didn't summon a staff member for help. "She was afraid to call anyone," an examiner wrote later, "because she was afraid that the assailant would be the one to come back to her room."

Under normal circumstances, justice would be rendered for Morissette, and society, in a court trial. There would be a public hearing in which a judge or jury would weigh evidence, determine guilt or innocence and levy appropriate penalties through the due process of law. But Morissette's case, details of which have not previously been made public, never made it to court. After a criminal investigation by local police failed to produce enough evidence to identify a suspect in the alleged attack, Morissette's family tried to file a civil suit against Chateau Vestavia, alleging everything from negligence to outrageous conduct. They felt there was plenty of evidence to back up those charges. The semen on the nun's bedsheets was enough to suggest sexual contact, and Morissette, because of her dementia, could not legally consent to any sexual act. But none of it would see the light of day in a courtroom.

> An estimated 90% of large nursing-home chains in the U.S. ask residents or their legal guardians to sign away their right to sue upon entering the facility

Previous pages: Arbitration agreements, which require consumers to give up their right to sue, are often buried in fine print

Back in 2011, when Morissette first came to Chateau Vestavia, she had signed the facility's standard admissions contract. Buried in pages of terms and conditions was what is known as a pre-dispute binding arbitration agreement. By signing it, the elderly nun gave up her Seventh Amendment right to trial by jury and any right to bring a civil suit against Chateau Vestavia or its then parent company, Trinity Lifestyles Management, for any reason and at any time in the future.

More than a million other elderly Americans may have waived away their rights in the same way Morissette did. While no organization tracks the precise number of facilities that ask residents to sign pre-dispute arbitration agreements, several experts on arbitration told TIME that roughly half the 2.5 million Americans in nursing homes or senior living centers are likely bound by them. Legal advocates who work on behalf of seniors estimate that as many as 90% of large nursing-home chains in the U.S. now include arbitration agreements in their admissions contracts.

The number is likely to increase in the coming years. In June, the Trump Administration proposed a new rule that would allow nursing homes to require residents to sign arbitration agreements as a condition of admission to a facility: either sign it or find somewhere else to live. With the number of elderly Americans projected to double over the next 30 years, mandatory arbitration clauses in nursing homes will likely affect millions of people. Which means some may find themselves in the same private system of dispute resolution that Morissette and her family fell into.

With arbitration, there is no courthouse, no judge and no jury. There are no requirements to follow state or federal rules on procedure, and effectively no appeals process. Whatever the arbitrator decides is almost always final. Says Brian Lee, a former long-term-care ombudsman for the Florida state government: "People have no idea this is happening."

WHAT IS ARBITRATION?
A mandatory arbitration clause in a customer contract requires consumers to waive their right to sue companies in court. Here's how it often works:

WHO DECIDES
Instead of a judge or jury hearing a case, a private arbitration firm assigns an arbitrator to decide the outcome. Some contracts stipulate which arbitration firm must be used.

THE COST
Arbitration is not always cheaper than going to court. Consumers may need to fork over fees to begin the arbitration process, pay for an attorney and share the cost of hiring an arbitrator. Some studies comparing arbitration and trial outcomes have found that monetary awards are much smaller when decided by an arbitrator.

POST-DECISION RULES
Public court systems have an appeals process, but an arbitrator's decision is almost always final. Arbitration clauses also frequently deny customers the right to file a class action.

II.

MORISSETTE WAS 84 WHEN SHE DECIDED TO MOVE into Chateau Vestavia. Her knees ached from years spent in prayer, and she worried she could no longer climb the stairs to her apartment in a suburb nearby. She also liked that the facility's grassy grounds included a chapel. But within a couple years, Morissette's health declined precipitously. She was moved from the facility's assisted-living area to its ward for people suffering memory loss. Morissette's sister, with whom she was close, became her legal guardian. (Morissette's sister and three nieces, her closest family members, asked not to be named in this story to protect their privacy.)

It's unclear whether Morissette understood what she had agreed to when she signed the admissions contract back in 2011. No one in her immediate family had legal expertise on arbitration. It was only after the alleged rape, when her nieces decided to bring a lawsuit, that the company told them they were legally barred from proceeding. They were, instead, directed to arbitration.

Arbitration was originally designed under U.S. law as a tool for businesses to resolve disputes quickly, without involving the courts. But over the past 30 years, it has expanded. Beginning in the Reagan era, judges decided that the 1925 Federal Arbitration Act didn't apply just to corporate contracts but rather to contracts of any kind—including those between businesses and their customers, doctors and their patients, and employers and their employees. Since at least as far back as 1997, nursing homes in the U.S. have included pre-dispute arbitration clauses in their admissions contract, according to a 2009 study by the American Health Care Association (AHCA), an industry lobbying organization. Now asking the elderly to sign arbitration agreements has become standard industry practice.

To supporters, including powerful business groups like the U.S. Chamber of Commerce, this is a boon. Arbitration, after all, offers a system of dispute resolution that yields fewer cases and can result in smaller payouts. Long-term-care claims subject to arbitration settle for 7% lower total cost to the business and three months sooner than claims resolved without arbitration, according to a 2015 analysis by Aon Risk Solutions. Critics paint a grimmer picture. They say arbitration agreements impede fair trials, limit workers' bargaining power and cripple class actions, making it nearly impossible for customers to hold companies accountable.

Democrats backed by trial lawyers and consumer-rights groups have traditionally opposed arbitration. But as a wave of populism has swept across the Republican Party and challenged the GOP's pro-business wing, some grassroots conservatives are speaking out against the practice too. "This is blatantly a sellout to the big CEOs and the Wall Street guys," says Kenneth Connor, a self-described conservative and a South Carolina trial attorney. Former *Fox & Friends* host Gretchen Carlson became an outspoken critic in 2016 after a pre-dispute arbitration clause in her employment contract barred her from suing Fox News over sexual-harassment claims. (She settled a suit filed against Roger Ailes alone.)

People who sign arbitration agreements often don't even realize what they've done. A 2015 federal government study found that less than 7% of people who'd signed an arbitration agreement as part of a credit-card contract understood that it meant they forfeited their right to sue the company in the future. That same year, researchers at St. John's University School of Law asked nearly 700 people to read a seven-page contract with an arbitration clause containing a class-action waiver, highlighted in bold, capital letters. Less than 9% of respondents correctly described what it did. The challenge of understanding the fine print is even more acute at nursing homes, where about half of residents have dementia, according to the National Center for Health Statistics. Checking into a nursing home is "one of the hardest, most emotional times in anyone's life," says Sarah Rooney, a director at the American Association for Justice, a plaintiff-litigation advocacy group. "And at that moment, you say, 'Oh, and initial here to waive your constitutional protection.' No problem."

But the nursing home and long-term-care industry has a lot at stake: $275 billion in revenue every year. And it has spent a lot of time and money defending those profits. The AHCA, which represents 13,500 facilities nationwide, has been particularly aggressive in its opposition to proposed rules and legislation that would limit the scope of arbitration. In the past decade, the organization has spent nearly $26 million lobbying members of the Senate and House as well as federal agencies on this and other issues, according to the Center for Responsive Politics.

In September 2016, the Obama Administration issued a rule barring nursing homes from asking residents or their guardians to cede their right to a civil suit prior to a dispute. The AHCA and other long-term-care groups sued, claiming the new rule amounted to federal overreach. The industry won. In November 2016, a federal judge in Mississippi preliminarily blocked enforcement of the Obama-era rule. Seven months later, the Trump Administration

VIEWPOINT

The damage done by the most ordinary problem: paperwork

By Russ Graney

I was surprised to discover that the biggest scare for caregivers isn't getting your loved one to the hospital—it's getting them discharged. Through my uncle's years-long journey with early-onset Alzheimer's, I ironically felt most nervous when he was "stable." Harried hospital nurses waited for us to choose where to fax my uncle's 100-page medical record for review. From lists of addresses and phone numbers, we just chose the ones closest to home. The first to respond would win the case and the insurance dollars that followed.

Every year this discharge process inadvertently directs more than $250 billion of Medicare spending to the most convenient post-hospital care providers, not the highest quality. MedPAC reports that 46.8% of patients went to providers that were outscored by five or more providers within a 15-mile radius on quality ratings like patient satisfaction and re-admissions back to the hospital. Less than 15% end up at a top-quality provider within 15 miles. Like the 10 million American families who will choose post-hospital care this year, I never meant to reward my uncle's case to the doctors with the best real estate and fax machines—yet the outdated discharge process I experienced quite nearly guaranteed it.

As my uncle racked up discharges from hospitals to nursing homes to home care, I saw that rearranging the logistics of discharge could realign the incentives. I founded Aidin six years ago to convert the faxes and phone calls of discharges into smart auctions where hospitals could make providers compete for patients. Rather than limiting choice, hospitals would encourage provider competition and show patients all their options. Instead of highlighting geography, hospitals would engage patients with personalized real-time outcomes and cost data right when choosing. Aidin invites interested providers looking for new referrals to offer care to patients and compete to be chosen as patients review patient satisfaction, cost and re-admission scores—82% of patients using Aidin choose the top-performing provider, and high-quality providers win three times as many referrals.

Health care's sheer size means few players have enough access and influence to make a difference. While the biggest innovation plays in health care require significant investment, the smartest approaches address existing operational headaches to strategically instigate change. I never imagined that lists of nursing homes and 100-page faxes could cause so much patient harm and misdirect so much money. While politicians and executives hustle in D.C. and boardrooms to steer the health care juggernaut from above, I remain glued to ordinary health care transactions of discharge, authorization, clinical document transfer, patient choice—the faxes, the calls, the clicks—that repeated in tens, hundreds, thousands and millions at a time generate marketplaces that enable reform today.

Graney is the founder and CEO of Aidin

proposed a new one that was even more to the industry's liking. Not only can nursing homes include mandatory pre-dispute arbitration clauses, they can turn away prospective residents if they refuse to sign.

Industry backers described the new Trump rule as no big deal. "If someone doesn't want to sign it, they don't have to," says Matt Webb, a senior vice president at the U.S. Chamber Institute for Legal Reform. "They can find another nursing home." But critics, including Kelly Bagby of AARP Foundation Litigation, see it as an "unmitigated disaster." Finding another home is not so easy, AARP argues: for one thing, nursing-home residents often need to be within driving distance to family and can't easily shop between facilities.

III.

SISTER MORISSETTE'S ARBITRATION HEARINGS unfolded over the course of a week and a half in March 2017 in a small conference space, no bigger than a hotel room, at a Marriott off Highway 280 in Birmingham. The arbitrator was Phillip Adams, a former Alabama municipal judge who has practiced arbitration since 1996. On most days, Morissette's nieces sat in the back of the room in a row of chairs, near a table with soft drinks and water.

Reed Bates, one of Chateau Vestavia's lawyers, worked to sow doubt about Morissette's allegations, according to a 39-page legal memorandum he submitted to the arbitrator in the case. He called a forensic nurse and a geriatric psychiatrist to testify that they did not believe Morissette had been raped, according to the memorandum, which the plaintiff's lawyer allowed TIME to review. Bates also called witnesses to testify that they had heard rumors that Morissette masturbated, according to Cameron Hogan, Morissette's lawyer. During questioning, Bates suggested that the nun might have caused her own vaginal abrasions, according to Hogan. The defense also speculated about how semen stains had ended up on the nun's bedsheets, proposing that the DNA may have gotten there while being laundered or handled by staff.

Hogan told TIME that the defense team's tactics, including invoking hearsay, would not have been permissible in a normal court. The witnesses who related rumors about masturbation, for example, said in sworn depositions that they had never seen Morissette engage in such activity. Nor did the defense provide any evidence of semen being present

in the laundry room or on staffers' hands. "It's all rumor and speculation," Hogan says. "There's no way a judge would have allowed it."

In a civil trial, Hogan says, he would have taken a different tack. For example, he would have focused the jury's attention on the nursing home's failure to preserve surveillance footage from the night of the alleged rape. In the days following the incident, Morissette's family asked the facility to preserve the records, according to a letter from Hogan's office. But a month later, Chateau Vestavia had allowed its system to automatically delete the footage. That wouldn't look good to a jury, Hogan says. "If your employees were under police investigation for sexual assault," he explains, "you'd think you'd be sure to preserve that tape." (A representative of Chateau Vestavia, which is now under new ownership and has been renamed Morningside of Vestavia Hills, told TIME that the surveillance footage did not include images of Morissette's hallway. The defendant's post-arbitration memorandum also says that the police department declined an offer to review the footage on site prior to its deletion.)

Opponents of arbitration object not just to the way a procedure occurs but to arbitrators themselves. A single person is often chosen from a short list of regional professionals, which means that one individual may hear multiple disputes from the same handful of local defendants. That can create a conflict of interest, says Paul Bland, executive director at Public Justice, a litigation firm. Arbitrators, who typically make $300 to $600 an hour, have an interest in keeping repeat clients happy, Bland says. "So if you want a paycheck next month," Bland says, "you might have in the back of your mind the idea of making a favorable decision for the guy who's going to hire you next."

On May 5, 2017, Adams released his final decision in the arbitration. In a concluding order reviewed by TIME, Adams described Morissette as "a wonderful person" but said he could not engage in "conjecture and speculation" to conclude that she had been raped. He couldn't be certain about how the semen ended up on the bedsheets, he explained, or how she had come to sustain vaginal injuries or bleeding. To Adams, she also did not seem upset enough in her testimony to police just after the assault allegedly occurred. "I did not hear the emotion from Ms. Morissette in this audio recording," the arbitrator wrote, "that I would expect to hear from someone describing being sexually assaulted."

Chateau Vestavia, Adams decided, could not be held responsible. Neither the assisted-living facility nor Trinity Lifestyles Management would be required to issue an apology. Nor would Chateau Vestavia be asked to inform the public that the dispute had occurred. Morissette's family would receive no damages. (Morissette's nieces, who had pursued the case, had asked for $5 million, but they stood to gain nothing personally. Morissette's will specified that her assets would end up with the Catholic Church.)

And with that, the case was closed. Morissette's family had no realistic way to appeal. Many nursing-home contracts now include so-called delegation clauses, which stipulate that any challenge to an arbitration must be answered in arbitration. If you believe your case should not be in arbitration, that question must be settled in arbitration too. As a final indignity, Morissette's family was handed a bill for roughly $3,000 to cover the cost of renting the Marriott room where the arbitration had taken place.

In a subsequent email to TIME, Adams wrote that he does "not believe it is ever appropriate, responsible or ethical for a judge or arbitrator to discuss his or her rationale or the basis of a decision." Bates and his firm, Starnes Davis Florie of Birmingham, did not respond to multiple requests for an interview. Trinity wrote in a statement to TIME that Morissette's claim was "taken seriously." "The allegation was carefully reviewed internally, by outside experts in the health care field, and by all appropriate regulatory agencies," the statement went on. "This process found no basis of proof to support the allegation. In fact, the legal process cleared our company of any wrongdoing."

Morissette herself was left with a profound sense of guilt. For more than six decades, she told investigators, she had honored her vow of chastity, saving herself to "give it to God." Her virginity, she said, had been something special to her. "I valued it, and I lost it," she told police in an interview a few days after the incident. She said she felt like "a piece of trash." It's around then that the recording is interrupted by the voice of a police officer. He asks Morissette if she has spoken to a priest. She says no. The cop responds again. "Because maybe he could explain about things that are lost and things that are taken. There's a difference there," he says gently. "There's a big difference." ◻

With arbitration, there is no courthouse, no judge and no jury. There are no requirements to follow state or federal rules on procedures, and effectively no appeals process. Whatever the arbitrator decides is almost always final

THE SCOPE OF PRE-DISPUTE ARBITRATION

Beyond nursing homes, arbitration clauses are in contracts for a multitude of everyday services. Companies say they save court costs; opponents say they harm consumers. Here are a few, according to a 2015 Consumer Financial Protection Bureau report.

MOBILE PHONES

Of eight wireless services examined in the study, seven included arbitration clauses in their consumer contracts.

