

The Atlantic

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BY MOLLY BALL

Can Woolly Mammoths Save the World?

BY ROSS ANDERSEN



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WHY IS SILICON VALLEY SO AWFUL TO WOMEN?

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BY LIZA MUNDY

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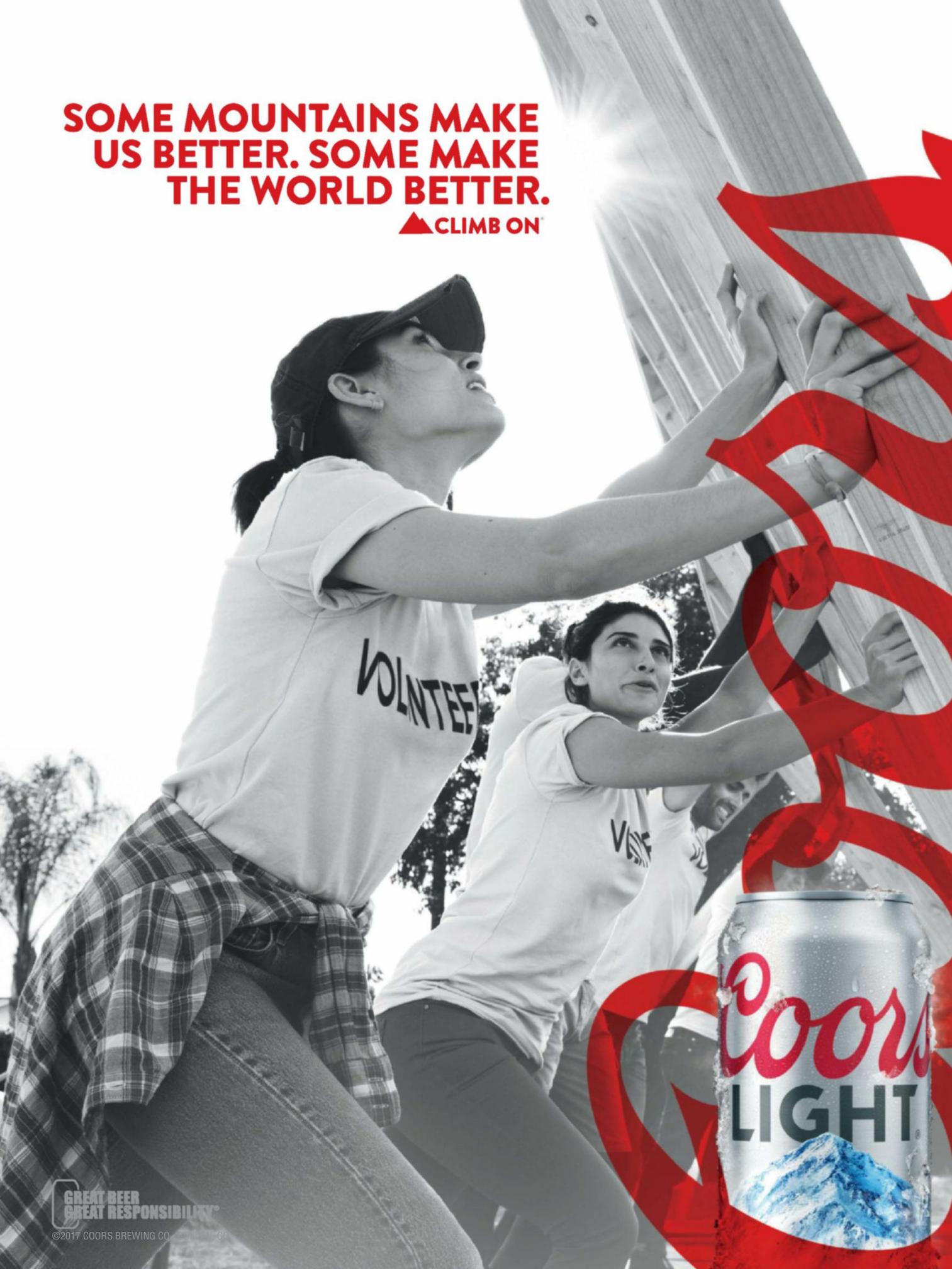


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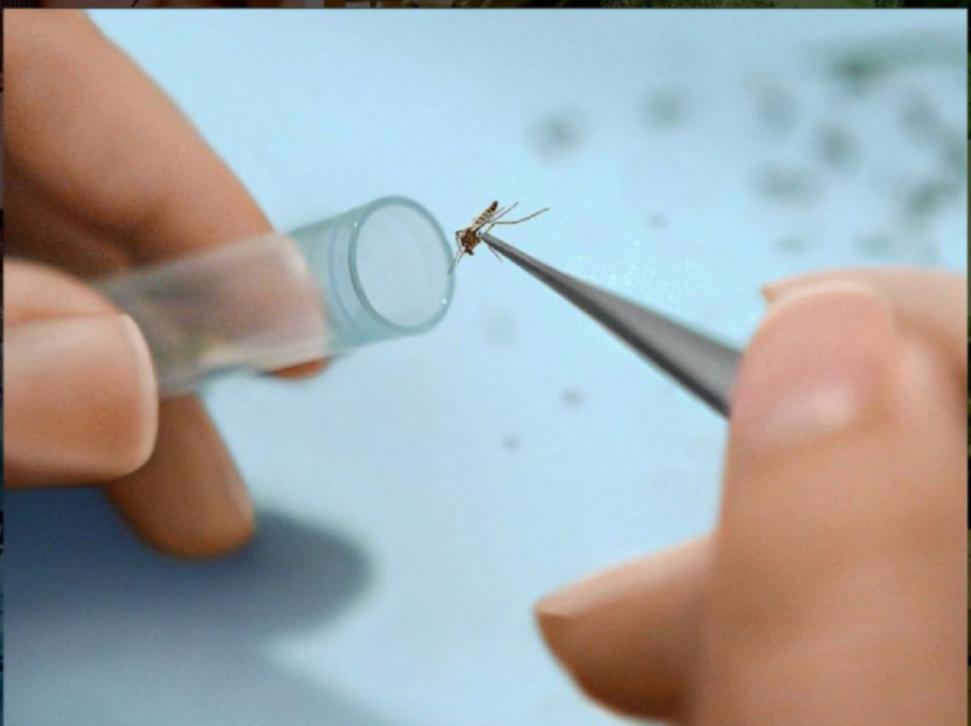
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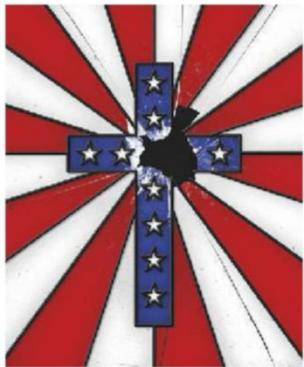
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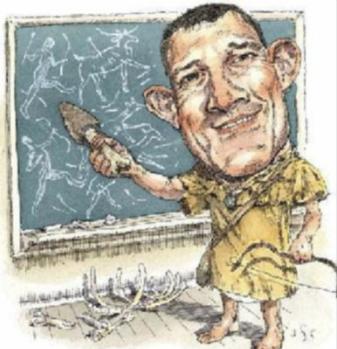
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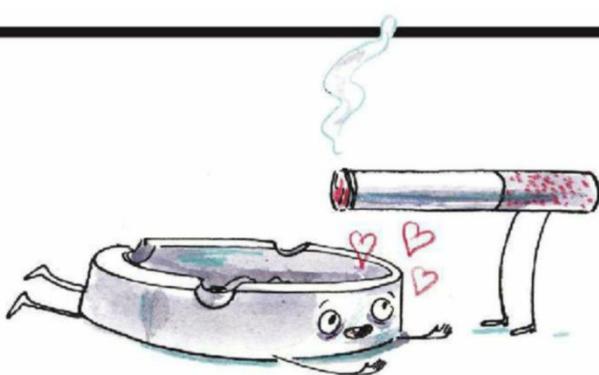


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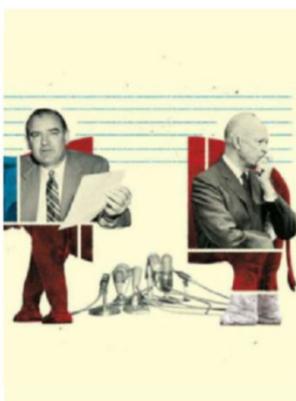
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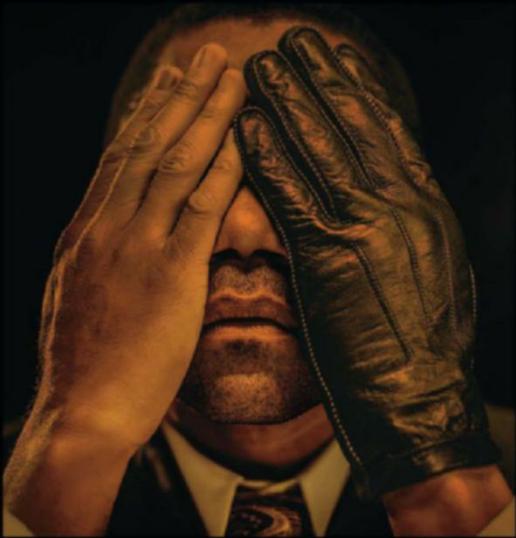
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THE CONVERSATION

RESPONSES & REVERBERATIONS

In Defense of Facts

In the January/February issue, William Deresiewicz reviewed John D'Agata's trilogy of essay anthologies, criticizing the author's very definitions of *essay* and *nonfiction*, as well as his infidelity to the truth.



William Deresiewicz raises a deeper issue that cries out for the same careful investigation and analysis. It has to do with the popularity of John D'Agata and his books and his position of power in a prestigious institution of learning. To wit: Are we as a species so fragile and anxious that we are sucked into the aura of beliefs of any "self-important ignoramus" who sidelines our arguments and fears about ambiguous facts? Is that part of the reason we are almost continuously at war—do we need wars and demagogues to distract us from the anxieties of simply being human? If this is the case, it helps explain the popularity of all who deny the facts for us: If the facts are not facts, then we can more easily deny the realities of life that make us so anxious. The demagogues, in essence, give us permission to deny our own uncomfortable facts and obligations and to live in a world of fantasy.

Ted L. Cox
BROOKLYN, N.Y.

Problem Gambling

John Rosengren examined how gamblers can become addicted to slot machines and other casino games, which can ruin—or even, in the case of Scott Stevens, end—their lives ("Losing It All," December).

I was enlightened and dismayed by John Rosengren's exposé of the gambling indus-

try. The West Virginia Supreme Court of Appeals reasoned that since Scott Stevens had the option of placing himself on an exclusion list, the Mountaineer Casino could not be sued for enticing him with "complimentary food and lodging, and by tendering lines of credit on terms that would not otherwise be bargained for." We are left to conclude that it's clearly okay to encourage a suicidal person to take daily walks across the George Washington Bridge, so long as he or she has the option of checking into a mental-health facility. And certainly for a bartender to pass by an alcoholic's home on the way to the bar and say to the alcoholic, "Come with me, the first three drinks are on the house"—so long as Alcoholics Anonymous exists.

Robert Moss
BLOOMFIELD, N.J.

The stories of those struggling with gambling addiction are devastating, which is why the gaming industry takes extraordinary measures to ensure customers enjoy the entertainment experience that casinos provide in a responsible manner and to connect those who need help with treatment.

Our association represents nearly 90 percent of the gaming industry. Our members must abide by a robust code of conduct that outlines measures every casino must take to prevent and address problem gaming, including extensive employee

training. Additionally, the industry makes significant investments in peer-reviewed research focused on effective treatment and prevention methods through the National Center for Responsible Gaming.

Even as dozens of new casinos have opened, the rate of problem gambling—in the low single digits—has not increased, according to a SUNY Buffalo study. And research shows that most people set a budget of less than \$200 when they visit a casino.

Without a legal, regulated gaming industry that provides millions of dollars to treatment programs, those struggling with addiction would have few options for receiving help. Indeed, a thriving illegal gambling market offers no protections for consumers and forces law enforcement at every level to dedicate scarce resources to combatting it.

Gaming has become a valued community partner in 40 states, generating \$240 billion in economic activity, supporting 1.7 million jobs, and providing \$38 billion in tax revenues for vital public services. We understand that some people will never examine the facts and overcome opposition to gaming, but nearly nine in 10 American voters view casino gaming as an acceptable form of entertainment. We look forward to building on our many contributions to the country in the years to come and advocating for safe, responsible gaming.

Geoff Freeman
PRESIDENT AND CEO, AMERICAN GAMING ASSOCIATION
WASHINGTON, D.C.

John Rosengren replies:

Geoff Freeman claims that "the gaming industry takes extraordinary measures to ... connect those who need help with treatment."

That's not what I found in my reporting. At the Mountaineer Casino, which Scott Stevens frequented, I asked a host who had worked there for seven years what he did if he spotted someone with a gambling problem. "We have a hotline," he said. "It's up to them to call. Or they can put themselves on a list." I asked him whether he'd ever suggested that someone in obvious trouble call the hotline or put himself on the list. "That's not our

THE BIG QUESTION

On TheAtlantic.com, readers answered March's Big Question and voted on one another's responses. Here are the top vote-getters.

Q: What was the most influential film in history?

5. Leni Riefenstahl's 1935 film *Triumph of the Will*.

This propaganda masterpiece glorified Hitler and Nazi Germany's brand of extreme nationalism, and helped propel Germany toward the most destructive war in history.

— Richard Uncles

4. *Citizen Kane*, because it reminds us that money and power

do not bring happiness.
— Katherine Albers

3. D. W. Griffith's *The Birth of a Nation* was at once evil and technically brilliant: storytelling on an epic scale. It helped revive the Ku Klux Klan, established the feature film as a serious art form, and was a box-office blockbuster of the silent era.

— Craig Curtis

2. *Star Wars: Episode IV—A New Hope*, for making way for thrilling storytelling and profitable franchises.

— Michael Driver

1. *The Godfather*. Francis Ford Coppola's Corleone family represents the American dream, with all of its pros and cons.

— David Baker

issue," he said. "That's not our concern. It's not our business."

I'll leave it to readers to decide whose words say more.

The Gospel of History

In December's "The Lessons of Henry Kissinger," Jeffrey Goldberg interviewed the former secretary of state.

The endorsement of Kissinger by Gerald Ford, Ronald Reagan, and, eventually, by [Hillary] Clinton has normalized him, making his views a central part of American statecraft by casting him as a fount of establishment gospel—a gospel that preaches the value of American humanity and accepts as necessity the casual destruction of other people and places. Normalization of this sort, also perpetuated by figures in the media, policy experts, and academics, is dangerous. It transforms the deplorable into the acceptable. Donald Trump is now

trying to make such a shift; there is no guarantee that he will fail.

Viet Thanh Nguyen

EXCERPT FROM A THEATLANTIC.COM ARTICLE

Kissinger states that the U.S. "military commitment to Vietnam started with Kennedy." In point of fact, the military commitment began when the Dulles brothers, John Foster and Allen, were secretary of state and head of the CIA, respectively, during the Eisenhower administration. After turning their backs on Ho Chi Minh, who had sought U.S. support in his fight for independence from the French, they organized covert military support for anti-Minh forces—including air support, weapons, and personnel on the ground.

Ralph E. Cooper, Ph.D.
WACO, TEXAS

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April 2017

"Extroverts were happier when forced to spend money at the bar, while introverts were happier spending at the bookstore."
— Isabella Kwai,
p. 24

• POLITICS

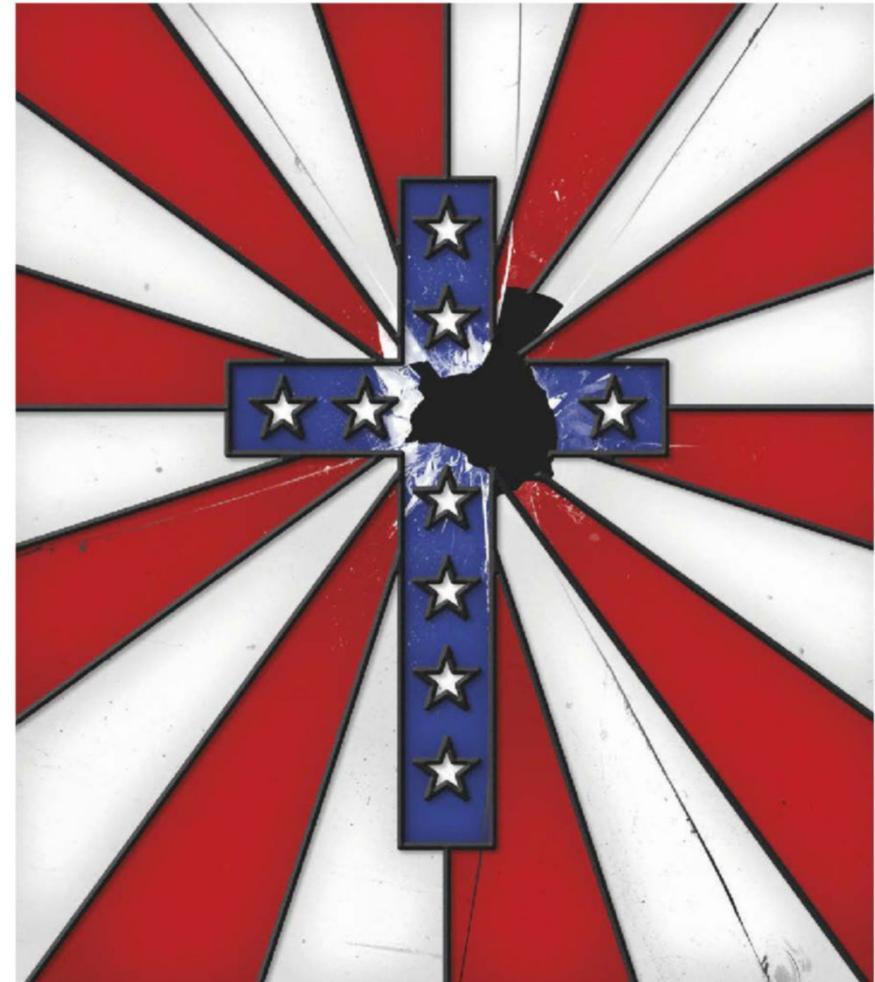
Breaking Faith

As American churchgoing has declined, politics has grown more vicious and convulsive than ever.

BY PETER BEINART

OVER THE PAST DECADE, pollsters charted something remarkable: Americans—long known for their piety—were fleeing organized religion in increasing numbers. The vast majority still believed in God. But the share that rejected any religious affiliation was growing fast, rising from 6 percent in 1992 to 22 percent in 2014. Among Millennials, the figure was 35 percent.

