

THE
LONGEVITY
ISSUE

ME

The Alzheimer's Pill

A radical new drug
could change old age

By Alice Park

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from a clam *p74*



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Photograph by Hannah Whitaker for TIME

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Lopez,
page 120



Follow the crumbs.
They will take you home.



What if you live to be 100? Or even longer?

AT THIS YEAR's World Economic Forum meeting in Davos, Switzerland, TIME partnered with the WEF on an exploratory session called "What If?" Deputy managing editor Michael Duffy moderated a panel on autonomous weapons, "What if robots go to war?" while assistant managing editor Rana Foroohar examined neuroscience in the courtroom: "What if your brain confesses?" My panel addressed the implications of a dramatic increase in average life expectancy: "What if you are still alive in 2100?" Nobel laureate Elizabeth Blackburn grounded the conversation in reality by noting the genetic components in those who are now living to be centenarians, which "are very, very complex." Life extension is "a solvable problem," she argued, but the focus should be on avoiding "the avoidable declines in health that make us so miserable."

All agreed on the challenge of extending not old age but our productive lives. London Business School professor Lynda Gratton predicted the emergence of new life stages, including one called the Explorer. "Why would you want to start making all your big career decisions at 20," she said, "when you could explore and create more choices?" Our personal capacity to change and manage transitions, she observed, will become a vital asset.

Derek Yach, chief health officer at the Vitality Group in New York City, explored the question of whether technology, that immensely powerful, contagious remedy for so many problems, can evolve fast enough to offset the enormous challenges to the environment, the food supply, economic justice and quality of life that could come from a global population that reaches 11 billion. "The decisions we make in the next 10 years or 15 years may be the most important," he said, "particularly the political and the ethical and the social decisions we make, to protect the ability of older



Duffy, center, leads a talk on autonomous weapons

people to age into a society where you are actually able to take full advantage of the technologies." Thomas DeRosa, CEO of Welltower, focused on wellness, mobility and cognition in maintaining a high quality of life for as long as possible, challenges we explore at greater length in this, our second Longevity issue, edited by Siobhan O'Connor, editorial director of TIME Health.

Laura L. Carstensen, founding director of the Stanford Center on Longevity, opens our issue with the argument that we need to fundamentally change how we think about the future—especially how long that future might last. Humans were not designed to think about the distant future, but in many ways our health and happiness are the sum of our habits, Laura points out, including the countless small choices we make every day about what we eat, who we engage with, even how much time we spend moving vs. sitting. The Stanford Center is simultaneously releasing the Sightlines Project, its first-ever comprehensive review of the state of longevity in America, in conjunction with our cover story.

Some of the most exciting developments come in an area where there is the most pressing need: confronting Alzheimer's disease, which is predicted to affect 14 million Americans by the year 2050. As Siobhan explains, "Dr. Frank Longo's work on an Alzheimer's pill is particularly astounding. He's not the first scientist to try for a cure, obviously, but the thinking behind his drug flies in the face of decades of thinking about how to treat the disease. It's that kind of radical approach that's going to be needed for all the challenges posed by a longer life."

Nancy Gibbs, EDITOR

Letters should include the writer's full name, address and home telephone and may be edited for purposes of clarity and space

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“There’s a special place in hell for women who don’t help each other.”



MADELEINE ALBRIGHT, former U.S. Secretary of State, criticizing young women who support Democratic presidential candidate Bernie Sanders over rival Hillary Clinton

28

Length, in feet (8.5 m), of a selfie stick, said to be the world's longest, wielded by Ben Stiller at the premiere of *Zoolander 2*



125,000

Number of Twitter accounts suspended for links to extremism, as the social network tries to stem the use of its platform by ISIS

‘WE NEVER WENT NEGATIVE BECAUSE WE HAVE MORE GOOD TO SELL.’

JOHN KASICH, Republican presidential candidate, celebrating his second-place finish in the New Hampshire primary despite “tens and tens of millions of dollars spent against us”



Samantha Bee
The comedian launched her new show, *Full Frontal With Samantha Bee*



GOOD WEEK BAD WEEK



Bees
New research shows humans are causing a decline in bee populations

‘THEY ARE NOT VERY GOOD AT FEEDING THEIR PEOPLE, BUT THEY INVEST A HUGE AMOUNT IN THEIR WEAPONS.’

PRESIDENT OBAMA, after North Korea said it launched a satellite into space

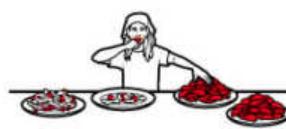
‘I’m going to drink a lot of beer tonight.’

PEYTON MANNING, Denver Broncos quarterback, after winning his second Super Bowl championship, in a 24-10 victory over the Carolina Panthers



429

Number of chicken wings that competitive eater Molly Schuyler ate to win Philadelphia’s annual Wing Bowl



‘I MISS MY FAMILY.’

JULIAN ASSANGE, WikiLeaks founder, after a U.N. panel said his stay in London’s Ecuadorian embassy amounts to “arbitrary detention”; facing extradition over rape allegations, Assange sought asylum there in 2012

The Brief

'CHINESE PRESIDENT XI JINPING IS UNACCUSTOMED TO SLAPS' —PAGE 13

► PRIMARIES

The Trump and Sanders Show: Why two outsiders are winning

By Michael Duffy

WITH THE RUMBLE OF AN avalanche, something new in politics shook loose from the snowy crags of New Hampshire, having little to do with the D's or the R's. Strong showings by Donald Trump and Bernie Sanders—each won by more than 50,000 votes—represented the utter inundation of the political parties. The outsiders who won owe nothing to nobody; party leaders huddled like demoralized Romans as the Visigoths sacked their city. New battle lines were drawn for primaries in South Carolina and beyond: not left vs. right, not red against blue, but insiders and outsiders. For now, the anti-Establishment is winning on both sides of the ballot.

Sanders, 74, and Trump, 69, entered the campaign last year as Don Quixote and P.T. Barnum, but they tapped a rebellious energy that has transformed them into revolutionaries. So different on the surface, they are echoes of one another too. Both are New Yorkers. Each one has an immigrant parent. (Trump's mom was from Scotland, Sanders' dad from Poland.) Each has been overlooked or underestimated in his public life; both are outsiders to presidential politics. Yet both have found large audiences in



places where veteran pols would have told them not to bother looking. And both are, for now at least, on top.

Like frogs on the stove, the establishments in both parties failed to notice that things were reaching the boiling point, what with the long and unpopular wars, the global unrest and the brutal recession that seemed to separate the fortunes of the rich from the larger fate of the nation. Even when Trump and Sanders began drawing huge crowds, the professional political class wrote them off as minor temper tantrums on the part of voters who would soon take their seats quietly and resume coloring inside the lines.

That may still be the fervent hope of Hillary Clinton, John Kasich, Jeb Bush and other campaigners as they rally their forces for the next fray. But there is no putting these voters in time-out; they demand to be heard. The question is whether it's too late for the old-school pols to start listening.

Donald and Bernie have more in common ideologically than either might care to admit. They rail against the elites who have gridlocked the government. In varying rhythms and very different keys, they blame bankers working in collusion with lobbyists, bad trade deals written in secret and a ruling class gone soft in the head on foreign policy, immigration and taxes. Each man's pitch strikes a distinct conspiratorial note—and though they jab at one another, they do it gently. "We're being ripped off by everybody," Trump said. "And I guess that's the thing that Bernie Sanders and myself have in common."

But they are different in important ways. Sanders' revolt recalls a drama staged regularly by the Democrats with a leftist hero in the featured role. Think of Henry Wallace's rebellion against Roosevelt's New Deal in the 1940s, and George McGovern's insurgency in the 1970s. Sanders is producing his revival in modern dress, and the underlying theme works best in Iowa and New Hampshire. No one has yet managed to take the show national.

Trump, on the other hand, appears to be a new, new thing, a collision of the cult of personality with the age of Twitter. No one has any idea how this story ends. Could he ever reconcile with opponents he has belittled so mercilessly? Not anytime soon: Trump's opera is composed in death metal, and the next show will play in South Carolina, where politics is a blood sport even in quiet years.

Whatever you call this divide—insiders and outsiders, haves and have-nots—it makes for messy endings. Excitement drove turnout in Iowa, and voters in New Hampshire jammed winding roads with endless lines of unmoving brake lights. Will it leave America, nine months hence, with a shaken government and a redrawn political map?

That is the question set loose by the outcome in the Granite State. □



The best presidential campaign ads—so far

Political advertising is mostly rote and robotic, drawn from a wasteland of tired formulas and boring sound bites. But a few candidates have broken through this cycle with something politicians rarely display: actual creativity. —Daniel D'Addario



'THESE HANDS,' BEN CARSON

Carson exploits his most famous traits—skilled hands in the operating room—without dulling their impact. Repeated shots of the hands of Carson supporters working in all sorts of fields bolster Carson's missionary argument about upward mobility.



'CHILDREN,' HILLARY CLINTON

Decades in the spotlight—and countless hairstyles—are transformed from a potential weakness into an asset, using chronological clips cut together to form a single speech about her fight for children. The point is crucial for Clinton: Despite all the political reinventions, she hasn't lost her core purpose.



'CRUZ CHRISTMAS CLASSICS,' TED CRUZ

Using family members in campaign ads is nothing new. But Cruz's controversy-courting staging—a mock book-club reading that targets the IRS and Obama—is delightfully nihilistic rather than sappy. It's a rare attack ad that, somehow, charms.



'15 QUESTIONS MARCO WON'T BE ASKED AT THE DEBATE,' MARCO RUBIO

As Rubio strolls backstage talking to an unseen interlocutor, we learn the Senator loves HBO's *Ballers* and thinks Batman could win against Spider-Man. The facts, though, are less notable than the chilled-out, un-politician-like tone.



'AMERICA,' BERNIE SANDERS

Sanders is no sentimentalist, so he lets Simon and Garfunkel do the inclusion and uplift for him. Their song "America" plays while he wordlessly summons the revolution. It situates the cerebral socialist in the comforting, recognizable milieu of '60s nostalgia.



'JEB: FOR ALL YOUR SLEEPING NEEDS,' DONALD TRUMP

This 15-second Instagram video turns a shot of a voter apparently snoozing at a Jeb Bush event into a witty sleeping-aid promo. Aided by Bush's dull stump speech, Trump's trademark bullying sense of humor is both vicious and funny.



TRENDING



CLIMATE

The U.S. Supreme Court **halted President Obama's plan to regulate CO₂ emissions from power plants**, pending a legal challenge by 27 states. The Feb. 9 decision could affect the nation's ability to meet international climate commitments.



TRANSPORT

A **head-on collision of two passenger trains** on Feb. 9 in Germany's southern state of Bavaria left at least 10 dead and 17 critically injured. Investigators have yet to determine why both trains were traveling toward each other at 62 m.p.h. (100 km/h) on the same track.



HIGHER ED

Professor Larycia Hawkins is to **leave evangelical Wheaton College** in Illinois by mutual consent, the school said Feb. 6. The teacher was placed on leave, to the dismay of many faculty members, after donning a hijab and saying Christians and Muslims "worship the same God."

EAST ASIA

A North Korean satellite launch angers China

NORTH KOREA'S LAUNCH OF A satellite via ballistic missile on Feb. 7 was directed against the U.S. and regional allies like Japan, but the real target may have been North Korea's only friend, China. Beijing had earlier dispatched a veteran diplomat to persuade Pyongyang to postpone the launch, yet North Korea instead brought it forward by a day to coincide with the eve of Lunar New Year—the country's major holiday. This was "a slap in the face for Beijing," says Steven Weber, an international-relations specialist at the University of California, Berkeley.

Chinese President Xi Jinping is unaccustomed to slaps. Since taking China's top job in 2013, he has launched an unprecedented anticorruption drive within the Communist Party and riled Asian neighbors by embarking on military expansions. He is arguably the most powerful Chinese leader since Mao Zedong.

So why does Xi put up with Kim Jong Un's defiance—much less fund it? China is impoverished North Korea's top trading partner and its principal source of cash, food, arms and energy. If China turned its back

on North Korea, the Kim regime would almost certainly collapse.

Yet China is still an essentially autocratic, one-party state—even more so under Xi—and extremely wary of having a unified, democratic, U.S.-allied Korea next door. The collapse of North Korea would send millions of refugees over the 880-mile (1,415-km) border into China, bringing with them social and economic anguish. "The North Korean regime is fully aware that it has the Chinese leadership over a barrel," says Weber.

The launch has prompted Washington and Seoul to announce talks to deploy a new missile-defense system in South Korea—a move China has opposed, and another North Korea headache for Beijing. Ordinary Chinese are also becoming exasperated by their government's support of the Kim regime, expressing their distaste in hastily censored social-media posts.

There's clearly little love lost between these once close allies. "North Koreans hate China more than the U.S.," says Daniel Pinkston, an international-relations expert at Troy University in Seoul. North Korea's nuclear program "is as much aimed at Beijing as it is at Washington," he adds, "because the Chinese don't respect the North Koreans and treat them with contempt." —CHARLIE CAMPBELL/BEIJING

◀ Kim Jong Un

HOW FAR CAN NORTH KOREA STRIKE?

These are projected ranges and potential targets for four major missiles reportedly developed by North Korea. The projections are based on intelligence estimates, as little about the country's missile program has been independently confirmed.



DATA

TROPHIES HUNTED

A new report by Humane Society International found that U.S. hunters imported more than 1.2 million wildlife trophies over the past decade. Here is a sampling, ranked by number of animals, of countries where those trophies originated:



508,325
Canada



383,982
South Africa



76,347
Namibia



47,026
Mexico



44,740
Zimbabwe



28,419
Argentina



TRENDING



TOURISM

Democratic Senator Bill Nelson of Florida called for a federal probe into why a Royal Caribbean cruise ship sailed into a predicted storm over the Atlantic Ocean on Feb. 7. No injuries were reported, but passengers were badly shaken, and the ship was forced to return to port in New Jersey.



ECONOMY

Federal Reserve Chair Janet Yellen warned Feb. 10 that the Fed could put the brakes on future interest-rate

hikes as the U.S. economy faces threats from volatile markets and stagnant growth in China. The Fed began raising rates in 2015 after seven years near zero.



UNREST

A protest against a municipal crackdown on unlicensed food hawkers escalated into a riot during Chinese New Year in Hong Kong. The violence, which left dozens arrested and more than 90 injured, is the worst the city has seen since 2014 pro-democracy protests.

THE RISK REPORT

Zika afflicts an already weak Brazil

By Ian Bremmer

JUST WHEN IT SEEMED THINGS COULDN'T get worse for economically suffering Brazil, there is now serious talk that the Zika virus may cancel the Summer Olympic Games, scheduled for August. Dozens of cities across the country have already canceled Carnival celebrations, and the U.S. Olympic Committee has warned athletes and staff to consider skipping the Rio Games. Zika threatens public health, tourism revenue and the country's prestige.

A slowing economy is already inflicting pain on Brazil's people. Inflation surged to 10.67% in 2015, its highest point in 13 years. Unemployment is on the rise. Per capita income has fallen by more than one-third since 2011. Brazil isn't in a recession—it's in a free fall. GDP growth fell from 7.5% in 2010 to -3.8% in 2015. In January, commuters in São Paulo hit the streets to denounce higher bus fares, a worrisome repeat of spontaneous protests that swelled to more than 1 million people across the country in 2013. Even without Zika, protests might have turned the Olympics into the wrong kind of spectacle.

Hard economic times are exacerbated by a corruption scandal that has provoked impeachment proceedings against President Dilma Rousseff and threatens leading politicians in government and the opposition. The so-called Car Wash scandal began at Petrobras, the country's state-owned oil giant, in March 2014, when the company's

chief of refining, Paulo Roberto Costa, was accused of money laundering. Costa then alleged that Petrobras awarded contracts to companies that promised to divert a percentage of their value into the accounts of ruling-party members and their allies. Early estimates place total bribes at nearly \$3 billion. Rousseff served as Brazil's Energy Minister and as chairwoman of Petrobras during the years of alleged corruption. Her opponents say if she knew about the scheme, she's dishonest—and if she didn't know, she's incompetent.

To survive the impeachment process, Rousseff must depend on votes from those within her party most hostile to the market-friendly

**Zika
threatens
public health,
tourism
revenue and
the country's
prestige**

reforms that might resuscitate Brazil's economy. If she's ousted, Vice President Michel Temer, who would take her place as President, would face an impossible political task.

Rousseff's Workers' Party would oppose him at every turn, and his own party, the PMDB, would have to fend off charges related to the same scandal.

There is reason for optimism—eventually. Political corruption has long stunted Brazil's growth, and the ability of an independent prosecutor to force a public reckoning may be exactly what the country needs. But that's a long-term hope. In the meantime, Brazil badly needs a boost of confidence, and the Olympics were expected to provide one. Zika couldn't have arrived at a worse time. □

TOURISM: UNREST: WHITE: TISHMAN: GETTY IMAGES; ECONOMY: EPA: DANCING: AP

ROUNDUP

Countries that banned boogying

The city of Lausanne in Switzerland has outlawed "silent discos," in which masses of revelers dance to music while wearing headphones. Local authorities said that despite the name, the events are too noisy for local residents to endure. Here, some other unusual dancing bans from around the world. —Julia Zorthian

GERMANY
The state Tanzverbot (dance ban) laws threaten fines of up to \$1,500 for venues hosting dance parties during Easter weekend, owing to the solemnity of the Christian observance. A group called the Pirate Party regularly stages dancing demonstrations in protest.

JAPAN
The Japanese government repealed a 1948 law against dancing in public after midnight in June after the public protested the ban. Members of government agreed to modernize the law before the 2020 Olympics in Tokyo, when the flood of visitors may seek late-night fun.



Some German clubs close over Easter >

SPOTLIGHT

China's shopping spree in America

A Chinese investment group's purchase of the Chicago Stock Exchange on Feb. 5 is the latest in a series of major acquisitions of U.S. assets by Chinese firms and investors looking to boost their fortunes as economic growth slows at home. —Victor Luckerson



LEGENDARY ENTERTAINMENT

The production company behind hits like *Jurassic World* was bought by the conglomerate Wanda Group for \$3.5 billion this year, the largest deal ever between China and Hollywood.



SMITHFIELD FOODS

The Virginia-based pork giant, which processes 28 million hogs per year, was purchased by Chinese meat producer Shuanghui Holdings in 2013 for \$4.7 billion.



WALDORF ASTORIA

The iconic Art Deco hotel in New York City, operated for more than 60 years by Hilton, was purchased by the Chinese insurance firm Anbang for \$2 billion in 2014.



MOTOROLA MOBILITY

The electronics manufacturer that invented the cell phone was bought by Google back in 2012, then off-loaded to Chinese tech giant Lenovo for \$2.9 billion in 2014.

BRAZIL

Brazil passed laws in 2000 and 2008 that banned or regulated **funk dance parties**, especially in favelas, where police said they were disruptive and linked to gang activity. The parties made a comeback in 2009, after Rio de Janeiro outlawed discrimination against the funk movement.

TANZANIA

Authorities began cracking down on the kigodoro dance last year when the **exuberant bottom-shaking activity** earned infamy on social media. Government officials said the dance—sometimes performed nude—threatens Tanzanian national identity.

Milestones



White performs in New York in 1979

DIED

Maurice White Master of the groove

AS THE LEADER AND SINGER OF EARTH, Wind & Fire, Maurice White created what is perhaps the world's greatest recipe for five minutes of sustained joy. It's called "Boogie Wonderland," and if it does not set your limbs in motion when it comes on the radio or over the speakers at a wedding dance, you may need to check your DNA for traces of humanity. White pioneered a sound that was perfectly in sync with the disco era of the late '70s: razor-sharp horns playing jazzy harmonies, James Brown-style funk guitar, popping bass, soaring background vocals and the insistent drive of high-hat cymbals. For his band and a host of other artists, he crafted smash hits—"September," "After the Love Has Gone" and "Best of My Love"—that kept dance floors packed. Having suffered from Parkinson's disease for more than 20 years, White, 74, died at home in Los Angeles on Feb. 4. His groove, however, lives on.

—ISAAC GUZMÁN

SETTLED

For \$14 million, a lawsuit challenging **Warner Music Group's copyright** on "Happy Birthday to You." If approved, the deal would put the song in the public domain.

SET

A new high for **Americans renouncing their citizenship**, with 4,279 doing so in 2015. The renunciations, which broke records for a third straight year, are likely a response to paperwork required to comply with U.S. tax laws.

PLEDGED

About **\$11 billion in aid for victims of the war in Syria**, by the world's wealthiest nations at a London summit—the most money pledged "on a single day for a single crisis," according to U.N. Secretary-General Ban Ki-moon.

DIED

Edgar Mitchell, 85, Apollo 14 astronaut and the sixth man to walk on the moon. He died on the eve of the 45th anniversary of his lunar landing.

► **Margaret Forster**, 77, author of *Georgy Girl*, the novel made into the Golden Globe-winning 1966 film starring Lynn Redgrave, Charlotte Rampling and Alan Bates.

► **John Tishman**, 90, real estate developer whose company oversaw the construction of iconic American skyscrapers such as the World Trade Center towers in New York City and the John Hancock Center in Chicago.

John Tishman



DEFENSE

War on ISIS update: Two steps forward, one step back

By Mark Thompson/Washington

LIKE A VIDEO PLAYING OUT IN FAST MOTION, THE 1,000-FT. bridge surged across the Warrar canal just before Christmas. Huge trucks dumped aluminum ramps, midsections and high-powered, flat-bottomed minitugs on one bank, just outside Ramadi, the capital of Iraq's western Anbar province. The city had been seized by ISIS seven months earlier, and now the Iraqi government wanted it back. Without an American soldier in sight (or any noteworthy enemy fire, for that matter), 400 Iraqi troops protected the 60 Iraqi bridge builders from ISIS attack as drones patrolled overhead, sending video images back to Baghdad.

Within hours, engineers from the 15th Iraqi army division had completed the \$10 million, 100-ton floating bridge—and 80 miles east, in Baghdad, U.S. military officers cheered. The Iraqi forces had been trained by members of the U.S. Army's 814th Engineer Company, which built bridges at Normandy during World War II. The Americans celebrated as 1,500 elite Iraqi troops and 300 vehicles trundled across the new bridge and began the fight to retake the city. Their victory on Dec. 22 marked a high point in the war on ISIS. "I'm biased, because I'm an engineer, but it's really one of the bright and shining lights of what we've done here," says Major Justin Pritchard of the 82nd Airborne Division. "It demonstrated the capability of the Iraqis to project combat power."

The good news is that the Iraqi military—which has been a huge disappointment, despite a \$25 billion U.S. investment—proved capable of building the bridge that helped take back Ramadi. The bad news is that the U.S. had sent the bridge to Iraq last year to retake Mosul, Iraq's second largest city, which ISIS seized in June 2014—and which it still holds. When a lack of Iraqi ground forces postponed U.S. hopes of retaking Mosul last spring, the bridge was used in Ramadi instead. That detour is the war against ISIS in a nutshell: two steps forward, one step back.

THE U.S. HAS BEEN CARRYING OUT a slow but steady military campaign against ISIS in Iraq and Syria, one that Washington hopes will keep the terrorist group too busy to plot more attacks like the one in Paris last fall that killed 130 people. But ISIS is "determined to strike the U.S. homeland," James Clapper, the Director of National Intelligence, told Congress on Feb. 9, warning that such prospects "remain a critical factor in our threat assessments for 2016." Yet despite that danger, the 20 bombing missions a day that the U.S.-led coalition has carried out on average against ISIS since August 2014 works out to just one-eighth the rate of U.S. strikes on the Taliban in 2001. "They say their goal is to destroy ISIS, yet they have this very slow attrition strategy," says Anthony Zinni, a retired four-star Marine general. "It's a flawed and



At top, Iraqi
troops pose
with a captured
ISIS flag;
above, U.S.
soldiers train
Iraqi engineers

high-risk strategy without a strategic end state that makes sense."

Recently Defense Secretary Ashton Carter has begun making hawkish noise. "This is a fight of civilization for its own survival," Carter said on Feb. 2, declaring that he needs \$7.5 billion to fight ISIS next year—a 50% boost from current spending levels. "We're going to do more, because we have got to win." But President Obama continues to refuse to



dispatch large numbers of U.S. troops to Syria or Iraq, and few experts believe that a strategy that Anthony Cordesman of the Center for Strategic and International Studies dismisses as “creeping incrementalism” will be enough to dislodge ISIS from its self-proclaimed caliphate—especially when other players in the region, like Russia, are doing more. “ISIS is already an enduring feature of the Middle Eastern landscape,”

says Emile Hokayem, a Middle East expert at the International Institute for Strategic Studies’ Bahrain office.

There’s no doubt that ISIS has suffered real reversals on the battlefield. Pentagon officials say ISIS’s territory in Iraq and Syria peaked in May 2015. Since then, they estimate, ISIS has lost about 40% of its Iraq holdings and 10% of the land it held in Syria. Instead of seizing new territory, ISIS fighters are digging tunnels and knocking holes in adjoining houses to elude detection. Allied attacks on ISIS oil wells and banks have forced the group to cut its fighters’ biweekly paychecks in half. Forced conscription and executions of deserters are on the rise.

Yet even while ISIS loses territory, it boasts a renewable supply of fighters. In late 2014, the U.S. estimated that there were as many as 31,500 ISIS soldiers. Pentagon officials have privately said 20,000 ISIS fighters have been killed since. Yet on Feb. 4, the White House said the number of ISIS fighters in Iraq and Syria could still be as high as 25,000. That suggests the bombing is ineffective, U.S. intelligence is lousy or those killed have been replaced, perhaps by foreign fighters. Most likely, the truth is some combination of all three. It reminds Zinni of an earlier American conflict: “We won every battle in Vietnam but lost the war.”

EVEN AS ISIS is losing territory at home, it’s gaining it abroad. Its nimble social-media campaign resonates with a tiny minority of Muslims around the globe. The group has staked its black flag in parts of Afghanistan, Algeria, Egypt, Libya, Nigeria, Pakistan, Russia, Saudi Arabia and Yemen. U.S. intelligence fears that Bangladesh, Indonesia, Somalia and Tunisia could be next. “They are clearly able to execute their global strategy, because they’re expanding their affiliations and they’re motivating people to kill their fellow citizens,” says Jack Keane, a retired U.S. Army general. “I see them only on the defensive, tactically, in Iraq.”

Battlefield successes mask tougher problems. Divisions between Arabs and Kurds, and Shi’ites and Sunnis, remain deep. Russia’s nearly five-month air war in Syria—which has mostly tar-

geted other rebel groups, not ISIS—has strengthened the regime of President Bashar Assad. Government forces have tightened a noose around rebel-held Aleppo, once Syria’s largest city, worsening the biggest refugee crisis since World War II and potentially giving ISIS more room to operate. Iran continues to grow its influence inside Iraq. The Iraqi army remains a work in progress, and a viable Arab ground force to destroy ISIS inside Syria is nonexistent.

The Kurds are one group that has proved able to fight ISIS, but some Kurds are now at war with Turkey, a key NATO member of the anti-ISIS coalition. “We really can’t have military success without political solutions,” the CIA’s former No. 2 official, Michael Morell, told Congress last month. “That has to come first.” The Pentagon believes that could take decades.

Meanwhile, the long-postponed fight for Mosul is likely at least a year away. As happy as the Pentagon was to see Iraq retake Ramadi, Mosul will be far more challenging. The city’s pre-ISIS population of 1.5 million was more than five times Ramadi’s, and 10,000 ISIS fighters have spent nearly two years digging in to Mosul, far longer than they held Ramadi. The Iraqi counterterrorism force that crossed that bridge into Ramadi was trained by the U.S. between 2003 and 2011, before American troops officially departed Iraq. It isn’t big enough to do the same in Mosul, and newly trained Iraqi troops aren’t as good.

But that bridge remains in place, proof of what the Iraqis can do—with a little help. The bridge will eventually make its way north to Mosul, its original destination. It’ll arrive there along with 1,800 fresh troops from the U.S. Army’s storied 101st Division, who will be training the Iraqi forces needed to storm Mosul. The 101st captured Mosul from Saddam’s government in 2003 and hasn’t been back to Iraq in a decade. “Frankly, I know the 101st has taken Mosul before,” Carter told some of the division’s troops at Fort Campbell, Ky., on Jan. 13. “And you can do it again.” But if the GIs need to do it again, it will mean the war on ISIS is going even worse than it seems. —With reporting by JARED MALSIN/CAIRO



Six images from the films created by Morris, who recorded the leading Republican and Democratic candidates for President at 720 frames

CAMPAIGN 2016

The candidates like they've never been filmed before

By Meghan O'Rourke

To watch the films, visit
time.com/thecandidates

PHOTOGRAPHS HAVE LONG BEEN important in American politics, dating back to at least 1860, when Mathew Brady made a portrait of presidential candidate Abraham Lincoln, clamping Lincoln's neck to keep him motionless for the long minutes needed to make the exposure. In the last century, our understanding of politics was increasingly shaped by such key images, whether in magazines or televised debates. Today, however, the sea of images is so vast that it's hard to be grabbed by anything. One begins to

wonder what Americans might have felt when they saw Lincoln's portrait for the first time.

In a series of films created by Christopher Morris that are now playing on TIME.com, we have the unusual experience of seeing politics freshly. With their eerie, slowed-down time and wealth of visual material, these films make the stale gestures and rhetorical tropes of campaigning appear startling, poetic, disturbing. They seem to expose all that is at once venal and spiritual about American



per second with the Phantom Miro, a camera never before used in political photography

politics, precisely by not trying to look natural.

Filming at a speed of 720 frames per second, the Phantom Miro camera that Morris used captures far more material than other cameras. Because film typically runs at 24 frames per second, when Morris' footage is run back to us at normal speed, it appears spookily slowed down, with moving objects and passing surfaces in a kind of suspended animation. For a moment, our brains take in more than they normally do. This is the way the world must look

during a near-death experience, Morris has mused.

Athletes in slow motion look graceful—think of the stunningly perfect arc of a gymnast's dismount—but politics under the Phantom's gaze looks, well, unnerving. The films reveal a complex interplay of cynical political staging and authentic civic engagement, where themes of American innocence and political culpability exist side by side. The camera exposes the grammar of physical communication onstage: all the candidates share a desire to

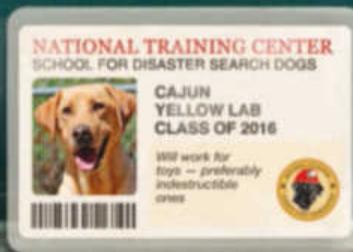
persuade us, by any means necessary.

In a strange way, watching these films drives home the import of politics—something that is easy to forget amid all the flag waving and horse-race coverage. The hopes, expectations and everyday practicalities of politics are written on the faces in the crowd. Here, all becomes newly charged. The strangeness jolts us to attention. Funny that it took a camera to make us see with our own eyes again.

O'Rourke is an essayist and poet

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TheView

'THEY WANT TO LOOK LIKE THEIR DAUGHTERS. THEY THINK THEY'RE THE REAL HOUSEWIVES.' —PAGE 26



Among adolescents, getting less than nine hours of sleep has been linked to depression, obesity and more

HEALTH

Why schools are struggling to let students sleep in

By Alexandra Sifferlin

SEVERAL YEARS AGO, JODI MCCLAY, assistant superintendent of the school district in Temecula, Calif., started fielding a bizarre complaint from parents and students. It was too hard, they said, for teens to rise in time for homeroom. Initially, she was puzzled. Classes started at 7:30 a.m. The solution seemed simple: go to bed earlier.

That's when McClay learned about sleep phase delay, the medical term for how puberty affects bedtime. As hormones change, so do circadian rhythms, making it biologically unfeasible for some teens to go to bed before 11 p.m. and wake up before 8 a.m.—let alone get dressed, transported and ready to learn.

Concerned, McClay met with a group of parents, teachers and administrators to discuss a question that

doctors have been posing for years, lately with growing urgency: Should school start later? Among adolescents, getting the recommended amount of sleep (around nine hours) has been linked to higher test scores and better behavior. Surely, McClay thought, Temecula could revise its policy.

Others were skeptical. Starting classes at 8:30 or 9 a.m. might make it harder for parents to get to work on time, and shifting the bus schedule would cost at least \$1 million, more than the district could afford. "We wanted to change," says McClay. "But ultimately, we couldn't."

Temecula's struggle is not unique. In the U.S., more than 4 in 5 middle and high schools begin at or before 8:30 a.m. That can contribute to sleep deprivation, making it harder for

students to concentrate and even increasing their risk for obesity and depression. The American Academy of Pediatrics confirmed as much in 2014, when it made a formal recommendation to delay school start times. By now, hundreds of districts have started to explore alternatives. Seattle Public Schools is the latest and largest to embrace one: this fall it will push morning bells from around 7:50 a.m. to 8:45 a.m.