CREDIT CARDS

Of America's 160 million credit-card holders, about 80 million—roughly a quarter of the U.S. population—are subject to arbitration clauses.

STUDENT LOANS

A third of those who graduate with a bachelor's degree have nonfederal loans from private online lenders, credit unions or banks. Of the seven largest private lenders studied, six used arbitration clauses.

THE MAKING OF

GENIUS

FRANKLIN, EINSTEIN, JOBS, DA VINCI.

HOW HISTORY'S GREATEST THINKERS BROKE WITH TRADITION

AND SOLVED PROBLEMS NOBODY ELSE COULD SEE.

By Walter Isaacson

BEING A GENIUS IS DIFFERENT THAN MERELY being supersmart. Smart people are a dime a dozen, and many of them don't amount to much. What matters is creativity, the ability to apply imagination to almost any situation.

Take Benjamin Franklin. He lacked the analytic processing power of a Hamilton and the philosophical depth of a Madison. Yet with little formal education, Franklin taught himself to become the American Enlightenment's best inventor, diplomat, scientist, writer and business strategist. He proved, by flying a kite, that lightning is electricity, and he invented a rod to tame it. He devised clean-burning stoves, charts of the Gulf Stream, bifocal glasses, enchanting musical instruments and America's unique style of homespun humor.

Albert Einstein followed a similar path. He was slow in learning to speak as a child—so slow that his parents consulted a doctor. The family maid dubbed him "*der Depperte,*" the dopey one, and a relative referred to him as "almost backwards." He also harbored a cheeky rebelliousness toward authority, which led one schoolmaster to send him packing and another to amuse history by declaring that he would never amount to much. These traits made Einstein the patron saint of distracted schoolkids everywhere.

Benjamin Franklin and his son William used a key and a kite to prove that lightning was electricity

But Einstein's contempt for authority also led him to question received wisdom in ways that well-trained acolytes in the academy never contemplated. And his slow verbal development allowed him to observe with wonder the everyday phenomena that others took for granted. "The ordinary adult never bothers his head about

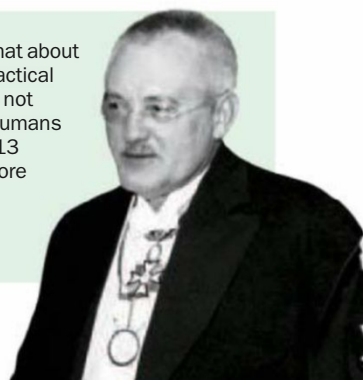
WHO'S THE GREATEST GENIUS OF ALL TIME? WE ASKED SIX MODERN-DAY INNOVATORS TO WEIGH IN

GEORGE CHURCH on

CARL BOSCH

The term *genius* is often reserved for freakish insights into fundamentals of nature. But what about an event unique in the history of our species? After many great chemists failed to find a practical process to convert nitrogen gas into ammonia for fertilizer, Carl Bosch managed. This may not seem like the romantic, flash-of-pure-thought type of genius, but it revolutionized the way humans grow food. In large part because of Bosch, our species surpassed 1.8 billion people in 1913 before rising to 7.5 billion today. And once we had sufficient crops, we were able to have more wealth and less violence per capita, and start distributing knowledge on a wider scale.

Church, a geneticist, helped pioneer the gene-editing technology CRISPR



the problems of space and time," Einstein once explained. "But I developed so slowly that I began to wonder about space and time only when I was already grown up." So it was that in 1905, while he was toiling away as a third-class examiner in the Swiss patent office after graduating fourth out of the five students in his class at the Zurich Polytechnic, Einstein revolutionized our understanding of the universe by coming up with the two pillars of contemporary physics: relativity theory and quantum theory. And he did so by rejecting one of the basic assumptions that Isaac Newton made at the beginning of *The Principia,* that time marches along, second by second, irrespective of how we observe it. Today Einstein's name and likeness—the wild halo of hair, the piercing eyes—are synonymous with *genius.*

Then there's Steve Jobs. Much like Einstein, who would pull out his violin to play Mozart when he was stymied in pursuit of theories (he said it helped him reconnect with the harmonies of the cosmos), Jobs believed that beauty mattered, that the arts,

PATRICIA BATH on

MARIE CURIE

Madame Curie is best known as the first woman to win a Nobel Prize. But I prefer to recognize Dr. Curie's genius rather than her gender. In 1903, Curie and her husband Pierre won a Nobel Prize in Physics (alongside Henri Becquerel) for researching "invisible" atomic properties that appeared to challenge the laws of thermodynamics and led Curie to coin the term *radioactive*. In 1911, five years after the death of her husband, Curie won a second Nobel Prize, this time for discovering the elements radium and polonium and opening the door to the age of nuclear chemistry. Her research paved the way for brachytherapy, or using internal radiation to treat cancer.

But Curie was more than a brilliant scientist. She was a passionate wife and mother to Irène Joliot-Curie, who herself won a Nobel Prize in Chemistry in 1935, and an educator whose students include Marguerite Perey, who discovered the element francium. Curie was a STEM role model and feminist champion before society even knew it needed gender equity in the halcyon halls of science.

Bath, an ophthalmologist, is the first female African-American doctor to receive a medical patent

PREVIOUS PAGE: APIC/GETTY IMAGES; DRAWING: HULTON ARCHIVE/GETTY IMAGES; CHURCH, BATH: GETTY IMAGES; BOSCH: ATELIER BALASSA—ULLSTEIN BILD/ GETTY IMAGES; CURIE: OXFORD SCIENCE ARCHIVE/PRINT COLLECTOR/GETTY IMAGES

ANN PATCHETT on

JANE GOODALL

What if genius is knowing the thing you are meant to do in life, and then doing it without regard for the time it will take? When Jane Goodall was a child in England, she knew she was meant for animals, for Africa. She traveled to Kenya, met famed anthropologist Louis Leakey and was soon chosen to study the chimpanzees in Gombe. Without a university education, or fear, she headed into the jungle with a notebook, sat atop a grassy knoll or climbed a tree, and waited.

Genius built on the ability to wait seems particularly female: curiosity dovetailed with patience. The chimps had rarely been studied long term in the wild; she gave them her limitless attention. Much of her early work was filmed, and when we see the chimpanzees finally go to her with their own shy curiosity, it feels as if the walls between the wild and the tamed have fallen.

Having raised awareness to the essential task of conservation, the woman patient enough to be accepted by wild chimpanzees has now turned her gaze to the planet. If anyone could save us, it would be her.

Patchett is a best-selling author, most recently of Commonwealth

sciences and humanities should all connect. After dropping out of college, Jobs audited classes on calligraphy and dance before seeking spiritual enlightenment in India—which meant that every product he made, from the Macintosh to the iPhone, had a beauty that was almost spiritual in nature, unlike the products of his competitors.

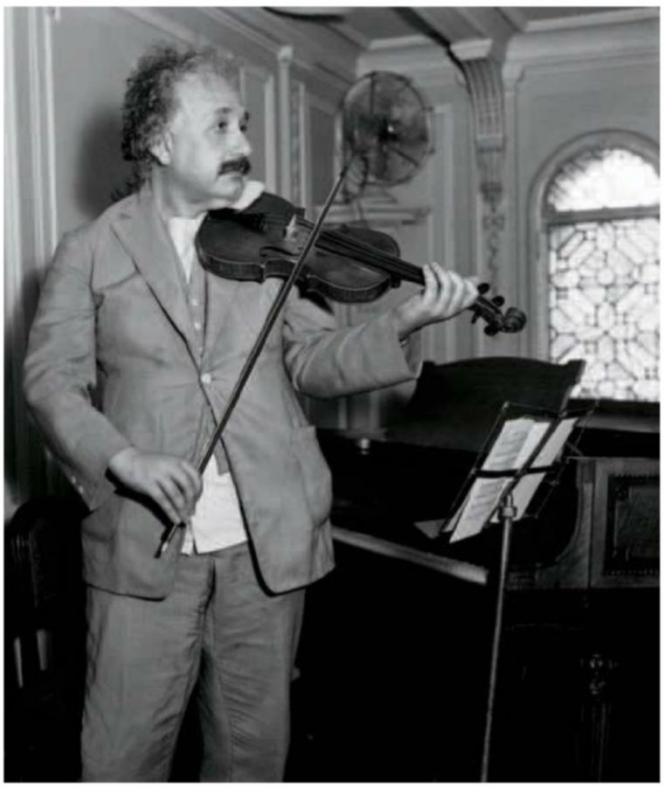
STUDYING SUCH PEOPLE led me to Leonardo da Vinci, who I believe is history's greatest creative genius. Again, that doesn't mean he was the smartest person. He did not have the superhuman theoretical brainpower of a Newton or an Einstein, or the math skills of his friend Luca Pacioli.

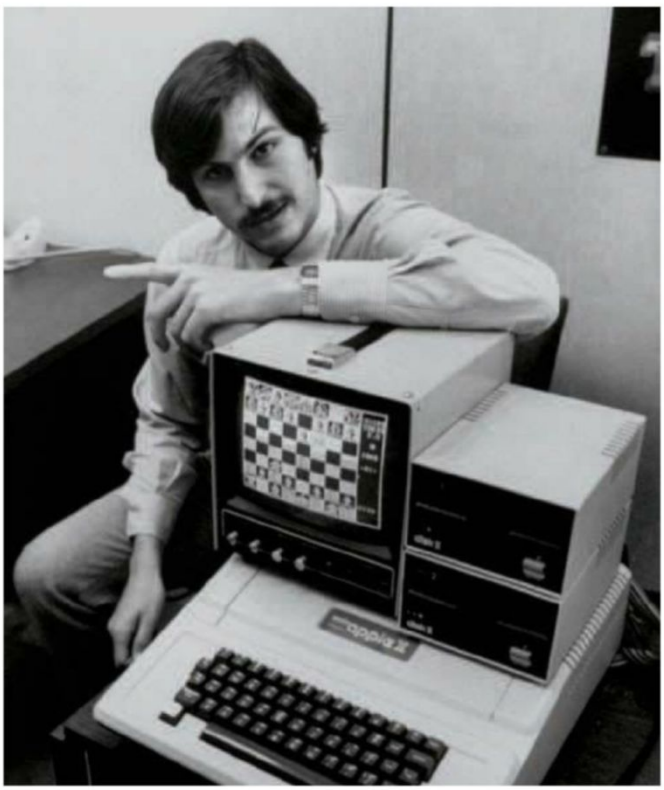
But he could think like an artist and a scientist, which gave him something more valuable: the ability to visualize theoretical concepts. Pacioli may have extended Euclid's theories to produce influential studies on mathematical perspective and geometric proportions. But da Vinci's illustrations—of rhombicuboctahedrons and dozens of other multifaceted geometric shapes—brought it to life, which was ultimately more important. Over the years, he did the same thing for geography (through the aerial three-dimensional maps he drew for warlord Cesare Borgia), anatomy (through his memorable drawings of *Vitruvian Man* and a fetus in the womb) and more—all while creating some of the world's greatest works of art.

Like Franklin, da Vinci was largely self-taught. He was born out of wedlock, which meant that he could not follow in the family tradition of being a notary and was not eligible to attend one of the "Latin schools" that taught the classics and humanities to well-groomed young men of the early Renaissance. And like Einstein, da Vinci had a problem with authority. He often seemed defensive about being an "unlettered man," as he dubbed himself with some irony, but had little patience for the "foolish folk" who thought less of him. "They strut about puffed up and pompous, decked out and adorned not with their own labors, but by those of others," he wrote in one of his notebooks.

So it was that da Vinci learned to challenge conventional wisdom, ignoring the dusty scholasticism and medieval dogmas that had accumulated in the millennia since the decline of classical science. He was, by his own words, a disciple of experience and experiment—"Leonardo da Vinci, disscepolo della sperientia," he once signed himself. That approach to problem-solving was nothing short of revolutionary, foreshadowing the scientific method developed more than a century later by Francis Bacon and Galileo Galilei. And it elevated da Vinci beyond even the smartest of his peers. "Talent hits a target that no one else can hit," wrote the German philosopher Arthur Schopenhauer. "Genius hits a target no one else can see."

PATCHETT, RIHANNA: GETTY IMAGES; GOODALL: CHE ROSALACE—WIREIMAGE/GETTY IMAGES; JORDAN: ANDY LYONS—ALLSPORT/GETTY IMAGES; EINSTEIN: BETTMANN ARCHIVE/GETTY IMAGES; JOBS: RALPH MORSE—THE LIFE IMAGE COLLECTION/GETTY IMAGES





LIKE EINSTEIN, da Vinci's most inspiring trait was his curiosity. The thousands of pages of his notebooks that survive sparkle with questions he listed to pursue. He wanted to know what caused people to yawn, how they walked on ice in Flanders, methods for squaring a circle, what makes the aortic valve close, how light was processed in the eye and what that meant for the perspective in a painting. He instructed himself to learn about the placenta of a calf, the jaw of a crocodile, the muscles of a face, the light of the moon and the edges of shadows. "Describe the tongue of the woodpecker," he wrote in one of my favorite entries. Da Vinci's grand and noble ambition was to know everything there was to know about everything that could possibly be known—including our cosmos, and how we fit in.

Much of his curiosity was applied to topics that most of us have outgrown even noticing. Take the blue sky, for example. We see it almost every day, but not since childhood have most of us stopped to wonder why it is that color. Da Vinci did. He wrote page after page in his notebook exploring how the scattering of light by water vapor creates various misty or vibrant shades of blue. Einstein puzzled over that question too: building on Lord Rayleigh's work, he worked out the mathematical formula for light-spectrum scattering.

Albert Einstein (in 1932) and Steve Jobs (in 1979) were both passionate about combining art and science

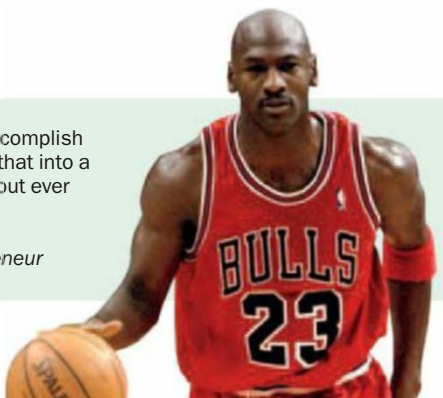
Da Vinci never stopped observing. When he visited the moats surrounding Milan's castle, he looked at the four-wing dragonflies and noticed how the wing pairs alternated in motion. When he walked around town, he tracked how the facial expressions of people talking related to their emotions. When he saw birds, he noted which ones moved their wings faster on the upswing than on the downswing, and which ones did the opposite.

RIHANNA on

MICHAEL JORDAN

Michael Jordan is a legend himself, and what he's been able to accomplish in his sports career is outstanding. But the way he's transformed that into a timeless brand that stands on its own and will live on forever without ever getting old—that's genius.

Rihanna is an award-winning singer, fashion designer and entrepreneur



CHRISTOPHER NOLAN on

DAVID HOCKNEY

Hockney's art assures his place in the history of imagemaking, but I believe he will be remembered at least as much for changing the way we view that history. Sixteen years ago, his paradigm-shifting book *Secret Knowledge* presented his rediscovery of the use of optics in painting, and his continuing research and experiments show us that however much we have convinced ourselves that we see the world as a camera does, we do not. We visualize our world in terms of fixed perspective because of the dominance of photography (a dominance that he reveals began hundreds of years earlier than we had thought). Like a character in a science-fiction story granted special insight, he has broken free from our camera-derived prejudice to offer the truth: the development of images throughout history is not a progression from the naive to the sophisticated, but a series of creative choices based within the imaging paradigms of each era. Not only is Hockney altering the lens through which we view history, he is also forcing us to confront the truth that we view history through such a lens in the first place.

Nolan is an acclaimed director

Leonardo da Vinci started painting his famous *Last Supper* mural in Milan in 1495

When he poured water into a bowl, he watched how the eddies swirled.