Some observers predicted that this new secularism would ease cultural conflict, as the country settled into a near-consensus on issues such as gay marriage. After Barack Obama took office, a Center for American Progress report declared that “demographic change,” led by secular, tolerant young people, was “undermining the culture wars.” In 2015, the conservative writer David Brooks, noting Americans’ growing detachment from religious



institutions, urged social conservatives to “put aside a culture war that has alienated large parts of three generations.”

That was naive. Secularism is indeed correlated with greater tolerance of gay marriage and pot legalization. But it’s also making America’s partisan clashes more brutal. And it has contributed to the rise of both Donald Trump and the so-called alt-right movement, whose members see themselves as proponents of white nationalism. As Americans have left organized religion, they haven’t stopped viewing politics as a struggle between “us” and “them.” Many have

come to define *us* and *them* in even more primal and irreconcilable ways.

When pundits describe the Americans who sleep in on Sundays, they often conjure left-leaning hipsters. But religious attendance is down among Republicans, too. According to data assembled for me by the Public Religion Research Institute (PRRI), the percentage of white Republicans with no religious affiliation has nearly tripled since 1990. This shift helped Trump win the GOP nomination. During the campaign, commentators had a hard time reconciling Trump’s apparent ignorance of Christianity

and his history of pro-choice and pro-gay-rights statements with his support from evangelicals. But as Notre Dame's Geoffrey Layman noted, "Trump does best among evangelicals with one key trait: They don't really go to church." A Pew Research Center poll last March found that Trump trailed Ted Cruz by 15 points among Republicans who attended religious services every week. But he led Cruz by a whopping 27 points among those who did not.

Why did these religiously unaffiliated Republicans embrace Trump's bleak view of America more readily than their church-going peers? Has the absence of church made their lives worse? Or are people with troubled lives more likely to stop attending services in the first place? Establishing causation is difficult, but we know that culturally conservative white Americans who are disengaged from church experience less economic success and more family breakdown than those who remain connected, and they grow more pessimistic and resentful. Since the early 1970s, according to W. Bradford Wilcox, a sociologist at the University of Virginia, rates of religious attendance have fallen more than twice as much among whites without a college degree as among those who graduated college. And even within the white working class, those who don't regularly attend church are more likely to suffer from divorce, addiction, and financial distress. As Wilcox explains, "Many conservative, Protestant white men who are only nominally attached to a church struggle in today's world. They have traditional aspirations but often have difficulty holding down a job, getting and staying married, and otherwise forging real and abiding ties in their community. The culture and economy have shifted in ways that have marooned them with traditional aspirations unrealized in their real-world lives."

The worse Americans fare in their own lives, the darker their view of the country. According to PRRI, white

Republicans who seldom or never attend religious services are 19 points less likely than white Republicans who attend at least once a week to say that the American dream "still holds true."

But non-churchgoing conservatives didn't flock to Trump only because he articulated their despair. He also articulated their resentments. For decades, liberals have called the Christian right intolerant. When conservatives disengage from organized religion, however, they don't become more tolerant. They become intolerant in different

ways. Research shows that evangelicals who don't regularly attend church are less hostile to gay people than those who do. But they're more hostile to African Americans, Latinos, and Muslims. In 2008, the University of Iowa's Benjamin Knoll noted that among Catholics, mainline Protestants, and born-again Prot-

estants, the less you attended church, the more anti-immigration you were. (This may be true in Europe as well. A recent thesis at Sweden's Uppsala University, by an undergraduate named Ludvig Bromé, compared supporters of the far-right Swedish Democrats with people who voted for mainstream candidates. The former were less likely to attend church, or belong to any other community organization.)

How might religious nonattendance lead to intolerance? Although American churches are heavily segregated, it's possible that the modest level of integration they provide promotes cross-racial bonds. In their book, *Religion and Politics in the United States*, Kenneth D. Wald and Allison Calhoun-Brown reference a different theory: that the most-committed members of a church are more likely than those who are casually involved to let its message of universal love erode their prejudices.

Whatever the reason, when cultural conservatives disengage from organized religion, they tend to redraw the boundaries of identity, de-emphasizing morality and religion and emphasizing

race and nation. Trump is both a beneficiary and a driver of that shift.

So is the alt-right. Read Milo Yiannopoulos and Allum Bokhari's famous Breitbart.com essay, "An Establishment Conservative's Guide to the Alt-Right." It contains five references to "tribe," seven to "race," 13 to "the west" and "western" and only one to "Christianity." That's no coincidence. The alt-right is ultra-conservatism for a more secular age. Its leaders like Christendom, an old-fashioned word for the West. But they're suspicious of Christianity itself, because it crosses boundaries of blood and soil. As a college student, the alt-right leader Richard Spencer was deeply influenced by Friedrich Nietzsche, who famously hated Christianity. *Radix*, the journal Spencer founded, publishes articles with titles like "Why I Am a Pagan." One essay notes that "critics of Christianity on the Alternative Right usually blame it for its universalism."

SECULARIZATION is transforming the left, too. In 1990, according to PRRI, slightly more than half of white liberals seldom or never attended religious services. Today the proportion is 73 percent. And if conservative non-attenders fueled Trump's revolt inside the GOP, liberal nonattenders fueled Bernie Sanders's insurgency against Hillary Clinton: While white Democrats who went to religious services at least once a week backed Clinton by 26 points, according to an April 2016 PRRI survey, white Democrats who rarely attended services backed Sanders by 13 points.

Sanders, like Trump, appealed to secular voters because he reflected their discontent. White Democrats who are disconnected from organized religion are substantially more likely than other white Democrats to call the American dream a myth. Secularism may not be the cause of this dissatisfaction, of course: It's possible that losing faith in America's political and economic system leads one to lose faith in organized religion. But either way, in 2016, the least religiously affiliated white Democrats—like the least religiously affiliated white Republicans—were the

Why did religiously unaffiliated Republicans embrace Trump's bleak view of America?

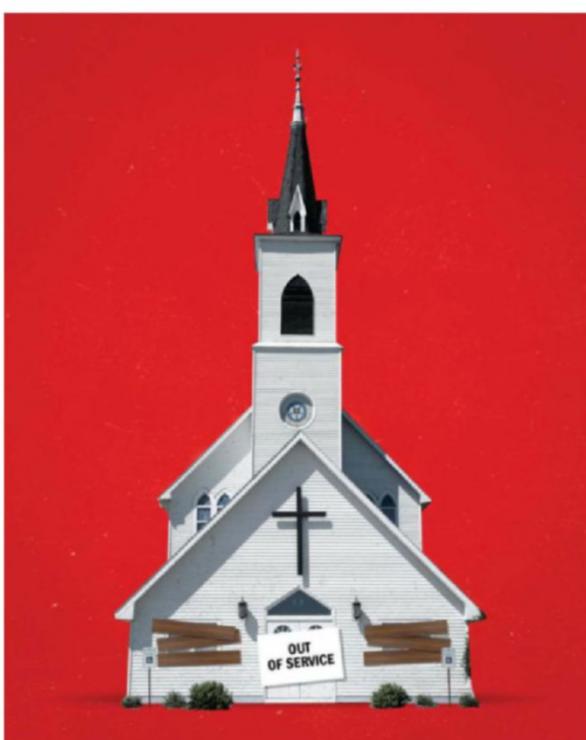
ones most likely to back candidates promising revolutionary change.

The decline of traditional religious authority is contributing to a more revolutionary mood within black politics as well. Although African Americans remain more likely than whites to attend church, religious disengagement is growing in the black community. African Americans under the age of 30 are three times as likely to eschew a religious affiliation as African Americans over 50. This shift is crucial to understanding Black Lives Matter, a Millennial-led protest movement whose activists often take a jaundiced view of established African American religious leaders. Brittney Cooper, who teaches women's and gender studies as well as Africana studies at Rutgers, writes that the black Church "has been abandoned as the leadership model for this generation." As Jamal Bryant, a minister at an AME church in Baltimore, told *The Atlantic's* Emma Green, "The difference between the Black Lives Matter movement and the civil-rights movement is that the civil-rights movement, by and large, was first out of the Church."

Black Lives Matter activists sometimes accuse the black Church of sexism, homophobia, and complacency in the face of racial injustice. For instance, Patrisse Cullors, one of the movement's founders, grew up as a Jehovah's Witness but says she became alienated by the fact that the elders were "all men." In a move that faintly echoes the way some in the alt-right have traded Christianity for religious traditions rooted in pagan Europe, Cullors has embraced the Nigerian religion of Ifa. To be sure, her motivations are diametrically opposed to the alt-right's. Cullors wants a spiritual foundation on which to challenge white, male supremacy; the pagans of the alt-right are looking for a spiritual basis on which to fortify it. But both are seeking religions rooted in racial ancestry and

disengaging from Christianity—which, although profoundly implicated in America's apartheid history, has provided some common vocabulary across the color line.

Critics say Black Lives Matter's failure to employ Christian idiom undermines its ability to persuade white Americans. "The 1960s movement ... had an innate respectability because our leaders often were heads of the black church," **Barbara Reynolds, a civil-rights activist**



and former journalist, wrote in *The Washington Post*. "Unfortunately, church and spirituality are not high priorities for Black Lives Matter, and the ethics of love, forgiveness and reconciliation that empowered black leaders such as King and Nelson Mandela in their successful quests to win over their oppressors are missing from this movement." As evidence of "the power of the spiritual approach," she cited the way family members of the parishioners murdered at Charleston's Emanuel AME church forgave Dylann Roof for the crime, and thus helped persuade local politicians to remove the Confederate flag from South Carolina's Capitol grounds.

Black Lives Matter's defenders respond that they are not interested in making themselves "respectable" to white America, whether by talking about Jesus or wearing ties. (Of course, not everyone in the civil-rights movement was interested in respectability either.) That's understandable. Reformists focus on persuading and forgiving those in power. Revolutionaries don't.

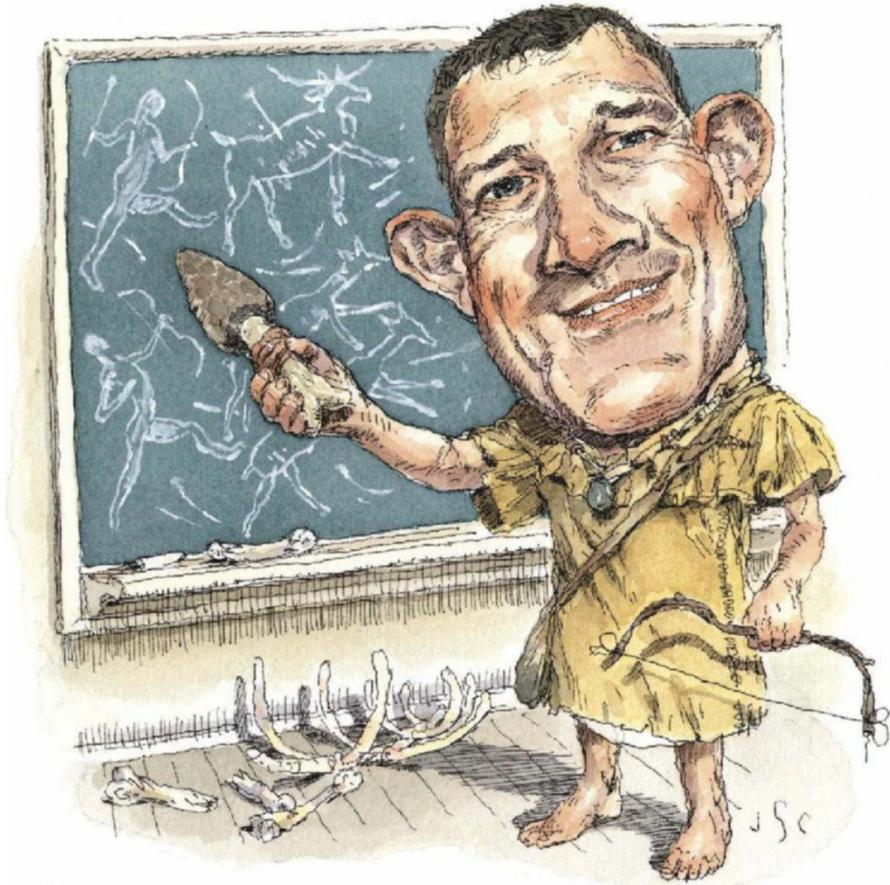
Black Lives Matter activists may be justified in spurning an insufficiently militant Church. But when you combine their post-Christian perspective with the post-Christian perspective growing inside the GOP, it's easy to imagine American politics becoming more and more vicious.

In his book *Twilight of the Elites*, the MSNBC host Chris Hayes divides American politics between "institutionalists," who believe in preserving and adapting the political and economic system, and "insurrectionists," who believe it's rotten to the core. The 2016 election represents an extraordinary shift in power from the former to the latter. The loss of manufacturing jobs has made Americans more insurrectionist. So have the Iraq War, the financial crisis, and a black president's inability to stop the police from killing unarmed African Americans. And so has

disengagement from organized religion.

Maybe it's the values of hierarchy, authority, and tradition that churches instill. Maybe religion builds habits and networks that help people better weather national traumas, and thus retain their faith that the system works. For whatever reason, secularization isn't easing political conflict. It's making American politics even more convulsive and zero-sum.

For years, political commentators dreamed that the culture war over religious morality that began in the 1960s and '70s would fade. It has. And the more secular, more ferociously national and racial culture war that has followed is worse. ■



• SKETCH

Professor Caveman

Why Bill Schindler is teaching college students to live like early humans

BY RICHARD SCHIFFMAN

THAT'S MY BLOOD, not the deer's," said Eden Kloetzli, a senior at Washington College, in Maryland, as she gazed at the red liquid staining her palm. She and about a dozen other students were busy slicing and dicing four deer carcasses laid outside the school's new archaeology laboratory. Making the task harder, the novice butchers were using tools that they had knapped themselves out of obsidian, basalt, and flint.

Their anthropology professor, Bill Schindler—who somehow looked ruggedly handsome despite the fact that he hadn't shaved in days and was wearing an odd necklace made of seal bone, African baobab seeds, and beads cast from

copper he had smelted himself—grinned. "With a simple flake that you can create in a second," he said proudly, "you have transformed that deer into food for you, rather than just something to look at while you starve." This is high praise, coming from Schindler, who says that fewer people have mastered basic survival skills today than at any other time in human history. Over the course of this semester-long class, Experimental Archaeology and Primitive Technology, Schindler's students learn to build fires with wooden hand drills, make rope from plant fibers, and gather tree nuts, among other things. Although most of us no longer rely on these skills, Schindler argues that they are essential

to understanding what it means to be human, and should be a part of our educational curricula.

"I didn't expect to be so cool with it," said Amy Peterson, who was taking a break from the butchering. "I thought I would be like, 'This was a live animal,'" she added. "Schindler makes it look easy," said Shannon Lawn, a former vegetarian who had spent the first hour of class trying not to look at the head of the deer she was butchering; as she spoke, she was struggling to position a silver-dollar-size obsidian blade into the soft connective tissue just under its hide.

Before the first crude blades were employed in East Africa some 3.4 million years ago, Schindler likes to remind his

students, our hominid forebears had no way to slash through tough animal hide to get at the nutrient-dense meat and organs beneath. The development of stone tools (together with the control of fire, which Schindler believes occurred 2 million years ago) initiated a nutritional revolution. In part because of all the fat- and protein-rich food that was suddenly available, our ancestors' brain and body size increased rapidly, culminating in the emergence of anatomically modern humans in the Middle Paleolithic period, some 200,000 years ago.

The skills prehistoric peoples depended on seem exotic to today's college students, who Schindler says arrive on campus each year with less and less of the sort of practical experience that he emphasizes in his class. He tells of the time he asked some students to crack eggs and separate the yolks from the whites. He returned to the kitchen 10 minutes later to find that not a single egg had been cracked. "I asked them if the problem was that nobody had ever told them how to separate the yolk from the whites, and received blank stares in return," he recalled. "After a minute of silence, one of them said, 'I've never cracked an egg.' I was floored—how do you even make it to 19 without cracking an egg?"

WHEN HE WAS a college student, in the 1990s, Schindler suffered from an almost comic degree of misdirection. He changed majors seven times and flunked out of school (due largely to a since-corrected eye problem that made him legally blind), then worked on a pig farm for a year. Deciding that animal husbandry was not for him, he re-enrolled in college, taking 10 years in all to complete his undergraduate degree. One day, Schindler noticed a manuscript about the evolution of hunting on a history professor's desk and asked incredulously whether studying this was part of his job. The exchange blew Schindler's mind. He had always been obsessed with hunting, food, and primitive tools—as a kid, he told me, he'd liked "banging on rocks and trying to start fires"—but it had not occurred to him that he could build a career around such things.

Schindler went on to get a doctorate in anthropology, then took up teaching; today, he is the chair of Washington College's anthropology department and a leader in the growing field of "experimental archaeology," which involves reproducing and using ancient technologies to gather data and draw inferences about life in the past. He takes particular pleasure in using these technologies to push his students outside their comfort zone. Once, while delivering a commencement address, he stripped off

his cap and gown and stepped away from the lectern wearing a homemade buckskin shirt and loincloth, to laughter and applause.

Beyond academia, Schindler may be the most widely recognizable archaeologist today, thanks to his role on *The Great Human Race*, a survival-genre TV show broadcast last year on the National Geographic Channel. Over the course of 10 ordeal-filled episodes, he and his co-host, Cat Bigney, a desert-survival expert, attempted to reenact



• VERY SHORT BOOK EXCERPT

X-RATED TWAIN

PUBLISHED IN THE U.S. in 1885, Mark Twain's *Adventures of Huckleberry Finn* has everything a reader could want: adventure, humor, controversy, tenderness, the hypocrisy of competing social-class structures—and a penis. During the printing of the first American copies of the novel, an innocent illustration of Huck presenting himself in Uncle Silas's home as his distant nephew was altered without Twain's knowledge. A few scratches into a printing plate made it appear as if Silas the farmer-preacher were proudly displaying his erect phallus—a phallus that, in order to pass unnoticed at a casual glance, had to be the size of a mealworm. The illustration's caption reads: "Who do you reckon it is?" Despite a \$500 reward (more than \$12,000 in today's currency), we still don't know which of the 50 pressmen working on the novel vandalized the plate. The "greatest American humorist" did not see the lighter side of this little printing debacle. Twain immediately had the illustration stripped from all copies, and book agents selling subscriptions door-to-door were ordered to tear out the page from their display copy.

— Adapted from *Printer's Error: Irreverent Stories From Book History*, by J. P. Romney and Rebecca Romney, published by Harper in March

the prehistory of humankind by creating their own tools and using them to make a go of it in some of the world's toughest ecosystems.