But many districts are hitting major snags. Under a suggested change at East High School in Denver, for instance, classes wouldn't end until around 4 p.m., meaning student-athletes could have to leave early for away games. Given that 60% of the school's nearly 2,500 pupils play a sport, "that's a lot of kids missing a lot of class," warns principal Andy Mendelsberg. A new system could also impact local businesses that rely on after-school labor from students.

There are parental concerns as well. In Maryland's Anne Arundel County, one mom, Judith Keeler, started a petition detailing how delaying high school hours—and pushing up elementary school hours, since there is one bus system—would make it harder for working parents to find child care. Then she raised a fraught issue in any school district: cost. "Is this the best way to spend taxpayer dollars?" Keeler wrote of the \$8.1 million initiative, inspiring nearly 3,000 people to sign their support. "This has blown up," says Lisa VanBuskirk, an Anne Arundel parent who supports the change. "I'm not feeling great [about our chances]."

Still, it is possible to navigate these hurdles. The key, say experts, is patience and compromise. Before Fairfax County Public Schools in Virginia delayed high school starts roughly an hour—to around 8 a.m.—officials spent a decade streamlining the switch. They surveyed Fairfax students about sleep habits. They reduced bus expenses. They worked around concerns from community members. During the process, they shared insights with the public and gave people a year to prepare for the change, which took effect in September.

Several months in, the system is "still not perfect," admits superintendent Karen Garza. But there haven't been any major incidents, and students appear more engaged. "My daughter used to feel tired all the time," says Elizabeth Ende, mom to a freshman at McLean High School. "Now she gets through homework more quickly, and when she's working, she looks more alert." Eric Welch, a social-studies teacher at J.E.B. Stuart High School, noticed a change as well. "I can see the kids in the hallways," he says. "They're not dragging as much."

Those results may well spark more schools to take the plunge—a decision that won't be easy. But given the payoff, says Garza, "it's a position we have to take."

VERBATIM ‘I just might be a black Bill Gates in the making.’

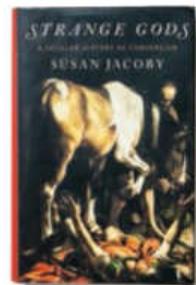
BEYONCÉ, on her new song "Formation," which has been widely hailed as a black-power anthem. In the accompanying music video, released one day before the singer's Super Bowl performance, Beyoncé offers up striking visuals, including a police car sinking in flooded New Orleans and graffiti that reads, "Stop shooting us."



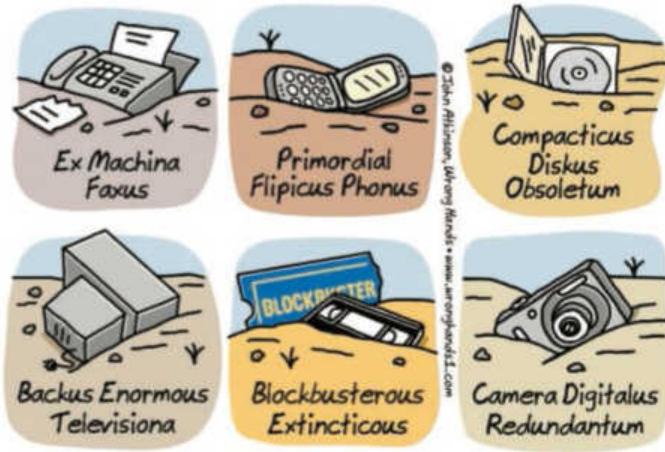
NUTSHELL **Strange Gods**

PEOPLE OFTEN talk about voluntary religious conversion as if it were motivated by spiritual zeal. But in her new book, historian

Susan Jacoby argues that the past tells a different story. In the early 20th century, it was common for Jews, like Jacoby's great-uncle, to embrace Christianity to improve their social class and career prospects. In the years that followed, more people started converting for love—a man adopting his wife's religion to please her family, for example, or a couple taking up a new faith entirely before or after saying "I do." (One study estimates the latter comprises 15% of all conversions.) And at times, Jacoby writes, switching faiths could appear politically shrewd, as when Newt Gingrich, raised Lutheran, became a Southern Baptist years before launching his first campaign in Georgia. "I would never deny that an intense emotional desire to believe in something true... motivates many conversions," writes Jacoby, who considers herself an atheist. "But so do other, more earthly needs and longings." —SARAH BEGLEY



CHARTOON **Fossils from the midtechnolitic period**



JOHN ATKINSON, WRONG HANDS

SNAPSHOT

The robot lifeguard

In 2010, Arizona-based tech firm Hydronalix debuted EMILY (Emergency Integrated Lifesaving Lanyard), a robotic lifeguard that has helped swimmers caught in California riptides. Now a new version of the remote-controlled float—which includes a camera and radio—is being used to rescue migrants marooned on shoddy rafts off Greece. The \$14,000 device can tow up to five people at once, zipping around water too shallow for rescue boats and too deep for lifeguards to easily reach; soon it may use thermal sensors to find people on its own. “It doesn’t replace first responders,” says co-inventor Robert Lautrup, “but it gives them another tool.”

—Julie Shapiro

**QUICK TAKE**

How Zoolander shaped the selfie generation

WHEN ZOOLANDER PREMIERED IN 2001, ITS titular character was supposed to be a joke. As played by director and co-writer Ben Stiller, the male model was unapologetically superficial and self-obsessed (he called himself “really, really ridiculously good-looking”), and audiences loved to mock him for it. The comedy, released just after 9/11, became a sleeper hit, grossing more than \$60 million at the global box office.

Fifteen years later, with *Zoolander 2* in theaters, it appears the joke is on us. Thanks to the rise of smartphones, which take selfies, and social networks, which enable users to share them with the world, Derek Zoolander’s not-so-model behavior has become de rigueur. We used to ridicule his vanity; now we bemoan our own. We used to

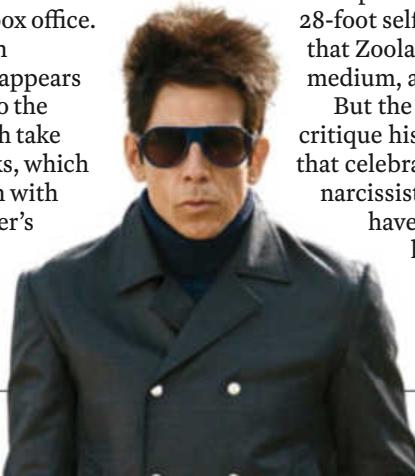
laugh at his signature look, a pursed-lips facial expression called “Blue Steel” (below); now we call it “duck face.”

To its credit, *Zoolander 2* seems to revel in this irony. A key plot point involves the model using clues from celebrity selfies to unlock the sinister plot of an evil mastermind (played by Will Ferrell). And at the film’s

London premiere, Stiller mugged for a 28-foot selfie stick, a nod to the fact that Zoolander is a “progenitor” of the medium, as Stiller put it.

But the writer-actor is not afraid to critique his character—or the culture that celebrates him. “You are the most narcissistic, self-involved person I have ever met,” Derek Jr. tells his father at one point during the sequel. Senior’s response: “That’s not how I think of me.”

—ELIZA BERMAN

**ROUNDUP**

WORK PERKS

Workplace-review site Glassdoor recently unveiled a user-generated list of the top company benefits—and they go well beyond day care and free snacks. Here’s a sampling:

NETFLIX

A year of paid maternity and paternity leave for new parents

REI

Two “Yay Days,” paid time off during which employees are supposed to enjoy themselves outdoors

AIRBNB

\$2,000 per year to travel and stay in company listings around the world

FACEBOOK

\$4,000 in “baby cash” for new parents

PWC

\$1,200 per year to reimburse student debt

BURTON

“Snow days,” so employees can hit the slopes after a large snowfall

EVERNOTE

Free team-building classes on subjects like macaroon baking

WORLD WILDLIFE FUND

“Panda Fridays,” which are essentially free days off, every other week



Meet Motto, TIME's new site for advice worth sharing

OVER THE PAST TWO YEARS, TIME'S digital audience has expanded dramatically, and close to half our readers are millennials. They are drawn not only to TIME's coverage of the world but increasingly to TIME's content on how to live a richer, smarter, more meaningful life—how to negotiate a raise, how to manage your inbox, how to actually unplug on vacation. It was, we discovered, millennial women who were most passionate and most engaged with that content, and they were looking for more.

So we've created Motto, a new website from the editors of TIME dedicated to empowering the next generation. It's about offering the advice and support to blaze new trails and redefine success in the fundamental aspects of our lives: how we work, play and live.

Motto draws on TIME's relationships with influencers, inspiring leaders and cultural icons who share their stories and advice, tactics and tools. Motto's initial contributors include Barack Obama, Lena Dunham, Michael Kors, Shonda Rhimes, Megyn Kelly, Danny Meyer, Jenna Lyons, Marie Kondo, Tony Fadell, Ina Garten, John Green, Kirsten Gillibrand, Jorge Ramos, David Chang, Robert Lopez and Kristen Anderson-Lopez, Alan Stern and more.

For people who trade advice on everything from office politics to the latest health news, we hope to offer a forum to mentor and be mentored, through articles by TIME 100 influencers, videos and data interactives.

We're proud to launch this enterprise with contributions from some of the world's most influential people, and yet we're equally excited about creating a platform for contributors who are grappling with everyday challenges. From life hacks to open letters, Motto is a place for all perspectives. And ultimately, Motto is about choosing the advice and insights that work for you.

—NANCY GIBBS

and CALLIE SCHWEITZER



motto exclusive

The world I want my daughters to grow up in

By Barack Obama

One of America's greatest strengths right now is the fact that our young generation—the millennials—is also the biggest, most educated, most diverse and most digitally fluent generation in our history. And one thing my daughters have taught me about their generation is that they're not going to wait for anyone else to build a better world; they're just going to go ahead and create that world for themselves.

We can create the circumstances that give them every chance to do that, of course—to make sure they can grow up free from debt and free to make their own choices in a world that's not beyond their capacity to repair. That's why my Administration has reduced student-loan payments to 10% of a borrower's income, so that young people who choose college aren't punished for that choice. We've reformed our health care system so that when young people change jobs, go back to school, chase that new idea or start a family of their own, they'll still have coverage. We led nearly 200 nations to the most ambitious agreement in history to combat climate change.

But my daughters' generation knew long before Paris that protecting the one planet we've got isn't something that's up for debate. They knew long before the Supreme Court ruled for marriage equality last June that all love is created equal. They don't see each of us first and foremost as black or white, Asian or Latino, gay or straight, immigrant or native born. They view our diversity as a great gift.

In many ways, their generation is already pushing the rest of us toward change. So for the sake of our future,

one thing we have to do, maybe even above all others, is to make sure they grow up knowing that their voices matter, that they have agency in our democracy.

Those of us in positions of power have to set an example with the way we treat one another—not by viewing those who disagree with us as unpatriotic or motivated by malice, but with a willingness to compromise. We have to listen to those with whom we don't agree. We have to reduce the corrosive influence of money in our politics, which makes people feel like the system is rigged. We have to make voting easier, not harder, and modernize it for the way we live now. And we have to encourage our young people to stay active in our public life so that it reflects the goodness and decency and fundamental optimism that they exhibit every day.

The world we want for our kids—one with opportunity and security for our families; one with rising standards of living and a sustainable, peaceful planet; one that's innovative and inclusive, bold and bighearted—it's entirely within our reach. The only constraints on America's future are the ones we impose on ourselves. That's always been the case with America—our destiny isn't decided for us, but by us. And as long as we give our young people every tool and every chance to decide the future for themselves, I have incredible faith in the choices they'll make.

Obama is the 44th President of the United States

Ivanka Trump's rules for how to negotiate—and win

1

Set your goals in advance

Without a plan, you allow the opposing party to set your goals.

2

Understand what the other person wants

Identify the other person's priorities. Often, they are not at odds with yours.

3

Don't negotiate over email

It's a cop-out that avoids confrontation. It's also easy to misjudge tone.

4

Listen more than you speak

When people are uncomfortable, they ramble. Engage less. The other person is more likely to slip up.

5

Practice when the stakes are low

To hone your skills, call the phone company and threaten to switch providers. Practice whenever you can!

Trump is the executive vice president of development and acquisitions of the Trump Organization

Ina Garten, best-selling author and host of Barefoot Contessa, spoke with Moto's Robin Hilmantel about how she began her current career

What do you wish you'd known when you first started working?

When you're in your 20s, you feel that you need to have goals and that there are so many other things you should be doing. But the more I've grown my business and my career, the more I've come to believe that goals aren't always helpful. Instead of trying to plot out specifically where I want to go, I've always just done the best job I can on what's in front of me and let the universe reveal itself. When I was in my 20s, I was working in nuclear-energy policy at the Office of Management and Budget at the White House and thinking, There's got to be something more fun than this! And then I saw an ad for a specialty-food store for sale in the New York Times, and it was in a place I'd never been before: Westhampton Beach. So my husband Jeffrey said, "Let's go

look at it!"

To say that I knew nothing about what I was getting myself into was an understatement.

Did not having a specific goal in mind open new opportunities?

I think if you set goals, you keep yourself from really interesting sidetracks. Before I bought my store, Barefoot Contessa, I'd thought I was going to go into real estate.

Something similar happened



MENTAL HEALTH

When it becomes hard to think straight

"The metaphors we most often employ when discussing disease don't really apply to chronic illness. Instead, you live with it. You get better. You get worse. You get better again. Sometimes you're driving the bus and sometimes you aren't, but the bus rumbles along regardless."

JOHN GREEN, author of six books, including *The Fault in Our Stars*

later, after I had been running the store for 20 years. I knew I wanted to do something else, so I sold the store to some of my employees, not having any idea what exactly I would do next. About nine months later, I thought, I'll write a cookbook while I figure out what I should do. But then it turned out to really love writing cookbooks.

What other advice has been important to you?

Somebody once gave Jeffrey some advice that I love: complicate your professional life but not your personal life. The fact that I have a really strong, solid personal life allows me to take chances in my professional life that I wouldn't be able to do otherwise. Having that stability has really helped me be someone who jumps into the pond instead of standing on the side of it trying to decide whether to jump. It's those times that I've jumped in even though I was really scared that I've done the things that were ultimately the most interesting.



How social media is disrupting the lives of American girls

By Nancy Jo Sales

ONCE UPON A TIME, ONLY THE WEALTHY AND PRIVILEGED could afford to have their portraits painted by a small, select circle of artists. With the advent of photography, parents of all backgrounds could have pictures of their children, which were coveted as documents of their development and a way to show off their innocent beauty and charm to family and friends.

Today, with smartphones and social media, we all have in our hands the means to broadcast our pride and joy to the world. And we are cultivating our children's online selves from birth—or even before, in utero. Ninety-two percent of American children have an online presence before the age of 2. Parents post nearly 1,000 images of their children online before their fifth birthday. "Sharenting" has given parenting a whole new dimension: viewer-rated performance.

The usual debate centers on whether posting pictures of one's children's online—or allowing one's children to do so—is safe from a privacy or security standpoint. And as we have seen in the recent abduction and murder of 13-year-old Nicole Lovell of Blacksburg, Va., concerns about online predators are more than just a moral panic: they stem from something real. Lovell reportedly texted with one of her alleged killers, 18-year-old David Eisenhauer, a Virginia Tech student, on Kik Messenger, an app known among kids as a place for the exchange of sexts and nude selfies.

But while we're consumed by the tangible dangers of messaging services like Kik, Yik Yak, After School and other anonymous apps, we may be missing a different influence: our own behavior. Kids today are often accused of being narcissistic, but they may be learning their exhibitionist ways from their parents. Accompanying the boom in selfie culture is a rise in competitive spirit, as well as a disturbing trend of sexualization. Likes, hearts, swipes—validation is only a tap away. And one of the easiest ways to get that validation is by looking hot. Sex sells, whether you're 13 or 35.

So it should come as no surprise that in this atmosphere, with the new technology available, sexting and sharing nudes have replaced other forms of intimacy. And it's girls—our daughters, granddaughters and nieces—who are most at risk in this online environment, which blends age-old sexism with a new notion of sexual liberation through being provocative. Girls who post provocative pictures often suffer slut shaming on- and offline. Girls are more often targeted in cyberbullying attacks that focus on their sexuality.

I SPENT THE PAST 2½ YEARS researching my new book *American Girls: Social Media and the Secret Lives of Teenagers*, visiting 10 states and talking to more than 200 girls. It was talking to girls themselves that brought me to the subject of social media and what sexualization is doing to their psyches. How is it affecting their sense of worth? The tweens



Though her book focuses on the plight of girls, Sales also considers the hyper-masculinization of today's boys.



and teens I spoke to were often very troubled by the ways the culture of social media was exerting influence on their self-images and their relationships, with both friends and potential dating partners. They were often highly aware of the adverse effects of the sexualization on girls—but not always sure what to do about it.

"Sexism has filtered into new arenas that adults don't see or understand because they're not using social media the same way," says Katie, a student I interviewed at Barnard. "They think, Oh, how can there be anything wrong here if it's just Snapchat or Instagram—it's just a game." But if this is a game, it's unlike any other we've ever played. And the stakes for girls could not be higher.

Victim isn't a word I'd use to describe the kind of girls I've seen, surviving and thriving in an atmosphere that has become very hostile to them much of the time. How can this be, when girls are graduating from college in higher numbers than ever before, when they're becoming leaders in their chosen fields in greater numbers? From what we



hear, American girls are among the most privileged and successful girls in the world. But tell that to a 13-year-old who gets called a slut and feels she can't walk into a school classroom because everybody will be staring at her, texting about her on their phones.

So why do some girls post sexualized pictures? Why are they complicit in this potentially very self-undermining aspect of social-media culture? "I think it's just to get attention," explains Lily, a 14-year-old in Garden City, N.Y., where I studied a group of girls for the book. "It's to get the likes. Everything's about the likes."

IF BUILDING A SOCIAL-MEDIA presence is similar to building a brand, then it makes a twisted kind of sense that girls—exposed from the earliest age to sexualized images, and encouraged by their parents' own obsession with self-promotion—are promoting their online selves with sex. In so doing, they're also following the example of the most successful social-media celebrities.

It's been almost 20 years since the brutal murder of JonBenét Ramsey magnified the horror of child beauty pageants—the extreme sexualization of the little girls, the skimpy costumes, garish makeup and risqué dance moves once associated with prostitution. In 1996, this seemed like a dark revelation, a national scandal. Then came *Toddlers & Tiaras*. Now, parents post videos of their daughters suggestively shimmying to Taylor Swift and Nicki Minaj—videos that rack up approval ratings, sometimes even media attention and ad sales.

In Boca Raton, Fla., a wealthy coastal city with a population of around 90,000, about 50 miles north of Miami, I met Julie, Maggie, Cassy and Leah, a group of 13-year-old girls—two white, two Latina—at the Town Center Mall. Wearing short-shorts and tank tops, Converse and flip-flops, they glided along the air-conditioned halls past all the stores. Their mothers had dropped them off for lunch—chicken and waffles at the Grand Lux Café—and now they were stuffed, so they sat down on some couches to check their phones.

As the girls visited their social-media accounts, opening their Snapchats and liking and commenting on the Instagram posts of their friends, a parade of mothers and daughters drifted past, all dressed almost identically. There were teenage girls in booty shorts and cleavage-baring tops, and mothers wearing almost exactly the same things, except with heels and bling. They carried shopping bags from Neiman Marcus, DKNY and Pink.

I remarked to the girls how strange it seemed to see the mothers in the mall dressed so similarly to their daughters. "They want to look hot," said Cassy, not looking up from her phone.

"Everybody wants to look hot," Julie said.

"Their daughters look hot and they want to look like their daughters," Maggie said. "They think they're the *Real Housewives*."

The reluctance of baby boomers and Gen X-ers to grow old is not lost on girls. The resistance to aging has been evident in the success the beauty industry has had with "antiaging" products. The demand for plastic surgery and

other cosmetic procedures skyrocketed in the 2000s, with a 98% increase in procedures overall from 2000 to 2012, according to the American Society of Plastic Surgeons. The second most popular procedure for women ages 40 to 54 in 2014 was breast augmentation. The hypersexualization that has enveloped the lives of American girls seems to have also ensnared their moms.

One factor in sexualization that is too often ignored is the rise of online porn. Studies have reported that American children start seeing online porn as young as 6, and a majority have watched it before they turn 18. When kids have easy access to porn and are watching porn, it's not surprising that they are posting what might be identified as porn. In 2014 Vine, the video-sharing service on which users share six-second looping clips, banned "sexually explicit material" after reports that children were posting sexually charged videos of themselves on the site, including girls who looked as young as 9 or 11 years old.

Periodically in the news we hear about a "sexting ring," in which nude photographs of teens are circulated among wide groups of kids, as at a Cañon City, Colo., high school in late 2015. But these sorts of amateur pornography sites, known to kids as "slut pages," have actually become common and existed at every school I visited.

Some young feminists have argued that photos by girls in sexual poses are a valid expression of their sexuality. "Choice feminism" maintains that whatever a woman chooses is inherently a feminist act. But this doesn't take into account questions of exploitation surrounding images of underage girls—not to mention the fact that girls' nudes are often shared nonconsensually, which can wreak havoc on girls' lives.

No matter how various theorists try to minimize and even glamorize girls' participation in social-media culture, it is girls who experience the reality of its troubling effects. □

Sales is the author of American Girls: Social Media and the Secret Life of Teenagers (Knopf), out this month, from which this article was adapted. Copyright © 2016 by Nancy Jo Sales.



VIEWPOINT

Why Ted Cruz and Marco Rubio are failing to excite Latino voters

By Jorge Ramos

FOR THE FIRST TIME IN HISTORY, NOT ONE BUT TWO Hispanic candidates—Marco Rubio and Ted Cruz—have a real chance to become President of the United States.

Latinos were supposed to be very happy and proud. But there's no fiesta. Why?

The reason is very simple. Rubio and Cruz turned their backs on millions of immigrants and broke a long-standing tradition. For decades, many prominent Latino politicians, regardless of party affiliation, have defended undocumented immigrants. Cruz and Rubio don't.

Both have dramatically shifted their admittedly different positions on immigration—which have helped them during the Republican primaries—and now favor incremental enforcement-first approaches. They want walls, deportations, more agents and increased screenings. A massive program of legalization is out of the question. By contrast, 89% of Hispanics want a path to citizenship for the 11 million undocumented immigrants in the U.S., according to Pew research.

THE LATINO DISILLUSIONMENT and frustration with Rubio and Cruz is palpable. Most Latinos won't vote for either one just because of their cultural backgrounds. A little bit of solidarity, empathy and generosity with the most vulnerable—the undocumented—is a prerequisite to earn the Latino vote.

Cruz's father and Rubio's mother and father were born in Cuba. They both have argued that their parents came here legally. But it is difficult to understand why these two sons of immigrants have decided not to defend people like their parents. Their upbringing was defined more by their family's rejection of the Cuban regime than by immigration concerns. Cuban nationals—called refugees or exiles—are treated with certain privileges under American law because they escaped from a brutal dictatorship. Under the Cuban Adjustment Act (the “wet foot, dry foot” policy), there's a fast track to legal residency for Cubans who touch U.S. territory. According to U.S. Customs and Border Protection, 43,159 Cubans arrived in the U.S. last year.

Growing up in Cuban families in the U.S., Cruz and Rubio didn't have to deal with the fears created by ICE and border-patrol agents in other immigrant communities. Their families were safe from deportation and, in contrast to the Dreamers, enjoyed all the benefits of the American educational system.

Some immigrants question—and even resent—that a different set of rules applies to Cubans when it comes to immigration. I don't agree with those critics. The U.S. has the moral obligation to protect those fleeing dictatorships, whether in Cuba or Syria or elsewhere. The point is not to reduce the protections that Cuban expatriates deserve but to extend some of those protections to the rest of the immigrant community. That is where Cruz and Rubio could do much

VOTING POWER



A record

27.3 million Hispanics will be eligible to vote in the 2016 election, according to a Pew Research Center study. The number represents a 40% increase from the 2008 election.



Hispanics will constitute 12% of eligible voters in the U.S. in the November general election, but strong turnout will be key. In 2012, fewer than half of eligible Hispanic voters cast their ballots.

more. But, for many different reasons, they have decided not to.

THE PARALLEL RISES of Cruz and Rubio reflect a larger trend. Latinos are going from big numbers to true power. “We have looked into the future and the future is ours,” Cesar Chavez once said. He was right.

Latinos are getting better salaries and better education. Our annual purchasing power is higher than a trillion dollars. And no one can make it to the White House without the Latino vote. That's the new rule in politics.

Democrats have traditionally won the Hispanic vote for President. But Republicans have been more successful lately at electing Latinos to important positions: Cruz and Rubio to the Senate, and Susana Martinez and Brian Sandoval as governors of New Mexico and Nevada, respectively. Democrats claim to be the “party of diversity” although they only have one Hispanic in the Senate—Bob Menendez—and no Latino governors or presidential candidates.

Rubio or Cruz, no doubt, could be formidable opponents to the Democratic nominee. Despite their immigration rhetoric and a patent unwillingness to help the undocumented, they could easily get more than a third of the Hispanic vote. (Romney got 27% in 2012.) They are the best example of the American dream: from sons of immigrants to presidential candidates in one generation. Hispanic voters can clearly connect to their life stories and speaking even a little *español* doesn't hurt.

Presidente Rubio? Presidente Cruz? Yes, either is possible. If they lose this year, they can try again in four more years. And if they lose in 2020 or in 2024, they can keep on trying. Time and demographics are on their side. □

Ramos is the author of the upcoming book Take a Stand: Lessons from Rebels and an anchor for Univision and Fusion

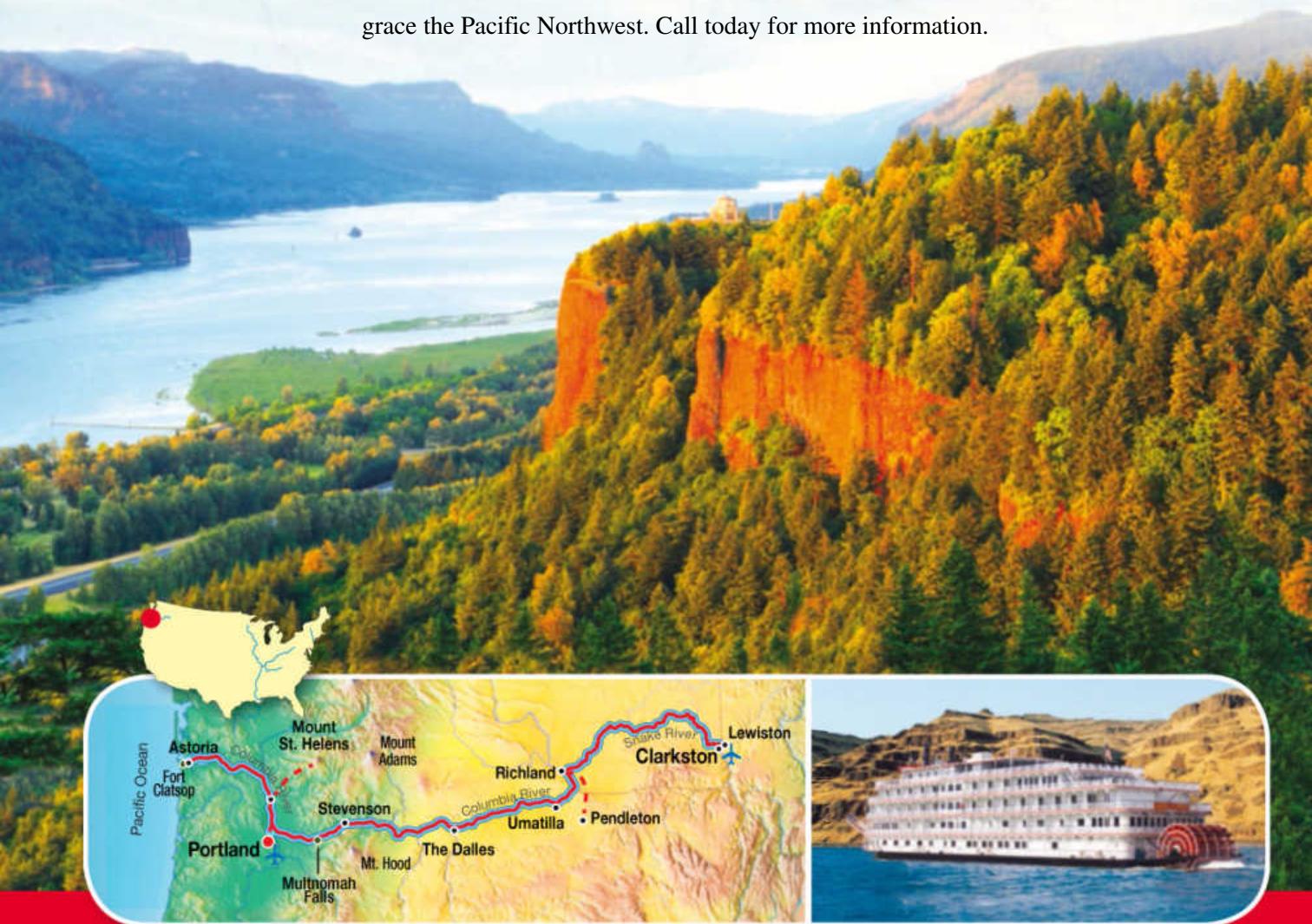


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IN THE ARENA

Finding moments of Republican grace amid the ugly bluster of Donald Trump

By Joe Klein

ON THE DAY BEFORE THE NEW HAMPSHIRE PRIMARY, Jeb Bush addressed a Rotary meeting at the Nashua Country Club. It was the sort of event that has, for the past 100 years, defined the Republican Party, just as union-hall rallies define Democrats. The Rotarians have always represented a peak of American bourgeois civility, and these Nashua businesspeople had listed some rules of discourse on a banner. The first two were: IS IT THE TRUTH? and IS IT FAIR TO ALL CONCERNED? Bush was perfect for this Norman Rockwell setting, speaking about his accomplishments as governor of Florida and his current travails as a candidate: he was tired of politicians who “push down a group of people to make themselves look better.” That could have been one of the rules on the banner. He said that he had a trove of position papers but that they weren’t “resonating” because the coin of the campaign was insult. He said that if elected, he would be a “leader with a servant’s heart,” a lovely phrase.

A day earlier, I’d watched John Kasich make the same point in a more off-the-cuff way. He talked about how he’d had to listen to average people on the campaign trail, who told stories about their hardships and victories. And he had taken a lesson from it: “Slow down,” he said. “You’ve got to slow down … Heal the divisions in our families, be willing to listen to the people next door … give ‘em a hug.” He would return to the theme in his victory speech—he finished second, a hollow victory—after the New Hampshire primary.

BUSH AND KASICH had found their way to a poignant and crucial, if counterintuitive, theme amid the rampant boorishness of this campaign. Speaking to the Rotary, Bush was paying homage to his father’s Republican Party and to a society in which businesspeople got together, talked about stuff, marched in parades and organized community-service projects. Ridiculed by a nation of hipsters, they’d been the glue in their communities; the glue has gone dry and is cracking now.

Kasich, who seems truly transformed by this campaign—in a good way—was also talking about the comforts of citizenship. He was suggesting that there was an antidote to all the free-range anger out there—lazy, uninformed, self-indulgent, media-induced anger—and it involved prying ourselves away from the flat-screens that rule our lives and becoming part of a community again.

This was immediately dismissed—it was called “chicken soup for the soul” politics—by too many of my colleagues. They pointed out that Bush was hanging on by his fingernails after a fourth-place finish, and Kasich was probably doomed in South Carolina and the rest of the red-meat South. In fact, Kasich has run a beautifully weird, unscripted campaign—

KINDER,
GENTLER
CAMPAIGNING



John Kasich

“I’m going to go slower and spend my time listening and healing and helping and bringing people together to fix our great country.”



Jeb Bush

“We need a President with a steady hand, with a proven record, who has a servant’s heart, who doesn’t believe it’s all about him.”

talking about how to actually make government work, as he has as governor of Ohio, offering his flagrant humanity and refraining from negative ads. There was clearly no long-term place for that sort of thing in American politics.

BECAUSE DONALD TRUMP, by God, was in the driver’s seat now. He had performed “better than expected” in New Hampshire, which meant the electorate had performed worse than expected. “I’m for Trump because he talks about Muslims the way we talk about Muslims,” one supporter said—and this, in my experience, was what Trump was all about: he was punking American civility. He said naughty stuff—and it was fun. “I know I shouldn’t feel this way,” a female voter told me. “I know I shouldn’t vote for him, but he’s entertaining and he’s saying the things no one else says.”

As usual, the TV folks couldn’t be bothered by the sheer amorality of the phenomenon: Trump had “won the day.” He now had a luminous path toward the nomination. Indeed, the Donald couldn’t have been happier than with the hand he was dealt leaving New Hampshire—his biggest threat, Marco Rubio, had been nailed in a historic debate kamikaze mission by Chris Christie, nailed in a way that illuminated Rubio’s greatest flaw: his cosmetic fluency. Ted Cruz was still out there, but he was diminished.