Much like Franklin—who sailed for England as a teenage runaway and later measured the temperature of the ocean currents, thereby becoming the first person to chart the Gulf Stream accurately—da Vinci could not resist chasing and studying whirlwinds of air when he was out on a ride.

Those observations led him to create some of his most brilliant strokes of art, from the ripples of the River Jordan around the ankles of Jesus in the Baptism of Christ to the disturbingly powerful *Deluge* drawings. He was also the first person to explain how the eddies of blood from the heart cause the aortic valve to close. And his drawing of *Vitruvian Man*—a work of anatomical exactitude combined with stunning beauty—became the preeminent icon of the connection of art and science.

SOME PEOPLE ARE GENIUSES in a particular field, like Leonhard Euler in math or Wolfgang Amadeus Mozart in music. But to me the most interesting geniuses are those who see patterns across nature's infinite beauties. Da Vinci's brilliance spanned multiple disciplines. He peeled flesh off the faces

PAINTING: UNIVERSAL HISTORY ARCHIVE/GETTY IMAGES; NOLAN, ADJAYE: GETTY IMAGES; HOCKNEY: DAVID M. BENETT—GETTY IMAGES; BOND: ANTHONY HARVEY—GETTY IMAGES

of cadavers, delineated the muscles that move the lips and then painted the world's most memorable smile. He studied human skulls, made layered drawings of the bones and teeth and conveyed the skeletal agony of St. Jerome in *St. Jerome in the Wilderness*. He explored the mathematics of optics, showed how light rays strike the cornea and produced magical illusions of changing visual perspectives in *The Last Supper.*

There have been, of course, many other insatiable polymaths, and the Renaissance produced other Renaissance men. But none painted the *Mona Lisa,* much less did so at the same time as producing unsurpassed anatomy drawings based on multiple dissections, coming up with schemes to divert rivers, explaining the reflection of light from the earth to the moon, opening the still-beating heart of a butchered pig to show how ventricles work, designing musical instruments, choreographing pageants, using fossils to dispute the biblical account of the Deluge and then drawing a deluge. Da Vinci was a genius, but not simply because he was smart. He was, more important, the epitome of the universal mind, the person most curious about more things than anyone else in history.

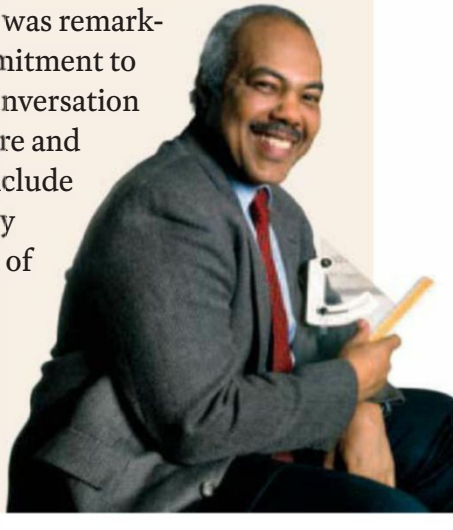
Isaacson, a former managing editor of TIME, is the author of Benjamin Franklin: An American Life, Einstein: His Life and Universe, Steve Jobs *and* Leonardo Da Vinci, *from which parts of this piece are adapted*

DAVID ADJAYE on

MAX BOND

It's no overstatement to call Max Bond the most influential African-American architect of his generation. I had long admired him for his success and dedication, and the breadth of his work across Europe, West Africa and the U.S. allowed me to imagine possibilities for my own career. But it was when we collaborated—during the last months of his life, on the competition for the National Museum of African American History and Culture (NMAAHC)—that I came to understand his true genius: the instinct for the empowering capacity of the built environment.

Whether as educator, designer or planner, Max had an ability to build networks and embrace communities. This unflinching drive to challenge marginalization is visible across his work. He was an architect of stories, rendering museums and housing equally with his sense of empathy. Given the very real constraints of the architectural industry, the mere fact of his success was remarkable. But his commitment to broadening the conversation around architecture and urban design to include issues of inequality was nothing short of revolutionary.



Adjaye is an award-winning architect

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The "fourth dimension" in the Futurecraft 4D is data from the wearer

PHOTOGRAPH BY SEBASTIAN MADER FOR TIME

A shoe engineered to boost performance

FUTURECRAFT 4D // DEVELOPED BY ADIDAS

Imagine a shoe that lets you run faster, pivot better and jump higher. That's the idea behind the Futurecraft 4D, a new sneaker from Adidas whose midsole can be expertly tailored to the needs of its wearers—not only in size and shape, but also in flexibility, impact type, cushioning and more. The key is the 3-D printing process, which enables Adidas to "look at every single square millimeter of a midsole and tune it from a performance standpoint," says Al VanNoy, who headed the project. It would take weeks to make those modifications using traditional shoemaking methods. But the Futurecraft 4D midsoles can be printed in as little as two hours, meaning Adidas could even produce them in stores. At least that's a possibility for the future. For now, Adidas is rolling out a standardized version (based on 17 years' worth of data from runners) beginning in mid-December. *—Julia Zorthian*

A portable, wearable breast pump

WILLOW PUMP // DEVELOPED BY WILLOW

Breastfeeding is easier said than done, especially for moms on the go. Most electric breast pumps use air-horn-shaped collection bottles, which are tethered to loud, whirring machines. Mountain View, Calif.–based Willow is working to change that. Its battery-powered alternative is quiet and small enough so that women can slip it into their bra and pump wherever they want. (Each is lined with a freezer-safe bag.) "Instead of scheduling life around the pump, you can play with an older child or take a conference call," says Naomi Kelman, the company's president and CEO. That convenience comes at a cost: $480 plus 50¢ per 4-oz. bag, which is considerably pricier than traditional models. Kelman says the company is making design tweaks based on feedback from moms who are testing a beta version now. If Willow delivers on its promises when it launches next year, it could revolutionize an industry in desperate need of disruption. —*Emily Barone*

A simpler home security system

NEST SECURE // DEVELOPED BY NEST

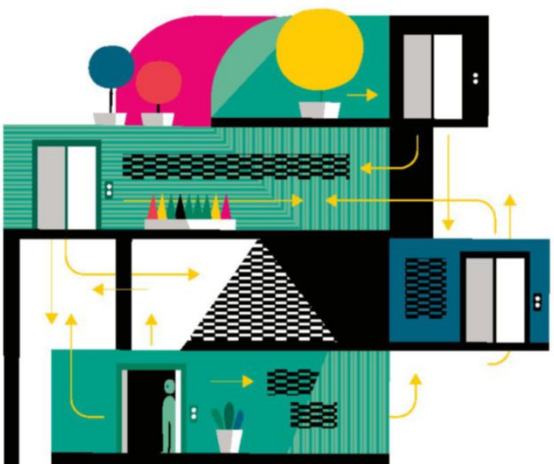
Most home security systems are created to keep intruders out. Nest, a subsidiary of Google parent Alphabet, built its Secure system "the complete other way around," says chief product officer Matt Rogers, choosing to focus just as much on making it simpler for its users to get in. Case in point: the Secure hub can be disarmed by waving a key fob instead of typing a pass code, and those key fobs can be programmed to work within certain time frames—so a babysitter, for example, could access your home only while she's working. A smartphone app also lets users manage their system from afar. (Similar tech exists from Abode and SimpliSafe, among others.) Of course, the Secure is plenty capable of guarding a home: if an intruder tries to break or unplug the hub, it will sound an 85-decibel alarm, and companion motion sensors can alert users when a door or window has been opened. —*Lisa Eadicicco*

$499 for a starter pack (a hub, two motion sensors, two key fobs) Available at nest.com

Elevators that move beyond up and down

MULTI // DEVELOPED BY THYSSENKRUPP

What if elevators could move sideways, instead of just up and down? It's a question straight out of *Charlie and the Chocolate Factory,* and Germany-based Thyssenkrupp has a real-life answer: MULTI, a system of elevators that ditches old-school pulleys for the same magnetic levitation tech that enables high-speed trains. The elevator cars can travel in multiple directions and even pass each other within a shaft—features that could not only reduce wait times, but also fundamentally "change how buildings are constructed," says Andreas Schierenbeck, CEO of Thyssenkrupp Elevator. (Think horizontal offshoots of straight, vertical towers.) Following a successful test this year, the first MULTI is set to debut in Berlin by 2021. —*Julia Zorthian*



WILLOW: NEST; ELEVATOR: ILLUSTRATION BY ALEX EBEN MEYER FOR TIME; SPARK: DJI

The Spark's body measures 143 by 143 by 55 mm, roughly the size of a soda can

In "Sport Mode," it can fly at speeds of up to 31 m.p.h.

Drones that put selfie sticks to shame

SPARK // DEVELOPED BY DJI

Airborne drones have exploded in popularity over the past few years, improving everything from mapmaking to search-and-rescue operations. The DJI Spark has a more down-to-earth goal: helping anyone take better photos, videos and "dronies," a.k.a. drone selfies. To that end, it's easier to operate (gesture recognition means you can control it with a wave of your hand), harder to crash (an array of sensors help prevent midair collisions) and relatively cheap ($499)—though its maximum flight time of 16 minutes is shorter than higher-end models. "We see Spark as the starting point of a whole new series of drones," says Paul Pan, DJI senior product manager. So far, that strategy is working: thanks in part to the Spark, which launched in June, China-based DJI sells half of all drones bought in the U.S. —*Alex Fitzpatrick*

$499+
Available at DJI.com

A craft that will probe beyond the surface of Mars

MARS INSIGHT // DEVELOPED BY NASA

The train to Mars pulls out only once every two years. That's how often Earth and its neighbor move into alignment for the quickest possible journey from one planet to the other. NASA plans to make good use of the 2018 window, with the planned launch in May of the Mars InSight lander, which, as its name suggests, will give scientists their best look ever at the interior of the Red Planet. (The InSight was initially slated to launch in '16, but glitches in its seismograph system led to delays.) Unlike Curiosity and other Mars rovers, this craft will stay in one place. But with good reason: it will hammer a probe more than 16 ft. into the Martian surface to study the planet's thermal history—in effect, taking its geological temperature. Meanwhile, the seismometers will study Mars' composition, an X-ray radio link will analyze wobble (the way Mars spins on its axis and is gravitationally tugged by other bodies in the solar system), and cameras will return panoramic and 3-D pictures. The spacecraft should operate for 728 Earth days (708 Martian sols)—or until just about the time the 2020 flight is ready to go. —*Jeffrey Kluger*

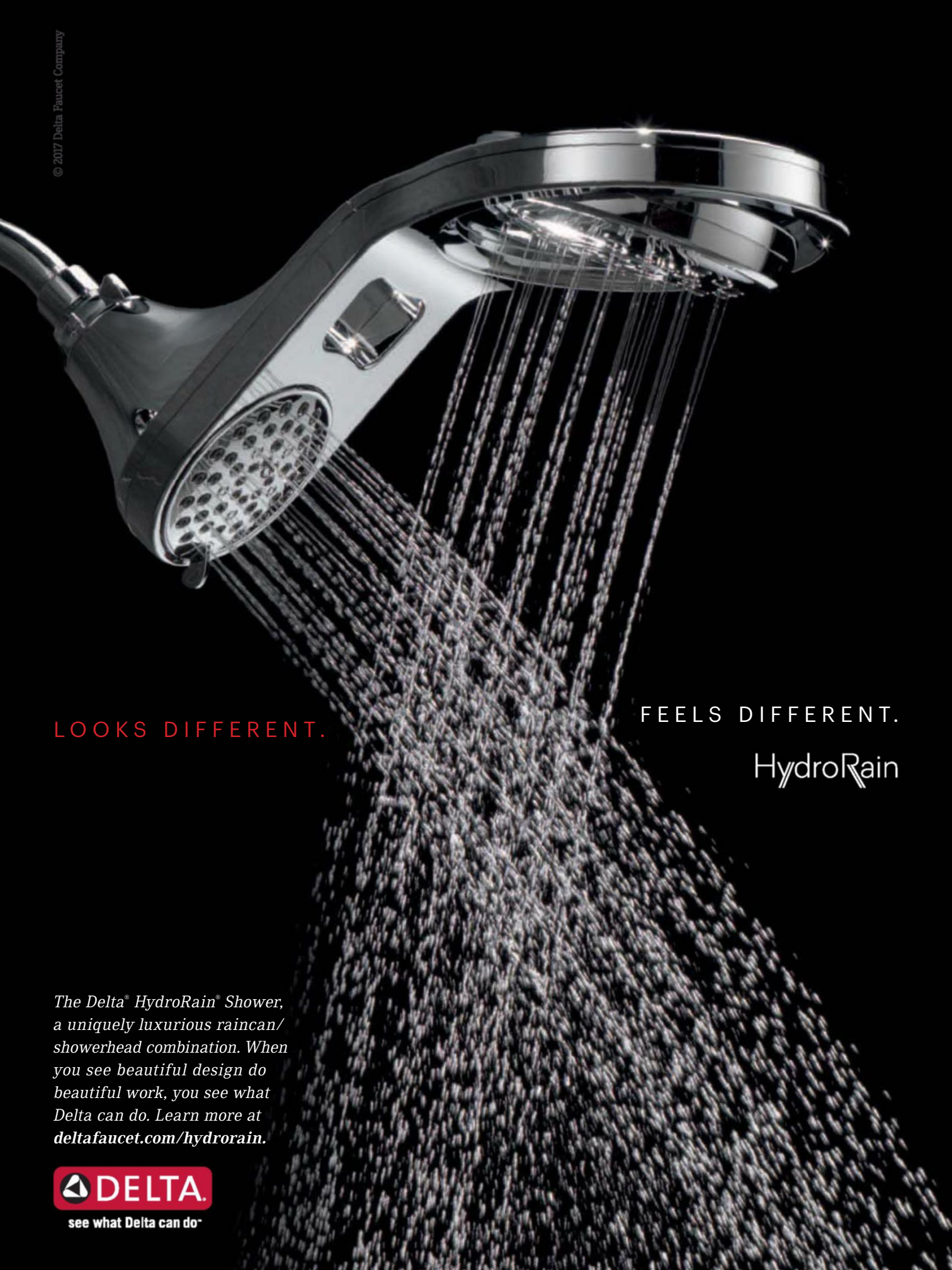
NASA's Jet Propulsion Lab has spent more than five years and roughly $830 million developing the InSight

Cars that could make electric mainstream

MODEL 3 // DEVELOPED BY TESLA

Electric cars typically have one of two problems: they're either too expensive, or they have a too-limited range. Tesla's Model 3 aims to render both issues moot: it's the buzziest in a series of $35,000-and-up electric cars offering more than 200 miles of driving distance on a single charge (alongside the Chevrolet Bolt). Consumers are certainly intrigued: demand for the Model 3 is so high—as many as 1,800 orders each day, per company estimates—that Tesla is struggling to keep up. "We are deep in production hell," Elon Musk, the company's co-founder and CEO, tweeted in October. But Tesla remains confident it will catch up—which is good for its shareholders, and also the environment. Vehicles like the Model 3, which runs on batteries rather than gasoline, are likely to play a major role in combating climate change. —*Alex Fitzpatrick*

MARS INSIGHT: NASA/JPL-CALTECH/LOCKHEED MARTIN; TESLA MODEL 3: TESLA



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The best inventions solving everyday problems

Halo Top's flavor selection includes birthday cake, rainbow swirl *(right)* and chocolate mocha chip

PHOTOGRAPH BY SEBASTIAN MADER FOR TIME

The company, launched in 2012, was originally called Eden Creamery; it changed its name after a lawsuit

Guilt-free ice cream

HALO TOP // DEVELOPED BY HALO TOP

It sounds almost too good to be true: a flavor-packed, low-sugar ice cream with no more than 360 calories—per pint. But such is the promise of Halo Top, whose containers invite patrons to "go ahead, eat the whole pint" in one sitting and whose product the company's CEO, Justin Woolverton, routinely calls "healthy." On the latter point, there has been some debate. Halo Top, which is also enriched with protein, maintains its low calorie count using the zero-calorie sweetener Stevia, along with cane sugar and alcohol. While those ingredients are fine to consume, they're not exactly paragons of nutrition. Then again, Halo Top's goal isn't to replace fruits and veggies; it's to give diet-conscious consumers "an option to eat ice cream again," says Woolverton. To that end, Halo Top (which retails for about $5 per pint) is succeeding in spades. Its annual sales soared roughly 2,500% last year, and it recently beat out Häagen-Dazs and Ben & Jerry's to become the best-selling pint in America. —*Mahita Gajanan*