Although Schindler had been reproducing ancient technologies for many years, these trying conditions revealed crucial new details about primitive life—such as how long it takes stone blades to blunt and need replacement, and how deerskin clothing performs when soaked. He and Bigney faced down a pack of hyenas on the African savanna, tried (unsuccessfully) to build a fire from scratch on a bone-chilling day in the Caucasus, and climbed an Alaskan glacier wearing boots they had sewn by hand. It was no picnic; on the contrary, they frequently went hungry. In Alaska, Schindler suffered frostbite, and in Tanzania, he contracted a severe infection from bat feces in the baobab tree he had been sleeping in.

Despite these near misses, Schindler bristles at the notion that ancient people struggled to survive; the archaeological record shows otherwise, he says. Early humans did not rough it alone, as he and Bigney did. They traveled within larger migratory groups, and possessed an intricate knowledge of the local environment and seasonal changes. They knew “where to be and when to be there,” Schindler says. “In terms of diet, bone strength, lack of disease, we were actually doing much better in the past than we are now.” (In fact, life expectancy was shorter in the past, but this was largely due to high infant-mortality rates. The fossil record does show that our ancestors had healthier teeth, probably thanks to their diet, and cancer and some other diseases may have been rarer.)

Schindler tries to provide a wholesome, early-human diet for his wife, Christina, and their three children. The family forages for wild fruits and greens, and fishes and hunts for much of its protein. Billy, age 11, just killed and butchered his first buck. (In addition to eating

deer meat, the Schindlers sometimes tan their own deer hides. Schindler made a point of telling me that the shirt and loincloth he wore for his graduation speech cost four deer their lives.) They also brew beer, and bake bread in an outdoor oven, for which they split the wood. Christina (who works in educational technology) does have limits, however—she recently reprimanded her husband for breaching suburban etiquette by butchering a dead deer and some geese in the yard. “She grounds me in the realities of modern life,” Schindler says. “If there is a glitch with my computer, I break down. I mean I literally mentally cannot handle it. Christina saves me.”

CLAUDE LÉVI-STRAUSS, the French ethnologist, famously claimed that civilization has been in decline since the Neolithic period. Schindler sounds a similar note. Most of us equate technological development with progress. Archaeologists, however, judge technologies not by their novelty, but by their impact on all aspects of life. By that criteria, recent technological advances may ultimately prove a failure. They not only are devastating our climate and environment, Schindler says; they

have given us weapons that could destroy the world as we know it. “*Homo erectus* was around for almost 2 million years,” he adds. “We’ve been here for 200,000 years. There is no way we are going to be around for 2 million years unless we radically change our behavior.”

Schindler is keen to correct the popular conception of our ancestors as ignorant cavemen. People today

have “thoroughly domesticated themselves,” he told me. Early humans, by contrast, had to be much more inventive, adept at problem-solving, and subtly attuned to changes in the natural environment. Their need to cooperate made them socially connected, as people nowadays are desperate to be (“Think Facebook,” he says). Early humans may even have been smarter

than us: Cro-Magnons had larger brains than we do today. (Some scientists believe our ancestors needed extra brain-power to negotiate tough environmental challenges. Others connect the decline to an overall decrease in body mass since the end of the last ice age.)

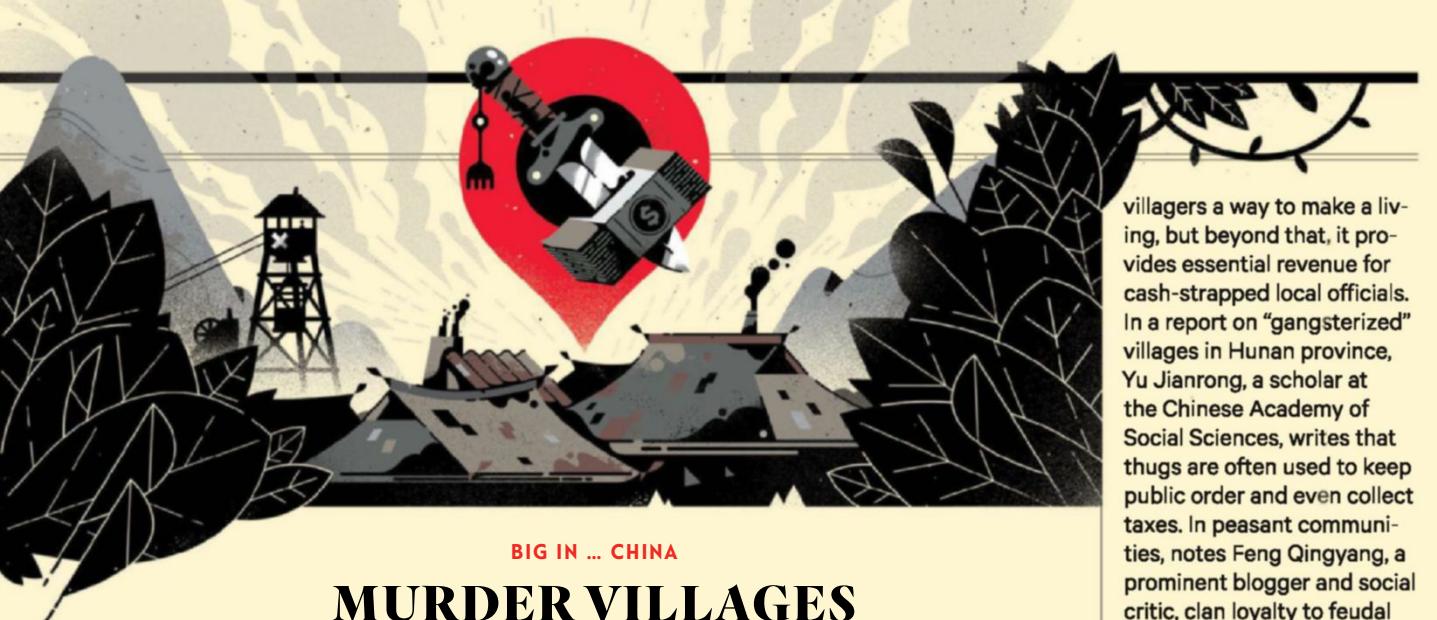
Above and beyond its applications to his scholarly work, Schindler says that his mastery of early-human technologies has given him a sense of personal competence. He believes that our over-dependence on technologies we don’t fully understand and are incapable of creating is disempowering. “The true value of all this is not trying to live a prehistoric life,” he told me. “It’s applying what we learn from the past to address contemporary problems.” For example: how to be healthy and happy. Ancient peoples faced dangers, he points out, but little routine emotional stress, and few of the chronic illnesses that arise from poor diet and lack of physical activity. They can also teach us a lot about how to interact with the natural world, he says. “In the past, when people killed too many animals or overharvested plants, they saw the impact on the world,” Schindler told me. But today, living apart from nature, we do not see the results of our food and energy choices.

On the last day of the course, Schindler and his class feasted on stew made from the deer they had butchered, out of bowls they had fired from local river clay. As they ate, some of the students gave presentations about their efforts to do as early humans had done. These attempts had not all been successful: Stone axes fell off the handles they were hafted to, wood in a charcoal kiln turned mostly to ash instead of charcoal. “It wasn’t a failure at all,” Schindler reassured the distressed charcoal maker, “because now you know what you would do differently.”

Not everyone looked convinced. “In order to survive, you need to be a real master,” one student said. “We don’t give our ancestors enough credit.” ■

Richard Schiffman is an environmental journalist and a poet. His latest book, What the Dust Doesn't Know, was published in February.

Fewer people have mastered basic survival skills today than at any other time in human history.



BIG IN ... CHINA

MURDER VILLAGES AND SCAM TOWNS

MANY CHINESE towns have grown fat off of single industries. Much of the world's hosiery, for example, comes from the village of Datang, also known as "Sock City." Songxia is dedicated to umbrellas. Jinjiang is all about zippers.

And Shisun, for a time, made a killing off of killing. Last year, Chinese prosecutors indicted 40 of the village's residents for arranging 17 murders. At least 35 more deaths are under investigation; dozens more victims may never be known. News of Shisun's killing ring provoked dismay in Hunan province, but not shock; similar gangs have been caught in Hebei, Henan, and Sichuan provinces. Indeed, the type of murder conspiracy seen in Shisun is so common that it has its own nickname: *Mangjingshi Fanzui*, after the film *Mang Jing* ("Blind Shaft"), which details a similar scheme. Like the movie's characters, Shisun's plotters killed migrant miners—staging each man's death as a mining accident—then posed as grieving family members. Corrupt mine bosses in turn paid these impostor "families"

hush money, rather than risk any investigation into working conditions. The scam was grisly but profitable—each death could net as much as \$120,000, an unimaginable sum in a country where the average rural family's annual income is \$1,800. The new concrete houses that line the mud-brick village's main street are a testament to the windfall.

Remote and difficult to access, many villages in China's interior have developed a criminal cottage industry, involving anything from drugs to internet fraud to counterfeiting. (In fact, *shanzhai*, the slang for counterfeit, literally means "mountain village.") In coastal Boshe, a village of 14,000 people, 20 percent of the population—including

pensioners, police officers, and politicians—helped produce a third of China's methamphetamine. Shutting down Boshe's meth labs three years ago required 3,000 tactical officers backed by helicopters.

Many observers blame crime villages on the widening gap between China's urbanized population and its left-behind agrarian one. Minimal policing, neglected infrastructure, and grinding poverty have isolated whole communities not just from society, but from traditional morality. Crime offers

villagers a way to make a living, but beyond that, it provides essential revenue for cash-strapped local officials. In a report on "gangsterized" villages in Hunan province, Yu Jianrong, a scholar at the Chinese Academy of Social Sciences, writes that thugs are often used to keep public order and even collect taxes. In peasant communities, notes Feng Qingyang, a prominent blogger and social critic, clan loyalty to feudal chiefs supersedes deference to government authority.

"People, rather than laws or government, rule," he wrote on his blog. And when most of a village is implicated to some degree in a crime, notes Zheng Guihong, a Beijing-based political commentator, the prevailing view is that "the law cannot punish the majority."

Authorities claim that poverty-relief efforts will consign crime villages to the past—provided local officials don't embezzle the funds, of course. In the meantime, catching perpetrators is a game of Whac-a-Mole, with the criminals forever ahead of the cops. Rewards for crime are high, penalties are low, and living conditions are often dire. Tales of peasants who have prospered in the city inspire many to dream of overnight riches, according to Feng. But few can make a fortune without crime. The lucky strike gold alone; for others, it takes a village.

—Robert Foyle Hunwick



• BUSINESS

Can Wall Street Save Trump From Himself?

The president has surrounded himself with former bankers. Here's what that portends.

BY WILLIAM D. COHAN

DURING HIS presidential campaign, Donald Trump was highly critical of Goldman Sachs, the powerful Wall Street investment bank. Bashing Goldman gave Trump a way to establish his populist bona fides—not an easy thing to do for a billionaire who lived in an onyx-and-marble triplex high above Fifth Avenue and flew in his own 757. Fairly or not, no institution has come to better symbolize Wall Street greed and amorality in the years leading up to the 2008 financial crisis than Goldman Sachs. Trump understood this symbolism and, ever the showman, used it to his political advantage. A few days before the election, Lloyd Blankfein, the Goldman Sachs CEO, was featured in an anti-global-establishment advertisement that Trump aired, one that some commentators suggested was anti-Semitic.

Trump also made a point of calling out his various political opponents' relationships with the firm, and of putting those relationships in the worst possible light. For instance, during a rally in February 2016, when he was still trying to fend off Senator Ted Cruz for the Republican nomination, Trump said, "I know the guys at Goldman Sachs. They have

total, total, total control over him. Just like they have total control over Hillary Clinton." Cruz's wife, Heidi, is a managing director at the bank, and Goldman had lent him as much as \$500,000, which he had used to help fund his

bay. Other than a loan made to a building that Trump holds a minority stake in, Goldman does not appear to have ever made a loan to Trump, or to his real-estate or country-club projects. It has never underwritten any of the debt or equity offerings of his casinos, many of which have gone bankrupt. According to *The New York Times* and my own sources, incoming recruits were instructed, in orientation sessions, to stay away from Trump and clients like him. (Goldman denies this.) One former vice president at the firm, who used to provide financing to other New York City real-estate developers, told me in 2013 that he knew better than to



successful 2012 Senate campaign. Cruz had not been fully transparent about the Goldman loan, and Trump delighted in highlighting it. Clinton, for her part, had famously participated in three Q&A sessions with Goldman employees in 2013; the bank had paid her a total of \$675,000 for her trouble.

If Trump held the bank in any real disdain, it seems safe to say the feeling was mutual. For years, Goldman had kept Donald Trump the businessman at

mention the name Donald Trump while on the job. "I did not look at anything for Trump when I was at Goldman," he said, "but suffice it to say I didn't attempt to." Staying away from Trump was good risk management.

Goldman was not unique on Wall Street in shunning Trump. Aside from Deutsche Bank, nearly every firm avoided Trump and what was commonly known on Wall Street as "Donald risk." And for good reason: His companies'

multiple bankruptcies cost investors and creditors billions.

Still, Goldman's unease with Trump seemed especially palpable. Hillary Clinton received the most money from Goldman employees and affiliated PACs—more than \$340,000—during the 2016 election cycle; contributions to Trump's campaign, by contrast, totaled less than \$5,000, according to the nonpartisan Center for Responsive Politics.

MY GOODNESS, though—what a difference an Electoral College victory makes. Now, it seems, Donald Trump cannot get enough of Goldman Sachs, and vice versa. As has been well documented, Goldman alumni have poured into the new administration. Trump tapped Gary Cohn, Blankfein's longtime heir apparent, to lead the National Economic Council. Cohn, a registered Democrat, is said to be close to Jared Kushner, Trump's son-in-law. Since Cohn was appointed, on December 12, he has had regular access to Trump, and is reportedly among the president's most influential advisers.

For Treasury secretary, Trump chose Steven Mnuchin, a former Goldman partner whose father was also a Goldman partner. Mnuchin, who left the firm after 17 years in 2002 and later started a hedge fund, served as the Trump campaign's finance chairman. Many people thought it was crazy for Mnuchin to tie himself to Trump. "Nobody's going to be like, 'Well, why did he do this?' if I end up in the administration," Mnuchin told Bloomberg last summer. Anthony Scaramucci, who did two tours of duty at Goldman before starting SkyBridge Capital, a hedge fund, moved to sell the business a few days before Trump's inauguration, with the expectation of working in the White House's public-engagement office. That appointment was derailed, but Scaramucci still hopes to get a role in the administration. Dina Habib Powell, another Goldman partner, has been appointed "senior counselor for economic initiatives" in the White House. Powell is close to Ivanka Trump and will likely be an advocate for her interests in the West Wing. Trump

also nominated Jay Clayton, a partner at Sullivan & Cromwell, Goldman Sachs's longtime law firm, to be the chairman of the Securities and Exchange Commission; Clayton's wife is a vice president at Goldman. Steve Bannon spent almost five years at Goldman beginning in 1985, although his position as chief strategist owes more to his nationalism than to his banking background.

Even Blankfein caught Trump fever, at least for a time. Two days after the election, he left a voicemail for Goldman employees observing that "the president-elect's commitment to infrastructure spending, government reform, and tax reform—among other things—will be good for growth and, therefore, will be good for our clients and for our firm."

The bankers' motivation isn't hard to discern. Power always attracts, and Goldman has long encouraged its employees to enter public service after their tenure at the bank, likely for both selfless and self-interested reasons. And it doesn't hurt that these ex-bankers, who are legally required to sell off any asset that could create a conflict of interest, will be able to park the money in Treasuries or diversified funds, deferring any capital-gains tax payments until they sell.

But what accounts for Trump's volte-face? He hasn't said anything about it publicly. But he may have been motivated into action by a feeling of exclusion before: In 1985, he bought Mar-a-Lago, and a decade later turned it into a private club—after, it was rumored in *Vanity Fair*, the blue bloods in Palm Beach didn't invite him to join the tony Bath and Tennis Club. (Trump dismissed these rumors as "utter bullshit!") What better way for Trump to cement his status as the most alpha of alpha males than through the continuous genuflection before him of a whole host of Goldman alumni?

More-practical reasons also suggest themselves: By virtue of its long-held position as the most prestigious firm on

Wall Street—and despite what Senators Elizabeth Warren and Bernie Sanders would have us believe—Goldman is highly credible to financial markets and to investors around the globe. There is no quicker and easier way for Trump to show the capital markets that he is not as unstable as he often seems than by surrounding himself with Goldman Sachs bankers, traders, and executives.

And indeed, the domestic stock market rallied after Trump's election and inauguration, although the bond market—about double the size—tanked, on fears of higher inflation and an increase in the federal debt.

IS THE RETURN of Goldman Sachs to the halls of power a cause for concern or celebration? Only time will tell, of course. One thing you can say for sure about Cohn; Mnuchin; the billionaire Wilbur Ross, Trump's pick for commerce secretary (and an alumnus of the Rothschild investment bank); and Carl Icahn, the billionaire hedge-fund manager whom Trump asked to serve as a special adviser on regulatory reform, is that they have a keen under-

standing of capital markets and the circumstances under which businesspeople and big investors are willing to put capital at risk—providing necessary grease to the wheels of commerce. Since Trump's knowledge of these markets is not nearly what he would have the public believe, the presence of those people around him

might very well help the country maintain or increase economic growth.

There is also an element of genuine corrective in the shift. By the end of the Obama administration, anti-Wall Street sentiment had swung far beyond rational judgment. The idea—which has had great currency in Washington lately, and is espoused by Senator Warren in particular—that anyone who has ever worked on Wall Street should automatically be disqualified from government service is self-defeating and absurd.

Nearly every firm on Wall Street avoided Trump, and what was commonly known as "Donald risk."

Yet overcorrection now appears quite likely. While Dodd-Frank has its downsides, some of what it mandates (for instance, minimum capital requirements for financial institutions and greater transparency in the derivatives markets) has clearly been beneficial. No sane person would ever argue that speed limits should be removed from roads just because once upon a time there were none. Speed limits, it is widely acknowledged, have saved lives. The same analogy applies to Wall Street. Although Trump will need Congress's help to unwind Dodd-Frank—it's a law, after all—his executive order about his "core principles" for regulating the financial system signals that he intends to do just that. Good luck to us if he succeeds. The last time Wall Street had free rein—a period spanning Bill Clinton's and George W. Bush's administrations—the U.S. ended up with the second-worst financial crisis in its history.

That's frightening, obviously, but then again, many scary possibilities are emanating from Washington these days. Wall Street is often criticized for its short-term thinking, for discounting future risks in favor of a quick payoff. And yet, here we are at the outset of a presidency in which attention to immediate risk—of every kind—needs to be a priority. The president's first weeks in the Oval Office provided a taste of what an unconstrained Donald Trump is only too happy to do on issues ranging from immigration to the treatment of long-standing American allies. One can only imagine what impact his economic instincts will have—on the prevailing liberal trade order, government debt, corporate favoritism, inflation and the independence of the Fed.