Bad taste and flagrant bigotry had been rewarded. And lessons had been learned by a generation of future candidates: if you want to get ahead, be outrageous, slag the weak and the different. You’ll get a lot of airtime.

When I think about this particular New Hampshire, though, I will remember the thwarted substance of Bush and the inconvenient, uncool civility of Kasich. I may not hug my neighbors tomorrow, but I’ll certainly listen to them more closely. □

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A photograph of a woman with short brown hair, wearing a teal scarf and a black jacket, smiling. She is in a crowd, with another person's face partially visible on the left and an American flag and a sign reading "A FUTURE WE BELIEVE IN" in the background.

CAMPAIGN • 2016

THE KIDS ARE

Millennials are financially stressed, socially liberal and politically pivotal. But none of that will matter if they don't vote By Paul Taylor

Young voters may be the largest cohort of the electorate, but their record of showing up to vote is spotty and more than three-quarters describe themselves as not politically engaged

REAL LEFT



FROM THE CHEAP SEATS ON THE UPPER floor of the Verizon Wireless Arena in Manchester, N.H., Matt Boyle cast a disapproving eye at the parade of national and state dignitaries at the New Hampshire Democratic Party's annual fund-raising dinner. "It's a rigged system," the 21-year-old said on Feb. 5. "Washington doesn't have our best interests in mind. They constantly throw out white political noise to keep us entertained long enough to hide the fact that nothing's ever changing."

Last year Boyle dropped out of college for fear of taking on too much student debt. He now lives with his parents in Maine, where he makes "chump change" as a dishwasher. He is frustrated by his prospects, disillusioned about the future and ready to do something about it. As the New Hampshire primary approached, he crossed the state line for the day to join one of the oddest youth causes in modern political history, shoveling snow and handing out yard signs for a curmudgeonly 74-year-old democratic socialist named Bernie Sanders.

In so many ways, Boyle is the embodiment of the "political revolution" that Sanders has promised the country. "You want to win an election?" Sanders likes to say. "You rally young people who have given up on the political process." But at the same time, he remains the outlier in his own generation. In the first two contests, Sanders won an overwhelming share of Democratic voters under 30—an astonishing 84% in Iowa and 83% in New Hampshire. But the Democratic youth turnout has yet to break out, matching in New Hampshire the same level of engagement as the 2008 campaign and falling below it

in Iowa. While Sanders is singing the right tune, his promise of a 1960s-style revolution has run headlong into a more modern trend: 21st century apathy and cynicism.

The millennial generation, defined as adults ages 18 to 35, became the largest cohort in both the electorate and the workforce during the past year. They're distinctive in many realms—racially diverse, socially liberal, digitally savvy, economically stressed. But as political actors, their role is now in question. If the election has presented older Americans with the question of what kinds of ancestors they wish to become, the question for the young is different. The political future is theirs for the shaping. But do they want to grab it?

THE KEY SWING VOTE

AS MUCH AS HAS BEEN WRITTEN ABOUT the role of young voters in this cycle, millennials have just as often made a huge difference by not showing up. In the midterms of 2010 and 2014, for example, record-low turnouts of young voters helped GOP candidates run the tables, coast to coast. Count millennials as the key swing voters of 2016 and beyond—with the mystery being not so much whether they'll swing from Democrat to Republican but from voting to abstaining. A recent poll by the Harvard Institute of Politics found that engagement in the political process has declined since 2011, with 78% of millennials describing themselves as not politically active. For them it is "an utterly ineffective way to solve problems," says Jennifer Lawless, who with co-author Richard Fox surveyed millennials for their 2015 book, *Running From Office: Why Young Americans Are Turned Off to Politics*.

Millennials are more allergic to a party label than any other generation in memory. Though they have a consistent record of voting Democratic, a shade under half describe themselves as independents. As for the Republican candidates, most millennials view them as espousing policies from another century. "I'm certainly not optimistic that we'll see more youth engagement this year," said John Della Volpe, director of polling at the Harvard Institute of Politics and an authority on the youth vote.

Even Boyle, who caught the political bug voting for Obama in 2012, has his



concerns. "Young people get this idea in their head that their vote doesn't matter and nothing ever is going to change," he explained. "And then they don't vote. And nothing ever changes because no one ever votes."

ECONOMIC INDIGNITIES

UNLIKE THEIR PARENTS AND grandparents, this is a downwardly



mobile generation, with smaller incomes, less wealth, more debt, higher unemployment and fewer homes than their parents' generation had at the same age. They, more than any other group of Americans, don't expect Social Security to be there for them in old age. They're the only cohort ever to start their adult lives with nearly \$1 trillion in student debt and more than \$18 trillion in unpaid government bills.

Sanders won 84% of the millennial Democratic vote in Iowa and 83% in New Hampshire

Throughout most of American history, the old were the poorest age group in the population. Today that unhappy distinction belongs to young adults and their children—the generations hardest hit by the harsh “new normal” of stagnant incomes, a shrinking middle class, cheap labor abroad, smart robots at home, rising inequality and stalled upward mobility.

Trends in household wealth illuminate

these generational shifts. Back in 1983, the median household headed by someone 65 or older had eight times the wealth of the median household headed by someone under the age of 35. By 2013, that disparity had ballooned to 20 to 1, according to Federal Reserve Board data. Today's old are better off than yesterday's old, while today's young are worse off than yesterday's young.

No surprise, then, that millennials have been so slow to make it past most traditional milestones of adulthood. As of 2015, nearly 4 in 10 were still living with parents or other older relatives, up from a quarter of their counterparts who did so a generation ago. Millennials trail far behind yesterday's young in the purchase of homes and cars. And they're only about half as likely to be married as their parents and grandparents were at the same age.

These new patterns reflect changing lifestyles, technologies and cultural norms. But all are heavily tied to economics. When pollsters ask single millennials why they haven't married, the most common response is that they can't be—or find—a good provider. Their generation's retreat from marriage has been greatest at the lower end of the socioeconomic spectrum.

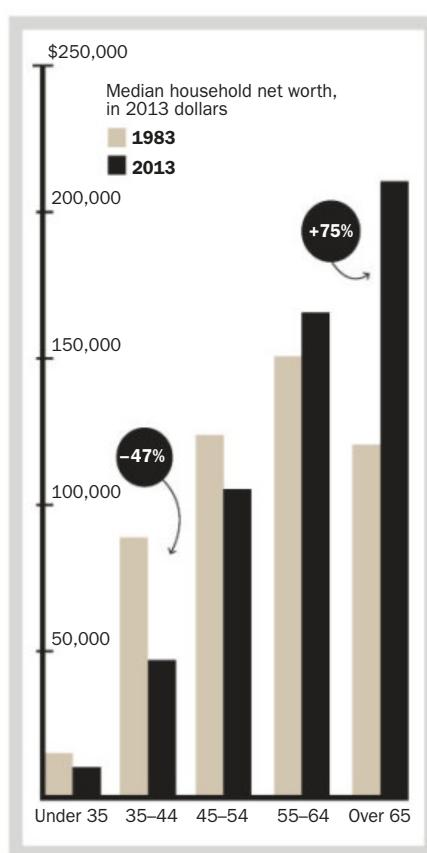
This is a self-perpetuating syndrome. Marriage has always promoted prosperity, with its economies of scale, division of labor, creation of new units of production and incentives to save for the long term. Millennials who don't marry risk passing on their economic hardships to their children, more than 40% of whom have been born to a single-parent household.

In the modern knowledge-based economy, in which well-off parents have become adept at passing along their advantages to their children, intergenerational mobility isn't nearly as fluid as the rags-to-riches allegory of American success would have it. Today economists project that about half the lifetime earnings of the young will be predetermined by who their parents are. As income and wealth inequality have grown in recent decades, so too have the intergenerational echo effects of the birth lottery.

Public policy hasn't caught up with these life-cycle shifts in economic well-being. The share of federal spending on programs that promote opportunity for future generations—education, infrastructure, basic research—has been

YOUNG AND POOR

In three decades, wealth has risen for older adults but deteriorated for younger adults



declining for decades, while programs that provide economic security for older adults are on track to soon consume more than half the federal budget.

But even with those spending increases, Social Security and Medicare won't be able to keep up with an aging population and

This is a downwardly mobile generation with less wealth, more debt, higher unemployment and fewer homes than their parents' generation had

rising life expectancy. Sometime in the 2030s, once everyone in the huge baby-boom generation has migrated from taxpayer to beneficiary, those programs will be able to pay future retirees only about 75% of promised benefits. Thus another potential economic indignity awaits: the dramatic decline in old-age poverty—one of the crowning achievements of 20th century social policy—stands in danger of reversing before millennials are able to collect their benefits.

WHEN CULTURE TRUMPS POLITICS

AS A RESULT, THIS GENERATION IS THE most skeptical in half a century. Just 19% of millennials say most people can be trusted. Some of their guardedness springs from their racial identities (43% are nonwhite) and economic vulnerabilities. People who have been marginalized can feel particularly betrayed when their trust is misplaced. Some may be a by-product of their having been raised by protective helicopter parents in an age of global terrorists and digital bullies. And some no doubt flows from spending so much of their social lives online, where it turns out people are not always who they say they are.

But if millennials are distrustful, many also remain upbeat and aspirational. The Harvard millennial poll found that nearly half declared the American Dream to be dead. Nevertheless, millennials consistently outpace all older generations in the share who tell pollsters they expect their own financial futures, as well as that of the nation as a whole, to get better.

Much of this is the invincibility of youth, a trait as old as the ages. But some is peculiar to millennials, with their everybody-gets-a-trophy upbringing and their everybody-stars-in-their-own-selfie digital lives. They are a pre-Copernican generation; online, their social universe really does revolve around them. No other generation in history has ever been so technologically empowered, at so young an age, with so boundless a sense of wonder and possibility.

They are also a generation that, while on its back foot economically, has been in the vanguard of social change—witness America's dramatic reversal, in the brief span of a decade, on the issue of same-sex marriage. At a time when

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gender roles, sexual identities, racial boundaries and family constellations are all in flux, it's the old who often feel like strangers in their own country, while the young are setting most of the new cultural norms—albeit not fast enough for many young activists.

THE TALENT GAP

IT'S NO SURPRISE THAT AS AN ECONOMIC matter, the Sanders agenda of free tuition at public colleges and universities, a raise in the minimum wage, expanded Social Security benefits and a promise to rein in Wall Street has resonated. Sanders also brings something more. The young see in him an authenticity and integrity they have trouble finding elsewhere. "Young people are the first to call bullsh-t on something," says Boyle. "There's a feeling that politics and the government itself are bullsh-t. Bernie is not afraid to say what needs to be said. He's honest and good about it."

Where does all this leave the millennial vote in 2016? Wrapped in uncertainty. On the Democratic side, Hillary Clinton remains her party's front runner despite a shaky February, including a double-digit loss in New Hampshire. She's been careful not to alienate Sanders' young supporters—"Even if they are not supporting me now, I support them"—because she knows how much she needs them in the fall, assuming she gets there.

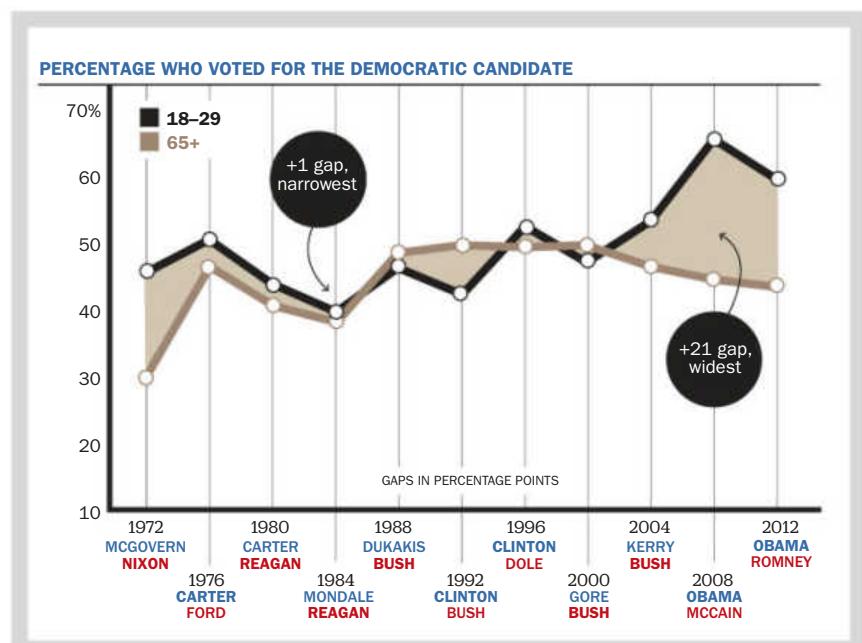
As for the GOP, its strategists have been tracking the voting patterns of millennials with mounting alarm ever since they came onto the scene. Their party has gotten much better at bringing young leaders to the fore—exemplified by 40-something Senators Marco Rubio and Ted Cruz, not to mention Speaker of the House Paul Ryan. By contrast, the Democrats' congressional leaders are both, like Sanders, in their mid-70s. Clinton is a mere child at 68.

But age is just a number, as they say. Millennials prize diversity and tolerance more fervently than their elders do. With the GOP waging yet another presidential contest in which so much candidate rhetoric is seen as demonizing minorities and immigrants, Republicans could be digging a deeper hole for themselves with the young.

Doubly so because the fastest-growing bloc of eligible millennial voters is U.S.-

THE VOTING GAP

Democrats have won the majority of young voters in the past three elections while losing their older counterparts



GRAPHIC SOURCES: PEW RESEARCH CENTER

born Hispanics. More than 3 million have already turned or will turn 18 between the 2012 and 2016 elections, meaning that 44% of all eligible Hispanic voters this year will be millennials, a far higher share than for any other racial or ethnic group. In 2012, more than 70% of young Hispanics voted for Obama.

On the other hand, young Hispanics have historically steered clear of the voting booth. Just 38% voted in 2012, compared with 55% of black and 48% of white millennials, according to a Pew Research Center analysis. But, says María Teresa Kumar, CEO and president of Voto Latino, "Donald Trump's incendiary rhetoric could bring

a lot of Latinos out to the polls."

Or not. Every presidential campaign brings with it a new batch of demographic variables. Obama's departure from the stage could depress black turnout, for example. And the backlash of religious conservatives to the Obama years, so much in evidence in this year's GOP primary fight, could be a factor in November as well.

Whatever happens with the millennial vote in 2016, one thing is clear. For America to prosper in an age of head-snapping demographic, economic and technological change, it needs to find new ways to provide more opportunities for today's young. And it has to do so at a time when old and young don't look, think or vote alike, which makes the politics all the more daunting.—With reporting by TESSA BERENSON and SAM FRIZELL/MANCHESTER, N.H. □

No generation in history has ever been so technologically empowered, at so young an age, with so boundless a sense of wonder and possibility

Taylor is the author of *The Next America: Boomers, Millennials and the Looming Generational Showdown* (PublicAffairs)



CAMPAIGN • 2016

THE GREAT

The GOP campaign has been brutal
and unforgiving. And it has only just begun
By Alex Altman and Zeke J. Miller/Concord, N.H.

A photograph of Marco Rubio, a man with dark hair and a beard, wearing a blue jacket. He is looking out of the open rear passenger side window of a dark-colored car. In the background, there are other people and buildings under a cloudy sky.

HUMBLING

HERE ARE SO MANY WAYS FOR THE dream to die. Money problems. The wrong message. A nervous tic on the stump. A candidate can flub a question about family or render the name of a foreign terrorist group into a chickpea dip. Or maybe it's five bad minutes on the Saturday night before the Super Bowl, when a cool young Senator suddenly freezes up like a wintry New England lake.

Through the first seven debates, Florida Senator Marco Rubio had been confident, eloquent and knowledgeable. But in the eighth he faced a telegraphed attack from New Jersey Governor Chris Christie that his life accomplishment amounted to little more than memorizing sound bites. Rubio's

Senator Marco Rubio stopped outside a polling station in New Hampshire on Feb. 9 before placing fifth in the primary

response was to repeat a memorized sound bite, four excruciating times.

And the damage was done. In a matter of hours, the “Marcomentum” from Rubio’s surprisingly strong third-place finish in Iowa vanished. The soaring oratory once seen as a strength was reduced to onionskin script, easily punctured by a tough-talking Jersey son. Democratic operatives began showing up outside Rubio’s campaign stops dressed as robots, wearing cardboard boxes scrawled with messages like RUBIO TALKING POINT 3000.

Rubio arrived at what was supposed to be his New Hampshire victory party on his way to a fifth-place finish, his campaign’s future suddenly in doubt. “Our disappointment tonight is not on you. It’s on me,” he said. “I did not do well on Saturday night. So listen to this: That will never happen again.”

Oh, but it will, though maybe not to Rubio. David Axelrod, Barack Obama’s former message maven, likes to say that a run for the White House is an MRI of the soul. But the metaphor doesn’t quite capture the cruelty and caprice of the process, which probes so many other parts of your character and constitution. And no state does humbling quite like New Hampshire. The first-in-the-nation primary has a reputation as a place of straight talk and comeback kids. But it’s also the site of Edmund Muskie’s tears and George Herbert Walker Bush’s scare at the hands of Patrick Buchanan. It slowed Barack Obama down in 2008 just as it slowed down Hillary Clinton in 2016. “This is a process that puts candidates through tests,” says David Kochel, a senior adviser to Jeb Bush, who barely survived his.

DARK ARTS

NO ONE ESCAPED NEW HAMPSHIRE intact this year; instead, everyone limped away, bearing scars. For months, Donald Trump campaigned here on the belief that his celebrity could overcome the state’s peculiar rule book. He spent more on baseball hats than voter lists and repaired nearly every night to his penthouse overlooking Central Park. “He’s broken every rule in the Republican political game,” says Dane Maxwell, Trump’s Mississippi state director, who flew in to knock on doors for Trump. “I don’t think it’ll ever be the same.”

But Trump learned the rule book exists for a reason. After collapsing in Iowa, his campaign finally ditched the lectern for intimate town halls, organized phone banks and cobbled together teams of volunteers and staff to walk neighborhoods in the shimmering snow. On election night, he bounded onstage to the strains of the Beatles’ “Revolution” but spent his speech paying homage to his family and thanking everyone from his New Hampshire volunteers to the Republican Party chairman. “We learned a lot about ground games in one week,” Trump suggested. Not quite the picture of humility. His own performances are still a strange confection of boasts and platitudes. But the campaign has a long way to go.

Armed with his family’s organizational muscle and political Rolodex, Bush began his campaign with a promise to take nothing for granted and to “do this on my own.” Nothing seemed to work. “Please clap,” the favorite son pleaded at one town hall, after his speech was met by silence. After months of railing against the name-calling antics of Trump, Bush caved to the ugly currency of the modern media age. “You aren’t just a loser, you are a liar and a whiner,” Bush tweeted at the eventual winner.

In the end, Bush transformed his solo act into the same old family drama, trotting out his 90-year-old mother to campaign in the snow and making plans to unleash his older brother in South Carolina. It bought him a fourth-place finish—a hair behind Texas Senator Ted Cruz, who invested just a fraction of the time and money Bush spent in the state. “This campaign is not dead!” Bush declared to supporters in Manchester, N.H., in his election-night address, though many of his donors wondered if the opposite was true.

Fresh off a victory in the Iowa caucuses, Cruz was the candidate with the least to lose. He had spent months quoting

Scripture, casting himself as a pious purist among grubby D.C. dealmakers. “Our approach from the beginning has been to take the high road,” he told reporters on the eve of the New Hampshire primary. But caucus night in Iowa—when Cruz allies tried to siphon votes from Ben Carson by suggesting that the neurosurgeon was on the verge of dropping out—had unmasked Cruz as a practitioner of dark political arts. The secular Granite State proved a poor fit for Cruz, who never quite pivoted from Exodus to eminent domain. Looking ahead to the Southern states that dominate Super Tuesday, opponents pointed to Cruz’s past failure to tithe as evidence that he was merely posing as an evangelical.

Carson’s own reckoning was complete long before Cruz’s smear job had done its work. A reluctant candidate pushed into the race by the conservative movement’s marketing wizards, Carson had a fleeting turn as GOP front runner during the fall. But when terrorists struck Paris and then San Bernardino, Calif., his tenuous grasp on foreign affairs brought the curtain down. So did his way of pronouncing the name of the terrorist group Hamas like that of the appetizer hummus. And while he seems intent on sticking with his quixotic calling, his campaign is effectively over.

The same can be said for Chris Christie, who made a huge bet on New Hampshire, grinding the town-hall circuit just as voters in the state expect. “We get to know them, we ask hard questions, and we remind them that they are interviewing to be hired to work for us,” says Steve Duprey, a Republican National Committeeman from New Hampshire. A skilled and dogged retail performer, Christie answered every question but never came close to landing the gig, burdened by a mixed record in his home state and the ongoing criminal prosecutions of his appointees.

He finished in sixth place, with just 7% of the vote, and dropped out of the race on Feb. 10. (Christie was followed out the door by Carly Fiorina, the sole Republican woman in the field, who never gained traction in the party’s nominating contest.) In the end, a man conservatives begged to run for President in 2012 may be best remembered for his murder-suicide mission against Rubio.

**No state does
humbling like New
Hampshire. The first-
in-the-nation primary
has a reputation as a
place of straight talk
and comeback kids**



GRUDGE MATCHES

THE LONE EXCEPTION TO THIS BRUTAL winnowing might seem to be Ohio Governor John Kasich, but even he faces a steeper climb now. Sensing space in a campaign of seething resentments for a self-styled “prince of light and hope,” he held 106 town halls while dancing to pop music and preaching sunny optimism. Kasich, long known to Ohioans as a tough customer, somehow refashioned himself as a soulful king of compassion, laying out plans to lift voters out of poverty and reform the mental-health system. In a debate marked by knife fighting, Kasich made the case for slowing down and helping neighbors. His rivals called him corny. “It’s better than razor blades to gargle with,” Kasich responded.

The reinvention worked, at least for a moment. The Ohioan grabbed 16% of the vote, good for second place. “Tonight the light overcame the darkness,” he told cameras before heading to South Carolina, aboard a new campaign plane that had to jettison staffers to bear the weight

Kasich at an event in Windham, N.H., the day before he placed second, winning 16% of the vote

of a ballooning press pack. “Maybe we are turning the page on a dark part of American politics.” Maybe, but Kasich has little cash and a skimpy national organization, and the conservative Southern states looming on the campaign calendar aren’t the kind that cotton to a Republican who backs Medicaid expansion and talks about reforming prisoners.

Up next is South Carolina, where character assassination is considered a political art form. It was in the Palmetto State that allies of George W. Bush launched a whisper campaign in 2000 that claimed Senator John McCain’s adopted daughter from Bangladesh was his illegitimate black child. Now they are ready to skewer Rubio as a callow freshman who isn’t up to the job. Other grudge matches are inevitable. “Cruz and Trump are going to go at it, and only one of them is going to survive,” predicts one Republican strategist.

But the outcome is unlikely to be clear-cut. Instead of producing a winner, the first two states produced a long string of wounded warriors, all of whom are girding for a long campaign.

Which leaves Rubio plenty of time for a resurrection, if he can face the next onslaught of challenges. On the morning after his New Hampshire humbling, the Senator stood in the center aisle of his campaign plane as it flew to South Carolina, calmly replaying his debate fumble with reporters by recalling his college exploits on the football field. “I can’t keep thinking about the touchdown I gave up,” he said. Reporters had another metaphor in mind, however, with one comparing Rubio’s tussle with Christie to a particularly grisly scene from the Hollywood flick *The Revenant*, in which a frontiersman played by Leonardo DiCaprio is mauled by a hungry grizzly.

“I didn’t see that movie,” Rubio said. “Who won? The bear?”

—With reporting by TESSA BERENSON/GREENVILLE, S.C. □

Lonely Journey

Migrants from the Middle East keep making the dangerous journey to Europe—whether they are wanted or not

PHOTOGRAPHS BY JAMES NACHTWEY





Two men attempt to stop rock throwing between migrants and police at the Greece-Macedonia border



IT WAS THE STORY of 2015, but the historic migration into Europe didn't end when the year did. About 2,000 people a day crossed the Mediterranean into Greece last month—more than the number for all of January 2015. Despite an increasingly cool reception from Europeans, they keep migrating through the rough winter months. They put their trust in conniving smugglers and unreliable boats. Thousands have died so far, and more will still.

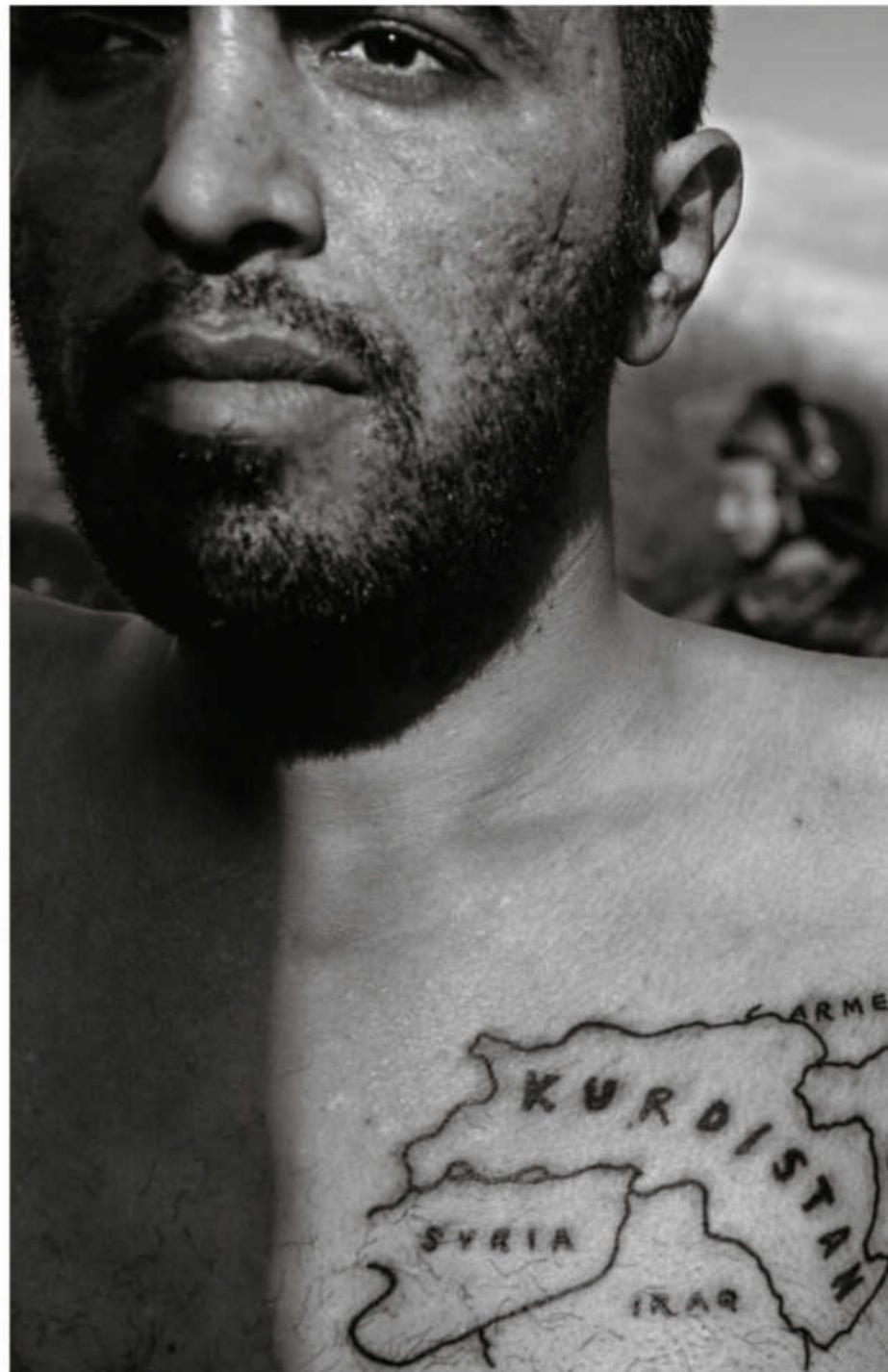
TIME contract photographer James Nachtwey, who traveled to the Greek island of Lesbos and the country's border with Macedonia late last year, has documented the movement of those displaced by war and other disasters for more than three decades. But the sheer size and disruption of this latest wave eclipsed anything he had previously covered. "I've never seen this before," he says.

Nachtwey's pictures tell the story. The woman in tears after her arrival on European soil, the man standing between migrants and a row of police shields, the refugees shouting to be let through the border crossing. In each image, Nachtwey captures his subjects' individuality amid the chaos. "The complexity," he says, "is in their emotions."

That focus on individual experience is the theme of his life's work. As the migrant crisis has lingered, compassion for the Middle East's refugees has given way to fear and loathing of an undifferentiated mass of invaders. But Nachtwey's photos give back the only thing these refugees may have left: their stories.

—ANDREW KATZ

A man spreads his arms in a bid to defuse tension between migrants and police





More than 70,000 migrants and refugees have entered Europe through Greece since January. Surveys by Greek authorities indicate that over 90% of them are from three countries: Syria, Afghanistan and Iraq





Iranian migrants shout during a demonstration at the Greece-Macedonia border after passage was restricted to Syrians, Afghans and Iraqis



Top: Migrants who are not permitted to cross from Greece into Macedonia watch as those allowed to move on do so. Bottom: A woman cries after her boat arrives on Lesbos



More than 400 migrants and refugees have died crossing to Europe since January



Of those who arrive in Europe by sea, over 40% are women or children, according to the U.N.

A man and woman carry their belongings to Lesbos after their inflatable boat became stuck on the rocks about 150 feet (46 m) from the Greek shore

Migrants are helped off a wooden boat after arriving at Lesbos from nearby Turkey





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The New Age Of Aging

WE NEED TO START THINKING FURTHER INTO OUR OWN FUTURE. MUCH FURTHER

BY LAURA L. CARSTENSEN

Something astounding is happening. For most of human history, life expectancy was barely long enough to ensure survival of the species. During the 20th century, a blink of an eye in

evolutionary terms, Americans began flourishing into their 80s, 90s and beyond. Asked in a recent survey about the prospect of century-long lives, the majority of Americans said they would like to live 100 years if they could do so in good health. Of course, in the same survey, nearly as many Americans said they want to retire at 65, and most of them said they eat too much and tend not to exercise. Hope is wonderful, but hope alone will not get us to 100 in good shape.

An important first step in creating a culture that supports long life is recognizing that long-term planning doesn't come naturally to humans. Nothing in our evolutionary heritage prepared our brains to think clearly about the distant future or, for that matter, to take much notice as the effects of our daily habits—which accumulate

over the course of many years—begin to present themselves. Research also makes plain the fact that humans have a hard time imagining the potential negative consequences of their actions. Yet the quality and of course the length of life rest squarely on the cumulative effects of those habits over decades. (For more on the latest findings about lifestyle changes that give humans an edge, see page 80.)

It is clear that people can thrive at advanced ages; indeed, many already do. But if we are to realize the vast opportunities that a record number of longer lives presents for the nation, we need to engage in an unprecedented level of planning and foresight. We also need to take stock of where we stand today, so we can have a better sense of what we need to work on for a healthier—and more financially secure—tomorrow.

To help address these problems, the Stanford Center on Longevity, which I founded in 2007, embarked on a continuing effort we call the Sightlines Project. Its premise is that in order for the U.S. population to age well in the 21st century, we need a clear vision of the ways in which its strengths and vulnerabilities are likely to play out. In early 2014, we gathered a diverse set of scientists from medicine, economics, social epidemiology and psychology, as well as experts from industry and policy, and asked them to identify known practices or behaviors that are associated with long and healthy lives.

We focused our attention on three key modifiable practices: healthful living, financial security and social engagement. Some factors, like the need for exercise, are already appreciated by most Americans. Others are less obvious. Failing to invest in your financial future or your close social relationships threatens long-term health too. Research has made clear that strong social ties are linked to better health—and not just because they mean someone will be around to help you if you need it. Strong relationships are also linked to a better outlook and reduced stress—two things that have been shown in studies to have a biological impact on how someone ages.

The next step was to search for good metrics in large-scale studies that could alert us to recent trends. That digging delivered good news and bad news. For instance, smoking rates continue to decline, and more Americans are exercising. But most still need more exercise—and unfortunately, we are also sitting more.

We are hurting financially in ways that have long-term consequences; no age group is doing better financially than it was a little over a decade ago, and millennials are being hit hardest. It is painful to note that young people who managed to get to college are now saddled with increasing

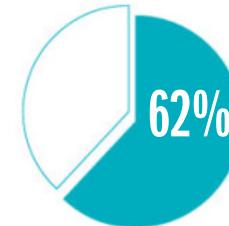
debt, a situation that has worsened in recent years and that is associated with lower rates of homeownership and investing.

And though the majority of Americans report having strong social ties, there are disturbing patterns being seen in people in their 50s and 60s. Baby boomers interact less with their neighbors as well as their families than did people their age 20 years ago.