The clinic that redefines preventive care

FORWARD // DEVELOPED BY FORWARD

In the U.S., patients tend to visit doctors only after they get sick. But what if both parties worked together to pre-empt medical issues as well? That's the idea behind Forward, a new type of wellness clinic that works much like a high-end gym. For $149 a month, users get unlimited access to genetic screenings, blood testing, weight-loss planning, routine doctors' visits and more—all of which help Forward "look toward your future and look out for things that are longer term," says Adrian Aoun, the founder and CEO, and a former Google executive. (Forward does offer reactive medicine too, including unlimited generic medications without co-pays.) Critics argue most Americans can't afford the clinics, especially since they do not accept health insurance. But as a niche experiment, Forward appears to be working: the company, which is based in San Francisco, has reportedly raised $100 million in funding and recently opened a location in L.A.; it plans to expand to other cities in the future. *—Alexandra Sifferlin*

Forward members can also get round-the-clock medical advice using its smartphone app

Mugs that heat your coffee just right

EMBER MUG // DEVELOPED BY EMBER TECHNOLOGIES

Anyone who's ever sipped coffee knows how temperature can affect taste: if it's too hot, it'll scald your mouth; too cold and it's barely worth drinking. By one estimate, you have only about 37 seconds to enjoy the brew at an ideal level of warmth. "That didn't make any logical sense to me," says Clay Alexander, CEO and founder of Los Angeles–based Ember Technologies. So he invented a solution: the stainless-steel Ember mug. Reinforced in white ceramic coating, it keeps coffee or tea at a precise temperature—anywhere from 120°F to 145°F, set through an app—for about an hour on its own and for an unlimited amount of time on its charging saucer. It's the second in Ember's series of smart drinking devices, following a temperature-control tumbler last year. And it may be poised to become a desktop staple: the mug launched on Nov. 9 and is already being sold in 4,600 U.S. Starbucks stores. *—Melissa Chan*

$80
Available at ember.com

FORWARD: JEREMY BITTERMANN—FORWARD; EMBER; FENTY BEAUTY

Makeup shades for every skin tone

FENTY BEAUTY // DEVELOPED BY RIHANNA AND KENDO

"Makeup is like a secret weapon," says pop superstar Rihanna. "It can go from very subtle to a complete transformation." But for many, that secret weapon is too secret: makeup companies often cater to women with light to medium skin tones, both in products and advertising, and sideline women of color. Not so with Rihanna's line, Fenty Beauty, which launched in September with 40 shades of foundation and a diverse array of makeup models. "It was important that every woman felt included," she says, noting that she had "100% involvement" in the development process (alongside parent company Kendo). Almost immediately, the deeper tones started selling out at Sephora; shortly thereafter, brands such as Make Up For Ever and L'Oréal launched campaigns targeting women of color. Now Rihanna is focused on launching new Fenty Beauty collections and taking her brand to the next level. "I love challenges," she says. "So I'm going to continue to have fun and push the boundaries in this industry." —*Cady Lang*

$18+
Available at fentybeauty.com

The DIY cooking companion

TASTY ONE TOP // DEVELOPED BY BUZZFEED LABS

With more than 100 million followers across Instagram and Facebook, BuzzFeed's Tasty—which distills complex recipes into bite-size video tutorials—may well be the Internet's most popular cooking channel. But there's "a gap between being excited about seeing something on Facebook and actually doing it," says Ben Kaufman, head of BuzzFeed's Product Labs. So he and his team set out to close it. The result: Tasty One Top, an induction cooktop that syncs with the Tasty smartphone app to guide would-be chefs through different recipes. A built-in sensor and companion thermometer track temperature, so the app can tell users when to flip a steak, for example, to make sure it's medium rare. Other companies, such as FirstBuild, Hestan and Pantelligent, have launched similar products in recent years. Tasty's advantage is its already robust arsenal of recipes, spanning everything from cheeseburger onion rings to ice cream churro bowls. Both those recipes require deep frying, which "freaks a lot of people out," says Kaufman. But having an appliance that makes it "easy and predictable," he adds, should empower them to try. *—Lisa Eadicicco*

Several celebrity chefs have appeared in Tasty videos, including Marcus Samuelsson and Martha Stewart

$149
Available at tastyshop.com

An air filter that zaps away pollutants

MOLEKULE // DEVLOPED BY MOLEKULE

Most air filters improve air quality by trapping harmful pollutants in a filter. Molekule takes that idea one step further—by destroying them altogether. The key is its specially coated nanofilter, which is designed to react with light in a way that prevents toxins, including mold and bacteria particles, from growing back. It's similar to "the way light shines on a solar cell and generates electricity," says Jaya Rao, who co-founded the company alongside her brother, CEO Dilip Goswami, and father, Dr. Yogi Goswami, who heads the Clean Energy Research Center at the University of South Florida. Although the price—nearly $800, plus $99 per year for new filters—has raised some eyebrows, proponents argue that the improved air quality is worth it. Investors are making the same bet: Molekule has raised almost $15 million to date. *—L.E.*

$799
Available at molekule.com

TASTY; MOLEKULE


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for GOOD

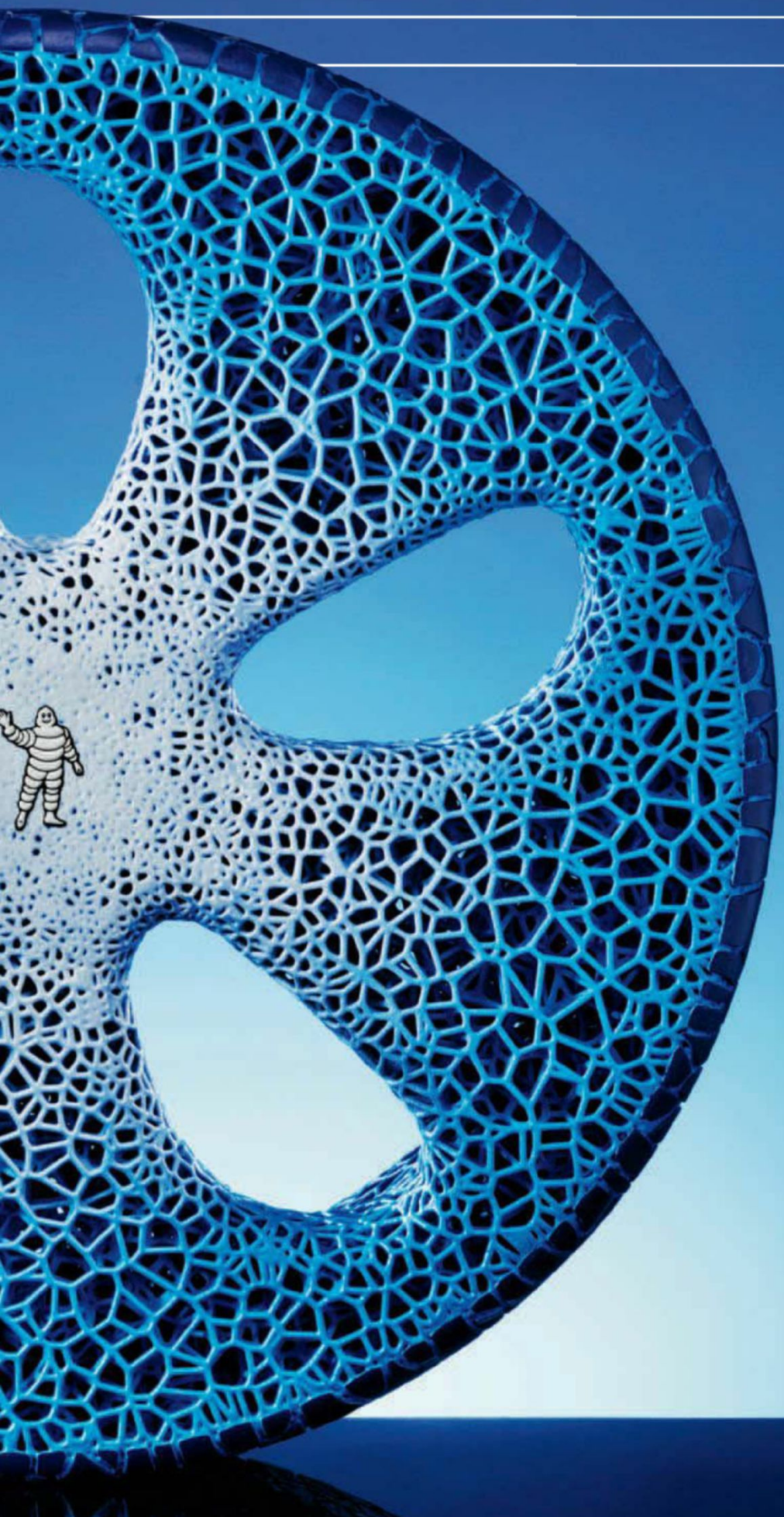
The best inventions making the world better

Über-adaptable airless tires

VISION CONCEPT // DEVELOPED BY MICHELIN

In the future, our cars will be smart, and our tires will be smarter. Or so suggests Michelin. Its Vision concept—unveiled this year to demonstrate the potential of tire technology—certainly makes a compelling case. For starters, it's airless, eliminating the need to worry about pounds per square inch. It's also made from recycled materials in an effort to reduce waste. But the most impressive feature may be its 3-D-printed treads, which can be swapped in and out to accommodate various road conditions—without changing the tire itself. The challenge will be figuring out a way to do it quickly, says Terry Gettys, who helped lead the project, "because consumers are going to want their tires [ready to go] in just a few minutes." Michelin estimates that a tire this advanced may still be as far as 20 years away. But some of its features, like airless designs and sensors that flag drivers when treads are wearing down, could become mainstream over the next several years. —*Lisa Eadicicco*

PHOTOGRAPH BY SEBASTIAN MADER FOR TIME



Glasses that give sight to the blind

ESIGHT 3 // DEVELOPED BY ESIGHT

For the millions of people who are legally blind, navigation is a routine challenge. Though support canes and guide dogs can help, they cannot mimic actual vision. eSight 3 can. Think of it as the world's most powerful pair of glasses: once users put on eSight, it records high-definition video and uses magnification, contrast and proprietary algorithms to enhance that imagery into something the legally blind can see—enabling them to partake in a variety of activities, including sports, that would otherwise be off-limits. At $9,995, the device, which launched in February, is not accessible to everyone (though the company does help connect would-be buyers with funding sources, including grants). But it is cheaper than the company's earlier iterations, as well as faster, lighter and equipped with better zoom capabilities. To date, the company estimates it has been used by more than 1,000 patients.

—Alexandra Sifferlin

eSight 3 has been clinically validated by Johns Hopkins, University of Michigan, Université de Montréal and more

Wristbands that help babies get a better start

BEMPU // DEVELOPED BY BEMPU

Fat is an extremely useful quality in babies. Without it, they can rapidly lose body heat, become hypothermic and develop breathing and other problems. But in areas with few resources, where the numbers of premature or low-weight births are highest, most hospitals and clinics can't afford incubators to keep babies warm, and most parents don't know their babies are in danger until it's too late. Enter the Bempu, a $28 light-up temperature-monitoring bracelet that fits on a baby's wrist; it sounds an alarm and flashes orange if babies are too cold, so mothers can warm them against their skin or swaddle them. So far, the device has helped an estimated 10,000 newborns, mostly in India but also in 25 other countries. And earlier this year, it won a $2 million grant from Saving Lives at Birth to scale its distribution even wider. "Our goal," says Bempu CEO Ratul Narain, "is to make a solid dent in the neonatal mortality numbers." *—Belinda Luscombe*

ESIGHT; BEMPU

The Pro Hijab is slated to launch in January; it will retail for $35

A hijab that empowers Muslim athletes

PRO HIJAB // DEVELOPED BY NIKE

It's tough to play sports in a hijab. If the material is too heavy, it causes excess sweating. If it's too light, it might fall off during competition. And if it's fastened in the wrong way, "you can feel like you're going to choke," says Manal Rostom, an Egyptian runner based in the United Arab Emirates and the founder of the "Surviving Hijab" Facebook group, which has nearly half a million members. Nike's Pro Hijab—which was put into development after executives met with UAE weight lifter Amna Al Haddad in 2016—aims to shift that status quo. Unlike a traditional hijab, the Pro is made with light, breathable fabric that wicks moisture; athletes who have used it report that it helps manage sweat. But for women like Rostom, who was one of the Pro's early testers, there's symbolic weight to Nike's investment, as well. "I'm athletic, I'm outspoken, I'm empowered by a big company," she says. "I'm representing what a Muslim woman can be." *—Sean Gregory*

PHOTOGRAPH BY SEBASTIAN MADER FOR TIME

A wi-fi router that safeguards your smart home

***NORTON CORE // DEVELOPED BY* SYMANTEC**

There are many benefits to owning gadgets that go online, not least of which is the ability to brew a pot of coffee while you're lying in bed. But in this new reality almost any appliance we own, from toasters to washing machines, can be targeted by hackers. The Norton Core aims to neutralize that threat. Unlike most wi-fi routers, which merely enable connectivity, the Core is designed to detect abnormalities; if one device is showing signs of a virus, the Core cuts it off it from the rest of your home network, much like a hospital would quarantine a sick patient. It also regularly updates its software to stay on top of new threats and "keep homeowners safe and secure," says Ameer Karim, Symantec's VP of consumer IoT (Internet of Things) security. The fact that it looks like a *Star Trek* prop? That's just a bonus. —*Alex Fitzpatrick*

The Core supports wi-fi speeds of up to 2.5 Gbps

$280
Available at Norton.com

Super-sustainable crops

3D OCEAN FARM // DEVELOPED BY GREENWAVE

The future of farming is growing oysters, mussels, clams and seaweed on ropes anchored to the ocean floor. So says Bren Smith, a commercial fisherman turned director of GreenWave, a Connecticut nonprofit doing just that. The concept isn't as wild as it may seem. As land farming becomes increasingly problematic—it accounts for a growing portion of the planet's greenhouse-gas emissions—and oceans get overfished, humans will need to develop alternative food sources. GreenWave's crops offer compelling advantages: they're protein-rich, self-sufficient (no fertilizer needed) and they even help combat climate change (by sequestering carbon as they grow). Of course, getting Westerners to center their diet on mollusks and seaweed is a stretch. Still, GreenWave sees potential: the group has helped fishermen establish 14 farms along the coast of New England since 2013, and now has plans to expand in California, the Pacific Northwest and Europe. —*Julia Zorthian*

NORTON CORE: SEBASTIAN MADER FOR TIME; GREENWAVE: ILLUSTRATION BY ALEX EBEN MEYER FOR TIME

THAT DINNER

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for PLAY

The best inventions helping us have more fun

Jibo's six microphones help him understand where sounds are coming from, so he can face you as you speak to him

The development process took three years, funded in part by an Indiegogo campaign that raised $3.6 million

PHOTOGRAPH BY SEBASTIAN MADER FOR TIME

Jibo's camera uses facial-recognition technology to recognize specific people. He also remembers your name

A robot you can relate to

JIBO // DEVELOPED BY JIBO

Personal robots, such as Amazon Echo and Google Home, have come a long way in recent years. They can tell you the weather and order you food. They can dim your lights and play your favorite song. But fundamentally, they're still stationary speakers whose defining expression is a light that turns on when you speak.

Jibo is different. It's not just that he—and I use the term *he* here, because that's how Jibo refers to himself—looks like something straight out of a Pixar movie, with a big, round head and a face that uses animated icons to convey emotion. It's not just that his body swivels and swerves while he speaks, as if he's talking with his nonexistent hands. It's not just that he can giggle and dance and turn to face you, wherever you are, as soon as you say, "Hey, Jibo."