If the Wall Street bankers surrounding Trump—those experts in risk management—can help reduce the "Donald risk" writ large, then perhaps we will look back at their newfound influence as a mixed blessing, even though we may pay dearly for it further down the road. **A**

William D. Cohan, a special correspondent for Vanity Fair, is the author of Why Wall Street Matters.

• STUDY OF STUDIES

How to Buy Happiness

What the social science says

BY ISABELLA KWAI

THERE'S nothing in the world so demoralizing as money," a character proclaims gloomily in *Antigone*, but maybe he didn't know how to use his cash. If we spend it right, research suggests, money can, in fact, buy happiness.

According to one oft-repeated rule of thumb, spending on experiences rather than objects makes us happiest. When asked to reflect on a purchase, people who described experiential ones—travel, say, or concerts—were much happier than those who described material ones. **[1]** Psychologists believe the "hedonic treadmill"—our tendency to eventually revert to our original level of happiness following a change—operates more swiftly after material purchases than after experiential ones: A new table is easier to get used to than a trip to Chile. They also say we are better at making peace with bad experiences ("It brought us closer together") than with regrettable objects. **[2]**

Not all experiences are equally worthwhile, however. In one study, when experiential purchases were

categorized as either solitary or social in nature, social expenses brought more happiness. People who spent on solitary experiences valued them no more in hindsight than they valued possessions. **[3]** It's not so much that doing things makes us happier than having things—it's that we like doing things *with people*. This is particularly true for extroverts: In one study, they got significantly happier after shopping with others, no matter what they bought. **[4]**

University of Cambridge researchers joined with a bank to analyze the relationship between customers' spending habits, personality, and happiness. They found that the "Big Five" personality traits—extroversion, openness to experience, conscientiousness, agreeableness, and



THE STUDIES:

- [1]** Gilovich and Van Boren, "To Do or to Have? That Is the Question" (*Journal of Personality and Social Psychology*, Dec. 2003)
- [2]** Gilovich et al., "A Wonderful Life"

Journal of Consumer Psychology, Jan. 2015

[3] Caprariello and Reis, "To Do, to Have, or to Share?" (*Journal of Personality and Social Psychology*, Feb. 2013)

[4] Goldsmith, "The Big Five, Happiness and Shopping" (*Journal*

of Retailing and Consumer Services, July 2016)

[5] Matz et al., "Money Buys Happiness When Spending Fits Our Personality" (*Psychological Science*, May 2016)

[6] Ruberton, "How Your Bank Balance Buys Happiness" (*Emotion*, Aug. 2016)

neuroticism—predicted spending. Outgoing people splurged on restaurants and entertainment, while self-controlled, conscientious types shelled out for fitness and insurance. And those whose spending fit their personality were happier than those who spent against type. In one case, extroverts and introverts received vouchers for either a bar or a bookstore. Extroverts were happier when forced to spend money at the bar, while introverts were happier spending at the bookstore. **[5]**

But before you go on a spending spree, a caution: More than income, investments, or debt, the amount of cash in one's checking account correlates with life satisfaction. **[6]** That doesn't mean you should be stingy, though: When people were assigned to buy goodies for either a hospitalized child or themselves, those who bought treats for a sick child reported more positive feelings. The effect was the same in a rich country (Canada) as in a poor one (South Africa). **[7]** Spending on friends and family likewise gives us a boost because—unsurprisingly—it brings us closer to them. **[8]**

So how do you turn cash into fun? First, figure out whether you're an extrovert or an introvert. Then, head to a bar, bookstore, or hospital, with a Canadian in tow. There must be a joke in there somewhere. **A**

[7] Aknin, "Prosocial Spending and Well-Being" (*Journal of Personality and Social Psychology*, April 2013)

[8] Yamaguchi et al., "Experiential Purchases and Prosocial Spending Promote Happiness by Enhancing Social Relationships" (*The Journal of Positive Psychology*, Sept. 2016)

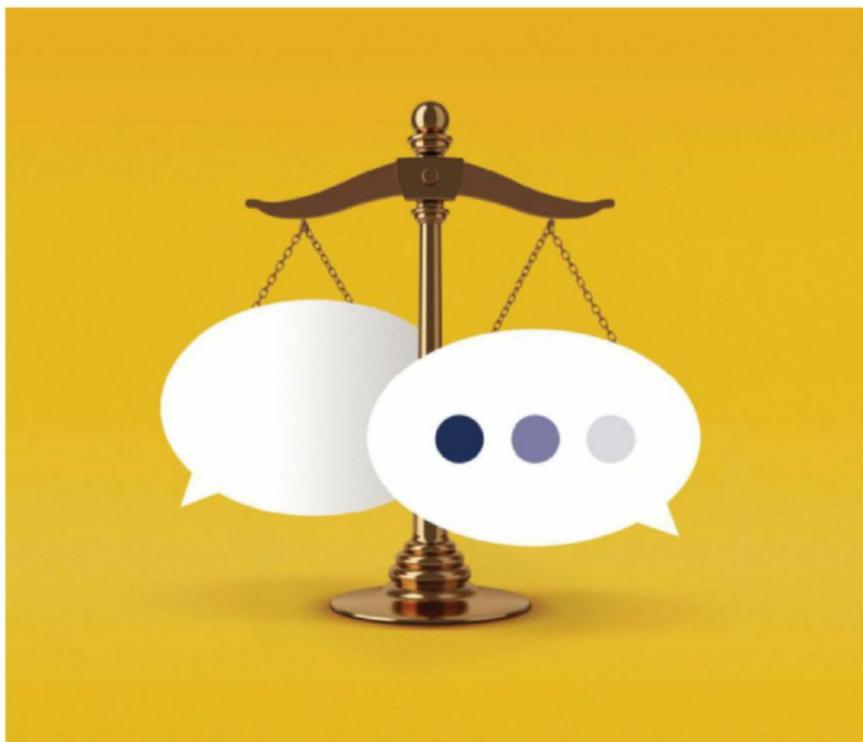


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• TECHNOLOGY

Rise of the Robolawyers

How legal representation could come to resemble TurboTax

BY JASON KOEBLER

NEAR THE END of Shakespeare's *Henry VI, Part 2*, Dick the Butcher offers a simple plan to create chaos and help his band of outsiders ascend to the throne: "Let's kill all the lawyers." Though far from the Bard's most beautiful turn of phrase, it is nonetheless one of his most enduring. All these years later, the law is still America's most hated profession and one of the least trusted, whether you go by scientific studies or informal opinion polls.

Thankfully, no one's out there systematically murdering lawyers. But advances in artificial intelligence may diminish their role in the legal system or even, in

some cases, replace them altogether. Here's what we stand to gain—and what we should fear—from these technologies.

1 | Handicapping Lawsuits

For years, artificial intelligence has been automating tasks—like combing through mountains of legal documents and highlighting keywords—that were once rites of passage for junior attorneys. The bots may soon function as quasi-employees. In the past year, more than 10 major law firms have "hired" Ross, a robotic attorney powered in part by IBM's Watson artificial intelligence, to perform legal research. Ross is designed to approximate the experience of working

with a human lawyer: It can understand questions asked in normal English and provide specific, analytic answers.

Beyond helping prepare cases, AI could also predict how they'll hold up in court. Lex Machina, a company owned by LexisNexis, offers what it calls "moneyball lawyering." It applies natural-language processing to millions of court decisions to find trends that can be used to a law firm's advantage. For instance, the software can determine which judges tend to favor plaintiffs, summarize the legal strategies of opposing lawyers based on their case histories, and determine the arguments most likely to convince specific judges. A Miami-based company called Premonition goes one step further and promises to predict the winner of a case before it even goes to court, based on statistical analyses of verdicts in similar cases. "Which attorneys win before which judges? Premonition *knows*," the company says.

If you can predict the winners and losers of court cases, why not bet on them? A Silicon Valley start-up called Legalist offers "commercial litigation financing," meaning it will pay a lawsuit's fees and expenses if its algorithm determines that you have a good chance of winning, in exchange for a portion of any judgment in your favor. Critics fear that AI will be used to game the legal system by third-party investors hoping to make a buck.

2 | Chatbot Lawyers

Technologies like Ross and Lex Machina are intended to assist lawyers, but AI has also begun to replace them—at least in very straightforward areas of law. The most successful robolawyer yet was developed by a British teenager named Joshua Browder. Called DoNotPay, it's a free parking-ticket-fighting chatbot that asks a series of questions about your case—Were the signs clearly marked? Were you parked illegally because of a medical emergency?—and generates a

A BRIEF CHRONICLE OF LEGAL TECHNOLOGY

1970: The first scholarly work that seriously considers the application of artificial intelligence to legal practice is published.



1973: Lexis, the digital legal-research service, launches.

1997: Westlaw, Lexis's main competitor, introduces a feature that helps determine whether a case can be used as valid precedent.



2006: Mark Britton, a former legal counsel for Expedia, founds Avvo, a digital service that matches people with lawyers.

letter that can be filed with the appropriate agency. So far, the bot has helped more than 215,000 people beat traffic and parking tickets in London, New York, and Seattle. Browder recently added new functions—DoNotPay can now help people demand compensation from airlines for delayed flights and file paperwork for government housing assistance—and more are on the way.

DoNotPay is just the beginning. Until we see a major, society-changing breakthrough in artificial intelligence, robolawyers won't dispute the finer points of copyright law or write elegant legal briefs. But chatbots could be very useful in certain types of law. Deportation, bankruptcy, and divorce disputes, for instance, typically require navigating lengthy and confusing statutes that have been interpreted in thousands of previous decisions. Chatbots could eventually analyze most every possible exception, loophole, and historical case to determine the best path forward.

As AI develops, robolawyers could help address the vast unmet legal needs of the poor. Roland Vogl, the executive director of the Stanford Program in Law, Science, and Technology, says bots will become the main entry point into the legal system. "Every legal-aid group has to turn people away because there isn't time to process all of the cases," he says. "We'll see cases that get navigated through an artificially intelligent computer system, and lawyers will only get involved when it's really necessary." A good analogy is TurboTax: If your taxes are straightforward, you use TurboTax; if they're not, you get an accountant. The same will happen with law.

3 | Minority Report

We'll probably never see a court-appointed robolawyer for a criminal case, but algorithms are changing how judges mete out punishments. In many states, judges use software called COMPAS to help with setting bail

and deciding whether to grant parole. The software uses information from a survey with more than 100 questions—covering things like a defendant's gender, age, criminal history, and personal relationships—to predict whether he or she is a flight risk or likely to re-offend. The use of such software is troubling: Northpointe, the company that created COMPAS, won't make its algorithm public, which means defense attorneys can't bring informed challenges against judges' decisions. And a study by ProPublica found that COMPAS appears to have a strong bias against black defendants.

Forecasting crime based on questionnaires could come to seem quaint. Criminologists are intrigued by the possibility of using genetics to predict criminal behavior, though even studying the subject presents ethical dilemmas. Meanwhile, brain scans are already being used in court to determine which violent criminals are likely to re-offend. We may be headed toward a future when our bodies alone can be used against us in the criminal-justice system—even before we fully understand the biases that could be hiding in these technologies.

4 | An Explosion of Lawsuits

Eventually, we may not need lawyers, judges, or even courtrooms to settle civil disputes. Ronald Collins, a professor at the University of Washington School of Law, has outlined a system for landlord-tenant disagreements. Because in many instances the facts are uncontested—whether you paid your rent on time, whether your landlord fixed the thermostat—and the legal codes are well defined, a good number of cases can be filed, tried, and adjudicated by software. Using an app or a chatbot, each party would complete a questionnaire about the facts of the case and submit digital evidence.

"Rather than hiring a lawyer and having your case sit on a docket for five weeks, you can have an email of adjudication in

five minutes," Collins told me. He believes the execution of wills, contracts, and divorces could likely be automated without significantly changing the outcome in the majority of cases.

There is a possible downside to lowering barriers to legal services, however: a future in which litigious types can dash off a few lawsuits while standing in line for a latte. Paul Ford, a programmer and writer, explores this idea of "nanolaw" in a short science-fiction story published on his website—lawsuits become a daily annoyance, popping up on your phone to be litigated with a few swipes of the finger.

Or we might see a completely automated and ever-present legal system that runs on sensors and pre-agreed-upon contracts. A company called Clause is creating "intelligent contracts" that can detect when a set of prearranged conditions are met (or broken). Though Clause deals primarily with industrial clients, other companies could soon bring the technology to consumers. For example, if you agree with your landlord to keep the temperature in your house between 68 and 72 degrees and you crank the thermostat to 74, an intelligent contract might automatically deduct a penalty from your bank account.

Experts say these contracts will increase in complexity. Perhaps one day, self-driving-car accident disputes will be resolved with checks of the vehicle's logs and programming. Your grievance against the local pizza joint's guarantee of a hot delivery in 10 minutes will be checked by a GPS sensor and a smart thermometer. Divorce papers will be prepared when your iPhone detects, through location tracking and text-message scanning, that you've been unfaithful. Your will could be executed as soon as your Fitbit detects that you're dead.

Hey, anything to avoid talking to a lawyer. ■

Jason Koebler is a senior staff writer at Motherboard.



2010: iJuror, an app that claims to help attorneys make the best decisions during jury selection, becomes available.

2014: A team at Michigan State's law school develops an algorithm that accurately predicts 70 percent of Supreme Court decisions made between 1953 and 2013.

2016: Four law students from Cambridge University create LawBot, a chatbot that helps individuals report crimes.



• WORKS IN PROGRESS

Haute Concrete

With his first building in New York, Tadao Ando takes the material to new heights.

BY BIANCA BOSKER

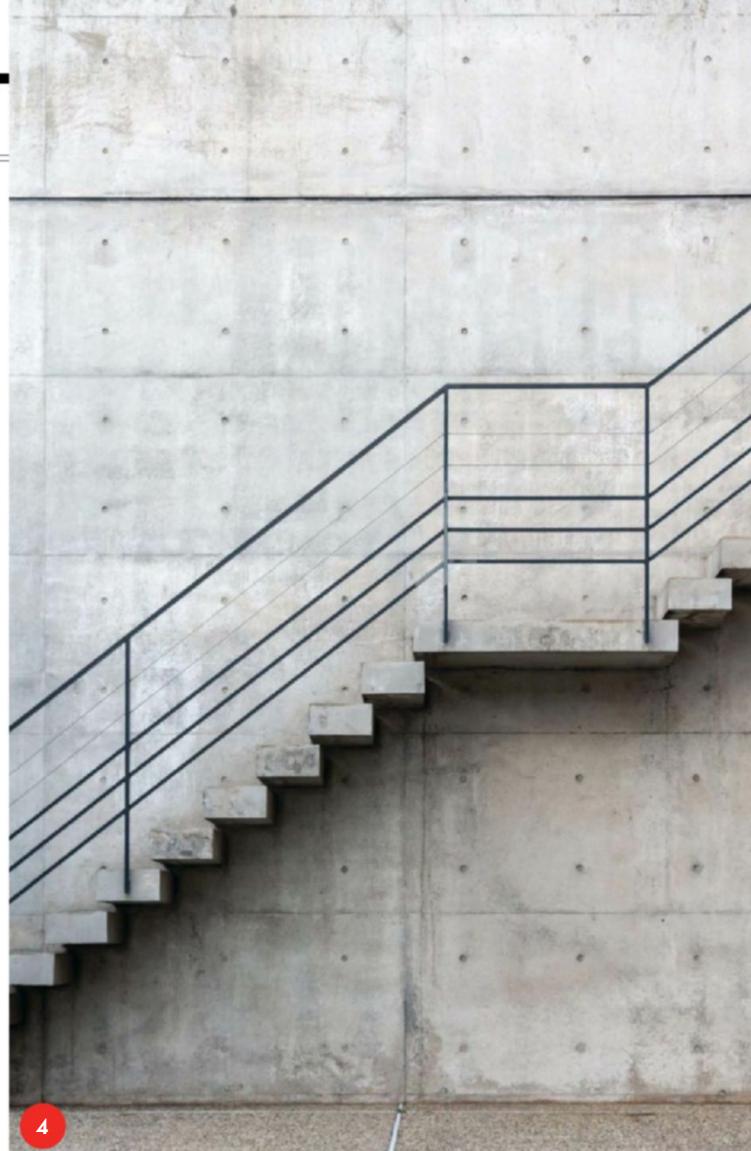
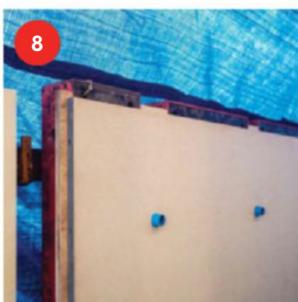
WHILE architects once considered concrete a building's underwear—an essential but hidden layer—Tadao Ando's ① structures display their concrete with pride. There's a story (which Ando's team declined to confirm) that's used to illustrate how seriously Ando takes the material: When the architect, a former boxer, saw a construction worker ash a cigarette into the concrete mixture for one of Ando's buildings, he reportedly slugged the man.

Over the course of his nearly 50-year career, Ando has helped transform the gritty, gray material often associated with driveways



and median strips into an artistic medium. "Every architect I know who wants to do something in concrete always refers to him as the ideal in concrete design," says Reg Hough, a concrete consultant who has for decades worked closely with top architects, including Ando, I. M. Pei, and Richard Meier. Having left his mark on cities from Tokyo to Fort Worth to Milan, Ando is now overseeing construction of a seven-unit, concrete-and-glass condominium building, 152 Elizabeth ② ③, his first stand-alone structure in New York City.

Ando is hardly the first architect to embrace concrete; he cites the



brutalist architect Le Corbusier, an earlier concrete virtuoso, as an influence. But while Le Corbusier and his peers used concrete in ways that suggested a heavy ruggedness—Prince Charles ungenerously described Owen Luder's brutalist Tricorn Centre as a "mildewed lump of elephant droppings"—Ando's concrete, which is smooth to the touch, seems more like cashmere. To architecture buffs, his walls are as recognizable as Bottega Veneta's woven leather is to fashionistas: They bear a consistent gridlike pattern, and are dotted with depressions ④. (It's even possible to buy pre-made paneling that knocks off the Ando look.) When



152 Elizabeth is completed later this year, its apartments will feature Ando's concrete both inside and out, where it will do double duty as structure and surface.