IT SHOULD COME as no surprise that a culture that evolved over the millennia to support short lives has so far failed to optimize long ones in these three key ways. And though progress is

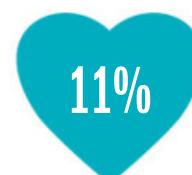
BY THE NUMBERS

Highlights from the Sightlines Project report on longevity



Americans
who own a
home, down
from 67%
in 2000

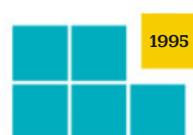
57% Americans ages 65 to 74 who spend more than 7 hours a day sedentary



Increase since
2003 of people
over 75 who
are married

5X

Average student-loan debt increase
since 1995



45% Americans ages 45 to 64 who exercise three times a week or more



Percentage of Americans
over 75 taking five or more
prescription drugs a day

being made, things have changed so rapidly. For instance, dementia was hardly a threat to public health 50 years ago; rather, it was a problem for a handful of unfortunate individuals and their families. Today Alzheimer's is on track to become an epidemic, with nearly 14 million Americans expected to live with the disease by 2050 unless promising drugs and other interventions can stop it. (To learn more about work to develop a new Alzheimer's drug, see page 64.) Similarly, neither sitting nor obesity was a problem when most Americans worked on family farms. Now, sitting is a risk factor for obesity, which in turn is a risk factor for diabetes, which is strongly associated with dementia. Clearly, optimizing longevity—and the quality of that longer life—demands a clear line of sight that spans decades.

The social world is changing just as profoundly. Because families have fewer children, there are fewer siblings and cousins. Yet families now include more generations than ever before. Globalization is not simply an economic phenomenon, it's also a social one. Because people don't grow up and grow old in the same place with the same people, communities have changed. More and more young people don't look to neighbors and family friends for mates; instead they contemplate mates who span continents and cultures. Friendships, collaborators and romantic partnerships depend less on physical proximity and more on common interests and concerns. Similarly, contact with local communities—especially religious organizations—is waning.

Because social media is still so new, we know little about its role in the formation and strength

of social bonds. We do not know how such exchanges across geographical distances strengthen or weaken emotional engagement over time.

Finally, the nation is failing when it comes to financing long lives. Our problems today stem in part from human foibles, like the failure to delay gratification, and in part from uphill struggles to secure education and sufficient income. Taking the long view, it is clear that we must save more and work longer. Ensuring that all Americans can do so is essential in order for the nation to thrive. Paraphrasing my Stanford colleague John Shoven, the vast majority of Americans cannot finance 30-year retirements with just 40 years of work.

IT WILL BE DIFFICULT for the U.S. to change its ways to support long and satisfying lives, but we've risen to even bigger challenges in the past. A short century ago, as many as 30% of babies born in some U.S. cities died before the age of 5, malnourishment was rampant, and infectious diseases left hundreds of thousands of people disabled. Our ancestors made reasoned decisions to invest in science and technology and education. They established public-school systems in every state in the nation, and the government funded the research necessary to make key advances in medicine.

Their efforts were so effective that diseases like polio and smallpox were essentially eradicated. Infant mortality declined dramatically. Health greatly improved. Teaching all children how to read and write improved the productivity of the country. Today educational attainment early in life predicts not only quality but ultimately length of life. The fact that gains in life expectancy are now leveling off and, according to recent reports, declining among subgroups of Americans who have relatively little education is a testament to the powerful role that education continues to play.

American optimism, often disparaged and seen as naive, will go a long way in addressing challenges related to longevity. Optimism can encourage bold investments in science and technology that can solve scores of problems associated with long life. Given the breathtaking capacity of modern science, armed with spectacular new tools represented in Big Data, computational genomics and flexible electronics, the greatest threat of failure will be setting the bar too low.

To fully use our added years—and to improve their quality—we will need to change the way we live. Although change will be hard, redesigning our world to accommodate long life may represent the greatest opportunity of our time.

Carstensen is the founding director of the Stanford Center on Longevity

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of Americans
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69 who still
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Alzheimer's From A New Angle

A RADICAL NEW APPROACH TO
TREATING THE FEARFUL DISEASE IS
SHOWING PROMISE **BY ALICE PARK**

DR. FRANK LONGO ISN'T the kind of guy who chokes up easily. The pre-eminent neurologist is better known for his professional stoicism and scholarly approach to the devastation he sees weekly in his Alzheimer's patients—the people who come into his office at the Stanford University School of Medicine, their memory just a little bit worse than the last time he saw

them. But today, even though he's trying to keep it together, his throat tightens.

He's in a small exam room outside Kansas City, Kans., watching a young man do something people do every day. He's swallowing a pill with a big gulp of water. But it's not just any pill—it's a new drug that Longo hopes will prove to be an effective treatment for Alzheimer's—and when the man swallows, tears pool in the deep furrows around Longo's eyes.

As chairman of the department of neurology



LONGEVITY
PRO TIPS

Run 20 miles a week if I can. I have a very low dairy intake and keep an eye on my red meat. I've also gotten better at recognizing when I'm overwhelmed, and once I recognize that, it's easier to deal with.'

BRIAN KENNEDY,
president and
CEO of the Buck
Institute for
Research on Aging

'Father Time is not always a hard parent, and, though he tarries for none of his children, often lays his hand lightly upon those who have used him well—making them old men and women inexorably enough, but leaving their hearts and spirits young and in full vigor.'

SHELDON SOLOMON
Skidmore College

and neurological sciences at Stanford, Longo knows how destructive Alzheimer's can be. He specializes in memory disorders and regularly sees patients whose brains are slowly scrambling. In recent years he's grown frustrated. Alzheimer's was first discovered in 1906, which means doctors have had a century to peel away the disease's molecular layers and search for a cure. But despite their best efforts, they still have no real treatments. Since 2000, more than 200 Alzheimer's drugs have been tested, and none proves to be a silver bullet. Only a handful of drugs can, in the best-case—but rare—scenario, relieve some of the worst problems of memory loss and confusion.

"My biggest frustration is that we've cured Alzheimer's in mice many times. Why can't we move that success to people?" Longo says. (He's referring to numerous promising compounds that have eliminated the amyloid plaques associated with Alzheimer's in animals.) If the ongoing human trials continue to progress the way he hopes, Longo's drug, called LM11A-31, could be a critical part of finally making that happen. But that's still a big if.

To further develop the drug for patients, Longo created a company, Pharmatrophix, which conducted the first phase of clinical trials required for all pharmaceuticals; the drug was deemed safe and caused minimal negative side effects. Now, it's in phase II, when the drug will be tested in people with the disease, to see if it ameliorates their symptoms. If the trial goes the way Longo and other leading Alzheimer's experts expect, LM11A-31 will then be on its way to being approved by the Food and Drug Administration.

The stakes couldn't be higher—not just for Longo but also for the world's aging population. In the U.S., one-third of Americans over 85 are already affected by Alzheimer's. Globally, nearly 50 million people are living with dementia, most of which is caused by Alzheimer's, and absent effective drugs or other interventions, that number is expected to double every 20 years. With no treatments, caring for them falls to loved ones and assisted-living facilities. The cost of that care is skyrocketing; in three years, the global annual burden could reach over \$1 trillion.

Longo's drug is noteworthy because of the promise it showed in those mouse studies and because it's been shown to be safe in humans. But what really sets it apart is that it attacks Alzheimer's in an altogether different way than the drugs that preceded it.

"The field is taking a step back and re-examining where we are with regard to what we know, what we don't know and what might be some of the best avenues going forward to look for treatments," says Dr. Ronald Petersen, director of the Mayo Clinic Alzheimer's Disease Research Center and the Mayo Clinic Study of Aging,

who is not involved in the LM11A-31 research.

For decades, scientists have pursued a cure with a nearly single-minded focus on how to treat the disease: by trying to get rid of the hallmark feature of Alzheimer's, which is sticky, insidious protein plaques of amyloid that they have fought so well in mice. If they could get rid of that in humans too, the thinking went, they could get rid of the disease—or at least lessen its severity. But LM11A-31 doesn't directly attack amyloid at all.

"We're agnostic about what is actually causing Alzheimer's," Longo says, referring to those protein plaques. "Most people are working at the edges of the problem, but we're going right after the core of it." LM11A-31 isn't designed to chase after every last clump of amyloid and wipe it away. The core, in this case, is simply to keep brain cells strong, protected against neurological onslaughts, whether they're the effects of amyloid or other factors involved in Alzheimer's. It's a much less orthodox approach, but—as Longo's emotion suggests—if it works, it could be a game changer.

Aging, of course, is inevitable, but aging well is not. No one would argue that finding ways to help people remain healthy, functional and productive for as long as they can isn't a good idea. That's why, as life spans continue to inch upward, more health experts are focusing not just on extending the number of our years but on making sure they are of the highest quality possible. Keeping the brain robust and free of damaging conditions like Alzheimer's is an essential part of that health span. Which is why brain experts are flipping their perspective and studying not just how our physical and mental abilities falter as we age but also how they keep going year after year.

'We have cured Alzheimer's in mice. Why can't we move that success to people?'

"The answer to extending healthy life spans lies not in how we break down at age 70 but in how we keep functioning at age 50," says Brian Kennedy, president and CEO of the Buck Institute for Research on Aging. Understanding how to do that could not just protect the brain from Alzheimer's but also serve as a longevity insurance policy to keep it humming along at close to full capacity for as long as possible.

UNDER A MICROSCOPE in his lab at Stanford, Longo shows off before-and-after slides of some brain neurons from mice. On the before slide, the normally orderly and uniform cells are in disarray. They're dying, slowly being choked off from their supply of nutrients by amyloid plaques that start to accumulate like molecular garbage in certain corners of the Alzheimer's-afflicted brain. In the after slide, the cells look normal. The difference, Longo says, is LM11A-31.

For brain cells, their molecular connections to other neurons are their lifeline—it's like their version of Twitter, as they constantly ping other neurons with status updates. But when the cells are assaulted by something like amyloid, these communications are threatened. And in response, those cells tend to make a quick exit—toward death.

To treat the degradation, scientists logically focused first on finding ways to soak up the excess amyloid in the brain, hopefully before the protein can form its tacky plaques and destroy neurons. They developed, among other drugs, antibodies to find and bind to amyloid and break it down. But these compounds, though they worked in animals, failed to make much difference in memory and cognitive function in people.

That prompted experts to consider that maybe the problem wasn't the drugs but when the drugs were given. Perhaps there was too much amyloid, and too much damage in people with advanced disease, for the drugs to have any measurable effect. For that reason, some companies aren't giving up on their failed drugs and have begun testing them, with promising results, among people with early-stage disease, when there's less damage from amyloid. Genentech, for its part, is testing its anti-amyloid drug in Colombian families who have a high genetic risk of getting Alzheimer's; the company hopes that giving the drug to asymptomatic people highly likely to get the disease can slow their cognitive decline.

But that requires knowing when the amyloid makes its first appearance. And there's another problem: about 30% of people over 70 have amyloid in their brains but no signs of dementia. In other words, everyone with Alzheimer's has amyloid, but not everyone with amyloid has developed Alzheimer's. Which people need help from anti-amyloid drugs, and which people don't? Which ones can wait before taking the drugs? Until recently, the only way to definitively diagnose Alzheimer's was in a post-mortem, when the brain could be studied for signs

Other strategies for fighting Alzheimer's

Having a smoking gun when it comes to a disease like Alzheimer's is both a blessing and a curse. While that can focus efforts to find an effective treatment, a one-track strategy can also be limiting. What if, as researchers are learning, taking on amyloid, the telltale sign of Alzheimer's, isn't the best approach? These are some other promising strategies from scientists and drug companies.

TAMING INFLAMMATION

So many of the most common chronic diseases, from heart problems and cancer to arthritis, are driven by the immune response known as inflammation. It's the body sending in the cavalry, a flood of defensive cells that include antibodies—immune cells that detect foreign invaders like bacteria and viruses—and other factors to defend itself. In the case of Alzheimer's, the troops are deployed to respond to amyloid

in keeping the brain healthy too. Just as cells in a person with diabetes no longer respond to insulin, so too do brain cells in Alzheimer's patients lose their ability to use insulin to break down sugar for energy. Without that fuel, the cells start to wither, so scientists are testing the idea of giving people with mild to moderate Alzheimer's sprays of insulin through the nose, so that it reaches the brain more quickly. A group at Albert Einstein College of Medicine is also testing whether the diabetes drug metformin, which lowers the amount of sugar produced by the liver, can help the brain to more efficiently pull out circulating sugar and use it to keep nerve networks functioning.

FIGHTING TAU

Along with amyloid, tau is probably the most popular target for drugmakers. Because it appears so late in the disease, however, any therapies have a huge hurdle to overcome, since much of the damage to the nerves is already done, and key brain areas relating to cognition are starting to shrink. Still, if anti-tau treatments can be introduced just as the protein is starting to cause the breakdown of nerve fibers, then they might be able to stop the disease from progressing too far. Researchers are testing one compound that can keep tau's normally organized and aligned structure intact and prevent it from deteriorating into a tangled mess; in animal tests, the agent stabilized the chaotic neurons and even helped animals improve their cognitive performance on tests.

There is also a vaccine developed by Axon Neuroscience to help the body generate antibodies to the tau protein. So far, it appears to be safe, and it helped a group of 30 people make the proper antibodies against tau. The company is now enrolling 185 people with mild to moderate Alzheimer's to further test whether targeting tau can reduce their memory problems and slow their cognitive decline.

1

Number of drugs for Alzheimer's approved, among 244 tested, since 2000

building up abnormally in the brain. But the result is overkill—the help turns to harm as the immune cells begin to destroy the nerve cells they're meant to protect. CereSpir, a biotech company, is developing what may be the first anti-inflammatory for Alzheimer's; in early trials involving people with mild cognitive impairment, the drug reduced the destructive effect of the immune cells and helped improve thinking abilities over more than a year.

INTRODUCING INSULIN

More commonly associated with diabetes, insulin may play a role

of the amyloid plaques. Now, thanks to new imaging agents that light up amyloid on scans, researchers can track the earliest appearance of these proteins and see if they grow, which could signal Alzheimer's.

There's similar momentum building around possible treatments against another major Alzheimer's protein, tau. If amyloid is the locomotive of the disease, driving the damage to neurons, then tau is the caboose, generally appearing in the late stages, when memory, organized thinking and language start to fail. By the time tau breaks down to form tangles, the brain has already started to degenerate, meaning it's shrinking in size as neurons are dying and certain parts, specifically the hippocampus, the hub for memory, start to atrophy. That's why memory problems and cognitive functions start to go.

"We think that tau may incite the whole process of neurodegeneration," says Dr. William Jagust, a professor of public health and neuroscience at the University of California, Berkeley. "That's important if you think of Alzheimer's as moving through standardized group stages. The first stage is [depositing] of amyloid. In the second stage, something probably happens with tau. Somewhere in there we begin to see neurodegeneration."

To interrupt this process, you need good drugs that can intervene at any or all of the stages. Even though doctors can now see amyloid deposits in the brain, for example, they don't have anything that can remove the plaques. Same goes for anti-tau drugs. "If we have a drug for treating amyloid, then that obviously changes the whole story," says Jagust. But we don't—at least not yet.

That's where LM11A-31, or C31, as Longo's team calls it, may come in. Together with the antiamyloid and anti-tau therapies, it could be a potent counter-punch to any neurological problems, from memory loss to confusion and loss of language.

Longo has a diagram of 14 signals passed among brain nerves that are triggered by amyloid and can ultimately lead neurons to deteriorate. So far, he's found that C31 can halt at least 10 of those. "We lucked out in a way," he says, since just targeting the receptor P75 that sits on brain nerve cells, as his drug does, can interrupt a cascade of unhealthy signals that instruct brain nerves to falter.

That might allow doctors to prevent some of the damage caused by amyloid before it occurs. "Growth factors might come into play to regenerate, restore and preserve connections between nerves," says Petersen. Theoretically, he says, if someone at high risk of developing Alzheimer's shows signs of amyloid on their brain scans, "you could squirt them with [nerve-growth factors] to try to prevent or ameliorate the things that are doing harm to nerve cells. So can we prevent Alzheimer's with nerve-growth factors? That's not an unreasonable hypothesis."

C31 even shows signs that it might help people

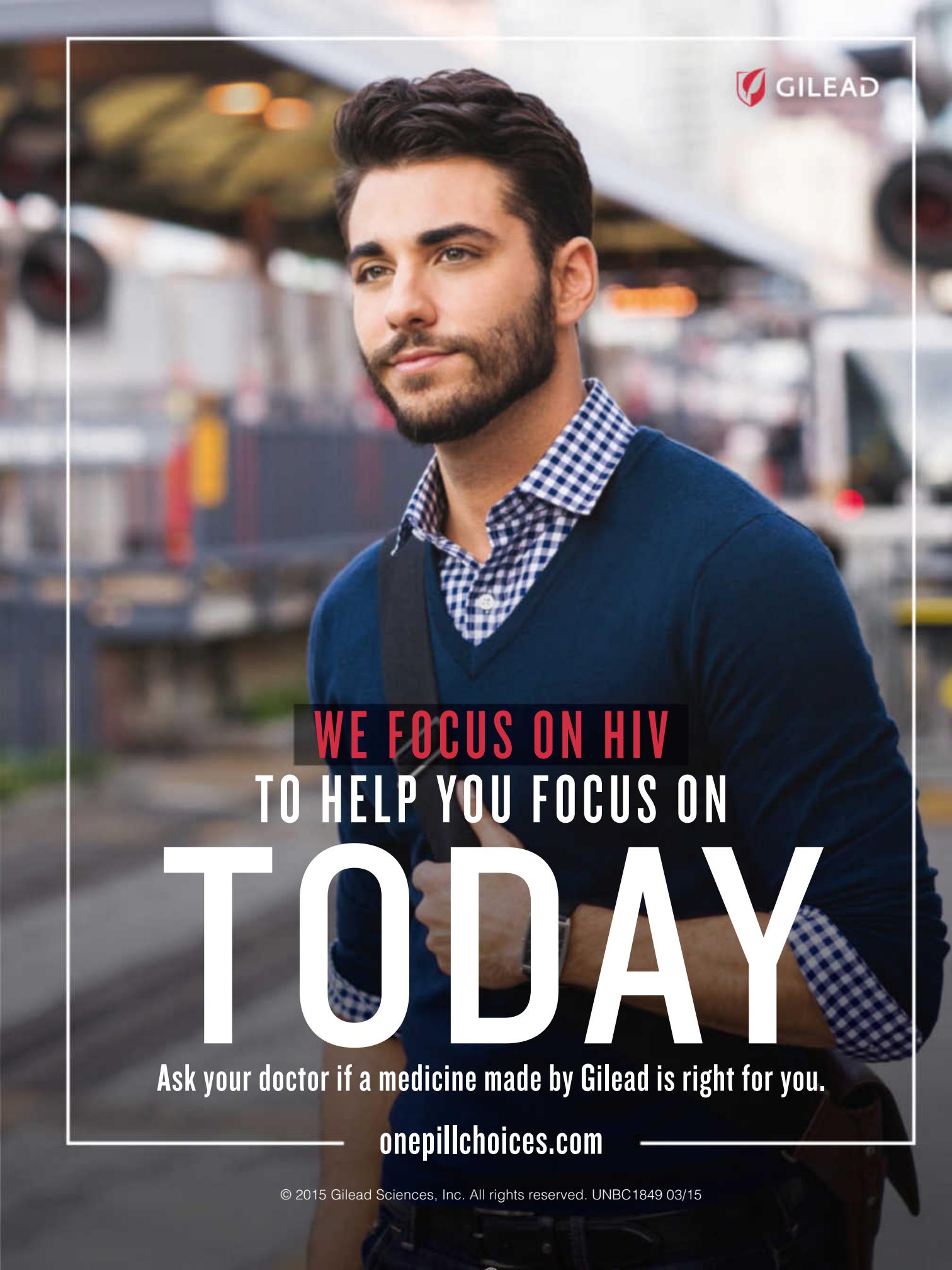
whose brains are already damaged by amyloid. "The general assumption was that the damage to brain neurons was irreversible," says Longo, "and that it would be nearly impossible to get them back. What our studies show is that in mice, there is a significant amount of damage that is reversible. That's really unusual," he says.

The impact of that feat, if it's repeated in humans, would be huge. "If approved, these could be the first drugs that will change the course of the disease" rather than just treat its symptoms, says James Hendrix, director of global science initiatives at the Alzheimer's Association. But the reality is that it's not clear yet whether the changes seen from drugs like C31 restored any lost memory. Brain experts are eagerly awaiting Longo's next series of studies for the answer to that question. So far, not everyone is convinced that it's even possible to rescue already compromised nerve cells. "To bring back neurons that have been destroyed by plaques and tangles—to me that still seems almost like science fiction," says Hendrix. "I have a hard time getting to that point."

Still, there's no denying the potential of compounds like C31 and the need to think about new



The best treatments will likely begin early, before there is too much damage to reverse



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LONGEVITY
PRO TIPS

Exercise is probably the most healthy thing you can do. I do mainly aerobic: walking or cycling on a stationary cycle bike. I do it every day, except today, because I'm running to the airport and I'm going to skip it. I'll wake up tomorrow at 5 a.m. and do the exercise that I missed today.

DR. NIR BARZILAI,
director of the
Institute for Aging
Research at the
Albert Einstein
College of Medicine

ways to attack the disease. Researchers at the Rush Alzheimer's Disease Center recently reported intriguing evidence that people with higher levels of an important nerve-growth factor called BDNF tended to keep more of their cognitive functions even when amyloid built up. In fact, people who had more BDNF activity saw a 50% slower rate of cognitive decline over the study's six years than those with lower activity. So far, researchers think that having higher levels of factors like BDNF might give people cognitive reserve—the ability to counteract any damage that's occurring and minimize its effects. (There is no drug that boosts BDNF levels, however—at least not yet.)

Longo's C31 is the first drug to be tested in people that capitalizes on this idea of topping off levels of nerve-growth factors, and it's gaining more supporters. "The old approach was to try to modify what went wrong in Alzheimer's," which in this case is the buildup of amyloid, says Dr. Aron Buchman, a professor of neurological sciences at Rush who was part of the BDNF study. "This new approach says, Let's find factors, proteins or behaviors that may protect people against the ravages of the pathologies that are likely accumulating in nearly all people as we get older."

SOME EXPERTS ARE CONVINCED that if people live long enough, some form of dementia, most likely Alzheimer's, is inevitable. It's just a matter of time. But figuring out which people can benefit from which types of treatments—and when—is still an open question. The hypothesis that dementia is inevitable is unpalatable to doctors like Longo. But it's a reality that even the government is starting to appreciate. In 2011, Congress created a National Alzheimer's Plan to coordinate and accelerate the development, testing and approval of new drugs to treat the disease. And the Alzheimer's Association will soon issue a consensus statement on how to move promising drug candidates like C31 and any BDNF-based compounds to human testing as quickly as possible without putting people at risk of unexpected or unwanted side effects.

Part of the puzzle will include figuring out whether older people should be screened for signs of the disease and when that monitoring should begin. "The idea of applying scans to everyone on their 65th birthday is not going to fly," says Jagust, noting that amyloid PET scans cost several thousand dollars each. But coming up with some type of risk score, as doctors now do for heart disease, might happen in the near future for Alzheimer's. It would fold in age, family history, physical activity and other factors. It's clear now that Alzheimer's begins decades before symptoms start and that the best treatments will likely begin early, before there is too much damage to reverse.



Aging is inevitable, but aging well is not. Keeping the brain robust is an essential part of health

"Odds are, if you follow anyone in their 70s or 80s for two, three or five years before they pass away and look at their brain under the microscope, you will find two, three or even four of the elements of Alzheimer's," Petersen says. That's why he's thinking beyond just looking for signs of amyloid and is encouraging his patients to participate in trials testing nonamyloid strategies as well.

"In an ideal world, you want to take a 78-year-old and say, I think in your brain amyloid is contributing to 20% of your cognitive problems, so I'll give you an anti-amyloid therapy. You also have tau proteins contributing to about 35% of your problems, and so on. You'd want to design a therapeutic regimen based on the different components and their contributions to that patient's disease," he says.

C31 may become the first drug in this new Alzheimer's cocktail; the results of the first studies among 72 healthy people who don't have any signs of the disease are promising. The next step is to see if it can make any difference in their memory and thinking.

That's the ultimate test for any Alzheimer's treatment, and if the history of drug research for the disease is any indication, it won't be easy. But those aren't the odds Longo is betting on. He is hopeful. Still frustrated, but hopeful. □



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BURNING #1 QUESTION

Why are old people less scared of dying?

IMAGINE YOU JUST GOT SOME VERY, very bad news. You don't have much longer to live, maybe only a couple of years, and there's nothing anyone—not you, not your doctor—can do about it.

Welcome to every day in the life of a very old person. We spend our entire lives dreading death and then, before we know it, it's upon us. For a senior with any sense, this ought to spell terror or at least sorrow. But for many—not all, but many—it can mean the opposite. The way so many older people manage the psychic jujitsu of being contented with what their short-term future holds has long mystified scientists. "You'd think people would get more anxious as they age," says Thomas Pyszczynski, professor of psychology at the University of Colorado at Colorado Springs. But if you look at the research, older people have less anxiety and sadness and more overall satisfaction, he says.

Otto Rank, the Viennese psychologist and student of Sigmund Freud, once said the secret of not fearing death lay in the "voluntary affirmation of the obligatory." How? Studies show there can be a powerful perspective shift later in life when we come to understand that

what we've always thought of as ownership is really just a long-term lease. "A lot of our fear of death is about losing the things we've built up," says Steve Taylor, a lecturer in psychology at Leeds Beckett University in Leeds, England, and the author of *Out of Darkness*. "But elderly people let go of their attachment to these things, and in the process they let go of some of their fear."

Seeing yourself as part of something that will outlive you can help as well. Some find their legacy in the children they've raised or the gardens they've planted. Others value families, religion and country more highly—the tribal groups that endure after we're gone. But not all people find such late-life calm. Some become "bitterly disenfranchised," says Sheldon Solomon, a professor of social psychology at Skidmore College, and grow disappointed with what they've done with the years. "They say if they could live again, they'd want to be Elvis or Lady Gaga. These are the ones who face death with a lot of fear."

Of course death, even for the most transcendent among us, will never be a thing anticipated with joy. It is in some ways life's great punch line—an annihilation of the self at the point where that self has gotten wiser and better than it's ever been before. But without that knowledge of a looming finale, we may never have achieved such a high and fine state to begin with. The certainty of a journey's end might make better travelers of us all. —JEFFREY KLUGER

BURNING #2 QUESTION

Why do some unhealthy people live so long?

I don't know how many unfiltered Chesterfields my grandfather smoked, but if you figure two packs a day for 75 years, it comes out to 1,095,000. He died on a Monday, at age 91, and he'd been at work the previous Friday. Outliers like that drive doctors crazy—but they can be useful for science. For decades, researchers have been trying to figure out what edge these folks possess in hope they may find a clue that can benefit the rest of us too.

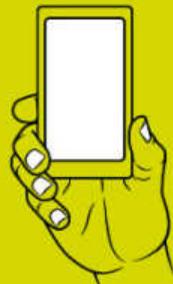
Some of the most telling findings so far involve a study of nearly 500 long-lived Jews who were either born in the U.S. or emigrated after World War II. Their mean age was 97.3. Whatever these seniors did to manage such a longevity feat, it did not always include behaving well. More than 50% of the sample group were overweight or obese; 60% of the men and 30% of the women were long-term smokers at one point or another; and only half said they did even moderate exercise. "One of the women had been a smoker for 95 years," says Dr. Nir Barzilai, director of the Institute for Aging Research at the Albert Einstein College of Medicine. But she also had four brothers and sisters, all of whom cracked 100.

This pattern of long-lived families played out across the group, and new research is uncovering why. So far Barzilai's team has identified at least two gene sequences that help keep down bad cholesterol and raise good cholesterol. We all have those genes, but ours do not necessarily perform as well. The findings are already paying dividends. At least two drug companies are working on ways to mimic the effect of the genes.

None of this means good genes make bad health choices wise. I started smoking at 17, reckoning I had a genetic edge thanks to my grandfather. By my 20s, I could barely run a block without getting winded, and I quit smoking for good. Your genes are up to chance; your lifestyle's up to you. It's clear what the safer bet is. —J.K.

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¹¹"Cut Your Cell Phone Bill in Half" is based on a pricing comparison of two of the leading service contract carriers' monthly online prices for comparable individual post-paid cell phone service contract plans, including overage charges, and Straight Talk's \$45 service plan, excluding the cost of the phone and limited time promotions. Source: Contract carriers' websites, December 2015. ¹²To get 4G LTE speed, you must have a 4G LTE capable device and 4G LTE SIM. Actual availability, coverage and speed may vary. LTE is a trademark of ETSI. ¹³At 2G speeds, the functionality of some data applications, such as streaming audio or video, may be affected. Straight Talk's Bring Your Own Phone plan requires a compatible, unlocked phone, activation kit and Straight Talk service plan. User may need to change the phone's Access Point Name settings. Please note: If you switch to Straight Talk, you may be subject to fees from your current provider. A month equals 30 days. Please refer always to the latest Terms and Conditions of Service at StraightTalk.com.

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A menagerie of super-agers

Scientists are studying these notably long-lived species for clues that may help humans

By Alexandra Sifferlin

500

Clam

The ocean quahog is a fist-size clam that can live to be

500 years or older.

Some researchers believe the sturdy quahog's secret to a long life is its ability to protect its proteins from damage. This mechanism, if further understood, could lead to potential treatments for such age-related diseases as Alzheimer's, which is caused by protein disturbances in the brain.





30

Naked mole rat

It isn't pretty, but the naked mole rat's elastic skin is part of why scientists believe the creature lives so long compared with other rodents—up to **30 years**. The naked mole rat appears to be immune to cancer, even when exposed to carcinogens. A molecule involved in making the rat's skin so stretchy may stop the rapid division of cells associated with cancer.



70+

Parrot

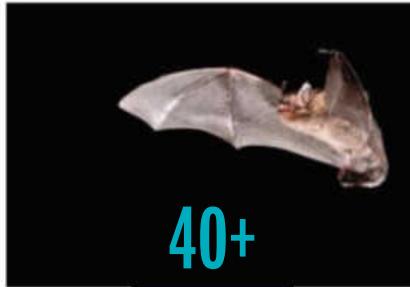
These birds can live well past their **70th birthday**. The kakapo, found in New Zealand, is thought to be the longest-lived species of bird and can survive to about 90. Their secret may lie in the fact that they do everything a bit more slowly. According to Kakapo Recovery, males don't start breeding until around age 4 and females around age 6, a reproductive pace easier on one and all.



100

Giant tortoise

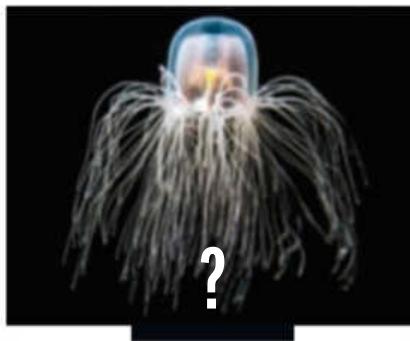
If you don't mind the pace, it's not bad to be a giant tortoise. Its life span is often more than **100 years**. Scientists credit a slow metabolism and a heart that beats at less than half the speed than that of humans.



40+

Brandt's bat

Found in parts of Europe and Asia, the Brandt's bat lives to **over the age of 40**. Researchers have found that the bat has mutations in its receptors for growth hormones, which are also thought to play a role in human populations that live for a long time without disease.



?

Jellyfish

The **immortal** jellyfish—also known as *Turritopsis dohrnii*—is the Benjamin Button of the sea. Instead of dying, the jellyfish gets younger and younger until it starts its life over once again. Its secret could be its ability to change one cell into another type of cell, something human stem cells are also capable of.



40

Thick-billed murre

This bird lives to around **40 years or older**, and though it does age, it never loses its ability to dive. Some researchers believe studying how the bird keeps up its strength and agility could provide some insight into the link between aging and the breaking down of the human body.



70

Elephant

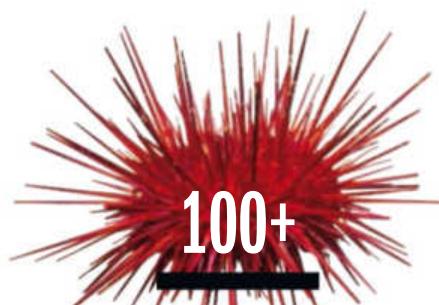
Logic suggests elephants, given their large size and long life span, should get a lot of cancer, since the more cells you have dividing for a greater amount of time, the more opportunities there are for things to go awry. But they don't. Instead, elephants live **60 to 70 years**, generally cancer-free, thanks to multiple copies of a gene that helps destroy mutated cells before they cause disease.