$899
Available at jibo.com

It's that, because of all this, Jibo seems downright human in a way that his predecessors do not. "We want people to look at Jibo and realize he's a someone and not a something," says Matt Revis, the company's vice president of product management. And while that technology may seem merely amusing—or creepy, depending on your point of view—it could fundamentally reshape how we interact with machines.

Jibo still has a lot to learn. Although he can help users in basic ways, like by summarizing news stories and taking photos, he can't yet play music requests or work with third-party apps like Domino's and Uber, which, at $899, could make him a tough sell. Then again, this is Version One. And Revis is confident Jibo will evolve. "There was a threshold we had to reach in order to launch," says Revis. "Now it's part of the journey." *—Lisa Eadicicco*

A smarter smartphone

IPHONE X // DEVELOPED BY APPLE

To Dan Riccio, Apple's senior vice president of hardware engineering, the iPhone X is quite literally a dream come true. "I look at the design as something we really wanted to do since day one," he says. It's easy to see why: the X is arguably the world's most sophisticated smartphone, with a screen that stretches from edge to edge, a processor optimized for augmented reality and a camera smart enough to allow users to unlock the phone with their face. (Though some of these features first arrived on devices from Samsung and LG.)

$999+
Available at apple.com

But in order to make it all possible, Apple had to kill the home button, a popular all-purpose navigation tool. Much like the company's move to nix the 3.5-mm headphone jack on the iPhone 7, this decision was driven by "looking to the future," says Jonathan Ive, Apple's chief design officer. "I actually think the path of holding onto features that have been effective, whatever the cost, is a path that leads to failure." At $999, the X is also the most expensive iPhone yet. "As you would expect," Ive says, "there's a financial consequence to integrating the sheer amount of processing power into such a small device."

It's easy to imagine a future iteration with a screen that wraps around the entire device, or a camera that can detect gestures. But for now, Ive and Riccio won't divulge specific plans. "We have a clear vision" for the next generation of iPhones, says Ive. The X is "in some sense a completion of a chapter."

—Lisa Eadicicco

The depth-sensing camera projects 30,000 invisible dots to create a map of your face

The iPhone X screen is 0.3 in. larger than the iPhone 8 Plus', even though the actual phone is smaller

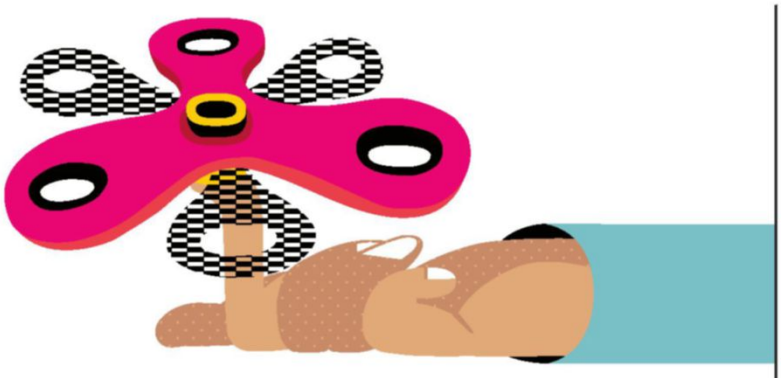
VICIS ZERO 1.: RENDERING BY VICIS; FIDGET SPINNER: ILLUSTRATION BY ALEX EBEN MEYER FOR TIME; OCULUS GO: OCULUS; IPHONE X: APPLE

Stronger, safer football helmets

ZERO1 // DEVELOPED BY VICIS

For decades, football players have worn the same kind of head protection: hard, plastic helmets. About four years ago, Sam Browd, a pediatric neurosurgeon, started thinking about how to approach them differently. What if, he wondered, the outer shell were made of a flexible polymer? That way, helmets could work like car bumpers, reducing the force (and the sound) of a collision immediately on impact. He sketched a prototype on a napkin and brought it to contacts at the University of Washington; together they founded a startup, VICIS, to make it a reality. "We wanted to build the safest helmet ever made," says Dave Marver, the company's CEO. The result, made possible by some $40 million in investments, is the Zero1, which earned top marks in the NFL's annual helmet testing for its ability to reduce the forces that can cause brain injury. It's now being used by players on 18 NFL teams, including Kansas City Chiefs quarterback Alex Smith, and about 20 college teams. Next up: versions for younger athletes. *—Jenny Vrentas*

The Zero1 is available to preorder for the 2018 season for $1,500



The ultimate distracters

FIDGET SPINNERS // DEVELOPED BY VARIOUS COMPANIES

Depending on who you ask, fidget spinners—those weighted prongs that spin, spin, spin, seemingly forever—are either a harmless distraction or wreaking havoc on American classrooms. But in either case, there's no denying their ubiquity. After a similar toy, the fidget cube, debuted last year, manufacturers noticed more online searches with the word "fidget." So they flooded the market with spinners; by spring they were a viral sensation, boosting year-over-year sales at U.S. specialty retailers by as much as $20,000 in April alone, according to *The Toy Insider.* Toys "R" Us chartered jets to keep spinners on shelves. Amid the craze, some manufacturers made specious claims about their therapeutic benefits, calling spinners "perfect for ADD, ADHD, Anxiety and Autism." (There is no conclusive scientific evidence to that effect.) Sellers would be wise to stick to a more agreeable benefit: "Provides hours of addictive fun." *—Sean Gregory*

A VR headset that stands alone

OCULUS GO // DEVELOPED BY FACEBOOK

For all its futuristic hype, virtual reality is a fairly clunky technology: even the best headsets require extra gadgets, such as smartphones or laptops, to work. Not so with Facebook's Oculus Go, a $199 wearable computer that operates entirely on its own. (HTC and Lenovo are working on similar devices.) Its tracking capabilities aren't as advanced as those found in its pricier counterparts—a function of having less physical space for computing power. "There are always trade-offs" when making something light enough to strap to your head, says Max Cohen, head of mobile product at Oculus. But Facebook's goal with Oculus Go, which will launch next year, isn't to create the most realistic VR experience; it's to create the most accessible one. "[We want to] make it easy for people to say, Oh I don't have to make sacrifices to get into VR," says Cohen. *—L.E.*

The detachable controllers can detect movement and distance, meaning you can wave and shake them during game play

The Switch has a 6.2 in. screen, which is slightly smaller than the iPad Mini

A gaming console that lets you play anywhere

SWITCH // DEVELOPED BY NINTENDO

"When you have a great game, that moment of disappointment is when you have to stop playing," says Reggie Fils-Aimé, president of Nintendo of America. And so, with the Nintendo Switch, you don't have to. In one form, it's a handheld tablet, allowing a single user to game on the go. In another, two controllers slide off from the sides, allowing multiple users to get in on the action. Once they get home, they can slide that tablet into a docking station and continue playing on a legitimate home console. Gamers seem to like the flexibility: Nintendo has sold 7.63 million Switches since its March debut; it's expected to surpass the company's previous console, the Wii U, by the end of its fiscal year. *—Lisa Eadicicco*

$300+
Available at nintendo.com

NINTENDO; PHOTO-ILLUSTRATION BY TIME

nest

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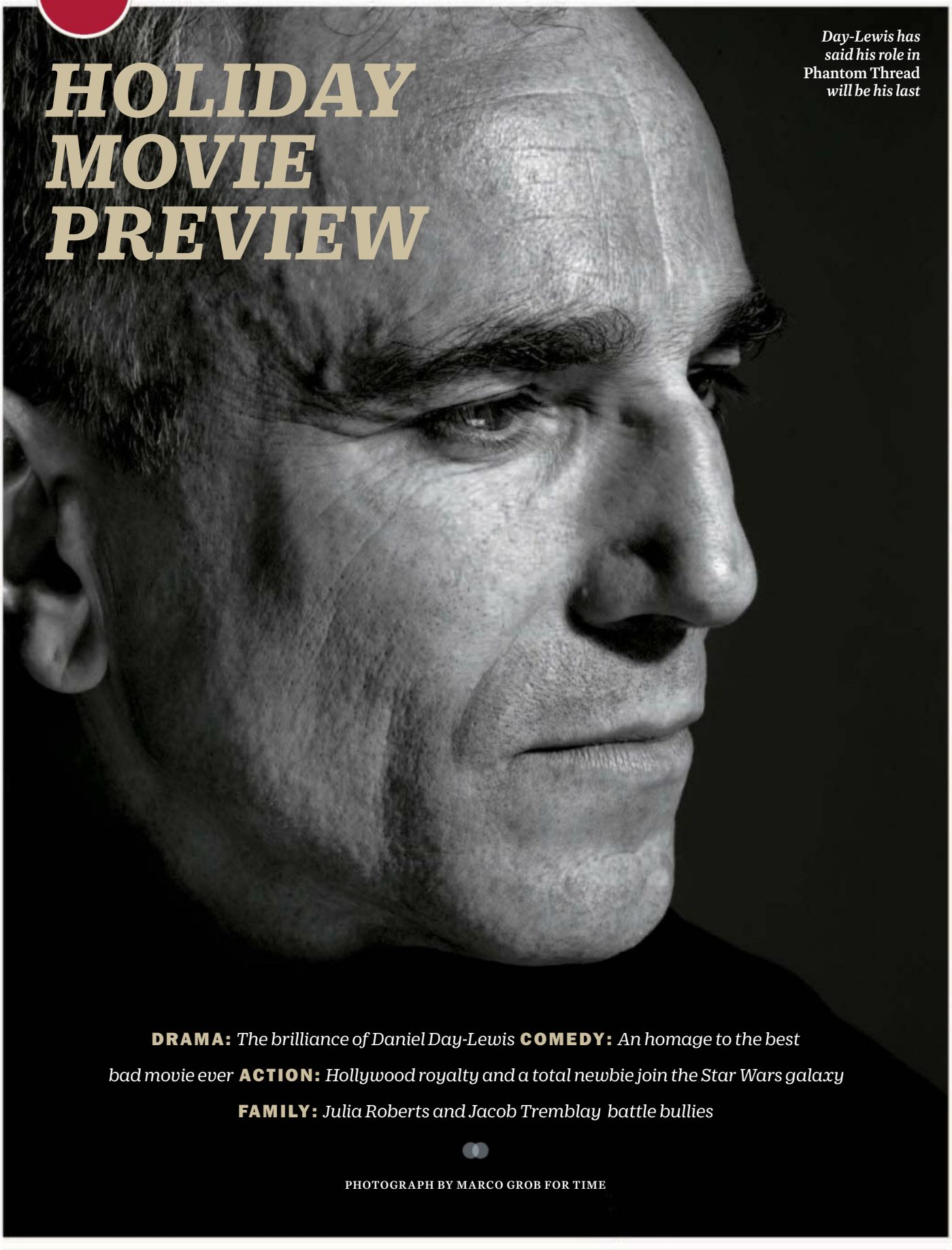
HOLIDAY MOVIE PREVIEW



Day-Lewis has said his role in Phantom Thread *will be his last*

DRAMA: *The brilliance of Daniel Day-Lewis* **COMEDY:** *An homage to the best bad movie ever* **ACTION:** *Hollywood royalty and a total newbie join the Star Wars galaxy* **FAMILY:** *Julia Roberts and Jacob Tremblay battle bullies*

PHOTOGRAPH BY MARCO GROB FOR TIME

DAY-LEWIS AND THE SEASON OF GRANDEUR

PHANTOM THREAD • DEC. 25

THE QUALITY THAT MAKES DANIEL DAY-LEWIS A great actor—that aura you see so clearly onscreen yet can't quite put your finger on—may be this: no matter what he's saying or doing, whether he's standing or walking or even, as in *The Last of the Mohicans,* running so magnificently through the forest in buckskin trousers, his eyes and his body language impart a whispered secret. It sounds a little like, "I could throw this all away at any minute."

That's why Day-Lewis' upcoming performance in Paul Thomas Anderson's *Phantom Thread* is an eagerly awaited event. Anderson's movie is one of the biggest holiday releases, and also one of the most mysterious: few details about it have been revealed, although we do know that Day-Lewis plays a fictitious 1950s-era English couturier by the name of Reynolds Woodcock, a man who looks, from the movie's trailer, to be both demanding and dangerously seductive. A Day-Lewis performance is always something to look forward to, because there aren't that many of them; he has always chosen roles carefully. But this particular turn comes loaded with even more intrigue than usual: in June, Day-Lewis announced that his role in *Phantom Thread* would be his last.

Day-Lewis has thrown it all away before, or at least temporarily given it up. In the late 1990s, he retreated with his family to Italy, where he apprenticed with a Florentine shoemaker for nearly a year. He didn't resurface until Martin Scorsese's 2002 *Gangs of New York*. In fact, Day-Lewis, who is 60, is so choosy about projects—he last appeared in Steven Spielberg's 2012 *Lincoln*—that you could almost argue that he's been semi-retiring off and on for much of his career.

But if Day-Lewis really is retiring for good—possibly to spend more time woodworking, which he has said he loves, or even just puttering around the house in classic retiree style—that only confirms the rarity of his spark. Most of us first fell for him as Johnny, the not-so-tough neighborhood tough of Stephen Frears' 1985 *My Beautiful Laundrette*. With his peroxide-tipped hair and T-square cheekbones, Day-Lewis' Johnny was sexual glamour in overdrive, a scrapper sauntering through life just for kicks,

In Phantom Thread, *Day-Lewis plays a 1950s couturier reminiscent of storied designer Charles James*

yet knowing enough to stop for what matters. As the artist and writer Christy Brown in Jim Sheridan's 1989 *My Left Foot,* he played a man, not a disability—even to call the character "wheelchair-bound" does this fierce yet infinitely delicate performance a disservice.

In approaching a role, Day-Lewis favors Method-acting preparation techniques. To play James Fenimore Cooper's heroic trapper Hawkeye in Michael Mann's 1992 *The Last of the Mohicans,* he spent time building canoes and tracking and skinning animals. But the subtlety of the results is what really matters. Day-Lewis is the only performer to have won three Oscars for Best Actor, for *My Left Foot, There Will Be Blood* and *Lincoln*. But his showiest performances, like the one he gave as Daniel Plainview, the poisonously bitter oil magnate of Anderson's *There Will Be Blood,* aren't necessarily his best, even when they garner awards. Day-Lewis' Plainview feels more painstakingly whittled than genuinely felt. It's acting you can see, which isn't necessarily the same as great acting.

But much more often Day-Lewis sinks like a specter into his characters—he's visible and yet not. He made a

PHANTOM THREAD: LAURIE SPARHAM—FOCUS FEATURES; MOLLY'S GAME: MICHAEL GIBSON—STXFILMS

superb Abraham Lincoln, gentle-hearted and melancholy. As the exceedingly proper yet passionate New York lawyer Newland Archer in Scorsese's 1993 *The Age of Innocence,* it was as if he had absorbed the mood of Edith Wharton's luminous, wistful novel through his skin.

What kind of performance will Day-Lewis give in *Phantom Thread*? Reynolds Woodcock appears to have been modeled on Charles James, whose observant eye and architectural precision made him one of the most extraordinary designers of the past century. A Charles James gown—it could be made of the stiffest silk draped into graceful arcs like a seashell, or of chiffon pleated as finely as the gills of a mushroom—is a touchable miracle of color and formality, of movement and soul. If it's possible to subsume those qualities into a performance, Day-Lewis is our man. Holiday releases have long been a big deal in the movie business, representing the pre-Oscar rollout of films the studios are most eager to show off. It's fitting that Day-Lewis may be making his grand exit in a big ball gown of a movie, leaving just a rustling of grandeur and mystery in his wake.