Making Ando-caliber concrete is not for the faint of heart. "It's been a bit of



• WORKS IN PROGRESS



But it is the process, more than the ingredients, that distinguishes Ando's concrete. Like most architectural concrete, it is made of water, cement, sand, and small rocks blended with chemicals and slag, a by-product of steelmaking that lends the final result its creamy finish. The material is trucked to the site, where it is pumped into a formwork—essentially a mold made of large wooden panels. Other architects might use bare panels of oak or fir, but those woods typically transfer their grain to the concrete as it dries. To avoid this, Ando has since the 1970s used plywood coated in plastic, which imparts a smooth surface. These panels are painstakingly connected so that the edges fit together tightly ⑥. Each mold is also pierced through with a series of steel rods, called form ties, which keep its two sides together ⑦.



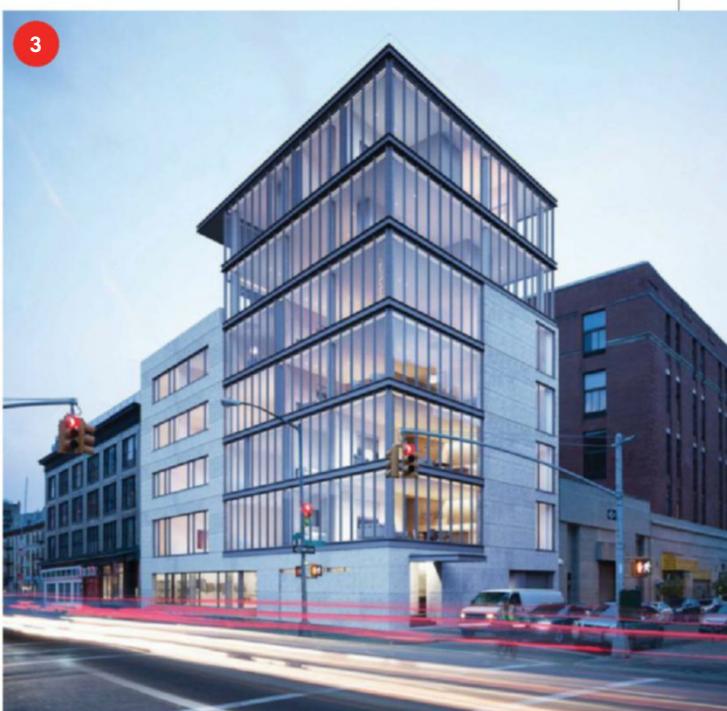
The form ties are in turn held in place by blue-plastic cones, which protrude into the wet concrete ⑧. When the formwork is removed, the seams between the wood panels leave behind Ando's iconic lines, while the plastic cones produce his trademark holes, which are partially plugged with mortar.

Khurana predicts that this will be his last project involving exposed architectural concrete. "I don't think I'll have the energy to ever do something like this again," he told me. "This is my jewel." Ando, however, seems drawn to concrete precisely because of the challenge involved in making

a pedestrian substance appear extraordinary. In his hands, the material takes on a counterintuitive grace—his designs ⑨ direct light, air, and people's movement in ways that recall works by artists like James Turrell or Richard Serra. "I want to create a space which no one has created before with a very common material which anyone is familiar with and has access to," Ando has said of 152 Elizabeth. "Concrete can be made anywhere on Earth." **A**



a war," says Amit Khurana, a co-founder of Sumaida + Khurana, which is developing 152 Elizabeth. "Getting architectural concrete right is like a fight because it's so hard to do." Because the concrete will remain exposed, any imperfection will be visible. Khurana's team practiced pouring concrete for 18 months before starting work at the site ⑤. Even so, nine inspectors oversee most pours to ensure that every protocol is followed. The crew has lugged in heaters, because concrete is hypersensitive to temperature shifts. And Khurana says they've rejected "several trucks" of mixed concrete for failing to meet the project's stringent specifications.



The CULTURE FILE



PARDON, MY
LORD. I AM...

...BEOWULF.

SON OF
ECGTHEOW
OF THE
WEGMUNDING.



▼
THE OMNIVORE

Beowulf Is Back!

Why a pre-Christian poem continues to haunt our post-Christian age

BY JAMES PARKER

BEOWULF, OF PRECARIOUS PROVENANCE—the single surviving, crumbling manuscript bears the scorch marks of an 18th-century library fire—has traveled across a thousand years to lodge in our imagination like some kind of radioactive space nugget. A story from a pre-Christian era written down by an anonymous Christian, in alliterative Old English verse, it has an otherness, a real frosty interstellar otherness, but also a mysterious resonance. It's holding something for us, this poem, the value of which is inseparable from its long and lonely transmission. And so we keep going back to it, we wonderingly retell it, testing it on our tongues like the syllables of a dream. The past 20 years alone have given rise to two feature films, a TV series, and no fewer than four graphic novels based on the poem, including one released this January.

What's it about, this running pop-cultural engagement with the old poem? To begin with, there's the action: kinetic, entralling fight scenes that go on for pages, pitting a superheroic human against a shape-shifting, ever-regenerating principle of destruction. Beowulf, mighty warrior of the Geats, hearing that some neighboring Danes are being terrorized by a misshapen antiman called Grendel, crews a ship with up-for-it countrymen and sails to the rescue. In the great hall Heorot—built for feasts, now stalked by Grendel—a bare-handed Beowulf fights the monster, rips his arm off, and nails it over the

door of the hall. Then he fights Grendel's mother, a water monster, diving into her demonic pond (where Grendel crawled to die) and running her through with a sword, which promptly melts. And then, back in Geatland 50 years later, Beowulf faces a dragon. Billows of *Game of Thrones*-esque dragon breath, heroic paroxysms. Beowulf kills the dragon, and the dragon kills Beowulf. The end.

But it's not the end. Because beyond, or behind, *Beowulf*'s triptych of hero-on-monster showdowns lies its starker-than-stark Dark Ages existentialism. The poem begins, very deliberately, with an image that is also a kind of parable: a person emerging nameless from the sea and then—after a lifetime of making a name for himself—being delivered back to the sea again. Scyld Scefing arrives on the shores of Denmark as an oceanic foundling, a baby drifting in a boat, and in time becomes a legend: ruler of the Danes and great-grandfather of Hrothgar, the king whose people Beowulf will later arrive to save. When Scyld dies, he is laid out in a vessel stacked with weapons and treasure, and set adrift once more. Away he floats. That's it, the poet is saying: That's life. Out of nowhere, and into nowhere. Better make it count.

It was Seamus Heaney who made a *Beowulf* nerd out of me. Heaney's 1999 translation/interpretation—some call it "Heaneywulf"—was a literary landmark and a best seller. I read it aloud to the mound of my pregnant wife's belly, hoping to inculcate Beowulfian ruggedness in my son in utero. These days I have a geekish preference for Michael Alexander's more musical 1973 version (*Away she went over a wavy ocean, / boat like a bird, breaking seas, / wind-whetted, white-throated,*),

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but it was from Heaney that I first slurped the overlapping atmospheres of the old poem: Heorot, the fear-swept hall; the phosphorescent mere where Grendel's mother lives; the dragon dozing on his bed of treasure, heaped glitterings and huge coils.

Heaneywulf is also, crucially, an aural experience: You hit Play on the audiobook, and suddenly you are a drowsing thane at the long table, wine and gravy in your beard, holding your goblet with heavy fingers as the skald, the bard, Heaney himself, lulls and astounds you with his verses. In the Old English, the first word of *Beowulf* is the exhortation *Hwaet*, for which translators have offered "Hear me!," "Attend!," and (in the infamous case of the otherwise forgotten literatus William Ellery Leonard) "What ho!" Heaney's version—conversationally, recursively, strum-of-the-harp-ishly—begins "So ..." A sort of hypnotic trigger. Into the epic trance you go. Your mind's eye blinks and opens, and here come the images and the moods: the granitic dignity of the cliff-top sentinel who challenges Beowulf and his gang of Geats when they first land on the shores of Denmark; the dismay of those Geats as they stare at the surface of the pond into whose vicious depths their chief has just dived, and see blood rising in the water.

Cinematic stuff. But big-screen adaptations of the poem have so far fallen short. In 1999, the year of Heaneywulf, we also received a cheerfully B-movie, jerkins-and-lasers film starring a peroxided and somewhat out-of-breath Christopher Lambert. Robert Zemeckis's CGI-crazed 2007 adaptation, with Angelina Jolie writhing and glistening in the role of Grendel's mother, was more coherent but horrible to look at. On the small screen, the 2016 miniseries *Beowulf: Return to the Shieldlands*, while not unenjoyable in a medievally glowering sort of way, took some diabolical liberties with the story.

Much more successful and interesting have been the graphic novels. *Beowulf* is a natural comic book, full of fractured perspectives, sudden zoom-ins, and spooky poolings of consciousness around heavy-metal details. January saw the publication of a gorgeous, splattery, hallucinated *Beowulf* by the Spanish writer-artist team of Santiago García and David Rubín. In the final combat, a half-roasted Beowulf, flung aloft by a whip of the dragon's tail, plummets through four circular frames like a smoking Icarus spied through a telescope. Stephen L. Stern and Christopher Steininger's 2007 version was also pretty good: Steininger's Grendel was dripping-faced and wraithlike, with a curl of malevolence fuming off his scalp like a poisonous dreadlock.

But it's Gareth Hinds's 2000 *Beowulf* that is the near-masterpiece, a scholarly, synesthetic

The Culture File

THE OMNIVORE

Cyclical, tribal violence obsesses the *Beowulf* poet.

freak-out: *skutchlp* goes Grendel's arm as Beowulf breaks it with his elbow, and the monster's agony—his "God-cursed scream and strain of catastrophe"—is rendered by Hinds as streamers of ancient script unwinding into the night sky. In my favorite panel, a blood-red Beowulf is breaching the surface of the evil pond, with Grendel's severed head hanging by its hair from his teeth and the handle of his melted sword hoisted above him like a crucifix. With this one wild image Hinds is resolving, in a sense, the tension between the pagan origins of the Beowulf story and the later, Christian messaging of the anonymous *Beowulf* poet: Beowulf himself may never have heard of Christianity, but when he vanquishes monsters, he does so under the sign of Christ.

What Beowulf fights against is the undoing of everything. I used to think that Grendel was your archetypal party-hater, a buzzkill like Jason Voorhees (of the *Friday the 13th* franchise) or Michael Myers (*Halloween*), his deep-brain slasher centers activated by laughter, music, the trebley ripples of hedonism. Harp-playing in the great hall makes him homicidal, to be alliterative about it. But it's not just any old harp-playing that gets Grendel going; it's the Christian vision of cosmic order laid out by the skald. *It harrowed him to hear ... how the Almighty had made the earth / a gleaming plain girdled with waters.* Creation itself, and the fact that it makes sense, is unbearable to Grendel.

So Grendel hates God. But the promise of Christianity, we begin to see, made barely a dent in this poem, which now emerges whole—eerily intact—into the post-Christian wreck of the current historical moment. There is no transcendence in *Beowulf*, and no redemption. Tear off the man-beast's arm, says the poet; plumb the lake of psychic terror and come up victorious; kill the dragon—but the dragon will get you anyway. Cyclical, tribal violence obsesses the *Beowulf* poet: In the same breath that he hails the splendors of Heorot, he assures us that the great hall will one day be burned to the ground. Beowulf saves the Geats from the dragon, but the rider who distributes the news feels obliged to add that, as a people, they will shortly be under the heel of the murderous, unsupernatural Swedes. And in the churning smoke of Beowulf's funeral pyre, a tableau from any age, every age: *A Geat woman ... sang out in grief; / with hair bound up, she unburdened herself / of her worst fears, a wild litany / of nightmare and lament; her nation invaded, / enemies on the rampage, bodies in piles, / slavery and abasement. Heaven swallowed the smoke.* □

James Parker is a contributing editor at The Atlantic.

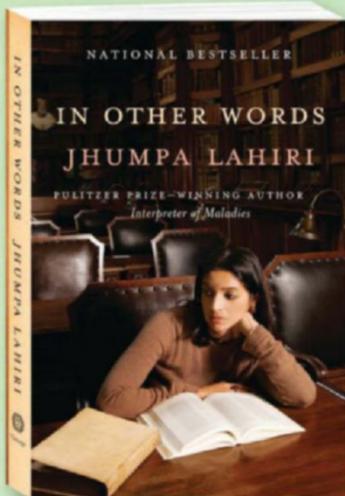
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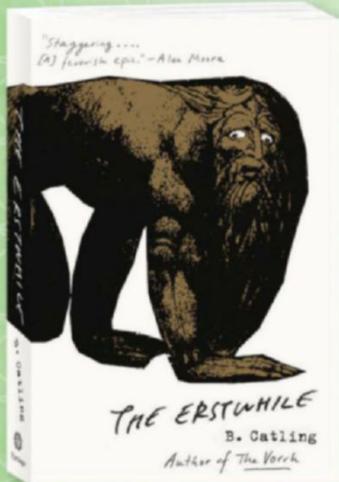
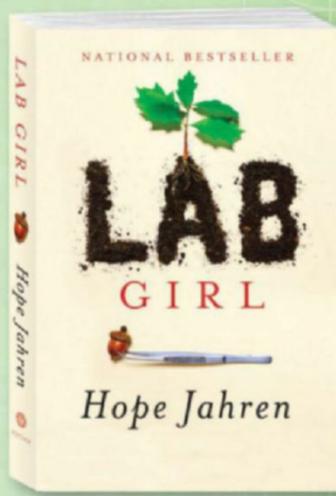
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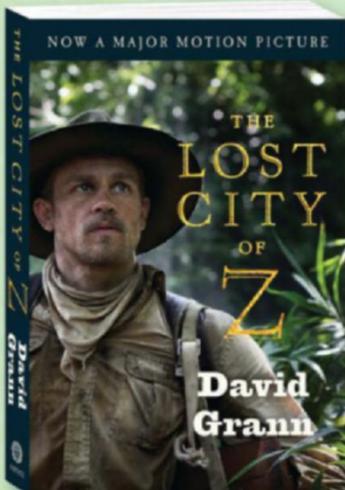
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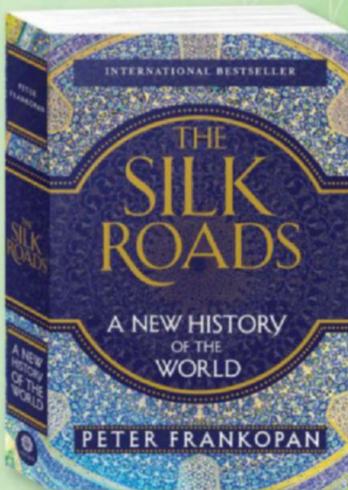
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BOOKS

Who Stopped McCarthy?

What the history of Republican infighting can teach us

BY SAM TANENHAUS

SO FIXATED ARE WE NOW on the divisions between the two major parties that we forget how often internal divisions within one party or the other shape political outcomes. A rich history could be written of the conflicts that have sundered presidents and congressional leaders of the same party, in some cases friends who turned into bitter foes. The Texan Lyndon B. Johnson, who probably had closer ties with the Senate than any other president before or since, tangled with Dixiecrats on civil rights and then with northern liberals, including his former ally Eugene McCarthy, on Vietnam. In 1990, House Republicans, led by Newt Gingrich, attacked George H. W. Bush for cutting a budget deal with Democrats and helped doom his reelection bid in 1992. It was Republican legislators who stopped George W. Bush's attempt to reform immigration, helping wreck his second term.

David A. Nichols's *Ike and McCarthy* is a well-researched and sturdily written account of what may be the most important such conflict in modern history: the two years, 1953 and 1954, when Dwight D. Eisenhower, the first Republican president elected since Herbert Hoover, found himself under assault from the demagogic senator who perfected the politics of ideological

slander. Joseph McCarthy had begun his rampage against "subversives" in the federal government, some real but most of them imagined, during the Truman years, amid the high anxieties of the Cold War. Hostilities had broken out in Korea, and threatened to draw in "Red China" (which had been "lost" to the Communists in 1949) or escalate into a doomsday showdown with the Soviets, newly armed with the atomic bomb. Meanwhile, billions were being doled out in foreign aid to left-wing governments in Western Europe, and homegrown spies like Alger Hiss and Julius Rosenberg had been uncovered and exposed.

McCarthy was dangerous—"no bolder seditionist ever moved among us," Richard H. Rovere wrote in his classic *Senator Joe McCarthy*—but much of the country was with him because he embodied, however boorishly, the forces of change. The Democrats had won every presidential election since 1932, and for much of that time had also enjoyed lopsided majorities in Congress. One party alone seemed responsible for the new postwar order, its failures as well as its successes, at a time of grand transformation for the country—from hemispheric giant to global superpower with commitments on every continent, and from land of rugged individualists to welfare state. For the new regime to flourish,

Republicans had to make at least part of the agenda their own. Thus emerged the hope for a lasting bipartisan consensus.

Eisenhower seemed a savior from central casting. He had guided 5 million Allied troops to victory in World War II and transcended grubby partisanship. He could have run on either party's ticket and won; in fact, the Democrats courted him in 1948. But he was a Republican, and his victory in 1952 was smashing: 55 percent of the popular vote and 442 electoral votes. The trouble was his coattails. They were just wide enough to give the Republicans a one-vote advantage in the Senate—their second majority since the Herbert Hoover years, but not really a majority at all, Nichols explains, “because the conservative wing of the party numbered eight to twelve senators.” They were the aboriginal right—Old Guard isolationists and enemies of the New Deal. Many of them remained loyal to the incoming Senate majority leader, Robert Taft, who had lost the nomination to Eisenhower in a brutal contest, complete with allegations of delegate-stealing.

At first McCarthy, who had cleverly side-stepped Taft's plea for an endorsement, said he was finished with his hunt for Communists in the government. In Eisenhower, “we now have a President who doesn't want party-line thinkers or fellow travelers,” he told reporters. Henceforth his mission would be to root out “graft and corruption.” But this cause didn't promise the attention he craved, the excitement and headlines that came with Red-hunting, the “permanent floating press conference,” as one writer has put it. Soon after Eisenhower took office, McCarthy reverted to his true self and began holding up high-profile foreign appointments—including Eisenhower's choice for ambassador to Moscow, the Soviet expert Charles Bohlen. The delay was dangerous. Stalin died in early March, and no one knew who was in charge or where things would lead. The previous ambassador, George Kennan, had been recalled in October 1952, at the Soviets' demand, leaving no one in his place to interpret Kremlin moves from the same close-up position. After a month-long delay, in late March Bohlen was confirmed.