200

Bowhead whale

Like elephants, whales hardly ever get cancer. The bowhead, thought to be the longest-living mammal, is estimated to live **beyond 200 years**. Researchers sequenced the genome of a bowhead whale in 2015 and identified genes related to DNA repair, cancer and aging that could be responsible for the animal's long life.



100+

Red sea urchin

Various species of these spindly creatures, including the red urchin, are known to live **100 years or longer** without any biological signs of aging. Scientists believe the key may be the urchins' ability to regenerate their tissues. Their telomeres, a part of cells that determine how you age, don't appear to shorten as they get older, as the ones in humans do.

It's The Little Things

NEW SCIENCE SHOWS THAT THESE DAILY CHOICES CAN HELP YOU LIVE BETTER—AND LONGER **BY ALEXANDRA SIFFERLIN**

YOU DON'T HAVE TO GO vegan, pledge allegiance to an exercise cult or become a full-time meditator to get the longevity benefits of healthy habits. The latest science is showing quite the opposite, in fact: that extending healthy life is attainable for many of us with just a few small changes that aren't especially hard to do—and won't make you miserable. Research-

ers have learned that logging hours at the gym cannot counteract the negative effects of sitting for long periods, for instance—but something as simple as fidgeting can. They've also discovered that cutting down on how much you eat doesn't have to be excruciating—and it can improve your chance for a longer life. Finally, they are convinced that your inner life has an important impact on how well the body ages on a biological level. Here's how to put science's latest lessons to work.



LONGEVITY
PRO TIPS

'In general, I follow my body. It really tells me lots of stories. If I eat something and my body doesn't like it, it basically lets me know. A lot of people don't really know how to listen to their own body. I learned to listen a long time ago.'

S. JAY OLSHANSKY,
School of Public
Health at the
University of Illinois
at Chicago

Every scientist, no matter what they're working on, will always say, "Try to exercise just a little bit more and eat as many plant-based foods as possible." So that's what I do. Do I like a cheeseburger? Yes. But I also eat lots of salad. You don't have to cut out, just put more in.'

STEPHANIE LEDERMAN,
American Federation
for Aging Research

Calories matter, but not for the reason you think

Thankfully, the days of deciding what to eat purely on the basis of calorie counts are over. The quality of the calories, whether they come from good sources like healthy fats or bad ones like added sugar, can determine how they are stored and how they help or hurt the body. But now calories are back in the scientific spotlight. Cutting back on them can be good for your health—for a different reason altogether.

In July 2015, results from a two-year trial that put some people on a strict calorie-slashing diet were published in the *Journals of Gerontology*. In the trial, called CALERIE, the researchers assigned diets to 218 people ages 21 to 50 who were of normal weight or moderately overweight. Half of them ate however they liked, and half were told to cut their calories by 25%.

By the end of the trial, the low-calorie group managed to eliminate about 12% of its dietary calories and lost an average of 10% of body weight, keeping the pounds off for the full two years. Just as impressive was the finding that calorie restriction didn't make the people in the study miserable. "That was a big question hanging over this," says Susan Roberts, one of the principal investigators and a nutrition professor at Tufts University. "Is this going to be such an awful thing that people are not going to be willing to do it or that it ruins their life?"

But the people in the study didn't experience the downsides many of us assume will accompany caloric deprivation, such as feeling tired or irritable and dreading any meal that doesn't end with dessert. Meanwhile, the researchers found that the average blood pressure for this group dropped by 4%, total cholesterol dropped 6% and levels of an inflammatory marker linked to heart disease, called C-reactive protein, were lowered by 47%. The results—that eating a little less is an effective but also practical strategy—add to the evidence that diet is a key to living well longer. "Especially for people who are overweight or obese, nothing is going to keep them healthier for longer than losing weight and keeping it off," Roberts adds.

In other new research, Valter Longo, director of the University of Southern California's Longevity Institute, showed that when people occasionally fasted, they lowered their risk factors for age-related diseases. In the trial, which was published in the journal *Cell Metabolism*, Longo did a series of modified fasting experiments on mice and humans. Mice that were fed an extremely low-calorie and low-protein fasting diet improved their metabolism, decreased bone loss, improved cognitive function, got cancer at a lower rate and even lengthened their lives. Longo then tried a similar diet strategy on 19 people for five days a week. The

menu was full of healthy foods but contained 34% to 54% fewer calories than what the people in the study usually consumed. After following the diet for three months, the people in the study had notable drops in risk factors related to aging, diabetes, heart disease and cancer, including lower blood sugar and reduced levels of the growth hormone IGF-1, which accelerates aging. While that hormone is important for normal development earlier in life, some people get too much of it from high-protein foods. Longo's research has also shown that cancer risk can increase about 400% among Americans who get 20% or more of their calories from protein, compared with people who clock in only about 10%.

Weight loss likely explains many of the positive changes, such as lower blood pressure and better blood-sugar levels. But some experts speculate that fasting also makes the body more resistant to stress, which can have beneficial effects at



'Diet is by far the most powerful intervention to delay aging and age-related diseases.'

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A NEW FRONTIER

Holistic-medicine devotees have been talking for decades about how chronic inflammation ages the body, but concrete proof of that has been elusive. Now, however, the longest-running human-aging study, the BLSA, has inched closer to proof. The BLSA has shown that having more than one disease, which doctors call "comorbidity," is a good indicator of how rapidly a person is aging, and it seems to be driven by chronic inflammation. That happens when the immune system's natural reaction to insult gets stuck in the "on" position. "Chronic inflammation seems to be the strongest predictor of comorbidity," says Dr. Luigi Ferrucci, scientific director of the National Institute on Aging and former director of the BLSA. The researchers aren't sure yet if that inflammation is a primary cause of aging, "but certainly it's an accelerator," Ferrucci says. Habits that have been linked to lower inflammation include a diet rich in plants and omega-3 fatty acids, mindfulness meditation and regular exercise.

—Mandy Oaklander

the cellular level. Longo's suspicion, based on his research, is that fasting kills a variety of organ and blood cells while spurring the generation of stem cells. These new cells appear to regenerate the lost cells and rejuvenate the body. Inspired by the findings, Longo follows a modified fasting diet twice a year and limits himself to two meals every day, plus a snack.

"Diet is by far the most powerful intervention to delay aging and age-related diseases," Longo says. "If you look at all the interventions that have ever been tried, diet has proven superior to anything else."

Moving a little matters more than exercising a lot

The latest research suggests you don't have to join a gym to reap the benefits. A body that's moving is what matters.

In the past couple of years, scientists have shown that sedentary behavior, like sitting all day, is a risk factor for earlier death. Several studies published in 2015 found that hours spent sitting are linked to increased risks of Type 2 diabetes and nonalcoholic fatty liver disease—even if people exercised regularly. In other words, you can't exercise away all the bad effects of sitting too much. But the good news is that doing anything but sitting still—even fidgeting counts—can add up.

In a 2015 study published in the *Journal of the American Heart Association*, researchers put fitness trackers on more than 1,000 adults in their 70s and 80s who were limited in how much they could move around. People who logged the least physical activity had the highest risk of a heart event in the next 10 years, which isn't shocking. But to the researchers' surprise, moving just a little bit more during the day—like doing chores around the house—was enough to lower the risk of a heart event.

Other research shows that moving more in old age helps people keep their mobility. The *Journal of the American Medical Association* reported in 2014 on the Lifestyle Interventions and Independence for Elders study, which enrolled more than 1,600 sedentary men and women ages 70 to 89. For about three years, one group did moderate exercise like walking, while another group attended a health-education class. By the end, those in the physical-activity program could walk about 104 minutes more per week than the other group, and they also had significantly less major mobility disability.

"Now I look forward to walking, and I feel antsy when I have to miss a couple of days," says 79-year-old Brian Ainsworth, who entered the study to exercise more and see if he could ease his depression symptoms naturally. Since he walked in the study, his depression has been under control—and he hasn't stopped moving since the research ended.

Your mind-set can affect how you age

By now it's clear to scientists that our emotions affect our biology. Studies have shown for years that anger and stress can release stress hormones like adrenaline into our blood, which trigger the heart to beat faster and harder. The new research suggests the stakes are even higher than that: stress may even have an effect on how well our brains hold up against Alzheimer's disease.

For the first time, two studies published late last year in the journal *Psychology and Aging* linked a person's negative stereotypes about aging, of all things, to the development of brain changes associated with Alzheimer's disease. In the first study, researchers looked at 158 people without dementia who were part of the Baltimore Longitudinal Study of Aging (BLSA). The researchers asked the men and women, who were in their 40s at the time, to rate how they felt about different aging-related stereotypes, like "Older people have trouble learning new things" and "Older people are absentminded."

About 25 years later, the researchers gave some of those same people yearly brain scans. They found that the men and women who held more negative views of aging earlier in life had greater loss in the volume of their hippocampus, a region of the brain whose loss is linked to Alzheimer's disease. People who years earlier had held more unpleasant views

Scientists have shown that sedentary behavior, like sitting all day, is a risk factor for earlier death



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LONGEVITY
PRO TIPS

'The most important thing is finding what works for you to manage your stress. I smile when I'm stuck in traffic. It is unbelievable how much it works. Now, when I go to the doctor's office, I even smile when I get a shot.'

SARAH PRESSMAN,
University of California, Irvine

'Do some service, because that's when you'll truly not only feel connected, but you'll have a sense of purpose and you'll thrive. You'll feel a happiness that doesn't just come as a burst of pleasure that leaves you hungry for more. It lasts.'

EMMA SEPPÄLÄ,
Stanford University, author of The Happiness Track

of growing older had the same amount of hippocampus decline in three years as their more positive peers showed in nine.

The researchers also looked at brain autopsies of people in the study to investigate other markers of Alzheimer's disease. They looked specifically for buildup of amyloid plaques and neurofibrillary tangles, twisted strands of protein that accumulate in brain cells. Once again, they found that the people who had held more negative stereotypes about aging had significantly higher levels of both plaques and tangles.

It's not yet understood how negative stereotypes may have such a notable impact on the brain, but the researchers speculate that holding these stereotypes is linked to stress, a known trigger of pathological brain changes. A February 2015 study published in the *European Heart Journal: Acute Cardiovascular Care* found that an episode of severe anger was associated with a significantly higher risk of heart attack in the following two hours. Even at the cellular level, stress seems to affect health; chronic stress has also been shown to harm DNA by shortening telomeres, the protective caps on the ends of chromosomes.

This is not the first time research has suggested that how we feel about aging can affect how we age. Other research has shown that people who hold more negative aging stereotypes have a higher risk of heart problems about 40 years later, compared with people who have more positive feelings about age. But by changing our minds, we may also be able to change our health. "Positive age stereotypes seem protective of not experiencing these biomarkers," says Becca Levy, lead author of the study and an associate professor of epidemiology and psychology at the Yale School of Public Health.

Levy's study adds to the evidence that a more positive mind-set could make us more resilient in measurable ways. Eric Loucks, an assistant professor of epidemiology at Brown University, has shown that people with more "mindful dispositions"—which might be best defined as having an awareness of what you're thinking and feeling in the moment—have significantly less body fat and also score higher on markers of heart health, compared with their peers. In another 2015 study, he discovered that people with high mindfulness scores were 86% more likely to have good cardiovascular health. Loucks' team also plans to study whether mindfulness interventions will help people stick to doctor-recommended health regimens, like taking blood-pressure medication.

But if stress clearly accelerates biological aging, the opposite may also be true. Studies by Elissa Epel, a professor in the department of psychiatry at the University of California, San Francisco, have shown that mindfulness meditation can re-



Mindfulness meditation can reduce stress and may slow biological aging by stabilizing telomeres

duce stress and prevent people from ruminating in negative emotions, and some forms of meditation practice may even slow the biological signs of aging by stabilizing telomeres. Turns out your parents were right when they told you not to sweat the small stuff.

If meditation continues to be a practice that eludes you, it may be more valuable to incorporate the lessons of the practice—like trying one's best to focus on the present moment—into daily life as opposed to spending hours in lonely meditation. "What matters most is probably social connections, viewing stressful events as ephemeral, rather than reflecting weaknesses and failures in us, and having the ability to recover quickly from stressful things when they happen," Epel says.

A little mindfulness can go a long way indeed. □



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BURNING #3 QUESTION

Do happy people really live longer?

Sometime in late 2015, researchers seemed to deliver a blow to Pollyannas everywhere. The news? Happy people did not live longer than sad people, after adjusting for factors like the state of a person's health. The study, published in prestigious medical journal the *Lancet*, looked at survey results from nearly 720,000 women and concluded that happiness, when considered independently, had no bearing whatsoever on how long people lived.

But many experts challenged that finding, taking issue with the study design, which removed as variables (or, in scientific terms, controlled for) things like how much a woman slept and whether she exercised. "The very reasons happy people live longer are some of the things the *Lancet* paper controlled for," says Sarah Pressman, associate professor of psychology and social behavior at the University of California at Irvine, who has been researching happiness for about a decade. "Positive emotion is good for you."

That may seem obvious, even to skeptics. Proving it scientifically can be tricky, however. Happiness studies usually rely on self-reported data, which is by nature subjective. Beyond that, it's just difficult to navigate the channels of cause and effect, given the many factors that influence mood and health. Still, a large body of literature shows that there does appear to be a link between a good mood and a longer life.

A 2011 study published in *Proceedings of the National Academy of Sciences* found that older people who reported being the least happy died at nearly twice the rate in the next five years as people who reported being the most happy. Even after adjusting for factors like illness, finances and depression, people who were the happiest still had a 35% lower risk of death.

Another study of older adults found that happier people retained their physical function better than those who weren't happy; their



walking speeds even declined more slowly. And in one 2003 experiment, researchers found that when they exposed people to a common cold virus, happiness level was a strong predictor of who got sick and who stayed well, which they could see by measuring people's mucus production and the levels of antibodies in their blood.

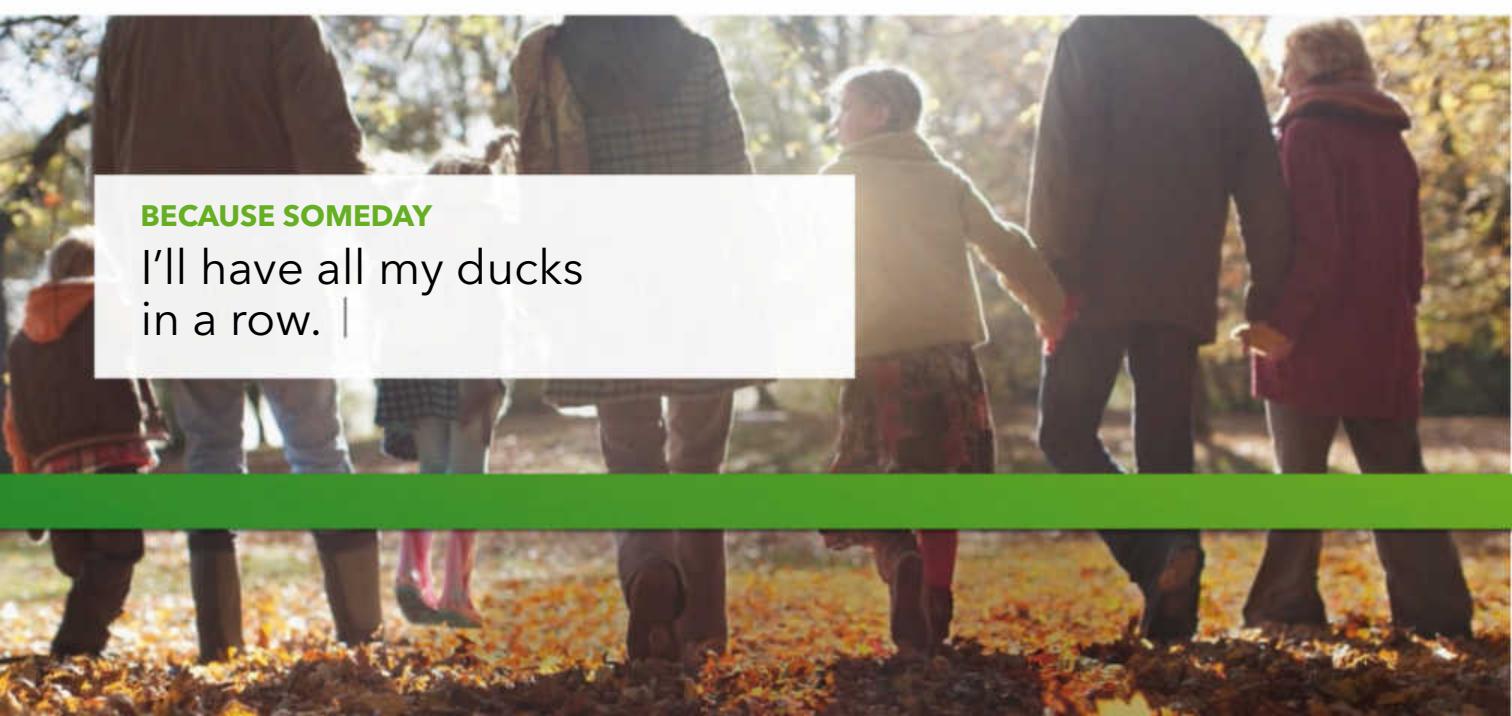
To Pressman, the existing research taken together settles the question: It does help to be happy. "The more interesting question is, Why?" she says. That's a puzzle researchers are now trying to solve. Pressman and other researchers think happiness has specific benefits for the body that cannot be chalked up solely to healthy lifestyle choices, like exercising, or the absence of negative emotional factors, like chronic stress. Scientists already know that negative emotions can cause a cascade of biological reactions that harm the body. Chronic stress increases inflammation, and inflammation has been linked to a host of health problems. So it's not a stretch to think that happiness, too, may lead to changes in the body's systems that influence certain diseases. But what, exactly, does happiness do? How does a positive disposition affect somebody's health? And, vitally, what are the best ways to get happier in a way that makes a difference?

Pressman isn't sure yet, but she's investigating one idea. Her experiments have found that people who smiled while receiving a needle injection rated the ordeal as 40% less painful than those who didn't—a testament to faking it until you make it. And their heart rates didn't increase as much in response to the stress of the injection, either.

"Now when I go to the doctor's office, I smile when I get a shot," she says. "It's amazing that it works. We're still trying to unpack why." —MANDY OAKLANDER

BECAUSE SOMEDAY

I'll have all my ducks in a row.





BURNING #4 QUESTION

What will the retirement age be in 2050?

SHORT ANSWER: OLDER than it is now. The economic pressures of aging populations and shrinking pension trust funds mean the retirement age will probably increase in the coming decades. But exactly how much will depend on where

you live. The U.S. Congress has already set the age to receive full benefits at 67 for people born after 1960, and economists say the government could reasonably be expected to raise that age by a couple years by 2050. That number will likely become 70 in the U.K., 65 in China and 67 to 69 throughout much of the E.U.

Economists and public-health experts say the government-set retirement age is just one factor in determining when people retire—if they retire at all. The reality of providing for

a longer life span will push many potential retirees to work past the day they can first get government benefits. And lots of people who end their formal careers may opt to work part time for pocket money or volunteer to stay active.

All of this plays into the so-called flexible retirement concept, according to Monika Queisser, a retirement-policy expert at the Organisation for Economic Co-operation and Development. “It gives them the flexibility to choose the patterns that they feel fit to do,” she says. “But at the same time, from a macro perspective, it’s better to have as many hours worked as long as possible.”

Instead of predicting the retirement age, it may be better to think about what old age will look like free from today’s associations with the word *retired*, says Ruth Finkelstein, an assistant professor of health policy at Columbia University. “We need to rethink how we understand work, making the

concept of retirement age obsolete,” she says. “It should be possible for people to dial up and dial down work across their life course. People shouldn’t turn a switch when they’re old and change everything.”

The inching up of the retirement age marks a dramatic shift for Western civilization. People in the West have seen 65 as the age to kick back and enjoy the twilight since 1916, when Germany made it the trigger for government old-age benefits. The U.S. set the retirement age for full benefits at 65 when President Franklin Roosevelt signed Social Security legislation in 1935. Politicians have been arguing over the number ever since.

“We have had the same retirement age,” adds Finkelstein. “But that number is politically negotiated. It’s not an age rooted in a person’s capability or longevity.” And that’s in large part why it’s changing even as the definition of what it means to retire changes too.

—JUSTIN WORLAND

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BURNING #5 QUESTION

Can a diabetes drug cure aging?

YOU'RE GOING TO GET OLD NO MATTER what you do; it's a condition of being human. Still, some experts are beginning to think that aging can be slowed with certain drugs or compounds—if only they can figure out which ones. Now a promising new trial has set its sights on metformin, a drug that millions of Americans already consume.

"There are lots of little things that suggest metformin is a little bit on the edge of magic," says Dr. Nir Barzilai, director of the Institute for Aging Research at the Albert Einstein College of Medicine and head of the new study, called Targeting Aging With Metformin, or TAME. The popular Type 2 diabetes drug has been available in the U.S. for more than two decades and has proved, over and over again, to help treat and even prevent the disease in at-risk people. Researchers in a years-long study gave metformin to people with prediabetes, a condition marked by elevated blood sugar, and found that those who took it reduced their risk of developing Type 2 diabetes by 31%.

But a growing body of research suggests that metformin may also have positive effects for conditions beyond diabetes. The drug has been linked to a reduction in the risk of cardio-

vascular disease, several types of cancer and glaucoma. A 2014 study found that people with Type 2 diabetes who took metformin lived longer than healthy people without diabetes who weren't taking it.

The drug works by controlling blood-sugar levels and making the body respond better to insulin. But along the way, it may also slow down elements of aging itself.

The TAME trial, which is estimated to cost \$66 million and will take place at 14 centers across the U.S., hopes to enroll 3,000 people ages 65 to 80 who have or are at risk for cancer, heart disease or dementia. Half will take metformin, and they'll be tracked for about six years. The goal is to see if taking metformin delays the development of illness and death.

While it may sound straightforward, this study will be, in its way, something of a breakthrough itself. Modern medicine focuses on treating one disease at a time; the fight to cure cancer is separate from that of Alzheimer's, heart disease

'There are lots of little things that suggest metformin is a little bit on the edge of magic.'

and Type 2 diabetes. But each of those diseases are linked by an enormous risk factor: getting older. The TAME trial may answer a more tantalizing question: What if we could target aging itself instead of the individual diseases that stem from it? "When several diseases come together, for me, it's the aging that plays a role, not the specific disease," Barzilai says.

Which means the TAME trial could be a turning point in our understanding of longevity. "We've created this scenario of long lives, and we've achieved exactly what we wanted to achieve, which is life extension," says S. Jay Olshansky, a professor in the School of Public Health at the University of Illinois at Chicago, who is also involved with the trial. "The price we had to pay for that was the rise of heart disease, cancer, stroke and Alzheimer's."

The goal of the trial is not to make people live longer but to extend their span of healthy life. If people could achieve even a slight slowing of the biological clock by taking a drug, "it would have a cascading effect on all fatal and disabling diseases," Olshansky says. "You'd lower the risk of heart disease, cancer, stroke, Alzheimer's, osteoporosis, osteoarthritis—the economic effect and the health effects are huge." In a 2013 study, Olshansky and others predicted how much money the U.S. could save if aging could be slowed by about three years, like making a 60-year-old biologically 57. The estimate: \$7 trillion over 50 years.

Aging researchers are also studying different compounds and treatments in animals for ways to slow the clock. Several are promising, but they come with risky side effects. That makes metformin, a drug with a long and strong safety record, the current best bet.

If TAME pans out as the researchers hope, it could speed the development of next-generation drugs. Olshansky, for his part, doesn't know if metformin will end up being the best drug to slow aging, but he's confident that someone will find one. "When it happens, it's going to earn somebody a Nobel Prize," he says, "because it's going to be one of the more profound public-health interventions in history."

—MANDY OAKLANDER



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So how am I going to pay for it?

BY DAN KADLEC

LIVING LONGER IS A BLESSING. BUT HOW TO FUND EXTRA YEARS HAS emerged as a global conundrum, one that will not be solved with the pension systems now in place. Life spans have stretched by more than a decade since 1970, making lifetime income too costly for governments or corporations to guarantee. If trends continue, the number of poor or nearly poor seniors will double to 4.3 million by 2022, according to one study. Here is a peek inside the financial labs where experts are trying to find solutions.

Social Security

This bedrock benefit lifts 15 million seniors in the U.S. out of poverty each year and is the sole source of income for nearly 1 in 4 recipients. It's not going away. But by 2033, payroll taxes will be enough to pay only 77% of promised benefits. "There is more energy than you might think" for benefit cuts and tax increases that favor those of lesser means, says Jared Bernstein, former economic adviser to Vice President Joe Biden. One possibility is raising or removing the cap on annual earnings subject to Social Security tax (\$118,500). There would be pushback against means testing. Presidential candidate Bernie Sanders is among those on board.

Guaranteed retirement accounts

Imagine a new account, above and beyond Social Security, 401(k)s and private pensions. It would be professionally managed, giving savers access to the lowest fees and broadest diversification. Contributions would be required of all workers and taken from your paycheck. The money would be invested conservatively, untouchable through loans or early distributions, and upon retirement paid out as an annuity. "The 401(k) is a failure," says Teresa Ghilarducci, professor of economics at the New School for Social Research. "We need a universal, mandated retirement-savings system." She believes that these accounts could be a reality within a few years and that as workers came to value low fees and guaranteed income, these new accounts would either supplant 401(k) plans or force them to compete with lower costs and more guarantees.

401(K) ANNUITIES

The 401(k) may have life in it yet. The search is on for ways to seamlessly convert some or all of your 401(k) assets into guaranteed lifetime income without taking a lump sum and paying hefty fees to buy an immediate annuity. Treasury and the IRS recently cleared the way for target-date funds inside a 401(k) to make deferred annuities a default option. "But we are not yet where we need to be," says Chip Castille, chief retirement strategist at BlackRock, which is pioneering 401(k) annuities. Look for remaining legal and other obstacles to phase out in the next few years.

TARGET INCOME

Most investing is about maximizing returns. But an actively managed portfolio that over your entire working life seeks only to generate a reasonable target level of lifetime income upon retirement would hold more stable securities and shield you from what academics call sequence risk—the chance that you'll suffer a big market hit at the worst time. Australian researcher Michael Drew has demonstrated that two identical savers with the same average annual returns can have vastly different wealth after 40 years—a spread of millions of dollars—just because one took their losses late in life when they had more to lose and little time to recover. Target-income funds "only take the amount of risk needed to reach the target, after which portfolio risk is lowered," says Drew. Such a fund would naturally be light on stocks when the market is most volatile throughout your career—and have done its job, and be parked in safe securities, as you approach retirement and are most vulnerable.

Phased retirement

As we live longer, we should work longer. But you can start taking retirement-fund distributions before age 60 and collecting Social Security at 62. Normal retirement age, now 65 to 67, has risen much more slowly than life expectancies. Look for lawmakers to raise certain age thresholds, especially on the back end, like when you must start taking minimum distributions (70½) and stop accruing benefits by delaying Social Security (70). As barriers to working longer fall, formal programs that enable seniors to phase into retirement through part-time or less stressful jobs will take root. "There must be widespread resolve among employers and policymakers," says Catherine Collinson, executive director at Aegon Center for Longevity and Retirement. Three-quarters of seniors want to keep working for reasons having nothing to do with financial concerns, and yet only a quarter say their employer has a program to help them retrain or downshift, the center found.



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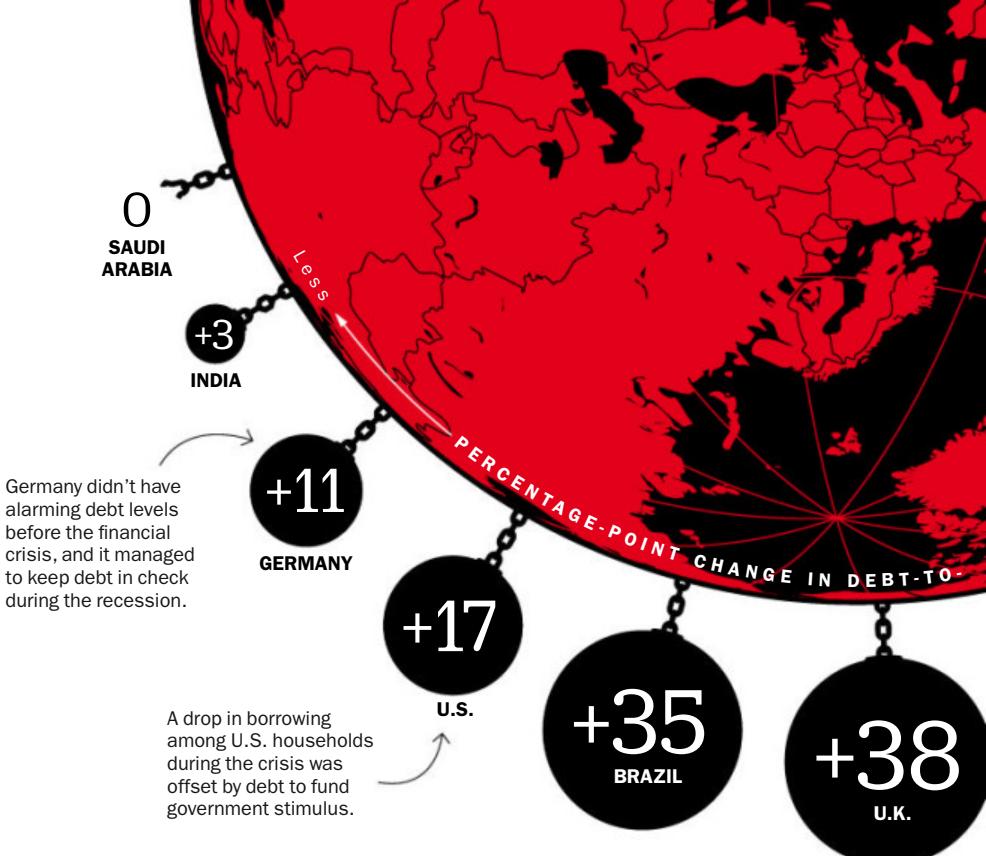
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VACATIONS

BY RANA FOROOHAR

A GLOBAL PROBLEM

Worldwide debt is nearly \$200 trillion. Since 2007, few countries have reduced their debt-to-GDP ratios

REPORTING BY EMILY BARONE



Remember junk bonds?

We haven't heard much about this kind of risky corporate debt since they helped put the go in the go-go '80s and, eventually, tanked the stock market. So it may come as a surprise to learn that they're back—and unreformed. Junk bonds and a malodorous bouquet of similarly risky types of debt have proliferated in recent years. Lately some of them have been going bad, as investors have pulled a record amount of money out of the corporate-bond sector after defaults in areas like energy and manufacturing, which have been hit by the fall in oil prices.

Trouble is, this bond blowup isn't an isolated event. It comes amid larger market corrections in sovereign debt, commodities and major emerging markets like China, where government officials had to stop trading twice in January to stave off a stock-market collapse. At first glance, these events might appear to be disconnected. They aren't. All those

markets has something in common, and it's the same thing that brought down the global economy in 2008: loads and loads of bad debt.

Eight years on from the debt-driven Great Recession and the financial crisis that followed, there's more, not less, red ink on the books than there was back then. In fact, there is an unprecedented amount of public, private and consumer debt in the world today—\$57 trillion more than before the crisis. The total, according to calculations by the McKinsey Global Institute, now rings up to a staggering \$199 trillion.

All of that red ink was fueled by the low interest rates of the past few years, which are themselves a central-bank reaction to the 2008 crisis. The idea was to keep money flowing throughout the global economy to encourage growth. But while the unconventional monetary policies led by the U.S. Federal Reserve

and later copied by dozens of other central banks did indeed keep the economy afloat, they also encouraged an epic global credit boom.

If all this is starting to sound a little familiar, that's because almost nothing has changed in our economic landscape since the last crisis. We still have a global economy driven by debt rather than by productive investment. Academic research covering decades of data shows that debt is always at the root of financial crises. "A rapid increase in debt is the single biggest predictor not just of financial crises but of economic slowdowns, in countries both rich and poor," says Ruchir Sharma, head of emerging markets and global macro at Morgan Stanley Investment Management.

Quick debt run-ups are exactly what the U.S. experienced before the last crisis and what China and other emerging countries are going through now. In fact, says Sharma, since 1960 every country that has experienced a significant increase in private debt over a five-year period had a recession. This is just one reason that many economists now predict a global recession within the next couple of years.

Debt, in other words, caused the last crash, and it'll likely cause the next. To understand the volatility, uneasiness and outright fear in the global economy these days, you have to follow the debt.



The picture isn't entirely black (or red).

U.S. consumers are unlikely to be the source of the next meltdown. Consumer debt is generally the riskiest kind of debt for an economy. As academics Atif Mian and Amir Sufi pointed out in their influential 2014 book, *House of Debt*, that's because there's a strong connection between the level of household indebtedness and the magnitude of the decline in consumption during a recession. When people get too heavily in debt, they simply can't spend. That has a major effect on businesses in an economy that is 70% consumer spending like America's. Until households curb their borrowing, the economy can't grow robustly.