—STEPHANIE ZACHAREK

Jessica Chastain shows her hand

MOLLY'S GAME • DEC. 25

In the early 2000s, skier Molly Bloom was an Olympic hopeful. A decade later, she was busted for running an elite underground poker game populated by Hollywood heavyweights, Wall Street billionaires and Russian mobsters. Jessica Chastain plays the real-life "poker princess" in *Molly's Game,* the directorial debut from screenwriter Aaron Sorkin *(The West Wing, The Social Network).*

What interested you most about Molly Bloom? The thing that really fascinated me is that she was a creation that society made. Everything about Molly was groomed. We know in our society, women are valued for their sexual desirability and not necessarily for what they have to say. Molly learned early on that if she presented herself in a certain way, rich and powerful men would pay more attention to what she had to say.

Sorkin has been criticized for his portrayal of women. As a feminist, did you worry about working with him? I had no trepidations. Aaron is a very successful white male writer. Let's be honest, for his directorial debut he could have told any story he wanted. But he decided to write about this woman and her fight against the patriarchy. That shows his growth as an artist. I can't tell you how many incredible directors I long to work with, but then I look at their IMDB page, and they haven't made a single movie about a woman. So I'm incredibly inspired by Aaron for acknowledging he dropped the ball, saying he is sorry and working to change the industry.

BY THE BOOK
In her 2014 memoir, Bloom name-checks Leonardo DiCaprio, Tobey Maguire and Ben Affleck as onetime members of her exclusive club.

At one point in the movie, Molly gets beaten up. Where do you draw the line with violence against women onscreen? I have a problem with filmmakers who use violence against women, and especially rape, to make a woman stronger—where the woman needs to be victimized in order to become a butterfly. I find that pattern in cinema really disturbing. I think it's important to acknowledge that this really happened to Molly. And the way the scene was shot, it was not a phoenix-rising moment. She didn't come out of it a different person or stronger because of it. As we know from watching the news, there are situations where a woman says no to a man, and the man responds with violence or abuse. That's what happened to Molly.

What needs to change for women in film? We have grown up watching women be used as props on a man's journey. It's not our fault that that's what we saw as children. But we need to acknowledge that and do better.—*Eliana Dockterman*

Chastain's Bloom works with lawyer Charlie Jaffey (Idris Elba) to clear her name

Hammer, left, and Chalamet explore small-town Italy together

A gay love story with all the pain of growing up

CALL ME BY YOUR NAME ● NOV. 24

ELIO (TIMOTHÉE CHALAMET) IS SPENDING A DULL summer at his cosmopolitan parents' villa in northern Italy while his father (Michael Stuhlbarg) does archaeological research. Into this placid Old World setting trots Oliver (Armie Hammer), a strapping golden retriever of an American there to assist Elio's father. His presence stirs up the household and sends something new astir in the 17-year-old. The soul of this story is in the setting: a house with enough quiet corners to allow moments of contemplation, and enough convergence points to allow for collisions neither Elio nor Oliver expected when the summer began.

Call Me by Your Name, directed by the great craftsman of emotion Luca Guadagnino *(A Bigger Splash)*, is a story that thrives on specificity. The big things it gets right include the sprawling house and the secrets it holds as well as the operatic emotions that Elio feels. The smaller ones are as simple as a bathing suit carelessly tossed over a faucet, or the way a disposable pop song that plays in the background of an important moment becomes an anthem. It's a deeply queer movie whose charge comes from the care that went into every moment.

That such a specific story can be told about gay love reflects a shift in prestige cinema. In 2005, *Brokeback Mountain* was put forward for the Oscars more as civic duty than movie; its subtler emotions seemed secondary to its capital-*I* Importance. Recently, by contrast, *Moonlight*'s Best Picture win felt less like the milestone it was than a celebration of characters we'd come to know deeply. *Call Me by Your Name* continues that new tradition. It's a heartening movement of movies whose protagonists, welcomed by a more inclusive Hollywood, have stories to tell that you'll never forget—down to the last detail. —DANIEL D'ADDARIO

LITERARY PEDIGREE
The screenplay for *Call Me by Your Name* was written by James Ivory, the famed director of films like *Howards End*. It's based on a novel by André Aciman.

Allison Janney is one tough mother

I, TONYA ● DEC. 8

Allison Janney's dreams of being an Olympic figure skater were shattered when she fell through a plate-glass window during her senior year of high school. Now, a few decades later, she returns to the rink for *I, Tonya,* Craig Gillespie's take—part comedic drama, part redemption story—on disgraced U.S. figure skater Tonya Harding.

Janney plays LaVona Golden, the abusive, chain-smoking mother to Tonya (Margot Robbie), whose highly publicized (and debated) involvement in a 1994 attack on rival Nancy Kerrigan made her name a punch line and got her banned from the sport. LaVona, whose characterization is based on interviews the real-life Harding and her ex-husband Jeff Gillooly gave for the movie, is crude, cruel and cutting—in one scene, she chucks a steak knife at her daughter. In another, she tells her, "You skated like a graceless bull dyke."

As LaVona, some of Janney's best moments take place when she's acting opposite a bird

Janney sees LaVona's behavior as a twisted attempt to motivate Tonya and capitalize on her daughter's raw talent as a ticket out of poverty. "If you're playing an evil character, you can't think you're evil," says Janney. "She saw that they were not accepting her daughter or herself as being good enough to be part of the skating world. That infuriated them both to keep them in it to win it." Class struggles permeate the story. LaVona pours all her earnings as a waitress into her daughter's career, while Tonya, equipped only with hand-sewn costumes and a foul mouth, can't conform to the skating world's upper-crust standards.

LaVona eviscerates nearly everyone in her path. But her best moments—and the ones that make her, on occasion, almost likable—come when she is justifying her behavior directly to the camera, accompanied by her favorite co-star, a bird named Little Man. "I knew the only way to make it look like that bird was mine was to ignore it as much as possible," she says. "It was almost like he knew, like, 'Oh yeah? I will not be ignored.'"

Janney relished returning to the rink but says her best skating moves are behind her. As for what's ahead? "I'm thinking of getting a bird now."

—Mahita Gajanan

CALL ME BY YOUR NAME: SONY PICTURES CLASSICS; I, TONYA: NEON; ROMAN J. ISRAEL, ESQ.: SONY PICTURES; THE POST: NIKO TAVERNISE—20TH CENTURY FOX

DRAMA CALENDAR

Serious takes on starlets, soldiers and tycoons

MUDBOUND
11.17
Based on Hillary Jordan's 2008 novel of the same name, this **epic drama traces the intersecting lives of two families, one white and one black,** living on the same piece of Mississippi farmland in the 1940s.

ROMAN J. ISRAEL, ESQ.
11.17
Denzel Washington dials down his charisma and mega-watt smile to play a disheveled **legal savant forced into the courtroom** when his more presentable partner becomes gravely ill.

DARKEST HOUR
11.22
Gary Oldman **disappears into the character of Winston Churchill in this drama about the leader's abrupt rise to power** as Nazi forces closed in on Western Europe in the early days of World War II.

WONDER WHEEL
12.1
Woody Allen's latest stars Kate Winslet as the **wife of a carousel operator on Coney Island. She falls for the same dashing lifeguard** (Justin Timberlake) as her husband's estranged daughter (Juno Temple).

GOTTI
12.15
John Travolta **inhabits larger-than-life Gambino crime boss John Gotti in this biographical drama,** co-starring his real-life wife Kelly Preston as his onscreen spouse, Victoria.

ALL THE MONEY IN THE WORLD
12.22
This **crime drama tells the true story of the kidnapping of John Paul Getty III** and the fight over his ransom that ensued between his mother (Michelle Williams) and his oil-tycoon grandfather (Christopher Plummer, replacing Kevin Spacey after allegations of sexual harassment and assault).

THE POST
12.22
In Steven Spielberg's drama, **Meryl Streep plays Washington *Post* publisher Katharine Graham, while Tom Hanks plays editor Ben Bradlee,** as they make the difficult decision to publish the Pentagon Papers.

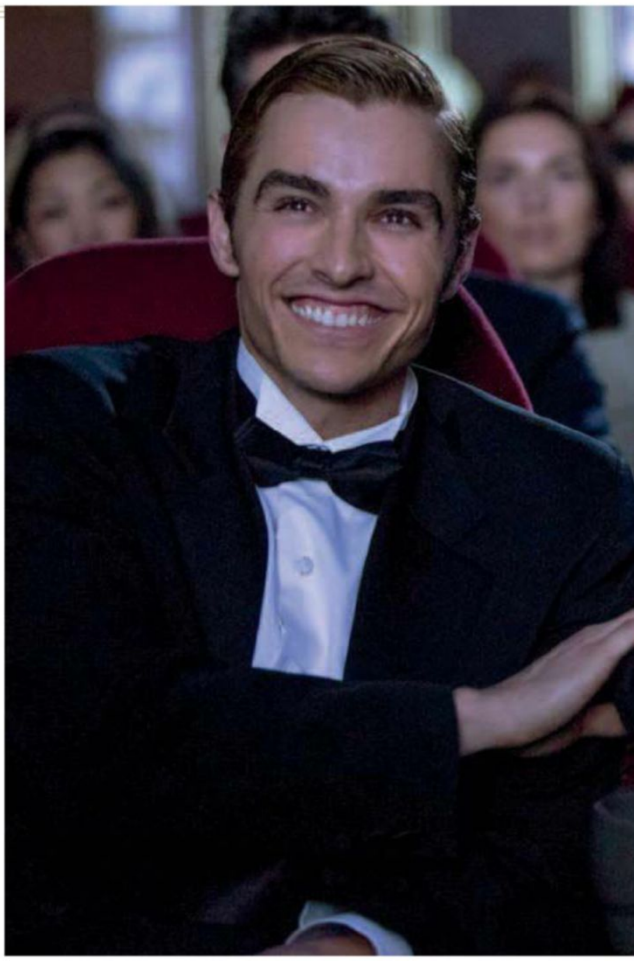
HOSTILES
12.22
In this period drama, set in 1892, Christian Bale plays an **Army captain escorting a dying Cheyenne chief (Wes Studi)—his ostensible enemy—on a treacherous journey** back to his birthplace.

FILM STARS DON'T DIE IN LIVERPOOL
12.29
With a wispy voice and a flirtatious smirk, **Annette Bening portrays Gloria Grahame, a Hollywood star whose career didn't quite survive the transition from black and white to Technicolor,** in the winter of her life.

—Eliza Berman

THE BROTHERS FRANCO, REUNITED FOR THE FIRST TIME

THE DISASTER ARTIST • DEC. 1



IT'S HARD TO BEAT THE RIOTOUS GOOD FUN OF A truly bad movie, and few bad movies are quite as historic as Tommy Wiseau's 2003 film *The Room.* The movie—written, directed, starring and produced by the eccentric Wiseau, on a reported $6 million budget—has earned cult status as one of the greatest worst movies ever made. Now James Franco and his brother Dave have immortalized it in *The Disaster Artist.* The meta-movie stars James as Wiseau and Dave as Greg Sestero, who appeared in *The Room* and wrote, with Tom Bissell, the book that serves as the film's source material.

You don't have to be a movie buff to appreciate a story about the movie business, but *The Disaster Artist* is more than that. It's a film about the foolhardy pursuit of the American Dream, and the delusional confidence required to think you can make it anywhere, especially in Hollywood. Somehow *The Disaster Artist* manages to be affectionate with its goofy subject where it just as easily could have been mean-spirited. And it's the brothers Franco, working together professionally for the first time, who give the film its irresistible crackle. They spoke with TIME about re-creating the magic of *The Room.*

Celebrity fans like Kristen Bell and Jonah Hill have attended packed midnight screenings hosted by Wiseau

How would you explain *The Room* to someone who's never seen it?

James: On its surface, it's a very simple story about an "all-American guy" with a job and a girlfriend and a best friend who is betrayed by all of them. But for Tommy, it was an incredibly personal expression of his feeling of betrayal by the world and everyone in his life. People love to laugh at this thing. But it's special in the pantheon of bad movies because it is so personal and because there's so much passion underneath it.

Dave: As opposed to other bad movies—like *Sharknado,* which knows it's a B movie, and everyone involved knew they were making something silly—with *The Room,* Tommy was trying to make an earnest drama that would win awards. There's something really beautiful about that.

But it didn't win awards, right?

James: On the poster, he put: A TENNESSEE WILLIAMS–LEVEL DRAMA. So that's how he went into it. When it came out and people laughed at it, Tommy capitalized on that. Maybe it was gradual but eventually he came around. He actually added a line to the poster: AN ENJOYABLE BLACK COMEDY.

Dave: He understands why it's become a cult movie. That being said, he's still able to do these mental gymnastics where he maintains that he's one of the greatest directors of all time.

James: I think he wanted success and to be an artist and to express himself, but also, I think he just wanted a family. And he has that now. By embracing the unexpected response, he's gotten that.

How did he react to your movie?

James: When we premiered the movie at South by Southwest, it was like a rock concert. It was the first time Tommy had seen the movie. It was weird for us because we didn't know how he'd react, and during the movie

Dave, left, and James stocked the movie with an impressive number of comedy cameos from people like Zac Efron and Judd Apatow

he wasn't laughing, really. But then the whole audience started cheering and Tommy stood up, and I realized this was the first time Tommy had ever heard applause that wasn't ironic, that was completely in support of him and his story.
Dave: That was the intention of our movie. We never set out to make fun of Tommy or *The Room*. On the contrary, we wanted to celebrate him and everyone who goes after their dreams and doesn't take no for an answer. When people were applauding him, that's what they were applauding.

Why has it taken so long for the two of you to work together on a project?
Dave: When I was first starting out, at every audition and meeting, they wanted to talk to me about my brother. And I understood that. But I didn't want to be referred to as James Franco's little brother for the rest of my life. So I made a conscious decision to carve my own path and separate myself from him in work. And then after a while it got to the point where I said, "F-ck it. He's my brother. I love him. I respect him. And we have similar sensibilities." And on top of that, it felt like the right project and the right dynamic between our characters. In the end it was one of the most rewarding experiences I've had on set. *[To James]* I don't think I've even told you this, but as we've been spending more time together, there's at least one time every day where as I'm about to say something, you say the exact same thing right before I say it. We very much share one brain.
James: Once a day?
Dave: I swear to God. At least once a day.

'WE NEVER SET OUT TO MAKE FUN OF TOMMY OR THE ROOM.'

DAVE FRANCO, star of *The Disaster Artist*

What was it like for you, James, to work with your brother?
James: We had a great dynamic. You know, growing up, I was the older brother. So my impression of our upbringing is that I was the brooding one. I had different pressures. Our parents were learning how to be parents with me. Davey's seven years younger, so by the time they got to him it seemed like everything was easy, and he had a seemingly very playful relationship with our parents.
Dave: They were just tired and didn't have the energy to discipline me.
James: My impression was always that Dave was happy-go-lucky. Had a lot of friends, homecoming king, all that stuff. And I thought, I'm the guy who works really hard and went to acting school for way too many years.
Dave: You're making it seem like my path was very easy.
James: It seemed like it! Anyway, when we got to set, I try to establish a relaxed energy, and Dave was just such a perfectionist. I thought I was the one who had to work really hard and overdo everything—and that's not to say that's what he did—but he was much more of a perfectionist than I'd remembered in my easygoing younger brother.
Dave: I've realized this about myself recently. When it comes to work I'm very type A.
James: I agree.

There's so much humor in this film but also a surprising amount of pathos for what looks like an oddball comedy.
Dave: We thrive when you put us in a bizarre scenario and we play it as real as possible and let the humor come from that. When we first started this movie, we were trying to find movies to compare it to, and from the beginning we wanted the tone of *Boogie Nights,* where it's a bunch of strange characters in crazy situations but everyone's playing it like human beings.

Do people need to see *The Room* before they see *The Disaster Artist*?
James: It's not necessary. In the same way that it's not necessary to watch extensive '70s pornography to see *Boogie Nights.* But it helps! —SAM LANSKY

FRANCO: JUSTINA MINTZ—WARNER BROS.; WISEAU: ISAIAH TRICKEY—FILMMAGIC/GETTY IMAGES

Chau's character may be tiny, but her heart is oversize

Hong Chau gets her big break in miniature

DOWNSIZING • DEC. 22

Ask a scientist how to address climate change, and they might suggest phasing out fossil fuels. Filmmaker Alexander Payne *(Election, Sideways)* had a more creative, if implausible idea: shrink people down to five inches. They'd require fewer resources, but get to live like royals. That's the conceit of *Downsizing,* which stars Matt Damon as a man who decides to live large by getting small. But it's his co-star Hong Chau who steals the show. She plays a Vietnamese activist whose altruism stands in stark opposition to the conspicuous consumption of the miniature world.