It seemed to be reckless lone-wolfing, McCarthy defying his Senate masters. In fact, 10 other Senate Republicans had backed him. Eisenhower's tight circle of advisers got the message. “The crowd that supported Senator Taft at the convention in 1952 are all now revolving around Joe,” said one of them, Henry Cabot Lodge Jr. Taft was quick to praise McCarthy's “very helpful and constructive” attack on the Voice of America; soon McCarthy's snarling adjutant, Roy Cohn,

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**To
Eisenhower
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McCarthy.**

and Cohn's sidekick, G. David Schine, went on a madcap European junket. The mission involved, among other things, inspecting America's overseas libraries for subversive material, and the triumphant yield included work by Henry David Thoreau and Herman Melville. Visits to countries on their route typically culminated in a Marx Brothers-style press conference, the babbling pair's literary and cultural ignorance on display. And then, when Taft died, in July 1953, McCarthy was on his own. In February 1954, he announced a major speaking tour, paid for by the Republican National Committee. The party looked as if it was his as much as Eisenhower's.

MCCARTHY HAD A SECOND constituency—the media. To Eisenhower it seemed that the press, at once credulous and cynical, was building up McCarthy. In a speech to newspaper publishers, he accused journalists of cheap sensationalism, of presenting “clichés and slogans” instead of facts. Walter Lippmann, the most respected columnist of the time, was indignant: How could a responsible press not report what McCarthy said? The same quandary attends the media today, as they figure out how to handle “fake news” and the president's intemperate tweets. Now, as then, no good solution exists. Implying that actual news is synonymous with truth is bound to be erroneous: In reality, journalism is the first, not final, draft of history—provisional, revisable, susceptible to mistakes and at times falsehoods, despite the efforts of even the most scrupulous reporters. The problems don't end there. Those who covered McCarthy's every move inevitably became his “co-conspirators,” as one of them, Murray Kempton, later said. “In the end, I did not feel any cleaner than he was ... I pretended once again now and then that McCarthy was not a serious man; but I always knew that the devil in me and the larger devil in him were very consequential figures indeed.” It is a mistake journalists repeated in 2016.

Then as now, the press could achieve only so much, and for a reason that hasn't changed. McCarthy was a political problem, not a journalistic one—a problem that could be solved in the end only by politics, by Eisenhower himself, who fooled almost everyone in deftly outmaneuvering McCarthy. Nichols is not the first to make this argument. But his timing is good. Americans have as much to learn today from Eisenhower as his many liberal critics did in 1954.

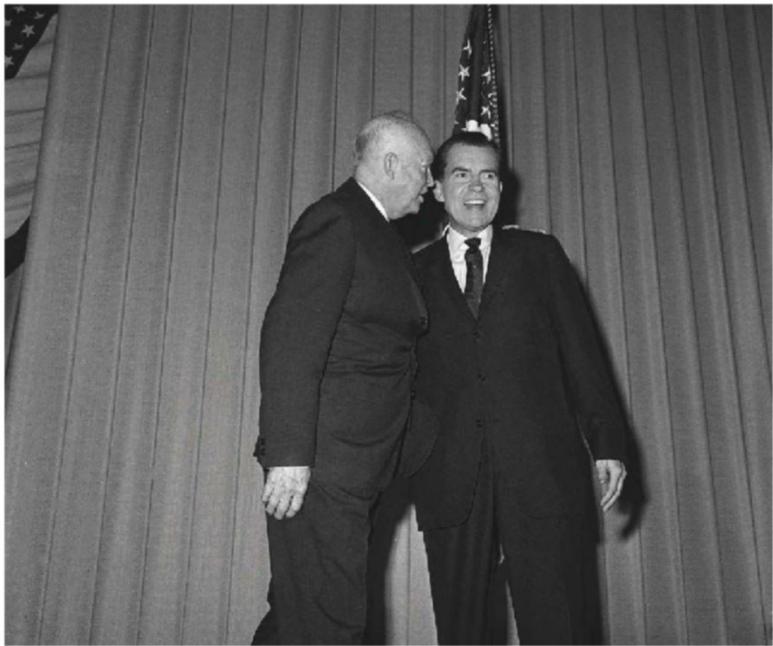
The first lesson is that Eisenhower defeated McCarthy through stealth. His efforts began in January 1954, exactly one year into his first

term. Eisenhower's inner circle had caught McCarthy and Cohn trying to secure favors for Schine, who had been drafted into the Army. The Army's counsel patiently assembled a dossier of Cohn's meddlings, which was strategically leaked to a Democratic senator and also to the press. Meanwhile, Senator Ralph Flanders—a Republican, just as Eisenhower had insisted it should be—denounced McCarthy in a strong speech. McCarthy's approval rating dropped. The Republican leadership in the Senate, boxed in, had to schedule what we now remember as the Army-McCarthy hearings, in which McCarthy was teased into loutish excess by the attorney Joseph Nye Welch while the TV cameras rolled. The villain was undone, ultimately, by methods like his own.

Nichols is right to emphasize the remarkable composure displayed by the very proficient staff that Eisenhower, widely underrated as an amateur, had assembled. They figured out that "Joe never plans a damn thing ... [and] doesn't know from one week to the next, not even from one day to the next, what he's going to be doing," as William Rogers, the deputy attorney general, said. "He just hits out in any direction." Leading him into self-destructive blundering was easy enough to do, but it couldn't be rushed.

Nichols overdoes the D-Day parallels, but Eisenhower was a model of battlefield self-control. And the military analogy seems right. Eisenhower himself equated politics with war, both zero-sum games in which "it's win or lose," with nothing in between, and no points won for rectitude or grand displays of valor. Our moral instincts recoil at this. We want the righteous side to win and everyone to watch the victory unfold. This was true in the 1950s, too. Even seasoned observers, well schooled in the realities of politics, kept waiting for Eisenhower to denounce McCarthy. But he refused to comment in public, blandly explaining, "I never talk personalities."

To those who wanted him to mount the bully pulpit in full battlefield regalia, Eisenhower seemed cowardly or even complicit, at best a "genial conciliator" (James Reston) and at worst a "yellow son of a bitch" (Joseph Alsop). It was catnip to Democrats. The Republican Party was "divided against itself, half McCarthy and half Eisenhower," Adlai Stevenson said in a brilliant speech, raising the specter of Lincoln to taunt a president who had bought a homestead in Gettysburg. Publicly, Eisenhower laughed it off ("I say nonsense"). Privately, he had assessed McCarthy's "demagogic skills," Nichols notes, and shrewdly decided against "saying or doing anything that would make himself, not McCarthy,



Nixon felt more in tune with McCarthy than he did with the Ivy Leaguers on Eisenhower's staff.

Nixon and McCarthy were both small-town products, tribunes of what would later be called Middle America.

the issue." He declined even to say McCarthy's name, thus denying him the satisfaction of recognition. Hillary Clinton might have applied the same principle in 2016.

Eisenhower repeatedly said, and Nichols seems to agree with him, that McCarthy was nursing his own presidential hopes. This was a natural enough assumption, and many at the time shared it. But McCarthy lacked both the discipline and the ambition to run for president. His talk about a third-party campaign came late, according to David M. Oshinsky's comprehensive biography. It was only after he was ruined in the Army hearings—and after his Senate colleagues prepared to censure him in December 1954—that McCarthy's drink-addled thoughts raced, or stumbled, toward the presidency. McCarthy loyalists were realistic about his limitations. William F. Buckley Jr. and L. Brent Bozell, who collaborated on the best-argued defense of him, *McCarthy and His Enemies*, never considered him presidential material. In their view, he was doing valuable work, discrediting the middle-of-the-roader Ike, the liberal in disguise. The figure they had plans for was William Knowland, Taft's handpicked successor as Senate majority leader.

Nevertheless, McCarthy fed the anti-government passions of the emerging conservative movement. Stevenson had been right when he said the GOP was splitting in two. Eisenhower represented its doomed moderate East Coast faction—the party of Thomas E. Dewey, the New York governor who lost to Roosevelt in 1944 and

Truman in 1948. Its voice was the editorial page of *The New York Herald Tribune*, with cheerleading from Henry Luce's magazines. McCarthy spoke to a newer constituency, based in the Midwest and, increasingly, the Sun Belt.

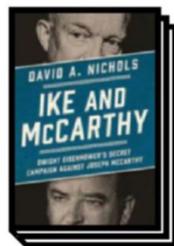
His supporters, whom Eisenhower called the "reactionary fringe," were more numerous than the president supposed. The journalist Theodore H. White, traveling through Texas in 1954 to interview conservatives in "the land of wealth and fear," including the new cast of oil billionaires, discovered articles of faith not recognized much in newsrooms or by broadcasters like Edward R. Murrow. One was that "Joe McCarthy is the senior patriot of the nation." Another was that "both older American parties are legitimate objects of deep suspicion." These conservatives were nominally Republican but were enrolled in "a nameless Third Party, obsessed with hate, fear, and suspicion—one of whose central tenets is that 'if America is ever destroyed it will be from within.'"

AT LEAST ONE OF Eisenhower's "foot soldiers," his vice president, Richard Nixon, sympathized with this outlook. Reluctantly, and on direct orders from "the general," Nixon delivered a brutally efficient reply to Stevenson's speech that essentially conceded the point that the Republican right was guilty of "reckless talk and questionable method." Once again, McCarthy's name wasn't mentioned. But it was clear whom Nixon meant. McCarthy certainly knew. "That prick Nixon," he grumbled, "kissing Ike's ass to get to the White House." It was indeed a profound betrayal of an ally. Nixon's dogged pursuit of Hiss, from his seat on the House Committee on Un-American Activities, had helped inspire McCarthy to start his hunt for Reds. After Nixon moved up to the Senate, McCarthy opened a place for him on his own committee. They were bound in other ways, too—both drinkers and small-town products, tribunes of what would later be called Middle America.

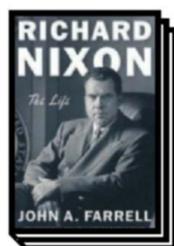
"Nixon identified more with McCarthy," John A. Farrell maintains in his deeply researched and sensitive *Richard Nixon: The Life*, "than he did with the 'tea-drinkers' on Eisenhower's staff, who went to Ivy League schools and played effete games like bridge and tennis." Farrell captures Nixon's many competing selves while also holding him in steady focus as a creature of his time, almost uncannily so. Our vivid memories of Nixon's demonic and seedy side, his crimes and cover-ups, obscure his initial image: He was a kind of clean-cut junior executive of the anti-Communist hard right, an off-the-rack suit mass-produced

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BOOKS



IKE AND
MCCARTHY:
DWIGHT
EISENHOWER'S
SECRET
CAMPAIGN
AGAINST JOSEPH
MCCARTHY
DAVID A. NICHOLS
Simon & Schuster



RICHARD
NIXON: THE LIFE
JOHN A. FARRELL
Doubleday

for suburban America. "McCarthyism in a white collar," Stevenson's cutting phrase for Nixon, was cited by Nixon's admirers on the right as evidence that he was on the side of the angels after all and had sold McCarthy out only because Eisenhower had given him no choice.

Nixon, too, would carry with him the memories of 1954 when he waged his own battle against Congress 20 years later, amid the slowly unfolding nightmare of Watergate. One lesson, borrowed directly from Eisenhower in his cat-and-mouse game with McCarthy, was to invoke executive privilege, which he did rather than produce the White House tapes. Nixon surrogates tried to depict Watergate as a new-model McCarthyism, with the media now cast as witch-hunters. But it was Republicans who did him in. Among the small contingent of Republicans who came to the White House to tell him it was all over—that he faced certain impeachment and conviction—was Barry Goldwater, the Arizona senator who had stuck with McCarthy to the end, and had then become the leader of the newly aligned Republican Party. When Nixon lost Goldwater, he lost the conservatives who now controlled his party.

Eisenhower versus McCarthy looked in its moment to be "one of the great constitutional crises of our history," in Lippmann's words. Perhaps. But more practically, it was a war within the Republican Party, and the battle was as much cultural as ideological. McCarthy wasn't appreciably more or less anti-Communist than many others, Republicans or Democrats. He had no program to speak of and little interest in economics or in exploiting racial and religious fears. His enemy was what would soon be called the establishment—the policy elite in Beltway institutions. He attacked the CIA, the State Department, and overseas enterprises like the Voice of America.

His genius was for disruption. He was one of those "men of factious tempers, of local prejudices, or of sinister designs," who, as James Madison warned in the Federalist Papers, "may, by intrigue, by corruption, or by other means, first obtain the suffrages, and then betray the interests, of the people." What finished McCarthy was his rash decision to resume his attack on the executive branch with a popular Republican in office. Had Eisenhower not been so well liked, a national hero, McCarthy might have won. Demagogues sometimes do. ■

Sam Tanenhaus, the author of The Death of Conservatism, writes for Bloomberg View and is at work on a biography of William F. Buckley Jr.

The Stubborn Optimist

The brilliant, prescient career of Grace Paley

BY NICHOLAS DAMES

IT IS THE EARLY 1930s. A girl in New York City, just tall enough to see over her family's kitchen table, catches a moment of tacit communication between her parents. The mother pauses in her reading of the newspaper to say to the father: "Zenya, it's coming again." Even the young girl, Grace Goodside, knows what "it" means: Hitler's rise to power. The "again" was more mysterious—more compelling—both for the girl and for Grace Paley, the writer and activist she became, who retold this memory. The 1905 pogroms that killed her uncle and drove her parents from Russia to the United States were only dimly known to her as a child. A penumbral and weighty silence, common to refugees from politically murderous areas of the globe, covered much of the family's past in the old country. A lesson emerged from that parental shorthand "again"—namely that nothing, even the worst, was entirely new. Politics was a matter of taking the long view and enduring.

Paley never forgot the rebuke her parents' wariness offered to American innocence, but she lived to shatter the silence with the volubility of an American child. From her Bronx childhood to her maturity in Greenwich Village's radical heyday, lasting to the Vermont retreat of her old age and her death in 2007, Paley was a fearless and unflagging arguer. She was someone who gained energy through the give-and-take of political debate, whose brash, blunt New York manners made the tacit sayable. A co-founder of the Greenwich Village Peace Center and a noted member of the War Resisters League whose pacifism was rooted in a continually evolving

feminism, Paley blended the socialism of her secular Jewish upbringing with the unruly passions of the left during and after Vietnam: The civil-rights, antiwar, and environmental movements each counted her as an ally. Much of her arguing happened on the ground—at protests, at the constant meetings that her life as an activist demanded, during visits abroad to nations that her own country was spending its young men and money ravaging. But from the 1950s until the 2000s, much of it also happened in writing: in poetry, in essays and political reportage, and in short stories, where her brilliance found its best outlet.

Paley's oeuvre isn't large. Years raising children, and many more years as a committed political actor, limited the extended solitude that writing demands. The short stories came out in three books published over two and a half decades, while the essays and poems were scattered over a longer period of time. The career can fit between two covers, as in a multi-genre anthology like *A Grace Paley Reader*. If the *Reader* was intended as a memorial, published a decade after her death, it now seems more pressing—a necessary antidote to the current demoralization of the American left and the disorientation of what remains of the country's center. On the one hand, Paley's durable, disabused optimism and the resilience of her fiction's women,



"the soft-speaking tough souls of anarchy," as she called them in the story "Friends," will catch you up short. On the other hand, so will her wary fatalism, the voice that lingered from her parents, reminding her how "it"—illiberalism, authoritarianism, the scapegoating of the most vulnerable—always might, and usually does, come again. When that happens, as it now seems to be happening, Paley has a way of reminding us how to be stubborn.

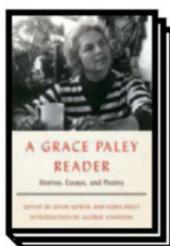
Paley's initial stories, slowly written during the 1950s and collected in *The Little Disturbances of Man* in 1959, received the kind of attention that launches careers. It is not hard to see why. They are masterpieces of voice, stunning ventriloquisms of women who, telling their life stories, refuse to be taken for suckers in a man's world. A streetwise Russian-Jewish Bronx patois is the general dialect, but every utterance of her characters promises to take an idiosyncratic, poetic swerve. The 14-year-old narrator of "A Woman, Young and Old," on her mother's taking a new lover: "Living as I do on a turnpike of discouragement, I am glad to hear the incessant happy noises in the next room." The middle-aged Aunt Rose of "Goodbye and Good Luck," remembering taking up piecework flower-making to earn some money as a young woman: "This was my independence, Lillie dear, blooming, but it didn't have no roots and its face was paper." With stony bravura, "An Interest in Life" opens: "My husband gave me a broom one Christmas. This wasn't right. No one can tell me it was meant kindly."

The milieu is the New York City immigrant world that muddled along before and during World War II, and then lurched unpredictably into middle-class prosperity. The voices are unapologetically female, speaking as if woman-to-woman. Men are transients and incidentals, "till time's end, trying to get away in one piece," Aunt Rose comments. Crowded multi-generational homes and thin walls make sex a common preoccupation. Patriarchal rules, inevitable and sublimely ridiculous, turn women into rugged survivalists. By 1959 this display of voice—the comedy of white ethnic life—was somewhat recognizable territory. Still, Paley pulled it off with so much panache that it gained her a following. The rueful honesty of her female narrators gave the stories a political charge, but they could be read as merely brilliant, wicked mimicry, a kind of amusing tourism, their feminism latent.

Late in *The Little Disturbances*, however, Paley found the key to transcending comic-ethnic ventriloquism: the recurring character Faith Darwin Asbury. While Paley's other narrators speak as if unconscious of their picturesque wit, Faith—a single mother of two boys, juggling petit bourgeois drudgery in increasingly bohemian times, putting no stock in men or their work—is her author's equal. The joke is no longer for the reader; it might even be on the reader. From her first appearance in "Two Short Sad Stories From a Long and Happy Life," when she names her first and second husbands Livid and Pallid, Faith

The Culture File

Politics is a matter of taking the long view and enduring.



A GRACE PALEY
READER: STORIES,
ESSAYS, AND
POETRY
EDITED BY
KEVIN BOWEN AND
NORA PALEY
FSG

has a self-awareness that makes it impossible to laugh at her:

Truthfully, Mondays through Fridays—because of success at work—my ego is hot; I am a star; whoever can be warmed by me, I may oblige. The flat scale stones of abuse that fly into that speedy atmosphere are utterly consumed. Untouched, I glow my little thermodynamic way.

On Saturday mornings in my own home, however, I face the sociological law called the Obtrusion of Incontrovertibles.

Faith invites and refuses confidences in the same sentence: "I rarely express my opinion on any serious matter," she tells us, "but only live out my destiny, which is to be, until my expiration date, laughingly the servant of man." If the admission seems like a bitter acceptance of things as they are, it is also the beginning of a refusal. It is a bulletin from a developing front.