Americans cut their personal debt by 3.5% from 2007 to 2014. Not all of it has been intentional—housing foreclosures wiped a lot of consumer debt off the books, and debt is now rising once again in some areas, like subprime auto loans

and student loans. But on the whole, U.S. consumers are less in the red than they were pre-2008. Household balance sheets are much stronger.

Personal-savings rates have also remained higher than many economists would have predicted. That's very unusual: normally, as soon as the prices of assets like stocks and homes begin to rise, people feel more secure, reduce their savings and start spending again. But in the wake of the Great Recession, something changed. Since 2012, U.S. net wealth increased by \$20 trillion, thanks to gains in both stock markets and housing, but the personal-savings rate still hovers around 5%. That's about double what it should be given such gains, according to research by JPMorgan.

The cause, say economists, could in part be America's aging population, since people spend less as they get older. But it is also true that most of that stock and housing wealth is accruing to a small subset of the population. (The richest 20% of the population owns roughly 80% of all stocks.) "The surge in household net worth during this most recent expansion has not been accompanied by equally impressive gains in income or income expectations," notes a December 2015 JPMorgan report on the topic. That disconnect between income and the "wealth effect," which in the past has

driven spending, goes a long way toward explaining why American consumers are much less willing to go into debt than they used to be.

Already, this has been a drag on the U.S. recovery, and it may be a permanent one. History shows that when consumers go through a seismic economic event, it changes their behavior over the long term—think about Depression-era grandparents who learned in the 1930s to save their used tea bags. They never changed. Now it may be that the financial crisis of 2008 and the recovery that followed have bred a new type of American consumer, one simply less willing to consume.

The outlook isn't quite so rosy for U.S. companies.

American corporate debt as a share of GDP fell 2 percentage points from 2007 to 2014. But some of this is financial alchemy. Money and investment are moving abroad, while debt is increasing at home. About half of corporate America's cash trove is now held overseas so that firms don't have to pay the U.S.'s higher-than-average corporate tax rate. Instead they are increasingly stashing cash in Ireland, the Netherlands, Singapore and the Cayman Islands.

DEBT, IN OTHER WORDS, CAUSED THE LAST CRASH, AND IT'LL LIKELY CAUSE THE NEXT

To be fair, there are some legitimate reasons for companies to keep more money overseas: one is that many emerging markets still represent strong long-term growth opportunities. As plenty of CEOs will tell you, even if the U.S. corporate tax rate goes down, there will still be high rates of growth in places like Indonesia, India or parts of Africa. Ultimately, companies want to invest where growth will be greatest, not just where tax rates are lowest.

The problem is that companies are still borrowing back at home. While total corporate debt fell, corporate-bond debt is approaching a record 30% of GDP. Companies have gone to public markets to raise money, taking advantage of those near zero borrowing costs. Increasingly, the entities holding that debt aren't Wall Street banks but the unregulated shadow-banking sector, including hedge funds, asset managers and money-market funds, which globally grew by \$18 trillion since 2007, to \$80 trillion in 2014. That debt hasn't gone away—it's just gotten harder to trace.

Most of that borrowed money has ended up in investors' pockets rather than in workers' salaries or such investments in the real economy as new factories and research and development. As University of Massachusetts professor William Lazonick has tabulated, from 2005 to 2014, S&P 500 firms spent \$3.7 trillion on stock buybacks, representing 52.5% of net income, plus another 35.7% of net income on dividends. These companies held much of the remaining 11.8% of their profits abroad, sheltered from U.S. taxes.

The situation was even more stark last year. FactSet Research calculates that in the 12 months ending with September 2015, S&P 500 companies spent 64.6% of net income on buybacks, with 130 companies spending more than 100%—both record numbers since the 2008–09 financial crisis. These buybacks helped boost stock prices, but there's no evidence they've created many jobs.

This recipe is doubly problematic because it encourages the cycle of inequality. When the rich get richer, there are only so many more cars and pairs of jeans and houses they'll buy. But when wealth is more broadly shared, the economy

grows more robustly. Laurence Fink, CEO of BlackRock, the world's largest asset manager, put it this way in an open letter to corporate America in 2014: "Too many companies have cut capital expenditure and even increased debt to boost dividends and increase share buybacks." (On Feb. 2, Fink chided CEOs for focusing on quarterly targets instead of long-term investment.)

This trend of cash hoarding and debt-financed investor payouts doesn't just stymie growth; corporate debt can also create major risk in the markets. That's an alarm that some of the savviest investors, like Carl Icahn, have been sounding for some time now. "The average investor [has ended up in risky debt markets], and he doesn't know what he's buying because he's got a wealth-management guy telling him, Oh, here's a good deal," he says.

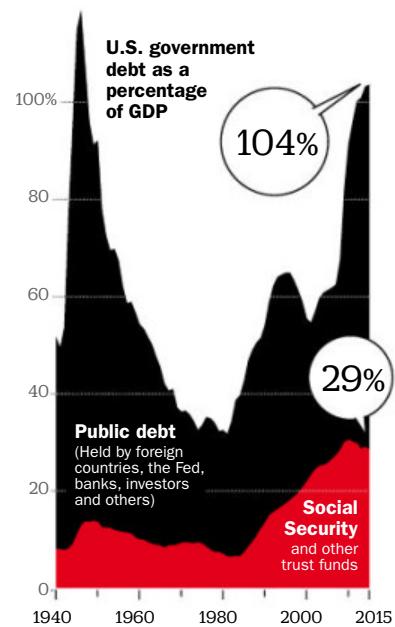
Usually, it's not so easy for lower-grade corporations to issue bonds and raise debt. But the Fed's monetary policies (which were themselves a reaction to an absence of more fiscal stimulus or other solutions from a gridlocked Congress) left investors looking for bigger payoffs, including junk bonds and other risky assets. Indeed, there's a good chance that your own retirement money could be in such risky securities, given that pension funds and many asset managers have piled into such investments en masse in recent years. A recent study by the American Federation of Teachers looked at 11 major pension funds with \$638 billion in assets and found that about \$43 billion of that money was in hedge funds and other sorts of funds that invest in riskier assets.

The nightmare scenario is that the

jitters in junk bonds spread to areas of the market that seem safe, as companies and investors holding bad debt are forced to sell off other parts of their portfolios to cover losses, triggering a downward market spiral like we saw in 2008. (There's little doubt that markets will be more volatile in 2016 than they were last year.) Investors and policymakers are also worried that the markets could seize up quickly if this happens. That's because

NATIONAL LIABILITIES

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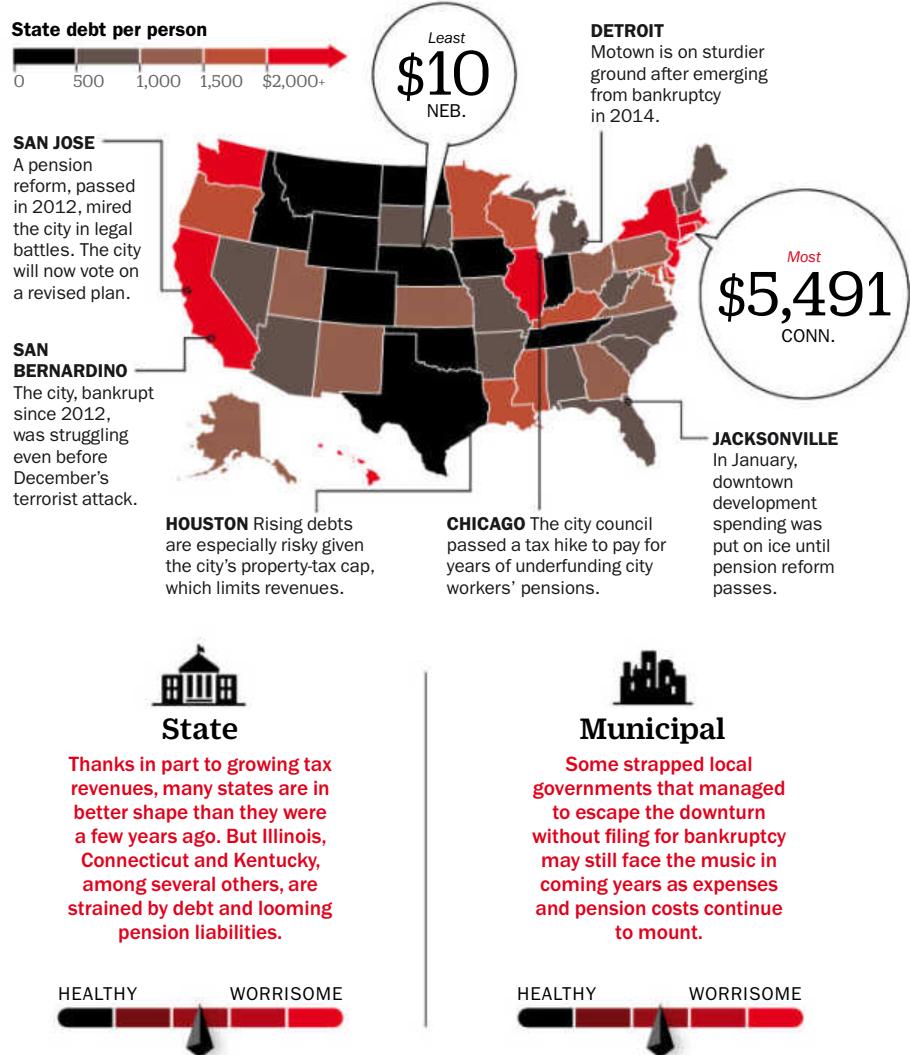
Government

U.S. debt swelled during the downturn, leaving the country more vulnerable to future crises. Separately, a growing stream of retirees are drawing from funds like Social Security, which totaled nearly 25% of federal spending last year.



investment banks, which have eschewed risky debt because of Dodd-Frank rules requiring them to hold higher-quality assets, are less likely to play the role of marketmakers of last resort these days. That means there is less liquidity in the markets in general, which makes the dominos likely to fall faster and harder when there is a disruptive event. The

must pay down past debts while facing rising retirement costs



THIS RECIPE IS PROBLEMATIC BECAUSE IT ENCOURAGES THE CYCLE OF INEQUALITY

Treasury Department's Office of Financial Stability warned of the possibility of just such a liquidity crisis in its most recent market report.

Even a much-less-dramatic crash than the subprime crisis of 2008 would be complicated by the fact that public debt levels have grown so much that central banks wouldn't be able to pump cash into

the system to fight another downdraft. In a global context, the U.S. public sector still looks pretty good on that score—it started with lower overall debt levels and has taken on much less since the crisis than countries ranging from Greece to Japan. State and city debt in particular is looking better than it did a few years back, when analysts like Meredith Whitney were predicting widespread municipal defaults. An increase in tax revenue combined with pension cuts in the wake of the crisis has put a number of regions in better shape. (Some areas are still in the red; see graphic.)

But federal debt is still rising. If you don't count entitlements like Social Security, it's now around 74% of GDP. But if current projections hold, it will reach over 100% of GDP by 2040, higher than at any point in U.S. history except the period during and after WW II. The reason? An aging population means higher health care and pension costs. (Including entitlements, U.S. debt is already at 104%.) Sooner or later, lawmakers will have to address the automatic spending that comes with the steady expansion of entitlements. "In many ways, the U.S. doesn't have a debt crisis—it has an entitlement crisis," says Susan Lund, research director for MGI.

Still, debt is debt, and levels like that will soon make it harder for the U.S. to pay the interest on its debt. That would in turn begin to undermine the standing of the U.S. in credit markets, which could, in a worst-case scenario, devalue the dollar and even wipe out wealth held in "safe" assets like Treasury bills. Such crushing debt burdens would also make it impossible for politicians to use tax and spending policies to respond to big challenges, like the 2008 financial crisis. It's already hard to imagine policymakers passing a fiscal stimulus in response to a new crisis like the last one.

And yet, even as it feels as if we've just emerged from the last recession, the next one may not be far away. We're heading into the seventh year of an expansion that started in 2009, and recessions happen every eight years on average. That's one reason that some observers, like Allianz's chief economic adviser, Mohamed

El-Erian, are predicting a 25% to 30% chance of return to recession in the U.S. by 2017. Others fear it is closer than that.

Addressing the debt issue—both the immediate problems

and the longer-term, systemic ones—is crucial to ensuring future growth. The next President needs to carve out a slow and steady path to federal-debt reduction, for example, since making big cuts all at once is a sure route to recession or even depression. Curbing the federal debt will require budgetary changes on both the spending and the borrowing sides. The conservative argument for tax cuts to bolster growth simply doesn't hold much water. Bill Clinton raised taxes in the 1990s and got great growth; George W. Bush cut them in 2001 and 2003 and got mediocre growth, and none of the Barack Obama tax cuts after the financial crisis did much to bolster it either. According to Pew Research, more than half of Americans actually think their taxes are fair.

Curbing America's existing debt is only the start. Government needs to encourage stronger and more sustainable growth by changing the underlying market system that encourages all of us—companies, consumers and countries—to take on more debt. That should start with a soup-to-nuts rethinking of the tax code to make it favor savings rather than debt.

Why does our tax code reward borrowing so much? In large part because it's a way to mitigate the pain of larger structural changes in the economy. Stagnating wages can't fuel spending, so debt-fueled consumer finance becomes a saccharine substitute for the real thing, an addiction that just gets worse as it becomes less satisfying. India's central banker Raghuram Rajan, a former University of Chicago economist and one of the most prescient seers of the 2008 financial crisis, has argued that rising credit levels have become a palliative to address the deeper anxieties of downward mobility in the middle class. As Rajan puts it, "Let them eat credit" has become our collective answer to globalization and technology-driven job displacement.

Yet the U.S.'s existing tax code rewards exactly the kind of behavior the

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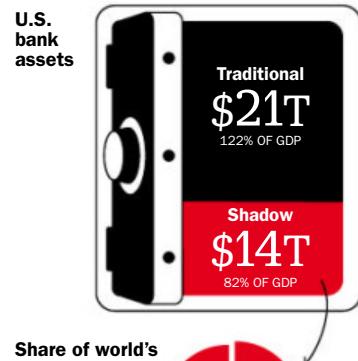
Large companies have accrued debt while consumers are still cooling off



SOURCES: MCKINSEY GLOBAL INSTITUTE; OFFICE OF MANAGEMENT AND BUDGET; CONGRESSIONAL BUDGET OFFICE; THE ROCKEFELLER INSTITUTE; MOODY'S; FACTSET; FEDERAL RESERVE; FINANCIAL STABILITY BOARD; EQUIFAX; CENSUS; NEWS REPORTS
NOTE: CORPORATE CASH AND DEBT FIGURES FROM S&P 500 COMPANIES; WAGE GROWTH BASED ON ALL NONGOVERNMENT FIRMS

economy doesn't need. The rich can get second-mortgage tax credits on their yachts, for instance, provided they stay on them more than 14 days a year. (Congress tried and failed to close this loophole in 2014.) There are tax breaks for the use of personal-travel and corporate jets for "security reasons." Tax dollars help underwrite federal flood insurance in some of

Shadow banks—credit and investment companies that are less regulated than traditional banks—have grown globally since the downturn

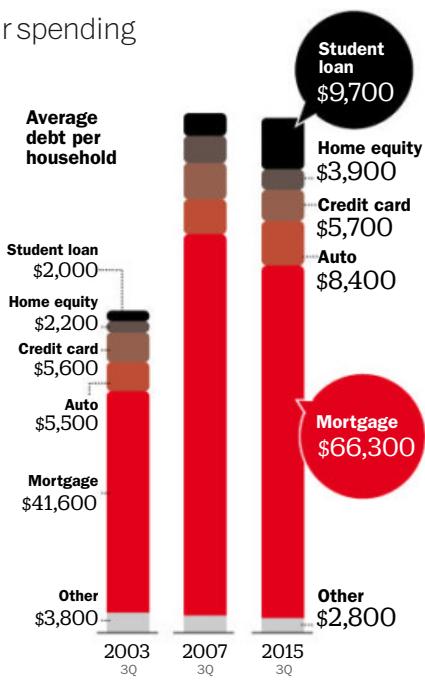


Banking
Although financial-sector debt has fallen 11% since 2007, the industry isn't necessarily safer. The U.S. has the most shadow-banking activity in the world. Shadow banks are difficult to monitor and are also vulnerable to runs.



THE U.S. TAX CODE REWARDS EXACTLY THE KIND OF BEHAVIOR THE ECONOMY DOESN'T NEED

their spending



Personal

Americans shed \$1 trillion in mortgage debt after the financial crisis and tightened their belts in most respects. However, student loans are up 130% and have higher delinquency rates than any other type of personal debt.



the richest waterfront property areas in the country, a subsidy that mostly benefits wealthy landowners.

The most appalling fact: people who make money from making money are taxed at lower rates than those who work for it. Income from labor is taxed at a much higher rate than investment income. Warren Buffett famously took on

this issue in 2011, noting that he paid a smaller share in taxes than his secretary, since he made money from things like carried interest on investments, capital gains from selling stocks and so on. The next President needs to work with Congress to fix these pieces of the tax code.

He or she should also look closely at reducing corporate tax subsidies for debt and closing loopholes that allow corporations to write off compensation awarded in stock options, which has fueled the corporate borrowing boom and encouraged much of the destructive, short-term boardroom behavior.

But housing is where the real debt—and the potential solutions for it—lie. Consider the mortgage-interest deduction, which was first put into effect in 1894, mostly as a way to help farms keep their family homesteads and make a decent living. Today it's become a boon for the middle and upper classes. Anyone who buys a house (or two) can deduct the interest payments as long as the mortgage (for one or both) doesn't add up to more than \$1 million. That's a lot of subsidy. Even if someone needed that much house, does it follow that taxpayers should help him or her afford it? One suspects that without the full home-mortgage-interest deduction, some home prices might fall to where more unsubsidized folks might be able to buy them.

This is a crucial point: subsidized debt

creates inflation in asset prices. That's great for the wealthy, who own a lot of assets, and even better for their banks. But it's a strain on the Treasury and not so good for poorer, more indebted people who can be hit very hard when bubbles burst, as they inevitably do. This system subsidizes the wealthy. Nearly 90% of the value of the mortgage-interest tax subsidy goes to households making more than \$75,000 a year. But even more, it rewards the financial industry itself. Financial institutions are big beneficiaries of jumbo and superjumbo loans on home mortgages, just as they are of corporate-bond deals. But they are also at risk of going under when those deals go bad.

Buffett once told me something quite relevant to our debt issues: "If you can

fix housing, you can fix the economy." No wonder, then, that real estate has been at the epicenter of most financial crises over the past several decades. America still doesn't have a well-functioning real estate market. Most of the real estate recovery has been enjoyed by the rich and by investors (private-equity firm Blackstone, the largest investor landlord in the country, bought up many properties during the crisis). Politicians and the financial lobby are pushing to privatize Fannie Mae and Freddie Mac. Yet these sorts of government institutions still underwrite at least 80% of American mortgages, and it's unclear how private institutions would guarantee home loans to the vast majority of people who can't put 30% cash down on a house.

Policies that encourage people to take on more housing debt not only drive asset prices up but also create more risk in the financial system, as the subprime crisis so painfully proved. Fixing that will require changing the way Americans think about housing policy and urban development. "The biggest source of wealth in the modern economy is location-specific urban land," says Adair Turner, chairman of the Institute for New Economic Thinking and a former financial regulator in the U.K. His new book, *Between Debt and the Devil*, makes a compelling case for why debt-fueled real estate consumption is at the root of many economic problems.

Turner and others, like Nobel laureates Robert Shiller and Joseph Stiglitz, have laid out a variety of policy solutions that could help shift the dynamic, including urban-planning policies that encourage more regional development, flexible mortgage contracts in which loan payments are reduced when property prices drop and community-run housing developments that allow people to move between renting and owning as their circumstances change.

None of this will be easy, as there are deep-pocketed lobby groups that will fight to maintain the status quo. But moving from an economy fueled by debt to one powered by investment is necessary to move beyond the sluggish 2% growth of our current economy. Major financial crises happen about once every 20 years. That, at least, gives the next President some time to try to set things right before the next one hits. □



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RX 350 F SPORT



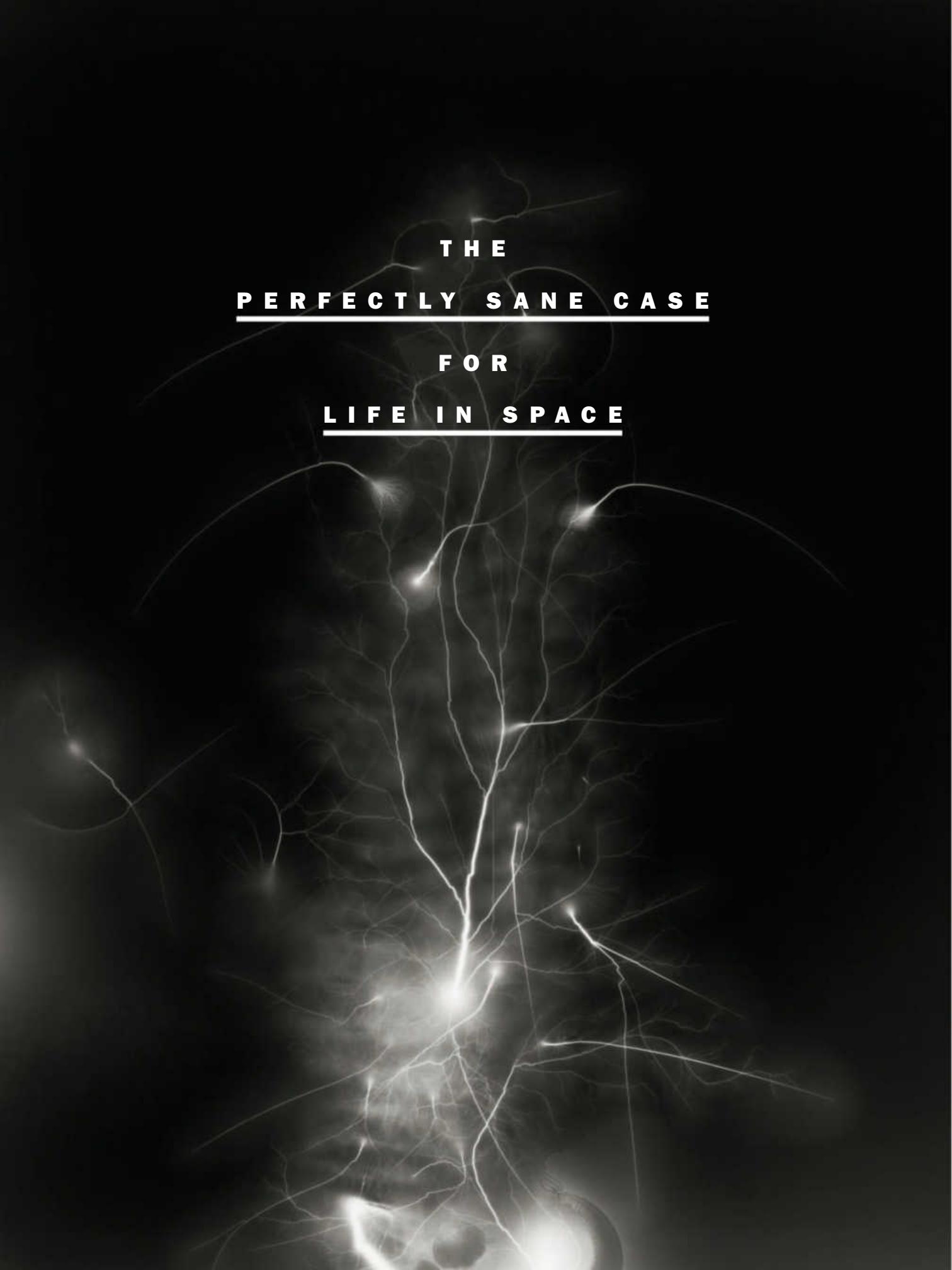
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IF YOU ASK NICELY, SCOTT SANDFORD will build you a piece of the universe. It won't be a big piece; that'd be way too much for a single astrobiologist in a single lab at the NASA Ames Research Center near Silicon Valley. And it won't be a very interesting piece—just the gas and dust of interstellar space. He'll swirl it all together in a little chamber in a big machine and chill it down to 40 Kelvins, which is -388°F , or -233°C —and no matter what you call it, is very, very cold.

"You're not allowed to put your tongue on that," he says, pointing to the chamber.

Then, he does a very important thing: he hits the gas and dust with radiation—all kinds of radiation, as long as it's the kind you'd find in space. And right then, everything changes.

"You get enormous chemical diversity," he says. "We get thousands if not tens of thousands of products. Some of these are more stable than others. And some are molecules like amino acids—stuff that life uses."

How did we—humanity, that is—get here? From the point of view of science, like it or not, the common chemical soup in Sandford's lab is all there is to it. Our growing appreciation of that is just the latest step in a long process of human humbling. Earth was the center of the universe once—until it wasn't. Our solar system, at least, was the most important place in the galaxy—but that turned out not to be so either. And the Milky Way itself is only one of at least 100 billion galaxies.

Finally though, there was life—the animation of an entire planet with things that walk and crawl and fly and swim and, in the case of human beings, think big thoughts. Surely that was the longest of long shots, something unique to the sole world with exactly the right mix of ingredients, orbiting exactly the right distance from exactly the right star. Just look around you: If life is out there, where is it?

That hasn't stopped people from looking, of course. For a long time, the search for life had been a more or less passive exercise: scan the skies for signals from another civilization, chop into space rocks that happen to fall on us, or wait—if you believe in such things—for aliens to land and settle the question once and for all. But in recent years the science has gotten much more serious and much more rigorous. The SETI (Search for Extrater-

restrial Intelligence) Institute, in Mountain View, Calif., not far from NASA Ames, is expanding its work beyond just listening for signals from space to looking for optical clues like laser flashes. Other researchers want to hunt for traces of biology such as methane or carbon dioxide in the atmosphere of alien worlds.

But the most compelling work is being done in labs like Sandford's, where researchers are trying to determine not just whether extraterrestrial life exists but what it would look like and how it would function. Animating this new push for answers is the growing belief among many scientists that the question of whether alien life exists at all is an outdated one. Life is out there, all right—simply because it has to be. Water, which is indispensable

"The universe is hardwired to be an organic chemist," says Sandford. "It's not a very clean or tidy one, but it has really big beakers and plenty of time."

IT IS NASA AMES that is conducting the world's most comprehensive search for life in space, coordinating its work with that of eight universities as well as with the SETI. The likelihood of any such researchers' actually finding evidence of life in space—specifically intelligent life in our own galaxy with which we could communicate—was first formulated by astronomer Frank Drake, in 1961, with his namesake Drake equation.

Drake's formula begins with the rate of formation of stars that could support habitable worlds, then multiplies that figure by the fraction of those stars that have planets, and further by the fraction of those planets that are suitable for life, the fraction on which life actually appears, and so on down for a few more multipliers, including the share of that life that becomes intelligent. The final tally of extraterrestrial civilizations you wind up with depends on how you fill in those X's—which depends at least partly on how optimistic you are. Drake has estimated the figure to be 10,000 worlds. The late Carl Sagan put it at 1 million.

"As long as none of the factors are zero," says Sandford, "you'd expect there to be life."

The risk of getting stuck with a zero went down in 2009, after the launch of the planet-hunting Kepler space telescope. Kepler's job was a simple one: to stare at a fixed patch of space, looking for the subtle dimming of light around a star when an orbiting planet passes in front of it. That change would be tiny—just 1 in 10,000. "If a star is 10,000 light-bulbs, the transit of an Earthlike planet is like taking one bulb away," says Natalie Batalha, a NASA astrophysicist and the Kepler mission scientist.

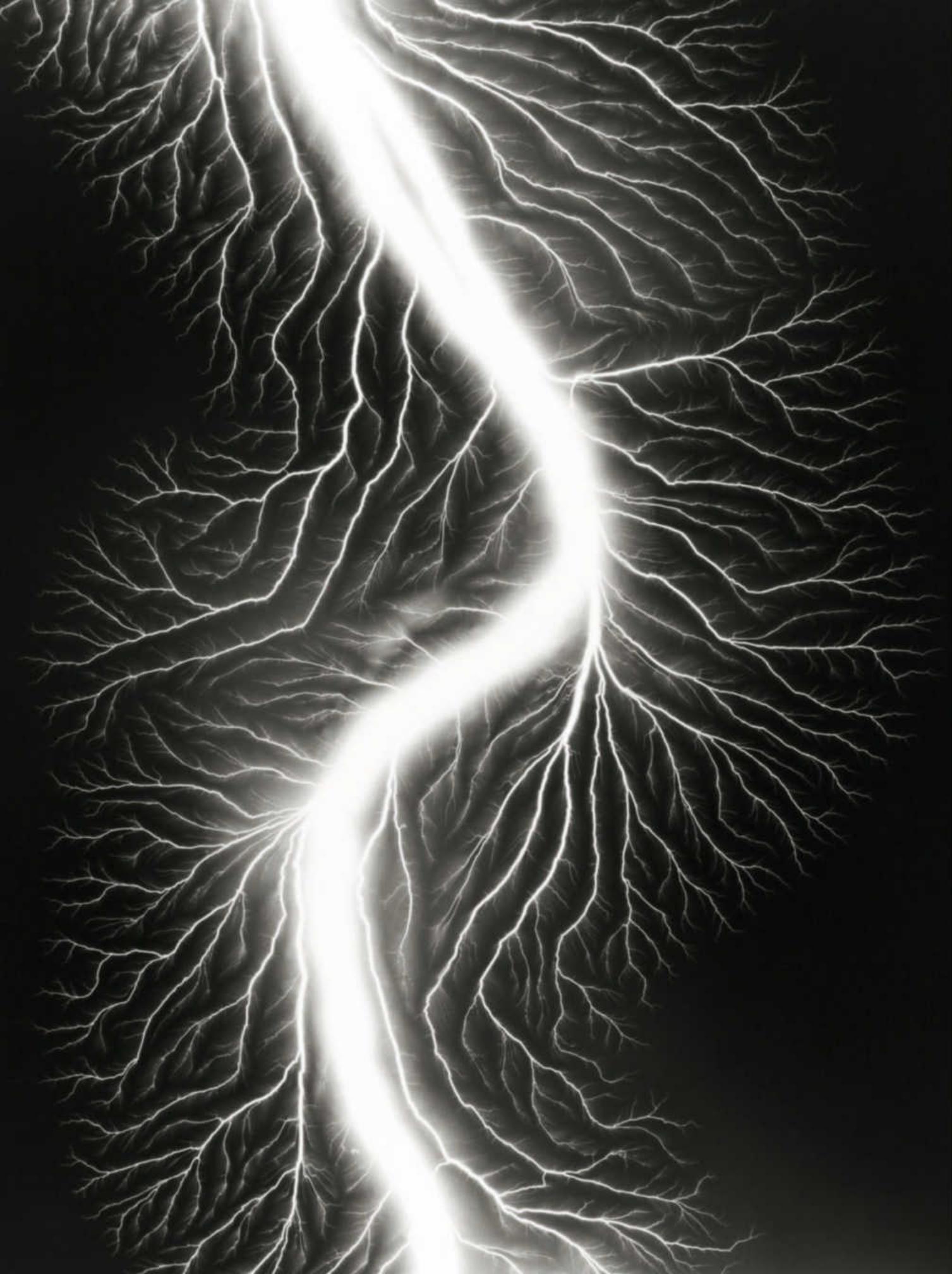
Still, in the relative handful of years Kepler has been operating, it has discovered 4,706 candidate planets, of which 1,039 have been confirmed. Making that figure even more impressive, all of these worlds have been found in a very small patch of sky, just 3,000 light-years deep—or about 3% of the depth of the Milky Way—and just 10 degrees by 10 degrees across the entire canopy of the

NEW RESEARCH SUGGESTS COSMIC BIOLOGY IS NOT JUST POSSIBLE; IT'S INEVITABLE

BY JEFFREY KLUGER/
MOFFETT FIELD, CALIFORNIA
PHOTOGRAPHS BY
HIROSHI SUGIMOTO

for biology as we know it, is one of the most common compounds in the cosmos. Amino acids routinely turn up in the meteorites that have been analyzed. And while as recently as 20 years ago we knew of no other planets in the universe apart from the handful in our own solar system, we've since spotted thousands of possible or confirmed worlds circling other stars.

As humanity moves ever closer to a trip to Mars to hunt for life—and as American astronaut Scott Kelly wraps up a year aboard the International Space Station to help prove that the human body can survive the rigors of so long a stretch in zero G—it seems more and more that so ambitious a journey is very much worth making. Life on other worlds may be not only possible, not only likely, but chemically and mathematically inevitable.



sky. “It’s like the size of my open palm held at arm’s length,” says Batalha.