Chau was born in Thailand to Vietnamese parents and raised in New Orleans. She planned on a career behind the camera until, after acting in friends' films at Boston University, she found a knack for being in front of it. She got her first recurring TV role on the Big Easy–set *Treme;* her first film was Paul Thomas Anderson's madcap 2014 neo-noir *Inherent Vice.*

To play Ngoc Lan Tran, Chau says she drew inspiration from "my parents, the community I grew up in New Orleans, Flannery O'Connor." As Ngoc Lan's left leg has been partially amputated, she says, "I basically was learning how to walk again." But what appealed most was not her limp or her accent—acting skills she sees as "a bit of a party trick"—but the character's rich inner life. In this case: a God-fearing straight shooter whose difficulties never distract from helping those who suffer even more.

Next up, Chau has a project with *Beatriz at Dinner* director Miguel Arteta, another class-conscious filmmaker. As she reflects on the enduring message of *Downsizing,* she sighs. Science might delay humanity's downfall, she says. "But science can't cure apathy." *—Eliza Berman*

COMEDY CALENDAR

Food, fathers and franchises

COOK-OFF!
11.17

The Food Network meets Christopher Guest in this **mockumentary about challengers in a cooking contest,** including Melissa McCarthy and Niecy Nash, who put their hearts, souls and a whole lot of marshmallows into their competing concoctions.

FATHER FIGURES
12.22

Owen Wilson and Ed Helms play twins (fraternal, naturally) who **set out on a quest to find their father, who could be one of several men with whom their mother (Glenn Close) rendezvoused** in the loose and laid-back 1970s. Contenders include J.K. Simmons, Ving Rhames, Christopher Walken and Terry Bradshaw.

JUST GETTING STARTED
12.8

Ron Shelton, the filmmaker behind *Tin Cup* and *Bull Durham,* pairs Morgan Freeman and Tommy Lee Jones in a comedic caper that finds them at first competing over a woman (Rene Russo), before they're forced to **set aside their differences to stop a would-be assassin.**

PERMANENT
12.15

In the first feature film from *Hung* creator Colette Burson, Patricia Arquette and Rainn Wilson play parents to an awkward teenage girl whose **life goes from rough to worse after a botched perm at the hair salon.** The film, much like her hairstyle, takes place in the early 1980s.

PITCH PERFECT 3
12.22

Fresh off the heels of a world championship and struggling in their post-college adult lives, the **Bellas take their a cappella act overseas on a USO tour** in the third installment of the aca-franchise. Anna Kendrick, Rebel Wilson and Hailee Steinfeld return to lead the crew of crooners. *—E.B.*

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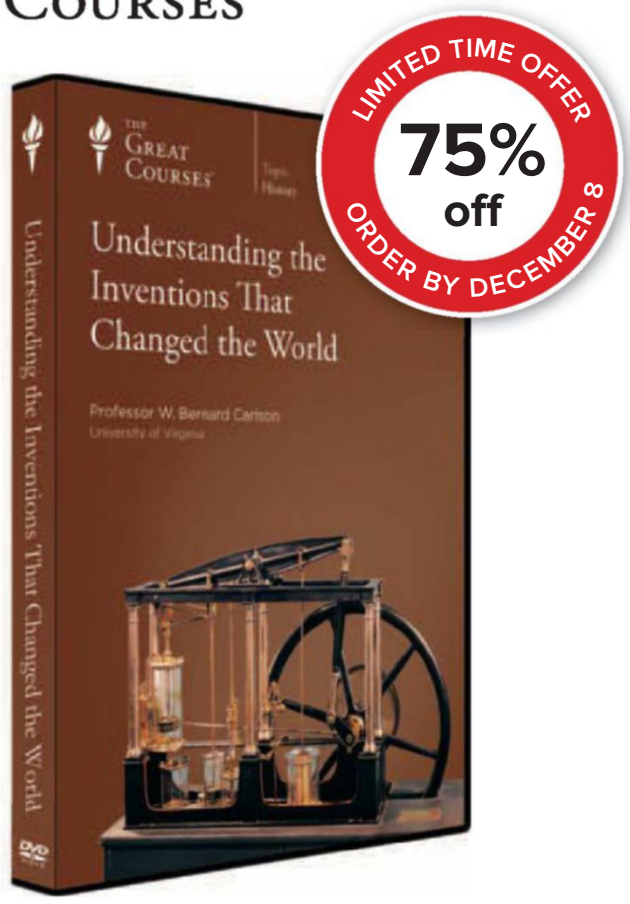

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OCTAVIA SPENCER

The Shape of Water *actor sets her sights on producing and transcending historical roles*

THERE ARE AT LEAST FOUR FEATS OF MOVIE MAGIC IN director Guillermo del Toro's new film *The Shape of Water.* First, there's the fact that the lead speaks no lines: Sally Hawkins plays Elisa, a mute woman who works as a cleaning lady at a Cold War–era government laboratory. Second, there's the monstrous yet alluring sea creature the scientists have captured from the waters of South America, rendered as a towering, scaly brute with human sensitivity. Third, there's the sexy, wordless romance that develops between Elisa and the creature. And finally, there's Octavia Spencer, who, as Elisa's talkative, down-to-earth work friend Zelda, makes it all believable.

Spencer has found success before in 1960s-era roles with performances that bring great dignity to characters who, as black women in that period, were afforded none. She won the 2012 Academy Award for Best Supporting Actress for her performance as the Mississippi maid Minny Jackson in *The Help.* She was nominated again for her role as NASA programmer Dorothy Vaughan in last year's *Hidden Figures,* making her the first black woman to be nominated for a second Oscar after winning one. Both films took place in the '60s with the civil rights movement under way. Both saw her staring racism and sexism in the face, fighting for fair and humane treatment. But Spencer admits that playing women with little agency, who face struggles that should not but still do exist today, is taxing. "To be in that headspace for the entirety of a film is just not fun," she says.

Soon she'll play Madam C.J. Walker, who became the first female self-made millionaire in America in the early 1900s. But the businesswoman will be her last historical role for a while, she says, despite the fact that offers keep rolling in. She needs a break from period pieces. "Honey, I don't have to tell people I'm a black woman," she says. "I want to be able to just be. To play a woman who happens to be a woman."

SPENCER'S CHARACTER in *The Shape of Water,* though living through the same period as Minny Jackson and Dorothy Vaughan, is just that kind of woman. Racial tensions cast a shadow over the story: a black couple is banned from a pie shop, and we catch a flash of protesters being brutalized on a television. And prejudice against perceived "others" is a central theme of the film. But Elisa's disability, the creature's unfamiliarity and the strangeness—and beauty—of their relationship are the primary focus.

Zelda's chief worries are for Elisa's well-being, their job security and her lazy, unappreciative husband. "She's empowered," Spencer says. Del Toro created the role with her in mind, and even though it fits a certain pattern—"I played a maid, then I played a woman at NASA, now I'm playing a maid at NASA," Spencer joked at a recent screening—the character felt fresh, because she doesn't have to bear the weight of her historical circumstances.

Hollywood has a long way to go before there are enough powerful roles for women, particularly women of color, to go around, Spencer says, adding, "Guillermo created a role with me in mind—it's still a cleaning lady." Which is not to say she'll never play a maid again: "If it's a serial-killing maid, of course."

But in the meantime, Spencer has set her sights on producing, which she sees as a means to create opportunity not only for herself, but also for more performers of different ethnic and racial backgrounds, ages and body types. Hollywood's obsession with remakes only gets in the way of telling the kind of unique, new stories she thinks people want to see. "*Blade Runner [2049]* is an indicator of why that shouldn't be done, with a gigantic price tag—then you look at *Girls Trip, Bad Moms, Get Out,*" she says—those are the movies she wants to make. Nothing set in the 1940s, 1950s or 1960s, please.

Spencer is producing an HBO limited series on the Jonestown massacre with Vince Gilligan and Michelle MacLaren of *Breaking Bad,* and producing the C.J. Walker project, another miniseries, with LeBron James' production company for Netflix.

After that, it's time for some laughs: "I can't wait to do some good old-fashioned comedy," she says. And if her longtime wish comes true, someday she'll get to make one with her dream collaborator: Jackie Chan. Spencer was in the room when the legendary martial artist received his honorary Oscar last November, but the crowd was too deep for her to approach. She's never had the chance to meet him. "So this is my way of saying, 'I love you, Jackie Chan!'" she says. "I just screamed it out from my hotel in New York." —LUCY FELDMAN

PROBLEM SOLVER Spencer, who calls herself an "investigative type," wakes up her mind most mornings with a brainteaser puzzle.

P. LEHMAN—BARCROFT IMAGES/GETTY IMAGES

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MEET THE NEW KIDS ON THE SHIP

STAR WARS: THE LAST JEDI • DEC. 15

FOR THE THIRD YEAR IN A ROW, *STAR WARS* FANS will be able to start the holidays with a trip to a galaxy far, far away. And this time for a new kind of adventure. Director Rian Johnson has promised that this year's installment, titled *The Last Jedi,* will be darker. Here's what to expect: Budding Jedi Rey (Daisy Ridley) finds her idol, Luke Skywalker (Mark Hamill), isolated and despondent on a faraway planet. Her friend Finn (John Boyega) comes out of a coma questioning whether he should continue to fight in the rebellion. And General Leia (the late Carrie Fisher, in her last *Star Wars* film) is mourning the loss of Han Solo (Harrison Ford).

The Last Jedi, out Dec. 15, will also introduce new characters, including Laura Dern's purple-haired Vice Admiral Amilyn Holdo and an overeager Rebel mechanic named Rose played by Kelly Marie Tran. As for the rest, the two new actors are reticent to share too much. "The new people will either be leading or misleading the heroes," Dern says. Tran is a little more revealing, admitting that Rose and Finn may occasionally crack a few jokes. (Tran's background is in improv, and she is a veteran of the comedy site CollegeHumor.) "John Boyega is very funny, and sometimes we could improvise," she says. "Is that answer diplomatic enough?"

Very. But it almost doesn't matter, because this *Star Wars* is also about something else. If 2015's *The Force Awakens* answered the question if it is possible to make a *Star Wars* that recaptures the charm of the original films and 2016's *Rogue One* showed there are interesting stories beyond the Skywalker family saga, this film will tell us what happens when Disney expands its universe to new kinds of characters, played by new types of stars.

WHETHER HOLDO AND ROSE prove to be good or evil, or funny or stoic, their inclusion in *The Last Jedi* affirms Disney's determination to make the *Star Wars* universe look more like our own. When *A New Hope* premiered in 1977, Leia was the only female hero. And though she upended stereotypes about princesses—the so-called damsel in distress seized a blaster from Han Solo and shot down Stormtroopers herself—Fisher lamented having little female company on set. The new movies feature female heroes and villains, from Rey to the evil Captain Phasma (Gwendoline Christie). "[Producer] Kathleen Kennedy's mantra is 'strong female characters,'" says Dern. That's surprisingly rare. When Dern won an Emmy for HBO's *Big Little Lies* this year, she joked in her acceptance speech, "I've been acting since I was 11 years old, and I think I've worked with maybe 12 women."

And Tran is the first major Asian female character in the *Star Wars* universe. Asian actors rarely get to play supporting roles—let alone a hero—in big-budget Hollywood movies. "When I was growing up, I didn't see anyone like me in movies. And I wanted to be white for the longest time, because I thought that meant my story would be valid," she says. "When you're a kid, you see images on TV and on billboards and in magazines—they all look the same, and you

MOVE OVER, EWOKS

Porgs, aliens inspired by puffins, are the galaxy's new cutest creature. A porg will join Chewbacca on the *Millennium Falcon.*

Dern, left, is no stranger to gigantic cinematic creatures. In 1993, she starred in Jurassic Park. *Tran, above, a comedian making her feature-film debut, spent her days on set examining the aliens and droids*

wonder, 'Why don't I look like that? And can I change myself to look like that?'"

Tran says her casting in *Star Wars* represents a shift in the industry, though it may take a few more years for other studios to catch up. She takes the opportunity seriously. Despite having trepidations about social media, she recently decided to join Instagram. "I was afraid of being picked apart," she says. "Being able to fail anonymously is such a luxury. But I realized that if I am in this franchise, I have to have a voice, and that includes speaking out on social media." One of Tran's first posts came on Halloween: she and a friend dressed up as porgs, the adorable puffin-like creatures featured in the new film.

Both Tran and Dern were awed to be a part of the storied franchise. Tran wandered around the London set, exploring ships and aliens "like a weird nerd." As for Dern, the first day on set brought back potent childhood memories. When Dern was little, she visited her father, actor Bruce Dern, on the set of *Silent Running*. There, Bruce befriended Douglas Trumbull, the visual-effects pioneer whose droids on that movie served as inspiration for C-3PO and R2-D2. Trumbull shared early sketches with Laura and Bruce. "I got ready for my first scene. And when they called 'action,' I opened my eyes and I saw C-3PO and started to cry," she says. "When I was a kid, my dad told me about these two characters they were making for this next movie. So it just feels like it's come full circle, to be in the company of these characters that I heard about and then grew to love. I felt like I was actually waking up in my childhood fantasy."

—ELIANA DOCKTERMAN

STAR WARS: LUCASFILM LTD. (3); JUSTICE LEAGUE: WARNER BROS.; THE BALLAD OF LEFTY BROWN: A24

ACTION CALENDAR

Thrills from Gotham to the Wild West

JUSTICE LEAGUE

11.17

The **DC Extended Universe's latest installment brings the whole team together**—that's Batman (Ben Affleck), Wonder Woman (Gal Gadot), the Flash (Ezra Miller), Aquaman (Jason Momoa) and Cyborg (Ray Fisher)—to fend off the supervillain Steppenwolf.

24 HOURS TO LIVE

12.1

Ethan Hawke plays a **hitman who's killed on the job and then given one more chance at life**—and redemption—when he's temporarily resuscitated.

THE BALLAD OF LEFTY BROWN

12.15

After witnessing the murder of his longtime partner (Peter Fonda), a cowboy (Bill Pullman) recruits a green gunslinger and a grizzled U.S. Marshal to avenge the slain man's death, **traversing the barren Montana landscape on their journey to deliver justice.**

—Mahita Gajanan

In Wonder, *a mother (Roberts) helps her son (Tremblay) to recognize his self-worth*

DIFFERENT IN AN INDIFFERENT WORLD

WONDER • NOV. 17

PARTWAY THROUGH *WONDER,* FIFTH-GRADER AUGGIE Pullman finds himself seated across from a new friend in the school cafeteria. "Have you ever thought about having plastic surgery?" the friend asks.

"Dude, this is *after* plastic surgery. It takes a lot of work to look this good," Auggie says, running a hand through his hair.

In other words, what could be painfully depressing turns out to hold lurking reserves of humor, which is pretty much the story of *Wonder.*

Auggie, played by Jacob Tremblay, was born with a facial difference (the current preferred term), and even after multiple surgeries, his looks startle his classmates. As he adapts from homeschooling to a new school community, he encounters far worse than that lunchtime scene—one nasty bully says he'd kill himself if he looked like Auggie—but he never fully loses heart.

The movie is an adaptation of the 2012 novel by R.J. Palacio, which has sold 6 million copies in North America and launched an antibullying campaign, Choose Kind. Palacio has said she got the idea for the story when her young son began crying at the sight of a girl with a facial difference in an ice cream shop. She took her kids out of the shop, but later regretted her reaction, telling NPR, "What I should have done is simply turned to the little girl and started up a conversation and shown my kids that there was nothing to be afraid of."