Through faith, Paley discovered her great subject: the evolving political engagement of the generation of women who came of age in the shadow of World War II. The stories Paley wrote after *The Little Disturbances* are ever more plotless. They are snapshots of female community—in particular, the group of Greenwich Village women early to the postwar quest for feminist consciousness—or, in Faith's own words, "a report on ... the condition of our lifelong attachments." Paley borrowed the method of linking characters across a story series from Isaac Babel, one of her lodestars. But unlike Babel's Odessa stories—or, for that matter, Sherwood Anderson's *Winesburg, Ohio*—Paley's stories about Faith extend the timescale well into adulthood. Faith and her friends age, shedding lovers and children and parents, and finding new objects for their political passions. It turns out that rather than voice, Paley's true subject was time.

Put another way, her theme was how the ethical aspirations of political life extend over time: how they survive inevitable disappointment; how they steel themselves into endurance. Paley's second collection, 1974's *Enormous Changes at the Last Minute*, was like nothing else in American writing then. Especially startling was the way the stories handled the question of time. "Faith in a Tree," one of the volume's showstopping pieces, starts as a gently meandering account of a Saturday afternoon in Washington Square Park, where Faith observes other mothers, the new generation of fathers performing parental attentiveness, the hesitant mixture of races, the urban gossip and sexual competitiveness. Faith's voice is mordantly

witty but sympathetic. The park is, as she puts it, “a place in democratic time,” and there is love blended with Faith’s quiet acerbity.

The story seems for a while like the kind of observational vignette that might have made its way into William Shawn’s *New Yorker*, a poignant display of modern manners in the style of Irwin Shaw or John Updike—and then the story tears itself apart. A small procession of families enters the park making noise and carrying signs protesting the napalming of Vietnamese villages. A picture of a “seared, scarred” baby is borne aloft. A policeman forces them out of the park. Faith fails to intervene on their behalf; her older son accuses her of timidity. In a moment, everything is different: “And I think that is exactly when events turned me around, changing my hairdo, my job uptown, my style of living and telling ... I thought more and more and every day about the world.”

The story doesn’t merely explode the comfortable confines of white-collar realism. It refuses the blandishments of postmodern irony, another popular narrative mode in 1974. After all its emotional indirection and leisured byplay, its well-mannered literariness, Faith’s last words register with a stunning, almost embarrassing directness. The story lingers, and then pounces, transformed into a confrontation with a political fact; one moment expands suddenly into years, pulling us into a future of continual preoccupation. More and more, starting in the late 1960s, Paley’s stories worked like this—embedding us in slow daily time in order to confront us, obliquely or directly, with urgent historical time. They depict the frictions of changing social norms, but they also preach, particularly the virtue of endurance. It is Paley’s emotional signature: how to wait patiently, stubbornly, but not passively.

The transformation from the early stories is remarkable, a pivot from wit into something like a steady and intelligent earnestness. Earnestness,

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BOOKS

“My husband gave me a broom one Christmas. This wasn’t right.”

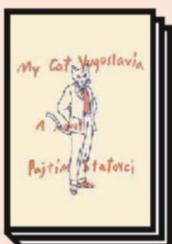
above all, is durable. Hate burns itself out and exhausts; indignation yields eventually to acclimatization; hope is bound to be disappointed. Earnestness expects to be around for a while, and knows it won’t have it easy. This is the theme of Paley’s essays, which offer plainspoken accounts of resistance: a jail stint for civil disobedience; a 1969 trip to North Vietnam to escort three American prisoners of war home; protests at the Seneca Army Depot, at the Pentagon, on Wall Street. The essays are not rousing, precisely, or in any way histrionic. They are steely. In their own way they too are about the long game, the lifelong project of change.

At the Seneca protest in 1983, Paley, then 60, musters one more act of exhilarating athletic defiance and climbs a fence around the Army depot. She is arrested for it, but claims no special virtue for the effort. “There was a physical delight in the climbing act,” she reports,

but I knew and still believe that the serious act was to sit, as many women did, in little circles through the drenching night and blazing day on the hot cement in front of the truck gate with the dwindling but still enraged “Nuke Them Till They Glow” group screaming “Lesbian bitches” from their flag-enfolded cars.

There are no easy conversions here, and while Paley has a stern understanding of her political enemies, she refuses to soften into acceptance. Instead she dwells on protracted acts: long, difficult conversations; long, painful vigils; many drenching nights and blazing days without obvious results. They are what the stories give us, fragmented into brief, vivid glimpses. Of the voices of mid-century American radicalism, few could ever make perseverance seem so vital. □

Nicholas Dames is the Theodore Kahan Professor of Humanities at Columbia University and the author of two books on Victorian fiction.



COVER TO COVER **My Cat Yugoslavia**

PAJTIM STATOVCI,
TRANSLATED BY
DAVID HACKSTON
PANTHEON

PAJTIM STATOVCI, who left Kosovo for Finland with his family as a toddler in the

early 1990s, knows how to disorient—and disarm. Who would have guessed that

an award for the best first novel written in Finnish would go to a book that features a talking cat, a pet boa constrictor, an Albanian arranged marriage, and a lonely gay immigrant?

The Yugoslav wars figure in the background, but for Statovci’s alternating narrators, a mother

and her son, the nightmare of embattled identity neither begins nor ends with the family’s flight from Kosovo. Emine finds herself entrapped in her village outside Prishtina well before the fighting starts. Well after it is over, Bekim drifts into young adulthood in urban Finland, feeling deeply estranged.

A tyrannical husband in the old country, who proves a brutally aloof father in the new, plays a crucial part in their plights. So, in a sinister yet also liberating way, do the cat and the snake. This dark debut has a daring, irrepressible spirit.

— Ann Hulbert



TOMINE

BOOKS

Lessons of the Hermit

Hiding in a forest for 27 years, a man found what the rest of us can no longer comprehend: solitude in nature.

BY NATHANIEL RICH

IN THE 27 YEARS he lived in the Maine woods, Christopher Knight said a single word. Because he never spoke to himself and avoided humanity with the guile of a samurai, he went decades without using his voice. In his hidden forest encampment he laughed silently and he sneezed silently, so fearful was he of being discovered. The only time he spoke came at some point in the 1990s, when he was surprised by a hiker during a walk. "Hi," Knight said. The hiker barely looked up, not realizing that he was face-to-face with the legendary hermit of North Pond.

Since his arrest in April 2013, Knight has agreed to be interviewed by a single journalist. Michael Finkel published an article about him in *GQ* in 2014 and has now written a book, *The Stranger in the Woods*, that combines an account of Knight's story with an absorbing exploration of solitude and man's eroding relationship with the natural world. Though the "stranger" in the title is Knight, one closes the book with the sense that Knight, like all seers, is the only sane person in a world gone insane—that modern civilization has made us strangers to ourselves.

Finkel first wrote to Knight at the Kennebec County jail after the hermit's capture became a national news story. Hoping to ingratiate himself, Finkel sent several of his articles, including one in *National Geographic* about a hunter-gatherer tribe in the remote Great Rift Valley of Tanzania. Knight responded to Finkel's letter with one of his own. It contained a photograph ripped from the Tanzania article, a portrait of a tribal elder named Onwas, who had lived his entire life in the bush. Though Onwas camped with his family, he passed vast reaches of time in silent isolation, measuring his days by the cycle of the moon. For more than 2 million years—or nearly all of human existence—this was how our genus lived. "This," writes Finkel, "is who we truly are."

In the course of their fragmentary, troubled relationship, Knight helps Finkel grasp the profound implications of this statement. If, deep down, we are all Onwas, then what, God help us, have we become?

FINKEL CALLS KNIGHT'S CASE "almost certainly the biggest burglary case in the history of Maine," which may be a touch too fine. A year after Knight's arrest, for instance, two 19-year-olds stole more than \$200,000 from a house in the island town of Vinalhaven (Maine fishermen tend not to trust banks). Knight, by his own estimation, engineered 40 break-ins a year, or more than 1,000 in total, before he was caught stealing marshmallows and Humpty Dumpty potato chips from the commissary of a camp for kids with disabilities. This was a typical haul; most of his break-ins netted loot like boxed macaroni and cheese, Mountain Dew, propane tanks, tarps, and novels. Knight stole what he needed to survive. He accumulated \$395, most of it in singles, in case of an emergency, but he never spent a dollar. Some of the bills had become moldy.

Knight's successful string of burglaries is among the least astonishing details of his story. At the age of 20, after earning a high-school diploma and a vocational degree, he quit his job as an alarm technician and took a road trip down to Florida. On his return, he drove past his childhood home in Albion, a small village northeast of Augusta, about halfway between China and Freedom, and continued 100 miles north until he nearly ran out of gas on a small dirt road. He entered the woods like a suicide, leaving his keys inside the car. He had no destination, nor a map; he carried a tent

but had never spent a night in one before. Most of his family members and friends assumed he had died. In one sense they were right.

He drifted for weeks, walking south, stealing food from people's gardens. By the time he discovered an ideal site—shielded by boulders and dense forest, between two ponds, steps away from the nearest of several dozen summer cabins in the area—he was just 30 miles from his parents' house, though he didn't know it. The site, Finkel notes, has good cellphone reception. (He has an eye for ambient details that reflect his subject's character. The geological term for the kind of boulders that shield Knight's site is *erratic*; the lines of writing in his letters are "crowded together as if for warmth"; the car he abandoned at the edge of the forest is "by this point as much a part of the wilderness as a product of civilization.")

Knight took extreme precautions to defend his isolation. He never lit an open fire and he devised trails over rocks and roots to avoid leaving any footprints. Taking advantage of his alarm-system expertise, he disabled surveillance cameras, spied on homes for days to learn their owners' habits, and restricted his raids to weeknights, when the cabins were most likely to be unoccupied. Once inside, he looked for spare keys and stashed them elsewhere on the property to enable future break-ins. When he borrowed a canoe to paddle to properties across the pond, he made sure, upon returning it, to sprinkle it with pine needles to give the impression that it had not been moved.

His actions were so stealthy, and his bounty so niggling, that for decades residents believed that the North Pond hermit was a myth. There was willful ignorance on both sides. Knight did not learn the name of the pond he haunted until he was arrested, or the name of the nearest town (Rome). He claims to have been ignorant of the year and even the decade. He kept time like Onwas does. "The moon was the minute hand," he tells Finkel, "the seasons the hour hand."

What kind of man does a thing like this? What kind of man talks like this? An autodidact, for starters, with the attendant traits: overly formal speech (asked about his survival methods, Knight replies, "I have woodscraft"), narcissism ("You're my Boswell," he tells Finkel), and quaking insecurity (in a conversation about literature, he defiantly tells Finkel that he refuses "to be intellectually bullied into finishing" *Ulysses*, despite the fact that he has not encountered an intellectual or a bully in 27 years). One can have a genetic predisposition to solitude, Finkel notes, and Knight came from a family of loners; he tells Finkel that he had missed "some" of his family "to a certain degree."

▼
**The
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**Knight
entered the
forest
because
there was no
place for
him in
modern
society.**

But genes cannot explain the extraordinary rigor of Knight's renunciation. Finkel plumbs the history of hermits for a similar case, considering Lao-tzu, the anchorites of the Middle Ages, the tomb-dwelling Saint Anthony, and India's estimated 4 million sadhus, many of whom file their own death certificate before commencing a life of monastic bliss. He does not mention Christopher McCandless, the subject of Jon Krakauer's *Into the Wild*, who lasted less than four months after disappearing into the Alaskan taiga, but McCandless had no cabins to break into. Finkel concludes as he begins, with the theory that Knight entered the forest because there was no place for him in modern society. "I wasn't content," Knight says. Before he left he was shy, socially inept, anxious. After, he says, "I was lord of the woods."

Knight's hermitage was not entirely pure—he stole processed food and a twin-size mattress, listened to talk radio (a lot of Rush Limbaugh), played handheld video games, and even watched a miniature Panasonic black-and-white television, charged with stolen car batteries (an admission that draws into question his claim that he did not know what decade it was). And it was not easy—he had to endure Maine winters when temperatures sank to -20° F, pacing across his site at two in the morning to fend off frostbite. But the forest granted him freedom, privacy, and serenity. And it transformed his brain. He developed photographic recall, a proclivity for deep contemplation, a limitless attention span. One of his favorite pastimes was hiking before dawn to a rise and watching the fog gather in the valley.

FINKEL QUOTES A HANDFUL of recent scientific studies to argue that Knight's camp "may have been the ideal setting to encourage maximal brain function." In her new book, *The Nature Fix*, about the growing field of environmental-health research, the journalist Florence Williams reports on dozens of studies that find that exposure to nature is "good for civilization." A few days in nature yields a 50 percent improvement in creativity, increases attention span, and lessens hyperactivity and aggression. Proximity to the ocean correlates with one's happiness, and mortality rates drop in greener neighborhoods, while traffic noise increases the strain on one's heart. Put another way, our growing alienation from nature is killing us.

Most people intuit that it's healthy to exercise outside, to visit a park, to walk in a forest. Poets and artists have preached these values for millennia, as have planners since at least Frederick Law Olmsted, as Williams acknowledges. But intuition is not enough for the scientists she interviews. "We

have to validate the ideas scientifically through stress physiology,” a Harvard lecturer says, “or we’re still at Walden Pond.” Williams agrees. “I was feeling pretty mellow,” she writes after walking through a national park in Japan, “and scientific tests would soon validate this.”

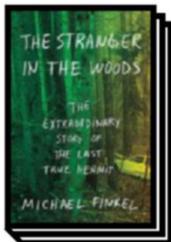
In search of validation, Williams visits with researchers in Finland, South Korea, Scotland, Utah, and Maine, submitting to diagnostic questionnaires, saliva swabs, heart-rate monitors, finger electrodes, and “crown of thorns” EEG helmets. She learns technical terms for familiar phenomena. The smell of earth after a rain derives from an aromatic hydrocarbon called geosmin. An environmental psychologist in Ann Arbor explains that observing falling rain puts one in a state of “soft fascination.” The Japanese word for “stress” is *stress*.

Williams’s findings are eminently reassuring, and perversely specific. “Don’t worry,” she writes, “I’m not going to tell you to pitch your smartphone over a waterfall.” Studies show that staring at a photograph of a forest is better than staring at drywall, though a window with a view is better, and a walk outside is best. Gazing at a eucalyptus tree for one minute makes you more generous. Your health will be improved by just a five-minute walk in a park, though 30 minutes will work wonders. Five hours of nature a month is all you need, though, as one scientist says, “if you can go for ten hours, you will reach a new level of feeling better and better.” Williams tops out at a rafting trip that lasts a week, or about 1/1,400th the length of Christopher Knight’s wilderness experience. For many of the war veterans with PTSD who accompany her, the rafting trip is a life-changing event, though one of her researchers isn’t convinced. “We don’t have the data,” he says. “I want to see randomized control studies, bigger studies.”

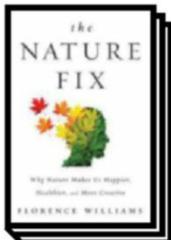
Like Williams, the journalist Michael Harris senses that something precious has been lost in our submission to immersive technology. This was the subject of his first book, *The End of Absence*, and remains the focus of his second. He began writing *Solitude: In Pursuit of a Singular Life in a Crowded World* after he realized he had never spent a day of his life alone, at least not without communicating electronically with others. “Why,” he wonders, “am I so afraid of my own quiet company?” The main subject of his book is not solitude, however, so much as its destroyers—the addictive digital resources to which human beings turn in order never to be alone: social media, video games like Candy Crush, the incessant blips and nudges with which one’s phone asserts its codependency. Harris notes that these distractions do not merely

The Culture File

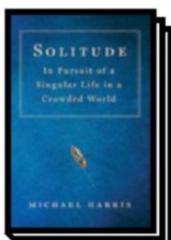
BOOKS



THE STRANGER IN THE WOODS: THE EXTRAORDINARY STORY OF THE LAST TRUE HERMIT
MICHAEL FINKEL
Knopf



THE NATURE FIX: WHY NATURE MAKES US HAPPIER, HEALTHIER, AND MORE CREATIVE
FLORENCE WILLIAMS
W. W. Norton



SOLITUDE: IN PURSUIT OF A SINGULAR LIFE IN A CROWDED WORLD
MICHAEL HARRIS
Thomas Dunne

impair our brain function, dilute our sense of identity, and shrink our lives. They make us lonely.

Solitude, like *The Nature Fix*, is most depressing in its prescriptions, which are delivered in the language of the technological culture Harris dreams of escaping. When he writes that choosing mental solitude is “a disruptive act,” yearns “to become my own algorithm,” or imagines an alternative, “slower-growing Internet,” he sounds like Williams extolling the virtues of various new nature apps, such as the one that uses visual-recognition software to measure a location’s “restorative potential,” or the one that collects users’ personal data to determine whether a location makes them happy. Williams writes of the virtues, when walking in nature, of stashing your cellphone “at least deep in your pocket.” Harris, on a tentative solitary walk, buries his phone in his back pocket. These are improvements, perhaps. But their phones are still in their pockets.

AS CHRISTOPHER KNIGHT observes, “There isn’t nearly enough nothing in the world anymore.” Even the nothing of jail is too much for him. To his horror, his cell mates try to sell him on the glories of cellphones and text messages. “That’s their enticement for me to rejoin society,” he tells Finkel. Why, he wonders, would a person take pleasure in using a telephone as a telegraph machine? “We’re going backwards,” he says.

After seven months in custody, Knight is granted some measure of leniency. He moves home with his mother and is hired by his brother to disassemble cars for his scrap-metal business. He ignores Finkel’s requests for additional interviews, but Finkel persists, showing up at his mother’s house. Nobody seems to be home. Finkel waits outside. Knight emerges from the bushes.

He is depressed, disoriented, lonely. He speaks of a visitation from the Lady of the Woods, a sylvan figure of death. Death seems better than enforced socialization. Even human faces, with all the information they convey, overwhelm him. “I miss the woods,” he says, before urging Finkel never to contact him again.

Finkel is moved to tears at the sight of Knight, broken and trapped, exiled from his forest home. The hermit of North Pond feels this tragedy more acutely than most, but he is not alone. “He has known something far more profound,” writes Finkel, “and that sense of loss feels unbearable.” We have known something far more profound, and that sense of loss feels unbearable. ■

Nathaniel Rich is the author of *Odds Against Tomorrow*.

Will the truth ever catch up with Trump's most skilled spinmeister?

KELLYANNE'S ALTERNATIVE UNIVERSE

BY MOLLY BALL

EVEN IN TRIUMPH, Kellyanne Conway nursed a grudge. As she reflected on Donald Trump's November victory, she made clear that she hadn't forgotten how people treated her back when they thought she was a sure loser. Their attitude wasn't one of outright rudeness or contempt; it was so much worse than that. It was syrupy condescension—the smarmy, indulgent niceness of people who think they're better than you.

"Kellyanne works hard," Conway said, assuming the voice of her erstwhile sympathizers. "We all love Kellyanne, but this is a fool's errand." Or 'She's done a really nice job, she should hold her head high, but this is just happy talk' ... You know, it was some combination of that. It was 'We love her, but she's full of shit.'