That’s an embarrassment of planetary riches, but if you’re looking for life you can narrow the field some. First, your planet needs to be orbiting its parent sun in the so-called Goldilocks zone—the not too hot, not too cold place where liquid water can exist. It also should be a relatively small world, from one Earth radius up to about two Earth radii. Those are the places likely to have both a rocky surface and enough gravity to hold onto their atmosphere—assuming they got one in the first place. Once you have a world like that, just add some water, season with hydrocarbons, wait a billion years or so and hello ET. Sure, that might overstate it—but not by too much.

“Life on Earth got started very quickly,” says SETI astronomer Seth Shostak. “That’s like walking into a casino in Vegas, pulling the handle and winning the jackpot. You say, ‘Well, either I’m very, very lucky or this is not a difficult bet.’”

Shostak is decidedly on the side of its not being a difficult bet—and Sandford’s work at NASA is helping to make that case. Much of his research involves what are known as amphiphiles, hydrocarbon chains that make up our cell walls. One end of the chain is hydrophilic (it loves water); the other end is lipophilic (it hates water but loves fat). No sooner do amphiphiles start forming in a preorganic world—which is easy enough to do as atoms link up into stable molecules—than the chains solve the problem of their bipolar nature by gathering into membranes with the ends that like water on the outside and the ends that like fat on the inside.

Over time, the membranes get bigger, and if they happen to incorporate molecules that make them resistant to excessive ultraviolet radiation—which can damage cells—and to survive in a range of acidities, the hardier little membranes eventually crowd out the more fragile ones. It’s not life, but it’s a good start.

“You have to go through a phase where everything is largely driven by the chemical nature of things,” says Sandford. “[But] since the laws of physics and chemistry are the same everywhere, if you have similar starting components and similar environments, you should get similar outcomes.” □

But the next step toward life is a big one: an incipient organism must develop an information-storage system, which on Earth is RNA and DNA. That’s a chemical trick that’s many orders of magnitude more complicated than growing a membrane—but it’s an indispensable criterion for life. Says NASA planetary scientist Chris McKay: “A hurricane is a self-organizing, self-propagating system with a life cycle. It’s born, it grows, it eats, and then it dies. Why isn’t it alive?”

The answer, in this view, is that it can’t remember what it’s doing or how it’s changed and pass those improvements on. The easiest answer to how an information-storage system gets started would come through a modern-day analogue to the celebrated Miller-Urey experiment, the 1953

‘THE UNIVERSE IS HARDWIRED TO BE AN ORGANIC CHEMIST. IT’S NOT A VERY CLEAN OR TIDY ONE, BUT IT HAS REALLY BIG BEAKERS AND PLENTY OF TIME.’

Scott Sandford,
NASA astrobiologist

study in which two University of Chicago researchers re-created what they believed to be the atmospheric conditions on the early Earth and shot electricity through it—representing lightning—which produced hydrocarbons. It was the precursor of Sandford’s much more complex studies and offered a satisfyingly simple deus ex machina by which prebiotic chemistry could have taken a big jump.

A much more complex and theoretical answer could come through the head-spinning world of quantum physics, which demolishes our familiar concept of linear time and allows it to bend back in sort of a repeating loop. That, argues McKay, means life might effectively program itself, with the mature organisms that exist at the end of an evolutionary line writing the code for the rudimentary organisms that exist at the beginning, which then grow up and become the code writers themselves. “I’m not saying it’s a mature idea or thought,” he says. “I’m

saying that we are so young in our appreciation of things that it would be hard to rule out anything.”

IT’S ALSO POSSIBLE that we don’t have to limit our search to life as we know it, because there could be uncountable kinds of life as we don’t know it. The most commonly posited example of alternative biology are organisms that are not carbon-based like we are, but silicon-based. Silicon and carbon are close neighbors on the periodic table, and both bond easily with other elements. But silicon doesn’t play well with water, which acts as the critical solvent in all forms of life we understand. “In silicon chemistry, a lot of the things we use in our biology would explode or combust in water,” says Tori Hoehler, a NASA chemist and biologist.

Methane is the next best guess for a solvent, and silicon does behave better in that medium. Saturn’s moon Titan is known to have lakes of ethane and methane, which is why the Cassini orbiter dropped a probe into Titan’s atmosphere to study its chemistry when it arrived in the Saturnian system in 2004. And while liquid methane is cold—on the order of -258°F (-161°C)—nothing says other forms of life have to be happy at what we think of as room temperature. Maybe their rooms are just really, really cold.

Still, life as we know it—warm, watery and carbon-based—might remain the best model. Chemistry and evolution are both, in their own ways, lazy. They take the simplest routes to elegant solutions. Perhaps there are other ways to get the biological job done, but it’s hard to come up with a better alternative.

Ultimately, as many astrobiologists argue, the question of life in space might be as simple as a three-part formula: chemistry plus energy plus time. McKay likes to cite what’s known as the zero-one-infinity rule, which applies in a lot of scientific theories but especially in the search for life. We know that the number of planets in the universe with life is not zero. We know so far that it’s at least one. If we do find another, it makes no chemical or mathematical sense for the total potential figure not to be unlimited.

“So what we’re searching for,” says McKay, “is two.” That search is as big as the universe—but so is the promise it holds. □

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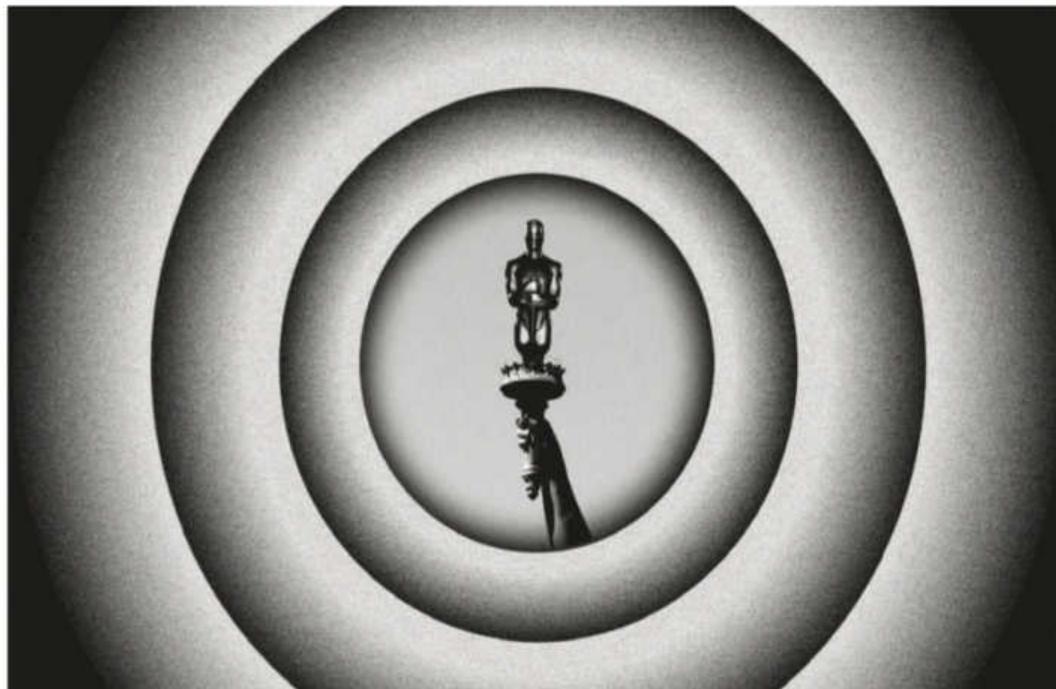
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Time Off

'LOPEZ BEST BRIDGES THE GAP BETWEEN CLASSIC VEGAS ENTERTAINMENT AND STROBE-LIT CLUBS.' —PAGE 120



In Oscar we trust: the Academy Awards are a purely American product

MOVIES

Horses, spuds and warriors: What this year's Oscars says about America

By Stephanie Zacharek

SETTING ASIDE WHICH PICTURES made the most at the worldwide box office in 2015—*Star Wars: The Force Awakens*, *Jurassic World*, *Furious 7*, in that order—how does the American movie industry want to be perceived? That's what the Academy Awards ceremony, a purely American product itself, is all about. In recent years Hollywood has reaped epic riches from fantasy-action films and comic-book movies, but this year's eight Best Picture nominees—ostensibly a short list of the best showbiz has to offer—represent something beyond money. They're about the export of a notion, a platonic salesmanship of that most American of products: the Hollywood prestige movie.

What image is the Academy peddling this year, and what does that say about us right now? It's not surprising

that if you include *The Martian* (and you should), three of this year's Best Picture nominees are westerns, that most staunchly American mode of storytelling. In *The Martian*, Matt Damon plays an astronaut—an explorer of new frontiers that just happen to be in space—stranded in a desertlike wilderness after being left for dead by his comrades. In *The Revenant*, Leonardo DiCaprio's beleaguered trapper guide is also left for dead, only here on Earth along the banks of the Missouri River in what is now South Dakota. Both Damon (alone with the stars) and DiCaprio (alone in the West) are solitary heroes right out of Dick Burnett's folk ballad "Man of Constant Sorrow"—"For in this world I'm bound to ramble/ I have no friends to help me now"—and their isolation kicks their American ingenuity into

Time Off Movies

overdrive: Damon figures out how to grow potatoes on a waterless planet. DiCaprio scoops out the innards of a dead horse to fashion a sleeping cave. You can't get much more ingenious than that.

Mad Max: Fury Road, the third western, isn't purely American—even though it's a product of Hollywood, it was made by an Australian, George Miller—but of the three, it's most in step with shifting American values when it comes to gender parity. Miller's most memorable character isn't Tom Hardy's Max but Charlize Theron's Furiosa, a warrior rebel obsessed with leading a group of enslaved women to safety. Miller doesn't have to oversell Furiosa's fearlessness—it's as much a part of her as her missing arm, a ghost limb whose presence is felt but not visible. Yet there's also something modest about Furiosa. She accomplishes twice as much as any of the male characters do, without thinking twice—she's a working-mom-style action hero. And even though watching her is pure pleasure, like John Wayne in Howard Hawks' *Rio Bravo*, she's still more a get-it-done heroine than a look-at-me one. What kind of future is Furiosa pointing toward? It took America some 220 years to be ready for a black President; is it finally ready for a woman to lead the country?

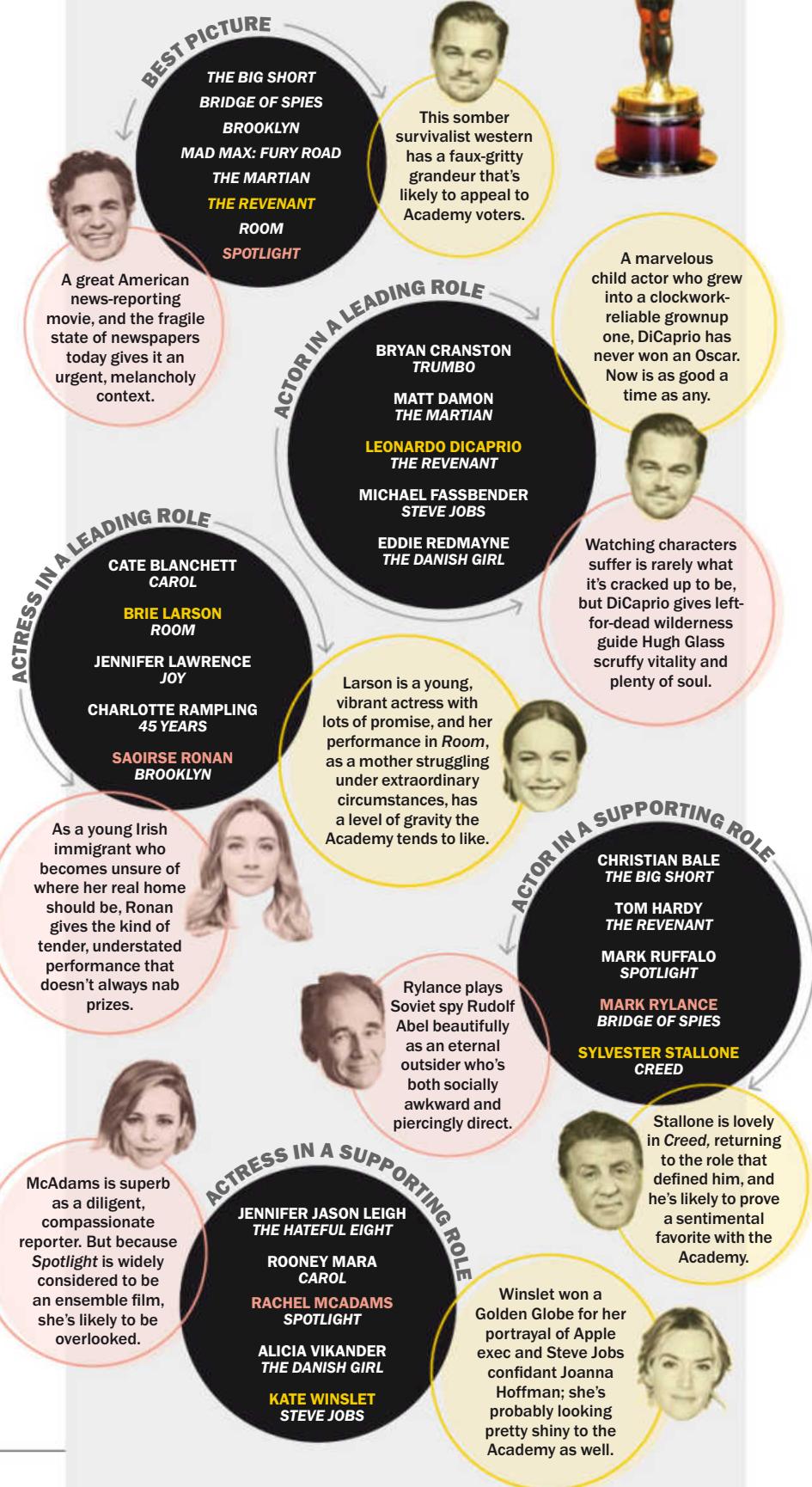
The Academy, made up of many old people, many male people and, as we've become painfully aware, many white people, has great fondness for tradition—and there's nothing wrong with that, as long as it's balanced by an openness to new things. *Bridge of Spies* and *Spotlight* represent a kind of old-fashioned Hollywood filmmaking, geared toward adults, that's becoming increasingly scarce in a movie landscape thick with pictures based on super-heroes. These movies generally don't make tons of money. Oscar season is perhaps the chief reason they exist. These are the prestige choices, the ones that show the Academy has class. (Charmingly, the movie industry still seems to carry at least the ghost of a chip on its shoulder, left over from early days when Hollywood filmmakers were considered West Coast rubes, inferior to East Coast sophisticates.) The Academy honors filmmaking tradition in other ways too:

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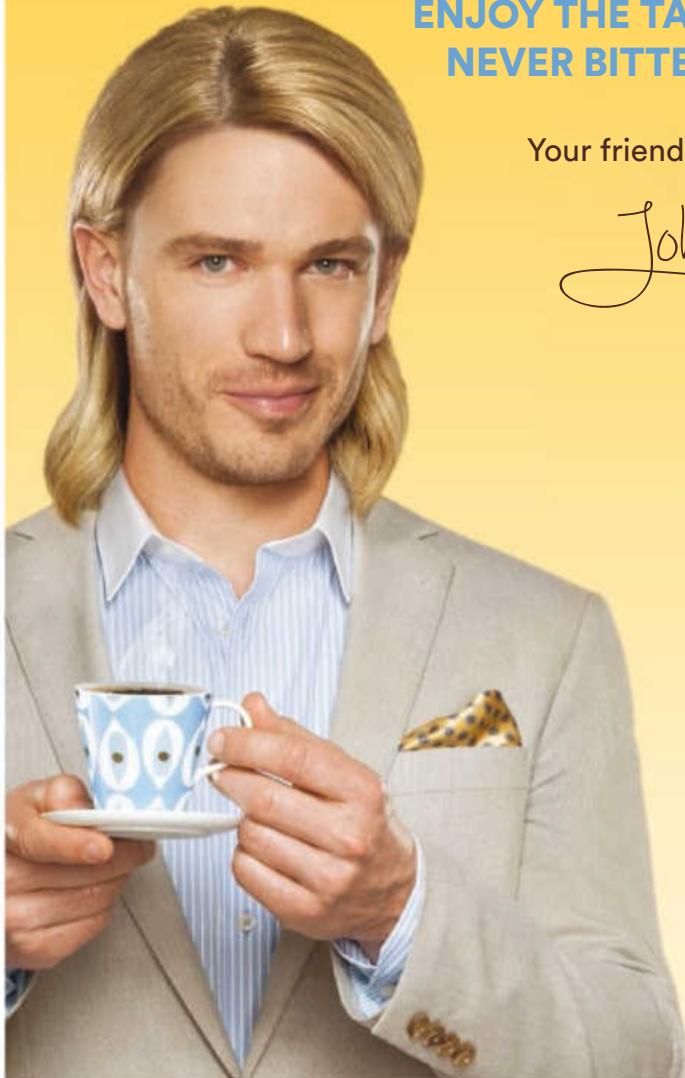
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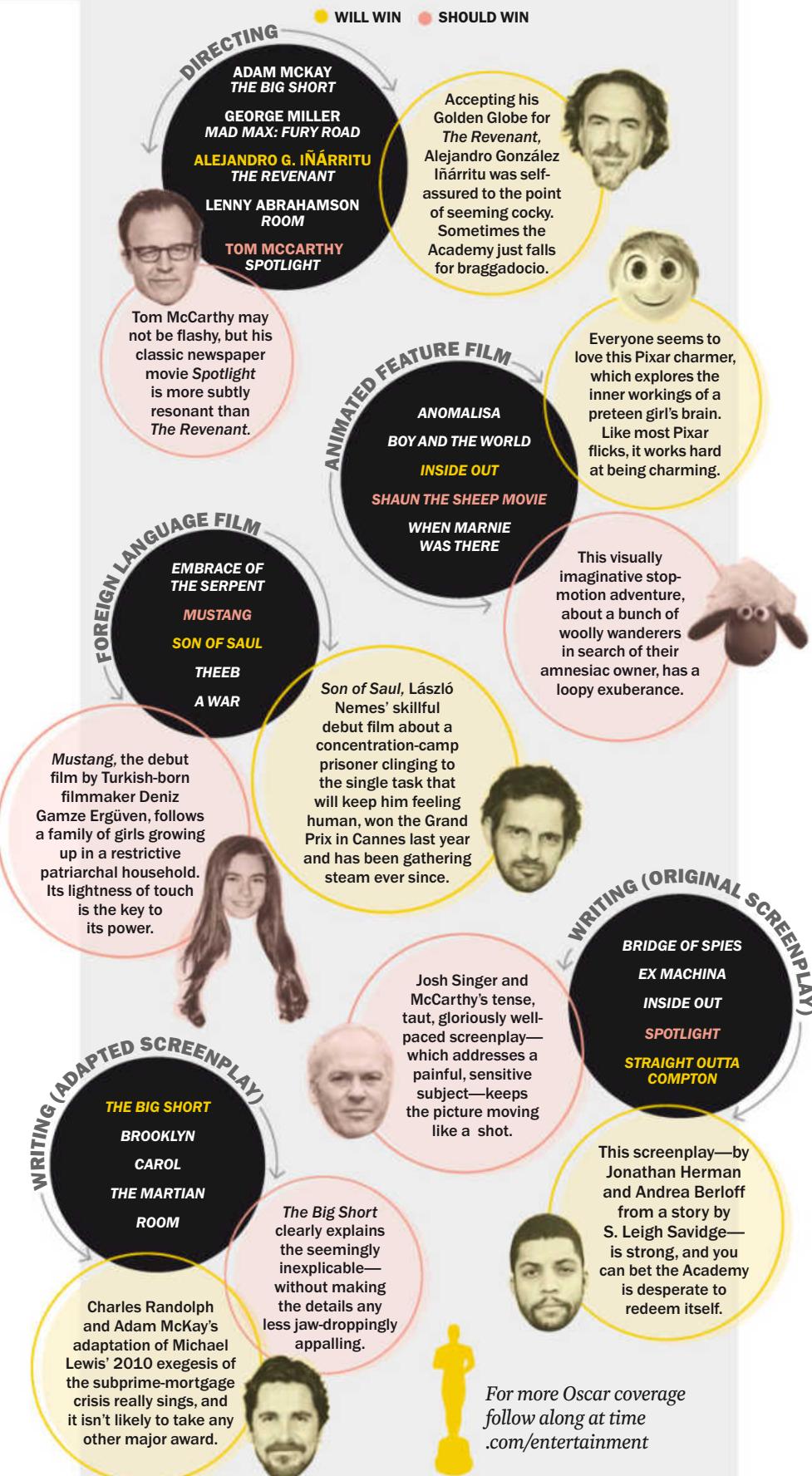
Time Off Movies

Room and *Brooklyn* are two examples of the little American indie that could, pictures made on a relative shoestring that strike a chord with audiences. And *Spotlight* and *The Big Short* riff on the great American muckraking tradition. Hollywood, so often maligned by the right for its liberalism, sometimes doesn't seem liberal enough, but once in a while we're reminded that it occasionally takes great pleasure in rattling the cages.

Which is part of the reason it has been so agonizing to watch Hollywood crawl halfheartedly in the direction of change, rather than rush toward it, when it comes to race. If the Academy were a cooler, hipper, smarter bunch—and let's not even say a more diversified one, because being white is no excuse for having bad taste—*Chi-Raq*, Spike Lee's timely, raucous reimagining of *Lysistrata*, might have been among the Best Picture nominees. But even the Academy we have now should have sparked to the of-the-minute exuberance of Ryan Coogler's *Rocky*-franchise reboot *Creed*.

Creed is beautifully made (by a smart, dynamic young African-American filmmaker) and wonderfully acted (not just by Sylvester Stallone but also by its charismatic, perceptive lead actor, Michael B. Jordan). It also dazzled audiences—the story is a classic underdog saga, revitalized for modern moviegoers. Had *Creed* been a Best Picture nominee, it would have been the one to say the most about where our country is now, in terms of how American cities look—it's set in an untouristy Philadelphia, vital but still rough around the edges—and of who actually lives in them. *Creed* also happened to be released in a year when—sadly, because it had to—#BlackLivesMatter became an even larger and more significant force.

And so the absence of a single movie from the Best Picture nomination list tells us more about the Academy's view of America than the movies that are actually on it. *Creed* is the most American—in the true civic sense, not in any partisan flag-waving sense—of all American movies made this year. Coogler built a city of brotherly love big enough for all of us. It's where we should all want to live. □



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Taylor-Joy as
Thomasin:
Could it all be
her fault?

REVIEW

Olden fears run deep in new *Witch*

THE SUBTITLE OF DIRECTOR Robert Eggers' intense, unnerving debut feature, *The Witch*, is *A New-England Folktale*, and once you've seen it, you'll think even ye olde unnecessary hyphen is scary. *The Witch* hints at lots of unsettling questions: Can female adolescence trigger supernatural whirls of energy capable of attracting evil? Is nature our friend, and can its creatures be trusted? Can we come to terms with the self-righteous wrongdoing of our collective American past? Set in 1630, *The Witch* is partly the story of a family torn apart by an ungodly curse, but its true function, like that of any folktale, is to nose around murkier, more deeply rooted anxieties.

Thomasin (Anya Taylor-Joy, a waifish blonde with the look of a faerie child fresh off the lily pad) is the eldest in a family of five that has just been banished from an established settlement—apparently the father (Ralph Ineson) has some religious notions too rigid even for the local Puritans. But shortly after he moves his tight-knit, ultra-pious brood to more

remote territory, hoping for a fresh start, the glowing, robust babe to whom mother Katherine (Kate Dickie) has recently given birth is mysteriously snatched away, under Thomasin's watch. Things get worse from there, and it's clear (to us, at least) that the source of all these scourges is someone—or something—lurking in the eerily silent gray-green forest that borders the family's property. The events that unfold lead Thomasin's family to suspect that she might be a handmaiden of Satan—and we wonder, too, if, wittingly or not, she has become a conduit for evil.

Although Eggers is discreet—the things you don't see are more horrifying than those you do—the picture's relentlessness sometimes feels like torment. But if you can survive it, *The Witch* is a triumph of tone. Some of its creepiest touches are also the most seemingly benign, like a sequence in which Thomasin's young twin siblings, mini adults in stiff clothes, cackle and sing as they taunt one of the family goats, a shaggy black beast with spiraling horns. Something about those kids just isn't right, but damned if you can put your finger on it. *The Witch* has the feel of a shared secret, a whispered revelation that you'll never be able to unhear, pouring like mist from images you'll never be able to unsee.—STEPHANIE ZACHAREK

REVIEW

The snide is high in *Deadpool*

DEADPOOL IS THE MARVEL CHARACTER for people who think they're too smart for comic books but read them anyway. Sarcastic but also prone to self-mockery, he takes pride in breaking the fourth wall: he seems to know it's ridiculous to be circumscribed by a comic-book panel, so why not bust out of it now and then?

If you're going to make a *Deadpool* movie—as first-time director Tim Miller has done—Ryan Reynolds is the guy to play him. Reynolds delivers every line with a smirk you can hear—a good thing, because Deadpool's face is obscured by a stretchy red mask, the better to hide his scarred, mottled visage. In a flashback we learn that Deadpool used to be smart-alecky mercenary Wade Wilson, who was diagnosed with incurable cancer just after becoming engaged to the love of his life, Vanessa (Morena Baccarin). Enter evil Ajax, a.k.a. Francis (Ed Skrein), who mangles Wade's face after promising to turn him into a cancer-free mutant with superpowers. Wade, having become the hypercynical Deadpool, seeks revenge for his eternal bad-face day. In between skewering thugs with his trademark twin swords and letting the wise-cracks fly, our masked misanthrope reflects, with unseen but surely misty eyes, on how much he misses his lost love. The sentimental hokum is the best thing about *Deadpool*: its abundant violence isn't particularly gratifying, and the repetitive plot mechanics don't help. *Deadpool*, intended as a spiky antidote to superhero oversaturation, ends up impaling only itself.

—S.Z.

*Reynolds as Deadpool:
If the smirk fits, wear it*



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What's a fashion designer? Says Tom Ford: 'We're dictators'

By Ariel Foxman

OPULENT SENSUALITY. IF YOU COULD trademark an aspiration, fashion designer and sometime film director Tom Ford would have dibs. The king of swagger has crafted a career out of selling us our most luxurious fashion fantasies.

Two decades ago, Ford revitalized a bloated, floundering and nearly bankrupt Gucci when he was made creative director at the age of 32. His purview expanded to include YSL in 1999, which he also revived. Ford's jaw-dropping and register-cha-chinging maneuvers—including a banned ad campaign shot by Mario Testino that featured a female model with a Gucci logo shaved into her pubic hair—won the daredevil designer accolades and fame. But in 2004 he broke free of both legacies and steadily began building his own eponymous luxury brand, which now encompasses menswear, women's wear, beauty and a periodic table's worth of perfumes and colognes.

At 54 he continues to play muse to his own master: an impeccable stud serving up a swirl of bons mots, earthy scents and debonair fashion. Ford spoke to TIME from London, where he's wrapping up edits on his second film, *Nocturnal Animals*, starring Jake Gyllenhaal and Amy Adams. He and his husband, editor Richard Buckley, split their time between the U.K. and Los Angeles, with their toddler son Jack in tow.

Though he's got no time to dilly-dally, Ford's success has afforded him the freedom to do what he wants when he wants. And that means bucking convention when something just doesn't sit right. Ford recently announced that he would no longer present his fall 2016 men's and women's collections during this month's New York Fashion Week but instead would show his fall clothes in the actual fall, within a see-now-buy-now, consumer-friendly time frame. Earlier that same day, Christopher Bailey, chief creative director and CEO

at Burberry, had announced a similar groundbreaking change. The two men sent shock waves through an industry that has been grappling with what many have decided is an antiquated model: showing clothes five months before shoppers can buy them. Now Ford aims to change the game he's been influencing for so long.

Why make the move to skip an entire Fashion Week season? I am not forgoing the season at all but will simply be communicating directly with the consumers at the time the clothes and accessories will be available to buy. As for the buyers, they will see the collection, as usual, well in advance so that they can place orders. There are still many kinks to be worked out, as this will be a complete shift in the way that we show and sell our collections. We will have to adapt and maneuver as we are transitioning to a new production calendar, so I honestly don't have all of the answers yet.

When it comes to luxury brands, how much does the anticipation of a product add to its exclusivity? Luxury and exclusivity are about the quality and service of the goods being sold. That will not change at all. The clothes and accessories will still be as beautifully made as always, and the service to the customer exceptional. In most other areas of the luxury market, instant gratification has also become part of the luxury experience. In fact, the ultimate luxury now is to not have to wait at all. It is a romantic notion to think that people want to wait for things and anticipate them, but I'm afraid that no one really wants to wait for anything anymore.

You have been a consistent disrupter of the conventional fashion-show business model—from your hyper-exclusive presentations that forbid



social media to a digitally released music video starring Lady Gaga, in which models sashayed down a Soul Train-style runway wearing your designs. Is this more about extending the boundaries of your brand or about fixing a broken system? I hate the word *disruptive* because it sounds like the idea is to be, Ooh, that will be disruptive. I own my own company. I



can do what I want. I want to be excited about what I do. If I am bored about the way I am going to show, that's ultimately going to translate. I have to think what would be fun and what makes sense now. And with Gaga I had millions of hits, in terms of brand recognition. But I am not going to do a music video every season—that would get boring. And you can't really see the clothes,

“I am hoping for a Democratic President—though a female President won’t be able to wear my clothes because they’re too expensive. And I think that that’s absolutely right,” says Ford

feel the clothes, touch the clothes as you can in a show or presentation. It was the right thing at the right time.

Is there such a thing as absolute good or bad taste? Behaviorally, there's being elegant and being human. But visually no. Taste is really just formed culturally. And if you say I am a “tastemaker,” it's that I am a tastemaker

Time Off Tastemaker

working within the framework of what is considered contemporary taste.

So, there's no one beauty ideal?

As humans we do respond to certain things on some sort of very deep level. We find symmetry of the face generally more pleasing than not. But overall we are so completely conditioned to think certain things are beautiful and certain things are not. With the latest film I am working on, I cast some people in it who I did not necessarily originally think of as beautiful. And through filming them, watching them, editing them, I now find them so beautiful and so moving. I have been wondering, Why did I think they weren't beautiful? If you can divorce yourself from what contemporary culture has told us is beautiful, you can then find it in places you would not expect.

How does your personal aesthetic play a role in defining our idea of what's hot, sexy, beautiful right now?

I have always had this amazing ability—and I'm not saying I'm an amazing designer—that is one of the reasons I am successful: you put five shoes on a table, I will pick the one that more people than not will find attractive and that will outsell all the others. Simply by saying, "I like this one best," it will sell the most.

Is that an inherent talent? How are fashion people like you able to be so influential? It's a combination of things. Part is innate. I also have the track record and the consistency and the platform. I also think it's confidence, a kind of dictatorship mentality. We're dictators. We say, "I hate that." We don't say, "I kind of don't like..." And we have the confidence to say, "That's awful" or "Yes, that's beautiful. Wear that!"

Wearing designer logos cycles in and out of high

MILESTONES

Tom Ford's most memorable moments

1995

Revitalizes Gucci; Madonna (1), wearing it head to toe, slays at the MTV Video Awards

2003

Does the same for YSL; Julianne Moore (2) wears his gown to the Academy Awards

2009

Writes and directs *A Single Man*, starring Moore and Colin Firth

2012

With husband Buckley (3) becomes a parent to a baby boy.

2013

"I don't pop molly! I rock Tom Ford," raps Jay Z (4) on an album track named for the designer

2015

Forges a traditional runway show and releases a music video starring Lady Gaga (5) and his spring 2016 collection

2016

Lips & Boys collection's Drake lipstick (6), named for the rapper, sells out in minutes at \$35 a tube

fashion, and it's safe to say shopping for a logo is less about a beautiful garment or an incredible shoe. As a designer, you've so deftly reignited logo lust over the years. What is it about logo mania that continues to intrigue consumers? The logo is only as valuable as the thing it is on. I shouldn't say things about another brand, but I love Alessandro Michele (creative director) at Gucci. That logo hasn't changed, but only in the last year, now everyone wants to wear it. And that's a compliment to him. He's terrific. And the same thing happened to me at Gucci. The logo was there, and no one wanted to wear it. I had a couple good collections, and everyone wanted to wear it.

Are logos in good or bad taste? If you are someone who takes it all very seriously and is covered in logos, I wouldn't call it good taste. In my opinion, I would call it sad and pathetic if you believed that this made you "better than," or more attractive. If you are covered in logos and it's kind of kitsch and you realize this is kind of funny and you have the right attitude, it can be great.

Is directing a film a stretch for a fashion designer? For me it's the exact same process. You have to have a vision.

You have to know, I want my collection or my film to look like this. Then you assemble a team. Then you lead them and push them and direct them into getting exactly what you want—whether it's working with a shoe factory to get the exact heel shape or with an actor editing a film.