Tremblay, 11, who broke out opposite Brie Larson in the 2015 drama *Room,* has more than a few things in common with Auggie. "We both love *Star Wars,* we have awesome families, and we love our dogs." But Tremblay thinks we all can find something in common with the boy. "Everyone's like Auggie in one very important way: we want to be accepted and treated equally and with kindness."

'EVERYONE'S LIKE AUGGIE IN ONE VERY IMPORTANT WAY: WE WANT TO BE ACCEPTED.'

JACOB TREMBLAY, star of *Wonder*

Julia Roberts, who plays Auggie's mother, became interested in the part because of her own children. "I read it with my kids and fell so in love with it," she says of the novel. "This book is such a beautiful and gentle introduction into all kinds of topics, including bullying and intolerance and fear, and what fear makes young people do sometimes."

Both actors have some familiarity with the subject. "I was picked on quite a bit as a young person," Roberts says, though she won't say what for. "Even as a 50-year-old mother of three, it's not a path I like to go up and down." Tremblay reveals a bit more. "I have been picked on," he says, "because I'm kind of short for my age. I told my parents, and that's one of the best things you can do, because my mom said she would never want me to carry negative thoughts on my shoulders alone."

The most challenging parts of filming, says Tremblay, were moments in which he had to cry. Tenderhearted audience members will likely shed tears of their own—especially during scenes between Auggie and his mom, who repeatedly reassures her son that he is worthy of love. But the movie also has its fair share of hijinks: for every tear-filled moment, there is a lightsaber battle or silly science project to lighten the mood. This blend of pathos and humor, says Roberts, "was intrinsic in the writing in the novel." But she credits writer-director Stephen Chbosky with translating that balance into visual terms.

As much as the movie instills the viewer with compassion for the underdogs, it also finds a way to sympathize with the bullies. "I would say to try to take a moment to be conscious of why a person that is bullying somebody is behaving that way," says Roberts. After all, she adds, "There's no child that's born a bully." —SARAH BEGLEY

Dwayne Johnson on comedy and en pointe

JUMANJI: WELCOME TO THE JUNGLE ● DEC. 20

In this sequel to the 1995 Robin Williams smash *Jumanji,* an awkward teen is catapulted into the world of an old-school video game and suddenly finds himself looking a lot like Dwayne "The Rock" Johnson. Here, the action star talks about wrestling as a training ground for comedy—and about how to get away with a pink tutu.

You're kind of a big guy, yet you have such a light comic touch. Is there a secret to that?
I think the secret is gathering the writers in a room and threatening them with bodily harm if they do not write great jokes for me and put in scenarios where I can make a lot of people laugh. Look, I'm kidding. Sort of. I don't know if it's a secret. I just know what works for me, and what works for me is the idea of making the audience laugh, and making them feel good and sending them home really, really happy.

You wore—and pulled off—a pink tutu in 2010's *Tooth Fairy,* which takes guts. Did that come from your time in professional wrestling?
Yes, I think. The basis of professional wrestling is theatricality. Before I got to the WWE, I was working in a very small wrestling territory down in Tennessee, where I would wrestle in front of maybe 50 people every night, at flea markets and carnivals and fairs. The goal was always to connect with an audience and to do everything that I could possibly do to entertain them. That meant singing, that meant looking ridiculous.

You're always terrific with kids, but here you're playing a kid in an adult's body. Was that freeing?
I play every kid's dream of being a video-game avatar with superhero powers. That's the A side. The B side is, I'm this terrified 16-year-old boy who has not gone through puberty yet. He's highly sensitive, with his allergies, and he's highly insecure. There's an A side and a B side to every scene, and I enjoyed the challenge of that.

—Stephanie Zacharek

Johnson in Jumanji: *big muscles, light touch*

FAMILY CALENDAR

Plucky protagonists have their moment

THE BREADWINNER
11.17
Executive-produced by Angelina Jolie, this animated drama tells the **story of an 11-year-old girl living in Taliban-controlled Afghanistan.** After her father is wrongfully arrested, she disguises herself as a boy to support her family.

THE STAR
11.17
In this **animated film based on the birth of Jesus, Christmas is saved by a group of animals** led by a courageous donkey. The star-studded voice cast includes Steven Yeun, Tyler Perry, Keegan-Michael Key, Kristin Chenoweth, Mariah Carey and Oprah.

COCO
11.22
Pixar's latest concerns a **young Mexican boy who journeys through the Land of the Dead to fulfill his dream of becoming a musician,** despite his family's generations-long ban on music. The film features an all-Latino voice cast including Gael García Bernal and Benjamin Bratt.

THE MAN WHO INVENTED CHRISTMAS
11.22
Step inside the **tumultuous weeks leading up to the publication of the Charles Dickens classic *A Christmas Carol.*** Dan Stevens plays the then struggling writer, while Christopher Plummer brings Ebenezer Scrooge's timeless scowl to life.

FERDINAND
12.15
Adapted from Munro Leaf's popular 1936 children's book, this 3-D movie tells the **story of a giant but gentle bull (John Cena) who's more inclined to stop and smell the flowers than chase matadors,** like he's expected to. Kate McKinnon voices an elderly goat, Gina Rodriguez plays a hedgehog, and Peyton Manning plays a bull named Guapo.

THE GREATEST SHOWMAN
12.20
Hugh Jackman brings his musical talents to the fore in this **story about P.T. Barnum's toiling journey to create the Barnum & Bailey Circus.** Michelle Williams plays his wife, Charity, with Zendaya and Zac Efron along for the ride as circus performers.

—Mahita Gajanan

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Hello, I must be going

By Joel Stein

SINCE MY FIRST COLUMN, 19 YEARS AGO, READERS AND co-workers have clamored to have me fired. The first time I visited TIME's L.A. bureau, I saw one of my columns taped outside a science reporter's door, with sentences crossed out by red Sharpie accompanied by the words "This is what TIME magazine has become!" When I introduced myself to Gore Vidal on a flight, he ranted about how TIME's editor at the time, Walter Isaacson, had destroyed the magazine by bringing in solipsistic young people who write in first person. I nodded in agreement, thinking, Gore Vidal knows about me!

But TIME has finally come to its senses, and it's time for the Awesome Column to end. I know this will be as hard for the reader as it is for me, though I'm assuming here that the reader got paid a lot of money to read this column.

I WANTED TO PROVIDE CLOSURE, and since as a columnist I was always more of a character than a person, I sought advice from writers who have worked on television finales. "It should be the funniest, most profound, most emotionally resonant column of them all," said Vince Gilligan, creator of *Breaking Bad*. "The best way to achieve this is to hold back on all your previous columns. Anyway, that worked for us." This was something I'd figured out when I wrote my first column, about rooting for an escaped death-row prisoner, despite the fact that of all the demographics to court as long-term readers, death-row prisoners are the worst. Jenji Kohan, who created *Orange Is the New Black* when her show *Weeds* was being canceled, was more worried about me: "Start a new column for another publication so you can avoid all the feels," she said. "And do it quick before you disappear." I could not understand how she had trouble getting people to keep watching a show about marijuana.

Damon Lindelof, who ended both *Lost* and *The Leftovers,* took me out to breakfast and advised the opposite. "I would feel ripped off if it's, 'O.K., off to bigger and better things.' I want to feel a little bit sad. Because I'm feeling sad about it. And good finales take how the audience is feeling about the finale and put that into the content." This was very helpful, though not nearly as helpful as offering me a job, which clearly was why I contacted all these people.

Finally, Larry David gave me some oddly specific advice that he got after ending *Seinfeld:* "Tell everyone what it's about ahead of time so that nobody can have any preconceived notions or feel disappointed after." I couldn't figure out how to do that. Because I never really knew what this column was about. I was so excited to get a wall to graffiti that I didn't try to convince the reader of my opinions. I was just figuring out what I thought by seeing what I wrote.

SO I CALLED WALTER ISAACSON, who—in the greatest moment of my career—walked into my tiny office and gave me a column. I asked him what I should have asked that day: What was its purpose? Was it speaking truth to power? Or providing a voice for my generation? Or delivering personal, embarrassing truths about living in our changing culture?

"TIME magazine took itself too seriously, and I thought you would be an amazing antidote. It infused a little bit less self-seriousness in the other writers," he said as he boarded a plane, returning from giving a speech about his new 624-page biography of Leonardo da Vinci.

Other writers might be disappointed to find out they were just a clown and that everything in between their desperate stabs at humor was filler. But I was thrilled I got to create all that filler. Looking back, I do think that, other than with Walter himself, I accomplished the task he gave me. And now that I have, I think TIME needs another kind of antidote.

When I arrived at TIME, there were hooks on the inside of our office doors for our suit jackets, and editors had an entire meeting about whether I could print the word *wuss*. The magazine is far less stuffy now. As is the whole world. It was fun to be a sex-obsessed narcissist who was only interested in how the news affected him when I was writing for readers who had survived 120 pages of serious news before me. Now the issues are smaller and filled with news about a sex-obsessed narcissist who is only interested in how the news affects him.

There are times when society needs a punk who doesn't care. There are far fewer times when society needs a 46-year-old punk who doesn't care. I've always been guilty of hanging on too long out of fear of graduating college, ending relationships and transitioning from democracy to authoritarianism. I look forward to a future columnist who makes me laugh about that. □

ILLUSTRATION BY MARTIN GEE FOR TIME

Gary Oldman The actor on how he transformed into Winston Churchill for *Darkest Hour* and what people today can learn from the wartime leader's example

What appealed to you about playing Winston Churchill? For me there was a personal element. My mother lived through the Blitz, in London. My father was in the Royal Navy and fought in World War II, so he was obviously under Winston's command. So it felt like there was a connection. I remember, as a child growing up in London, thinking of Churchill as the man who won the war. He was our savior.

Was it a challenge to play such an iconic figure? It is a very iconic silhouette you have to work toward. He had the cane, the Victorian clothes, the Homburg hat, the cigar. And many great actors have played him before. So you close your eyes and you say to yourself, Am I really remembering Winston Churchill, or am I being influenced by Albert Finney, or Robert Hardy? So first I had to put all that aside.

There's the physical challenge too. The elephant in the room, of course, is that I don't exactly have a striking resemblance to Winston Churchill. And I wasn't going to put on 60 pounds to play the role. If I'd been a younger man, perhaps, but I've got to look after my health! So I knew it was going to be a long journey, with a lot of time spent in the makeup chair. But the key to it was homing in on the physical details.

Such as? I studied newsreel footage of Winston in this period, and I discovered a man who had great energy. He would just charge ahead of everyone, cut through space with this fixity of purpose. He was on a mission. And there were small idiosyncracies: The way he turned the page on his notes. The way he would slide his fingers underneath the lapels of his coat, rather than hold on to them. You look for all of these details and try to soak them up like a sponge.

Did you discover anything that surprised you? His vulnerability. During the 1940s he would go to bomb sites in London and meet the people going through these hardships. Often he was moved to tears. He could be a real blubberer. The reputation of him as a shouter and a hard taskmaster comes from the fact that he hated Hitler with every fiber of his being. He was on this mission to eradicate fascism. So I think that he had little patience if you came up short of his expectations.

Your performance is already getting Oscar buzz. Have you been happy with the response? The thing I've been most chuffed about is the response from the Churchill family. We got a big thumbs-up from them and from scholars of Churchill. That was nice.

The movie presents Churchill as a politician with a popular touch. Did you see any parallels with today's political environment, in which populism has made a comeback? I suppose it has—you certainly saw that with Bernie Sanders. But we didn't set out to make anything topical or relevant. Of course, if the film resonates with the public and they feel some connection to today, it's always a good thing. People of every generation are looking for examples of leadership, or real statesmanship.

People in Hollywood are looking for leadership too, in the wake of the Harvey Weinstein scandal. Do you think that will change the culture? I think it's already shifted. Hollywood has always been morally a little imperfect, and now we're seeing it changing incredibly quickly. And it's permeating all sorts of other industries. Hollywood is in the spotlight at the moment, but the light will shine in other areas. It's like a turn in the notch on the wheel of evolution. We're just slowly cleaning up our act. So it's a good thing, I think. —DAN STEWART

> 'I remember, as a child growing up in London, thinking of Churchill as the man who won the war. He was our savior.'

ERIC CHARBONNEAU—REX/SHUTTERSTOCK

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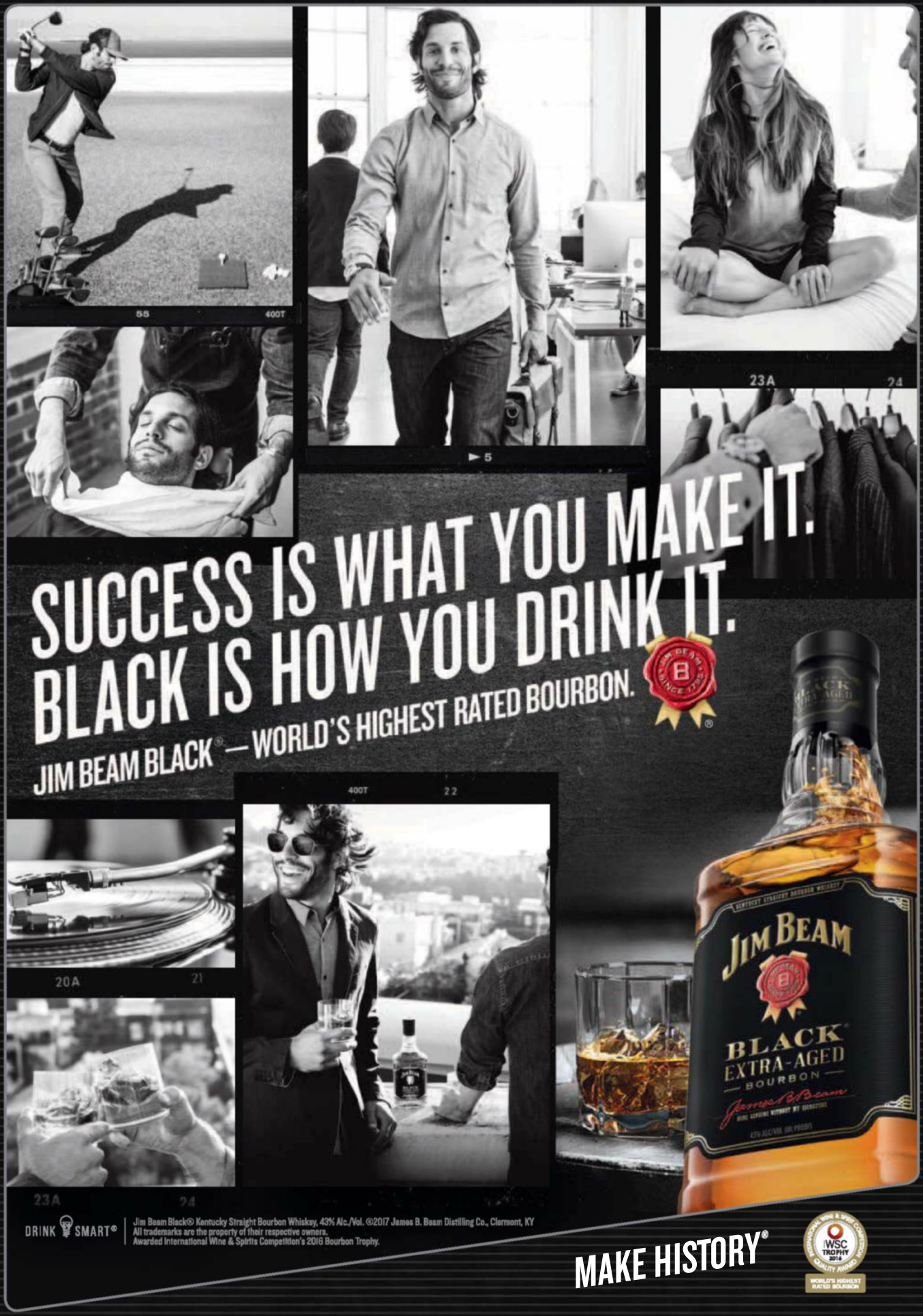
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