I have to know what I want.

You received critical and commercial success for writing and directing *A Single Man* (2009).

Were you concerned about tempting fate with *Nocturnal Animals*? No, because it's so much fun. It's the most fun I've ever had in my life. Why would I deprive



myself? It's the ultimate design project! If you want to come close to playing God, write, direct, produce, edit a film. You design a world, you design everything about it and everyone in it—what they say, do, whether they live or die. It's just so exciting.

How do you find inspiration collection after collection? Sometimes you have to lock yourself in a room and think, "O.K., f-ck! What the hell am I going to do? I just did this, so that's not going to work. And I'm tired of that. What am I not tired of?" And of course there's always a thread that links it all because that's your core.

What's your thread? A certain sensuality. Lately, though, it's a lot less sexual. I'm bored with that. I don't start out saying, Wow, I'm going to make this woman as sexy as possible! It's just in my nature. If I take a dress and it's on a woman, I will pin it here, pull it there, drape it there. And she *will* end up looking, in most people's opinion, sexy.

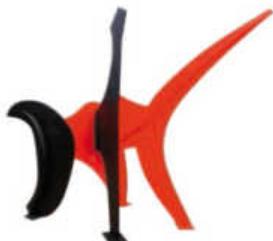
Are you your own barometer for when you've got it right? I generally know in my heart. I will try to convince myself that it is it even when some little voice inside is saying, Ooh, I don't think you got it this season. And that little voice is unfortunately—or fortunately—right.

And do you sometimes just run out of time? No, sometimes it's just that maybe you feel things don't really need to move that season. The difficult thing about fashion is that you don't get to wait years until your next inspiration strikes. An artist can have a show and go for years. People don't understand it and they will probably laugh when they read this, but fashion is one of the most grueling, brutal industries in the world because we create a constant stream of product that is perishable. And it's speeding up so fast. People consume. They're bored. They consume. They're bored. They consume. They're bored.

Is this mad intensity a factor in all the firings and resignations at so many of the major fashion houses? I think that businessmen often don't realize

QUICK PICKS

A few of the designer's favorite things



ARTISTS

Alexander Calder (above),
John Currin

ALBUM

Bryan Ferry's
Boys and Girls



DANCE SONG

Anything by the Bee Gees

PHOTOGRAPHER

Helmut Newton

DISH

Fettuccine with truffles at Harry's Bar in London

HOTEL

The Carlyle in New York City

TECH

Withings Smart Baby Monitor:
"I can watch Jack from anywhere in the world on my phone."



CLASSIC FILM

The Women (1939)



TV SHOW

Deutschland 83

MEN'S OR

WOMEN'S FASHION?

"Well, men's is personal because I wear the clothes. But women's is more fun because it's more abstract and possibly more creative."

what goes into a creative brain. People have bad seasons, bad moments. But I am a loyal person. If I placed my bet on a horse, I would let it run a bit. I started my company for personal reasons: I had something to say, clothes I wanted to see made, and I wanted control of it.

How does celebrity factor into your overall brand messaging? I would never dress someone who was popular who I did not respect—someone who I didn't think had great style or was not a great talent. I have turned down dressing people because I think, I don't care that people think she's hot. I think she's awful, and dressing her would be a statement.

Why have you resisted social media, as a celebrity designer? I am a personal person. I literally cannot go to the supermarket without someone coming up to me and wanting to take a picture or tell me that they are wearing my glasses—which is always nice—or ask me if they are wearing the right shade of lip gloss. If anything I would like to build a wall around myself, which I kind of have. The real me who's at home now that I am not an alcoholic or a drug user is very, very quiet. It's a family dinner at home, and it's watching some television with Richard. It's very domestic. And nothing can prepare you for having a child. You hear this all the time when you're not a parent and you think you understand it, but only now can I actually relate to how it changes everything in your life.

Does Jack get to pick out his own clothes or do you dress him? You have to let them. It's a big part of their development. It's very important that he feels he can make choices in his life. Let's realize, though, that when I open those drawers every morning and I say, "Take out what shirts you want to wear," that I have preselected by buying all those shirts. So he can't screw up. But he is making a choice. He happens to like wearing a red shirt. He wears one almost every day. I don't wear red, but I'm not Jack. So he gets to wear red. □

Foxman is the editorial director of InStyle

Jennifer Lopez's new show turns Las Vegas into Destination Diva

By Nolan Feeney

A FEW SONGS INTO THE OPENING NIGHT OF HER LAS VEGAS residency, titled "All I Have," Jennifer Lopez laid out the agenda. "We gon' get to some singing," she said, prompting cheers. That's usually a no-duh announcement to make at a concert, but Lopez *did* inherit the 4,600-seat AXIS theater at Planet Hollywood Resort & Casino from Britney Spears, who isn't known for her live vocals these days. "We gon' get to some dancing," she continued, to more applause. That a former *In Living Color* Fly Girl would be showing off her moves was no surprise either—though it sets Lopez apart from another Vegas star, Mariah Carey, who has never relied on intense choreography yet sometimes uses dancers to escort her around the stage like precious cargo.

Just like that, Lopez, 46, summed up the biggest draw of her show: the latest in a slew of pop stars to set up shop in Vegas, she brings a showmanship that's hard to top. A triple threat who balances her residency with a number of television commitments, Lopez effectively unites her talents to put on a spectacle as lively and extravagant as the city itself. When she announced, "There's a new girl in town!" it seemed aimed as much at her peers as the audience.

LAS VEGAS USED TO BE where past-their-prime performers finished out their careers in peace and relative obscurity. That changed in 2003, when Celine Dion launched her pioneering "A New Day..." residency, which grossed over \$400 million in its five-year run thanks to a splashy mix of live music and state-of-the-art theatrics. Other stars followed—Elton John in 2004, Cher in 2008, Shania Twain in 2012—but now Vegas has become a hot ticket for capital-P Pop Stars as well: Spears' "Piece of Me" residency began in December 2013 and will kick off a two-year extension on Feb. 13 with a revamped show and set list; Carey, whose show features all 18 of her No. 1 hits performed chronologically, arrived last spring and just extended her stay into September.

These shows share DNA with Dion's, but just as crucial was the postrecession rise of Vegas' electronic dance music (EDM) scene. DJs and their *untz-untz* beats helped attract a younger class of Vegas goer—the share of tourists over 40 dropped from 71% in 2010 to 57% in 2014—and paved the way for contemporary pop. (It was only during the EDM-themed finale of Lopez's show that her audience got to its feet without prompting.) Lopez, Carey and Spears are also mothers to young children, and Vegas—a quick private-jet flight away from Los Angeles—offers stability as well as big paychecks: Lopez was reportedly offered \$350,000 per show.

Of the bunch, Lopez best bridges the gap between classic Vegas entertainment and strobe-lit clubs. Her two-hour show, whose second leg will run from May 22 to June 12, highlights the wide appeal of the catalog she has assembled over two decades.



▲
Lopez, above center, kicked off her residency on Jan. 20; Carey, left, has extended hers through September; Spears will update her show this month



Audiences first see her as a jewel-covered Vegas showgirl singing hits like "Love Don't Cost a Thing." One costume change later, she's Jenny from the Block, jumping around a replica New York City subway car and pumping out her hip-hop tunes. A funk portion, a Latin-music tribute and the rave-inspired finale all follow, but J. Lo switches genres like she switches outfits—quickly and seamlessly. The only constant is the sparkle.

LOPEZ BOOKENDS HER SHOW with generically inspirational monologues about following dreams and then achieving them. She'll have you believing she's America's hardest-working pop star, and she might be: her Vegas residency arrived the same month as a judging stint on *American Idol* and a starring role on the new NBC police procedural *Shades of Blue*. If anything, though, "All I Have" makes the more convincing case that she's America's most resilient diva.

Her final act juxtaposes "Waiting for Tonight" and "Dance Again," two Europop-inspired hits that stormed the

charts almost 13 years apart; it's a sign that she's been around long enough to see EDM—and countless other trends—go in and out of style. Between those two songs, she had movies that bombed at the box office and others that dominated it. Her figure used to be, well, the butt of many jokes, but her legendary green Versace dress from the 2000 Grammys sits in a glass display case outside the venue, a selfie-ready reminder that before Nicki Minaj and Meghan Trainor took up the mantle for curvy women, Lopez was once the poster girl for distinctive derrieres. If the apocalypse comes, the sole survivor will be Jennifer Lopez, still shaking her hips and ready to give you more.

The only thing Lopez's show might be missing—and between the phalanx of dancers, hoverboards, holograms and more than 335,000 Swarovski crystals, there isn't a lot—is a back catalog as iconic as her competition's. During a striptease segment, she writhed around a chaise longue to "If You Had My Love," the show's opening number, as if she had already run out of songs. This shortcoming is most apparent during the ballads section, but not because she can't sing them. Lopez's cover of Lee Ann Womack's country crossover "I Hope You Dance" is competent, even moving—but not what anybody came for.

There is, however, an unexpected pleasure in watching Lopez take one of her weaker songs and flip it into something unrecognizably fiercer. During a horn-heavy rendition of "Hold It Don't Drop It," which didn't even crack *Billboard's* Hot 100, she slid down the stage on her knees with the charisma of a rock star and the outfit of a sexy gladiator.

But it was Lopez's Latin-music set that ultimately gyrated its way to becoming the most electrifying part of "All I Have." It didn't really matter that a few of the songs—including "Quimbara" (made famous by Cuban star Celia Cruz) and "¿Quién Será?" (better known as Dean Martin's "Sway")—weren't her own, or even sung in English. She sounded the best she had all evening, and watching her relax into a one-woman salsa exhibition felt as climactic as the laser-filled, pyrotechnics-fueled finale that followed. If that were all she had to give, it would have been more than plenty. □

REVIEW

Rihanna's *Anti* goes against the grain

THE GREAT IRONY OF RIHANNA'S long-awaited album *Anti*, which arrived Jan. 27 after months of delays and false starts, is this: for most of her career, Rihanna albums really weren't something people hungered for. They were hodgepodes of tracks from top hitmakers, and they arrived like clockwork: she released an unheard-of seven albums from 2005 to 2012. Prolificacy paid off—she has as many No. 1 singles to her name as Michael Jackson—but left her unfulfilled. "A lot of my songs ... don't feel like me," she told MTV last year. "I want to make songs that are timeless."

Anti doesn't have many likely radio hits, but it does have, at last, a strong point of view: these hazy, left-field tunes indulge her personal tastes while exploring how lonely life at the top can be. Making "timeless" songs here means time traveling: on the stellar "Kiss It Better," she pleads for intimacy over a guitar solo straight out of the '80s; later she channels old-school soul on "Higher," a whiskey-soaked come-hither with a stirring vocal performance. The lack of uptempo dance-pop may alienate some diehards, but by throwing out everything you think you know about a Rihanna album, she shows the rest of us why we'd want one in the first place. —N.F.



Rihanna's *Anti* is her first album in over three years



Jagger and Scorsese seek rock's holy grail in HBO drama *Vinyl*

By Daniel D'Addario

IT'S A FUNNY THING ABOUT ROCK GODS: THEY RISE AS A result of their rebellion, their willingness to push past propriety in search of musical Valhalla—and a few short decades later, what was once edgy is now establishment. Just ask the Rock and Roll Hall of Fame, or anyone who's ever made a buck selling a CBGB T-shirt.

Or ask Mick Jagger! The Rolling Stone is now, with his film-world equivalent Martin Scorsese, an executive producer and co-creator of the new HBO series *Vinyl*, which premieres Feb. 14. With *Boardwalk Empire* creator Terence Winter and award-winning nonfiction writer Rich Cohen also on board, *Vinyl* attempts to capture the anarchic spirit of rock's 1970s heyday while cohering to the expectations of TV's new golden age—that a troubled, morally ambiguous hero will pursue his or her ambitions while the story makes big rhetorical statements about society. A spin of *Vinyl*'s first five episodes reveals a beautifully made, sophisticated-enough antihero drama in the *Mad Men* or *Boardwalk Empire* mold, but one hampered by incongruities that keep it from being a true game changer.

Bobby Cannavale plays Richie Finestra, a record executive with never-ending crises that begin in the space between his two very valuable ears. He's an addict whose life has become unmanageable, a husband whose wife (Olivia Wilde) has long since grown disillusioned and a music biz whiz whose colleagues (including his morose partner Zak, played by Ray Romano in a curious triumph of a performance) don't trust or respect him. That last part drives

much of the narrative. Richie's belief that his label, American Century, could do better at finding music that inflames passions leads him to torch a business deal and set out with his A&R chief Julie (Max Casella) in search of the next big thing, rather than release more empty records that the label will end up dumping in the river in order to manipulate sales figures.

In a fiercely committed performance, two-time Emmy winner Cannavale seems ready at any moment to burn down the screen, and the direction—Scorsese helmed the pilot—and writing provide plenty of tinder. The series opens with Richie sweating and drinking behind the wheel of his car, eventually tearing off the rearview mirror so that his cocaine can be snorted from a flat surface. We're still far from his rock bottom, or the show's dramatic peak.

WITH THE BLOOD-DRENCHED fantasy world of *Game of Thrones* now headed into its sixth season, *Vinyl* is crucial for HBO. It marks a return to the ambitious, modern-day drama that made the network's name in the days of *The Sopranos* and *Six Feet Under*. As he did in his season-long arc as maniacal gangster Gyp Rosetti on *Boardwalk Empire*, Cannavale puts his back into making it work.

Richie is worse than a rogue; he's a disaster. This sort of troubled, stimulant-filled business maverick is ubiquitous on TV, but Cannavale carves Richie a new path through sheer grit—his energy level pushes past aesthetic questions of good or bad. Like Jagger singing a forgettable B-side in concert, Cannavale has the raw star power to sell anything, from junkie desperation to the joy of experiencing an electrifying rock show, in person or simply in memory. *Vinyl* relies heavily on cutaways to actors impersonating music greats such as Janis Joplin and Jerry Lee Lewis. Though these moments are more deferential than magical, Cannavale's wild eyes convince you that he's really seeing the stars perform.

Off in her own plotline, Wilde excels as a former Warhol muse who has given up dreams of stardom. But narratively she's a drag, mourning for her husband as we're rooting for him. Her story smacks the most of Scorsese's



As Richie, Cannavale (top, center) follows his bliss and wreaks havoc for (inset) Casella, Wilde and Romano

influence: like Margot Robbie in *The Wolf of Wall Street* or Lorraine Bracco in *Goodfellas*, Wilde plays a wife who's largely left out of the fun, and her isolation is the point. But on a weekly basis, it becomes frustrating to watch her relatively humdrum life when Richie is putting on a show.

Visually *Vinyl* takes care to make Richie's world as vivid and appealing as possible. Dissolution is presented as not just glamorous but expensive, from the attention paid to lighting each musical cutaway to a progression of shots as striving junior employee Jamie (Juno Temple) arrives to work at the gold-encrusted Brill Building. As the ornamentation catches the eye, it feels like Jamie's really made it—until she's degraded yet again by bosses who view her as an apparatus for fetching coffee.

This gets at the core frustration of *Vinyl*: it's so torn between reverently obsessing over the bygone days of the music biz and the imperatives of contemporary prestige TV that it tries not just to say something but to say everything. Is it a show about two thwarted women whose artistic ambitions and talents the men around them aren't able to register? Yes. Is it simultaneously nostalgic for a time even earlier than the past it depicts, when great men were able to exercise their instincts and find musical genius? That too! There's a subplot touching on a grave injustice inflicted upon a gifted black singer and also a murder plot. Even the name of Richie's label, American Century, seems pointed, though what it points toward never made it out of the writers' room.

"Can you hum it?" Richie asks his staff about the new hits he's tasked them to find. "Will you remember it tomorrow? Does it make you want to call the radio station and find out who the band they just played was?" *Vinyl* doesn't project the lyricism to which Richie aspires. It may have something to love for practically every viewer and plenty of references to '70s stars that will satisfy rock fans, but even through his drug-addled mania, Richie knows this immutable fact: no one has ever reverse-engineered a song that moved the culture. □

REVIEW

Love: funnier when the glow is gone

SITCOMS HAVE COMMITTED many serious crimes against TV romance. To keep us enthralled during long series runs, couples we love are often subjected to torment that seems like unfunny wheel spinning: Ross and Rachel took a break; Niles had two wives before Daphne; and this season, Homer and Marge went through a trial separation. That history of dragging out coupling plots makes Netflix's *Love*, co-created by Judd Apatow and premiering Feb. 19, an exciting discovery. The title is broad enough to imply sweeping ambition, but the brisk 10-episode series wants to do nothing more (and nothing less) than show the process by which two very specific people find solace in each other.

Gillian Jacobs plays Mickey, a radio program manager in Los Angeles who's committed to her idea of herself as tough and rebellious but halfhearted about her relationships and 12-step program. After a long bad night, she meets Gus (Paul Rust), a nebbishy tutor to child actors, at a convenience store. In fits and starts, they begin to

discover what they like about each other, and what they can tolerate.

Jacobs provided a much needed dose of something dark and threatening in the last season of *Girls*; she played, brilliantly, a troubled narcissist who was getting too old to write off her flaws as cute self-obsession. She's better still in *Love*, movingly depicting each moment that Mickey pauses to realize the mistake she's about to make that will steamroll Gus' heart. But Gus is no mere punching bag: Rust shows us the thwarted vanity that underlies his character's nice-guy smile.

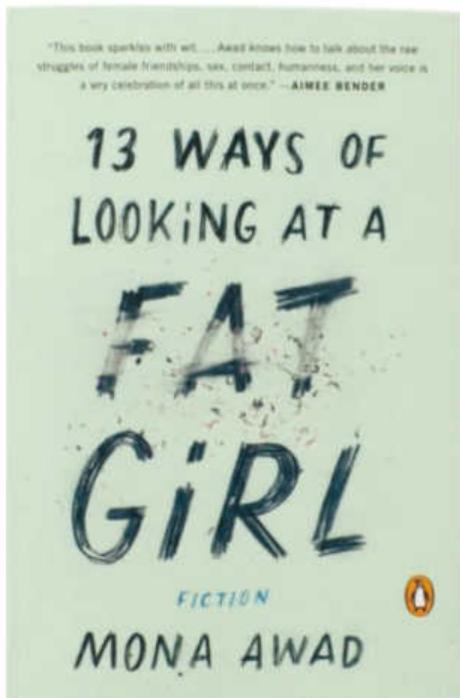
We can see that they're both nightmares. And yet they're both lovable—to each other, of course, but also to us. With sharp, observational wit, the show takes us through the familiar process of getting to know someone. After the glow of the initial meeting, you're stuck with a person who says the wrong thing at a party, has habits you don't like or is simply too human in any of 100 ways.

These aren't just contrived sitcom obstacles. They're the things of life, and of a romantic comedy that earns both words in the genre's name. —D.D.

LOVE, the full season, will be available on Netflix on Feb. 19



Jacobs and Rust capture the aches and angst of a blossoming relationship



FICTION

Body language

RECENT DISCOURSE ABOUT BODY IMAGE HAS AIMED to empower women who don't fit the mold of svelte beauty. But in her insightful debut novel, *Mona Awad* doesn't try on positivity maxims like "Big is beautiful" or "Weight is just a number." Instead, she explores how living in a body you loathe can be misery.

Awad's Lizzie is an overweight teen who loves vampires, fairy tales and David Lynch movies. Over the course of a decade, she loses half her body weight—and all her interests outside of diet and exercise, not to mention most of her friendships. The title is a nod to Wallace Stevens' poem "Thirteen Ways of Looking at a Blackbird," in which he wrote about "the beauty of inflections" and "the beauty of innuendoes." Replace *beauty* with *pain* and you have a summary of Lizzie's social interactions: when other girls aren't taking digs at her ("You're very salady," one judges while she diets), she's flinging them back ("Must make you hungry," Lizzie says to a zaftig salon worker rubbing yogurt on her arms). Fatness is a state of mind, and in Lizzie's world, the girls who live there can't stop quietly torturing their own kind.

Before all the hours of cardio, the dinners of grains, the awful relationships and the dressing-room visits that end in tears, teenage Lizzie makes a promise to herself: "Later on I'm going to be really f-cking beautiful ... I'll be hungry and angry all my life but I'll also have a hell of a time." A hell, indeed. And Awad's sensitive, unflinching depiction of it is a valuable addition to the canon of American womanhood. —SARAH BEGLEY

QUICK TALK

Grace Helbig

The comedian and YouTube star, whose channel boasts 2.8 million subscribers, just released her second book, *Grace & Style: The Art of Pretending You Have It*, an irreverent guide to beauty and fashion.

You begin the book by writing about your past experience with an eating disorder. What inspired you to open up? I felt like I would be lying to my friends—these people who have watched my videos for years—if I wasn't very honest about my struggle with body image. Once that was written, I had a much easier time making jokes about not wearing tinfoil to work.

You come to the defense of sweatpants. Why? I've had this spirit-animal relationship with sweatpants. In a past life, I probably was a pair of sweatpants. They're like the white trash of the fashion world. It's interesting that sweatpants are currently trendy: stores like Banana Republic and Gap have "jogger" pants that are basically elastic-waistband pants, but you can't fool me.

You were one of the first YouTube stars to transition to TV with your E! show last year. What was the biggest challenge? People have these patterns of consuming content on the Internet, and it is difficult to get an audience to television. Some people do it very successfully. But even with James Corden and Jimmy Fallon, some of the biggest viewership comes from clips they put online after the show.

Do you ever worry about over-sharing? In one of your YouTube videos, you describe having some, uh, bowel issues at Target. There's an immediate wave of embarrassment when someone mentions something you did online. When you make videos by yourself in your home, you lose the perspective that it's available online to everyone. Even when my parents are like, "We saw that you went to Michaels," I'm like, "How'd you see that?" "You recorded yourself doing it and put it on the Internet." "Oh. Right."

—NOLAN FEENEY

ON MY RADAR
MAKING A MURDERER

I just got so immediately sucked in. I've never yelled at my computer at strangers I don't know so much as I did while watching this.'



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Time Off PopChart



To make up for shortening store hours on Feb. 8 for a food-safety meeting, **Chipotle** offered **free-burrito coupons**.

Bernie Sanders appeared on **Saturday Night Live** opposite Larry David, who frequently plays Sanders.



Marc Jacobs named a lipstick shade after Princess Charlotte; it's "inspired by the deepest saturated pink tones of an English rose."



A Florida cop responded to a call at an animal shelter and wound up adopting a puppy.



Rapper Drake accepted a ping-pong challenge from NBA Hall of Famer Reggie Miller.



Beyoncé's Super Bowl outfit paid homage to Michael Jackson.

TIME'S WEEKLY TAKE ON

LOVE IT
LEAVE IT

WHAT POPPED IN CULTURE



CBS announced that **The Good Wife** will end after this season, its seventh.

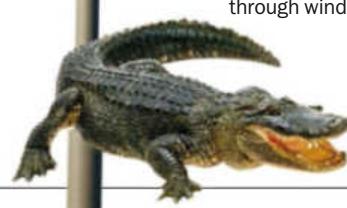


Uber's redesigned logo is "ugly" and "confusing," according to many posts on social media.

The McDonald's kale salad (with dressing and crispy chicken) has 730 calories—more than a Big Mac.



A Florida man was arrested for allegedly throwing a live alligator into a Wendy's drive-through window.



Johnny Depp admitted he loved teasing Leonardo DiCaprio during the filming of 1993's *What's Eating Gilbert Grape*:

**'I tortured him.
I really did.
I actually did.'**



Of the 41 Super Bowl ads that featured women, less than half gave them any spoken lines.

By Nolan Feeney, Samantha Grossman and Ashley Ross



THE AWESOME COLUMN

Music brings my family closer together—as long as I'm not the one choosing it

By Joel Stein

UNTIL I LIVED WITH MY WIFE, I HAD NO IDEA OTHER PEOPLE'S brains worked differently from mine. And by differently, I mean worse. Many people, for instance, don't like to read with music blaring. Or be interrupted over and over again by the world's funniest jokes. Because of their inferior brains.

So when Sonos asked us to be one of 31 families participating in a study to see if music brings people closer together, I feared I would throw off their results. However, I cared far less about science than about trying Sonos' amazing wireless speakers, each of which can play its own music that you choose from an app. They're one of the things you're required to have as a rich person now, along with a Tesla, an Apple Watch and parents who were rich.

Sonos had conducted a survey that found families that played music in their house spent more time together, ate dinner together more often, had twice as much sex and—because, I'm assuming, the polling company made Sonos come up with one more question—had more dance parties. The most surprising finding was that 7% of people who do not play music at home have dance parties there anyway, which is either a testament to the human spirit or a warning to stay away from 7% of people.

ONE COULD ARGUE that the kind of people who play music are also the kind of people who dance, eat together and have sex. In other words: South Americans. So Sonos decided to conduct an experiment. For one week, we were not allowed to play music out loud in the house; the following week, we'd set up the speakers and dance-party all night. Our behavior was tracked through an app Sonos built, our biometrics were measured on Apple Watches, our movements by iBeacons on our ceilings and our feelings through therapy sessions with Daniel Levitin, a neuroscientist who wrote the best-selling book *This Is Your Brain on Music*, contributed jokes to Jay Leno, engineered Grateful Dead albums, jammed on saxophone with Sting, played himself on *The Big Bang Theory* and worked with me at the Stanford newspaper. Most of our session involved me wondering why I hadn't accomplished more since college.

My lovely wife Cassandra told Levitin that she was excited for the silent week, since I played music too loud and all of it was uncool. Levitin asked her if I'd always had crappy taste in music or if I tricked her during our courtship. This was the kind of bit I thought he should save for Leno. But Cassandra said, "When you're young and fall in love you overlook those things. After time it starts to wear on you." I had the feeling we were no longer talking about music.

When we talked to Levitin at the end of the week with music, however, she was very pleased, since she could change my music right on her phone. When he asked if we had more sex, she reported that we hadn't, but then had sex with me that night. Far more powerful than music is having your love life questioned



by a guy who has been on *The Big Bang Theory*.

Sonos' study showed that during the week when the music was on, families spent 13% more time together and were 12% closer when they were in the same room. The fourth most popular song people played was "Sex Dwarf" by Soft Cell. This made Cassandra's and my accomplishment seem pretty lame.

Even worse, our family somehow spent 51% less time together when we played music. When I delved into the data, the reason became clear: Cassandra and my son stopped wearing their Apple Watches and carrying their iPhones despite my pleas. When I asked Levitin how I could use music to get my family in line, perhaps the way the U.S. military did on Manuel Noriega, he said, "It's a healthy thing that even Laszlo at 6 is scoping out his own identity, as is your wife. Just because it's good for your career doesn't mean it's good for theirs." This would make sense if either one of them had a career.

STILL, THE DATA we did gather showed that when we were wearing our watches, we were 5% closer during the music week. Based on other research he's done, Levitin thinks this is due to the fact that sad music releases prolactin, which is a bonding hormone, and all music releases oxytocin, which is a hormone released during orgasm. "It effectively tricks the man into sticking around because he feels bonded to a woman," Levitin said. I told him not to tell his wife that or all the "Sex Dwarf" in the world wouldn't help him.

This is the worst-paying column I've ever written, since I'm buying all eight speakers Sonos lent me. Because I'm pretty sure we now spend more time eating, doing dishes, dancing and not talking about how my taste in music sucks. I'm going to need all those ways to be happier now that I realize I have no ability to get them to listen to me. □

Meet The Trailblazers

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How WOMEN Are
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America Works

JAY NEWTON-SMALL
WASHINGTON CORRESPONDENT.
TIME MAGAZINE



“Jay Newton-Small breaks a great story.
It's how women members of Congress have restored the lost politics of compromise. Where men waste time proving who's toughest, women give enduring priority to getting things done.”

—CHRIS MATTHEWS,
Host of *Hardball* on MSNBC



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If You Bought or Leased a New Motor Vehicle, or Bought Certain Replacement Parts for a Motor Vehicle Since 1998

You Could Get Money From Settlements Totaling Approximately \$225 Million

Eleven defendant groups and their affiliates (“Settling Defendants”) have agreed to Settlements resolving claims that they fixed the price of certain motor vehicle components. This may have caused individuals and businesses to pay more for new motor vehicles and certain replacement parts. The Settling Defendants deny any claims of wrongdoing.

Am I included?

You may be included if, from 1998 to 2015, you: (1) bought or leased a new motor vehicle in the U.S. (not for resale), or (2) indirectly paid for a motor vehicle replacement part (not for resale). Indirectly means you bought the replacement part from someone other than the manufacturer of the part. New motor vehicles include, but are not limited to, automobiles, cars, light trucks, pickup trucks, crossovers, vans, mini-vans, and sport utility vehicles. Visit the website, www.AutoPartsClass.com, or call 1-877-940-5043 for a full list of Settling Defendants and applicable time periods.

What do the Settlements provide?

The Settlements provide money for consumers in 30 states and the District of Columbia as well as non-monetary relief, including cooperation, and they also include agreements by certain Settling Defendants not to engage in certain conduct for a period of 24 months.

The 30 states are: Arizona, Arkansas, California, Florida, Hawaii, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Carolina, North Dakota, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Vermont, West Virginia, and Wisconsin.

How can I get a payment?

No money will be distributed yet. Class Counsel will pursue the lawsuits against the Non-Settling Defendants. All funds received in this case will be distributed at the conclusion of the lawsuits or as ordered by the Court. You will need to file a valid claim to receive a payment. Notice about the claims process will be provided at a later date.

If you want to receive notice about the claims process or future settlements, you should register at www.AutoPartsClass.com.

What are my rights?

Even if you do nothing, you will be bound by the Court's decisions concerning these Settlements. If you want to keep your right to sue the Settling Defendants regarding a particular motor vehicle component part, you must exclude yourself from that Settlement Class by **April 11, 2016**. If you stay in a Settlement Class, you may object to one or more of the Settlements by **April 11, 2016**.

The Court will hold a hearing on **May 11, 2016** to consider whether to approve the Settlements and approve Class Counsel's request that up to \$11.25 million be set aside for future litigation costs and expenses. Class Counsel will also request at the hearing, or at a later date, attorneys' fees of up to one-third of the Settlement funds, plus reimbursement of costs and expenses. You or your own lawyer may appear and speak at the hearing at your own expense.

If the cases are not dismissed or settled, Class Counsel will have to prove their claims against the Non-Settling Defendants at trial. Date for the trials have not been set yet.

For More Information or to Register:

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Eddie S. Glaude Jr. The chair of Princeton's African-American studies department is urging black voters to write in 'None of the above.' He explains why

In your new book, *Democracy in Black*, you talk about the "value gap," the belief that white people are more valuable, which leads to "racial habits." Is that racism? Our typical way of thinking about racism is as intentional prejudice. Racial habits are much more diffuse. I'm not a climate-change denier, for example. But you wouldn't know that by the look of my house or my car or the way in which I use lights. I'm making choices that reproduce the effects of global warming. All of us have habits that give life to the value gap.

How is what you call the "great black depression" different from the recession? There is all of this talk about economic recovery, but when we look at the vital statistical data around black America, we see nothing but devastation and ruin. For the first time, there are more poor African-American children than white children. What's startling about that is that there are three times as many white children in America as black children.

Why do you call President Obama a "snake-oil salesman"? He stands in the tradition of Bill Clinton and Jimmy Carter, Democratic confidence men who said that they were going to change the realities of race in this country. In fact, in terms of the material conditions of large numbers of black folk, matters have gotten worse.

So why are African Americans lining up behind Hillary Clinton? It has something to do with familiarity, brand and that the black political class is doing its work. But if you look at the particulars, you will get a much more complicated picture.

This election you want people to write in "None of the above" for President. How can that be a good plan? You have a black political class who make a living delivering blacks for the Democratic Party, which then has no obligation to deliver in terms

of policy. I want us to think about how we can create a civic-power outrage. Because whatever this is, it's not democracy.

Your son Langston, a student at Brown, was questioned while in a public park by police. What had you said to him about situations like that? I remember when a neighbor of ours, who was not black, got in trouble and the police brought him home. I walked my son outside, pointed down the street and said, "They wouldn't have brought you home. You'd be in jail."

Could you see protests like those at Missouri happening at Princeton? You have to read these moments on campuses as extensions of what's happening in America. Students are taking possession of the university. They're not just passing through and told to endure. It's amazingly powerful.

'In terms of the material conditions of black folk, matters have gotten worse.'

How do you reconcile what Bill Cosby has done for historically black colleges with the heinous things he's been accused of? I'm a Morehouse man, and he's been generous to Morehouse. If he did them, he's a monster. Period. This is not an excuse for Cosby, but we have to ask ourselves what in this country cultivates such monstrous behavior. To paraphrase Jimmy Baldwin, we have to deal with the sons of bitches we are and the miracles we can be.

Are there no grounds for celebrating improvement in race relations?

As long as we view equality as a kind of charitable enterprise, something white folks give to other folks, we're always going to be behind the eight ball. The goal is for every human being to be afforded dignity and standing. And white people aren't the measure for that.

—BELINDA LUSCOMBE



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