Conway flashed a wicked grin. We were sitting in her spacious office in the West Wing of the White House, less than a week after the inauguration. Just a year ago, she was a knock-about GOP pollster and talking head, a casino worker's daughter who's never quite shaken her South Jersey accent. But she'd understood something about the electorate that others had missed, and now here she was: perhaps the most powerful woman in America, a senior counselor to the president of the United States, a member of Donald Trump's core team of top advisers. "Winning may not be everything," she said, leaning forward over her paper cup of hot cocoa and giving a wink of one mascara-clotted blue eye. "But it's darned close."

Winning, Conway contended, was exactly what Trump was doing as president—just look at the number of executive actions he'd already signed. He was outpacing Obama, she said. "Not that it's a contest." When I told her I recalled Republicans depicting Obama's executive orders as Constitution-defying, dictatorial abuses of power, she replied, "Well, I don't know that I would have said that." And then came a blast of her signature verbal fog: "But the difference is that—it depends on the issue. Is it something that should be legislatively fought? And now that we have a government that functions that way, this president is taking the reins and doing that—operating, in part, that way."

Since taking over Trump's flailing campaign in August, Conway has become famous for her insistence on Trump's looking-glass version of reality—in which conspiracy theories merit consideration but reported facts are suspect. She claimed, during the campaign, that Trump "doesn't hurl personal insults," and that when it came to Barack Obama's birth certificate, "it was Donald Trump who put the issue to rest." She once insisted, on CNN, that Trump should be judged by "what's in his heart" rather than "what's come out of his mouth." She has reframed falsehoods as "alternative facts," invented a terrorist attack (the "Bowling Green massacre"), and flacked for Ivanka Trump's clothing line, in possible violation of federal ethics rules.

When Conway's critics pile on, she just keeps spinning. "She can stand in the breach and take incoming all day long," Steve Bannon, Trump's chief strategist, told me. "That's something you can't coach." She's figured out that she doesn't need to win the argument. All she has to do is craft a semi-plausible (if not entirely coherent) counternarrative, so that those who don't want to look past the facade of Trump's Potemkin village don't have to.

There is a playful self-awareness to Conway that tempts observers to believe she's in on the joke, as in the *Saturday Night Live* skit in which her character mutters, while Trump's



ILLUSTRATION BY WG600

character appears not to notice, “I’m handcuffed to you for all of history.” But if Conway has any doubts about the rightness of the cause, she doesn’t let them show. While her specious arguments leave interlocutors sputtering, she wields a weaponized calm. (Seth Meyers: “I bet in the next four years we are not going to see the president-elect’s tax returns.” Conway, not missing a beat, with a beneficent smile: “I bet that most Americans really care what *their* tax returns are going to look like after he’s been president for four years.”)

Newt Gingrich, the former House speaker (and a former Conway client), told me her effectiveness at “taking on the media” makes her essential to the new administration. “You either decide you’re going to defend Trump and Trumpism, or you let the left browbeat you into doing stupid things,” he said. When I asked whether the administration and the media might be able to find some kind of common ground, Gingrich practically snarled. “Not these people,” he said. “You are all so far to the left, so contemptuous to Trump. Trying to conciliate you is silly. It’s like trying to pet lions.”

“WAS MITT ROMNEY NEGOTIATING CEASE-FIRES IN ALEPOO AND SOMEHOW I MISSED IT?”

The media lions have seemed to roar louder at Conway with each passing week. But she’s never been afraid to mix it up—sometimes even literally. At one of the inaugural balls, two men in tuxes started scrapping, a witness told the New York *Daily News*. Conway intervened and, when they wouldn’t stop, punched one of them three times in the face. When I asked her about the fight, she coyly did not deny it. “I’m not commenting on that,” she said, grinning. “Men behaving badly is nothing new to me.”

Unlike the men with whom she vies for Trump’s favor, Conway isn’t seen as one of the new administration’s centers of power, and she resents the perception that she’s a mere spokeswoman. Now that she’s in the White House, she says, she has an expansive role overseeing numerous policy areas.

Conway’s claims to centrality can at times come across as self-aggrandizing and exaggerated. (Her insistence, for example, that then-National-Security Adviser Michael Flynn “does enjoy the full confidence of the president,” hours before Flynn resigned, suggested that she had been left out of the loop.) But Bannon told me she played a much more important role in laying the early groundwork for Trump’s movement than almost anyone knows. And she seems to have a unique ability to steer the impulsive president—who is, by all accounts, more attuned to what’s on cable news than to any white paper or policy briefing.

During the transition, Conway began publicly criticizing, on Twitter and on television, Trump’s consideration of Mitt Romney for secretary of state. Romney and Trump were in the midst of a high-profile courtship, and Romney was reportedly a leading contender for the job, when Conway tweeted that she

was receiving a “deluge” of feedback from Trump fans who would feel “betrayed” by Romney’s selection.

“What were his special qualifications for that, is all I asked,” she told me. “Losing Michigan by 10 points, when Donald Trump won the state, certainly wouldn’t have been a qualification. Was Mitt Romney negotiating cease-fires in Aleppo and somehow I missed it?”

The public airing of such a sensitive personnel matter caused a sensation. It was suggested that Conway had “gone rogue,” and on *Morning Joe*, Trump was said to be “furious” with her for her insubordination. She called him up to see whether this was true. He said it was not, and she proceeded to explain why she was so opposed to Romney: She hadn’t forgiven him for his role in the “Never Trump” movement, including a speech calling Trump a “con man.”

“I just told him that I know how things go,” she explained: “Every single time Secretary of State Mitt Romney would have deplaned in a foreign country ... they would go to the B-roll of him in front of the orange-and-white background, mocking

Trump Water, Trump Steaks, Trump’s character, his integrity, his message—him. And that would never have gone away, and he deserves better.”

Romney dined with Trump in New York and gave a public statement that seemed to retract his previous concerns and expressed confidence in the president-elect. Nonetheless, he was passed over. Trump chose Rex Tillerson, the ExxonMobil CEO, for the post instead.

“Judas Iscariot got 30 pieces of silver; Mitt Romney got a dish of frog legs at Jean-Georges. And even at that, it was the appetizer portion,” a high-ranking White House official told me. “We’ve sort of taken out his larynx—how can he criticize [Trump] now?”

The episode was, Conway said, an example of her method: operating “dimensionally,” not “linearly,” to get results. She pointed to a dinner where Trump told a group of diplomats that Tillerson was “a man that I wanted right from the beginning.” In the end, Conway hadn’t just gotten her way. She had made the president think it was his idea all along.

CONWAY’S HOMETOWN of Atco, New Jersey, is the sort of featureless place that takes its name from a corporate acronym—*Atco* is short for the Atlantic Transport Company, which, at the turn of the 20th century, ordered some ships built nearby. She prides herself on staying rooted here, in the Real America that fancy people can’t quite grasp—the America that defied conventional wisdom and handed Trump the presidency. Conway can claim to speak for Trump’s base, that is, because she’s one of them.

Just off White Horse Pike, a single-story stone house sits on a raised mound of earth that makes it tower above its neighbors, its driveway a steep slope. When I rang the bell one afternoon in early February, Conway’s 73-year-old mother, Diane Fitzpatrick, answered the door. “My mom always wanted a house on a hill,” Fitzpatrick said, by way of explanation. “So my father built a hill.”

Fitzpatrick welcomed me into the dining room. The walls were a bright, cheerful yellow, the windows hung with filmy curtains. Every surface was choked with clutter—silk plants, prescription bottles, angel figurines, crosses, little plaques with



Donald Trump and Kellyanne Conway at a victory party on election night. "If Kellyanne had not been there when the firestorm hit, I don't know if we would have made it," says Steve Bannon.

sayings about family and faith. Through a doorway I could see an enormous framed photograph of Conway and her family hanging over the fireplace; on a set of shelves were a signed photo of Trump and a Mother's Day note from him. The house was a shrine—to God, to Trump, and to Kellyanne.

Fitzpatrick has lived in this house on and off for 60 years, since she was a teenager. She'd wanted to be a traditional homemaker, but her marriage ended in 1970, when Conway was 3. Fitzpatrick went to work, eventually spending 21 years as a cashier working the night shift at the Claridge casino in Atlantic City, relying on her mother and two unmarried sisters to help raise her only child.

Conway went to Catholic school in Hammonton, 10 miles down the road, where she was a cheerleader and played field hockey and was first in her class. "I always told her you have to do your best," Fitzpatrick said. "But she had to *be* the best."

Conway spent eight summers packing blueberries at a nearby farm, where she sometimes drew onlookers with her remarkable, automaton-esque speed and ability to work for long stretches without a break. She brought a similar intensity to her schoolwork. "I didn't think she was a deep thinker," one of her high-school teachers told *Cosmopolitan*. "But I do remember that she would argue her point relentlessly. You would pray to God that the bell would ring."

Fitzpatrick told me her grandparents came from Italy, noting indignantly that they were held at Ellis Island until they could be thoroughly checked—unlike today's immigrants, she said, who just come right in. "We never wanted anything handed to us," she said. "My father hated credit cards—'If you don't have the money, you don't need it.'" In her day, she added, children respected their parents. "It's not like the kids you see today, where there's so much hate in the world." After a botched back surgery in 2001 left Fitzpatrick unable to stand for long periods, she sued her doctor and retired on permanent disability.

The country, as she described it, is at the mercy of atheists and agitators who want to tell "the majority" how to live their lives. Fitzpatrick was kindly and hospitable, serving me coffee

and snacks in neat little bowls. But once she got going, she could barely contain her disgust at the snobs and celebrities who were not giving the new president the chance he deserved—people like Ashton Kutcher, who lambasted Trump at the Screen Actors Guild Awards in January. "I'd like to kick the TV in, honest to God."

President Obama "pitted the blacks against the whites," she said. "If something happened to a black person, he and his wife were right there. But if something happened to a white person, you never saw them, did you?" Attending the inauguration with her daughter, Fitzpatrick was relieved to hear God mentioned for what she believed was the first time in eight years.

Conway and her husband, George, a conservative litigator (who as of press time was said to be in the running for solicitor general), own a \$6 million house in Alpine, New Jersey, a wealthy suburb of New York two hours from Atco. But Fitzpatrick told me that Conway hasn't forgotten where she comes from: "She has been all over the world, but it hasn't changed her any—not at all."

RANK LUNTZ, the Republican pollster and messaging guru, met Conway in the 1980s at Oxford University, when he was in graduate school and she was on an undergraduate year abroad from Trinity Washington University, in D.C. Lonely, homesick, and surrounded by stuffy Brits, Luntz was immediately drawn to Conway. "She already was political, and right of center," he recalled. "The smile, the blond hair, the vivaciousness, a little bit flirtatious—she was just fun."

One time, she and a couple of friends took Luntz shopping and made him try on a Speedo so they could laugh at him. "I've been fat for, like, 15 years, but I wasn't always fat," he told me. "Nevertheless, a guy like me should not put on a Speedo." This sounded humiliating and cruel to me, but Luntz insisted it was hilarious.

Conway went to law school at George Washington University and accepted an offer to work for a D.C. firm, but reneged when Luntz asked her to join his polling company instead. They traveled the world together, and loved to play pranks, such as pretending they were husband and wife and having a noisy argument in an elevator. After a few years, she left to start her own company. While building her business, Luntz told me, Conway said things about him that hurt his feelings, and the two didn't speak for several years. They have since reconnected.

A few firms dominate Republican campaign polling, and Conway's was never one of them. But she carved out a niche helping politicians and corporations understand women. Though she's an unapologetic career woman who married at 34 and had the first of her four children at 37, Conway views feminism as unnatural and man-hating. She says "femininity" is more important, is strongly opposed to abortion, and thinks that women should cherish traditional roles, not a sense of victimhood. The post-inauguration Women's March left her notably unmoved. "Marching on the Mall with vagina hats on?" she said. "Your mom must be so proud."

In the 1990s, Conway began appearing often on TV, spouting the standard Republican line on Bill Maher's and Chris Matthews's shows. She seemed like a member in good standing

of D.C.'s political-hack crowd. But as a pollster, she worked for certain groups that other Republicans avoided or dismissed as fringe, including the Federation for American Immigration Reform, which, according to the Southern Poverty Law Center, "promotes hatred of immigrants, especially non-white ones," and the Center for Security Policy, a think tank headed by Frank Gaffney Jr., which has been accused of pushing anti-Muslim conspiracy theories. Her 2015 poll for the center claimed to show that a majority of American Muslims supported Sharia law in the United States, but it was widely criticized for methodological flaws; that December, Trump cited it when he first proposed banning Muslims from entering the country.

"Remember, Kellyanne was not a mainstream pollster," Bannon told me. "She had every marginal act out there. Social issues, security moms, immigration—she was a movement-conservative pollster." It was in that capacity, he said, that she played a pivotal role in upending the GOP establishment.

After Romney lost the 2012 election, the Republican National Committee concluded, in its "autopsy" report, that the party needed to broaden its appeal. Supporting immigration reform, and thus bringing in Hispanic voters, was the only way forward—a position shared across the Republican establishment, from the *Wall Street Journal* editorial page to the Chamber of Commerce to the Koch brothers. Donald Trump, then hosting *The Apprentice*, said Romney had lost because his "self-deportation" policy alienated Hispanic voters.

But there was another view: that Romney lost because he'd failed to inspire white working-class people, many of whom stayed home in 2012. This idea, laid out by an analyst named Sean Trende for *RealClearPolitics* and known as the "missing whites" theory, became the major counterpoint to the GOP autopsy. It held that Republicans didn't need to do better with minorities; they could instead turn out a bigger share of white voters, particularly rural, blue-collar white voters.

One way Republicans could win, Conway believed, was by arguing for stricter immigration policies. She told me she had long understood how the issue resonated with struggling voters. They were willing to do unglamorous jobs to support their families—to hang drywall or mow lawns—but found themselves undercut by immigrants who would "work under the table for peanuts." It wasn't fair, but the elites—and many politicians—didn't seem to think their concerns were even worth mentioning.

In 2014, Conway was part of a group of Republicans that produced a poll for FWD.us, Facebook founder Mark Zuckerberg's immigration-advocacy nonprofit. It showed that immigration reform was a political necessity for the GOP—a finding at odds with the line Conway had been pushing since the 1990s. Two months later, she produced a different poll, demonstrating that "enforcement of current law" and "encouraging illegal immigrants to return to their home countries" could be a winning message. She presented her findings to a group of Republican donors, who rebuffed her. But the poll found favor with opponents of immigration reform. The far-right website Breitbart.com (then headed by Bannon) hailed it as a "blockbuster."

The poll was credited to Conway, but it was paid for, I discovered, by the immigration-restriction group NumbersUSA, a longtime client of hers. After she circulated her findings, Republicans began to embrace previously taboo positions. NumbersUSA's executive director, Roy Beck,

watched in amazement as one Republican presidential candidate after another—Scott Walker, Ted Cruz, even Jeb Bush—began parroting his group's arguments. Trump was the most ardent convert. "Trump started out at, like, a C-minus" on the group's report card, Beck told me. But he got with the program. "He just kept improving, focusing his message more and more on what was good for the worker."

Bannon told me Sean Trende's "missing whites" theory and Conway's polling on immigration formed "the intellectual infrastructure" of 2016's populist revolt. He added that Conway was part of a "cabal" he had started to build with Jeff Sessions and Sessions's then-aide Stephen Miller, who is now a senior White House policy adviser. "This is her central thing," he said, "the reason I got to know her."

N 2006, the Conways were living in Trump World Tower, a hulking skyscraper across from the United Nations, when the condo board sought to remove Trump's name from the building. George Conway took Trump's side and gave an eloquent speech at a meeting Trump attended, arguing that removing his name would decrease the value of the building's apartments. Trump called him afterward to thank him, and two days later the property manager offered George a seat on the board. He didn't want it, but Kellyanne did, and that's how she met Trump.

Conway says she recognized early in the 2016 campaign that Trump was connecting with voters. But despite an early overture from Trump, she initially signed on to run a super PAC supporting Ted Cruz. The reclusive father-and-daughter megadonors Robert and Rebekah Mercer, whom Conway considers friends, poured more than \$10 million into the effort. In that role, she occasionally bashed Trump, such as when she said he had built his fortune "on the backs of the little guy."

But after Cruz dropped out, the Mercers threw their support behind Trump and got him to hire Conway as a pollster. In August, when the campaign was fountaining under the direction of Paul Manafort, Trump made Bannon the campaign's CEO and promoted Conway to campaign manager, again at the Mercers' urging.

It was a job many top-flight consultants wouldn't have touched, and Trump's critics dismissed Conway as a junior-varsity talent leading a doomed mission. "No one in D.C. before this ever woke up in the morning and said, 'My God, this campaign will go nowhere without Kellyanne Conway,'" says Rick Wilson, a Republican consultant who opposed Trump and worked for the independent conservative presidential candidate Evan McMullin.

But when Conway took charge, in August, Trump stopped giving press conferences, which had been erratic and freewheeling; started using a teleprompter more frequently at rallies; and dialed back his tweets. She quickly developed a reputation as the "Trump whisperer," a perception she encouraged. It wasn't that she was moderating him, or pushing him toward policies with mainstream appeal—she was taking his pugilistic instincts and funneling them in a more productive direction.

When the campaign hit its low point, in October, with the release of the *Access Hollywood* tape on which Trump boasted about groping women without their consent, Conway's indomitable faith in Trump appeared, from the outside, to be flagging. She canceled her planned appearances on the Sunday talk

shows, as some suggested Trump might drop out. But Conway soon reemerged, insisting that while the comments on the tape were “indefensible,” she believed Trump when he said they were just words, and that he had never acted on them. She implied that when she was “younger and prettier,” she’d endured sexual harassment from some of the lawmakers now sitting in judgment of him. And she stuck to her script even after about a dozen women came forward to say that Trump had forced himself on them.

Bannon says it was Conway’s calm presence that led both wavering women and conservative voters to think, *If she can still support Trump, I can, too*. “If Kellyanne had not been there when the firestorm hit, I don’t know if we would have made it,” he told me. “She literally became a cult figure during that time period, just because of her relentless advocacy for Trump on TV.”

The idea that she was merely a spokeswoman rather than a true campaign manager misses the point, Bannon said: Communications was everything to Trump, an instinctive marketer who didn’t believe in much traditional campaign organization. Coordinating field efforts, placing ad buys—those functions were secondary. “People say, ‘She wasn’t really campaign manager.’ I say, ‘No offense, this wasn’t the Bush campaign.’”

Frank Luntz agrees with Bannon that Trump couldn’t have won without Conway’s defense of him after the *Access Hollywood* tape came out. “He owes her for standing up for him,” Luntz said. “I could not have done what she did.”

I told Luntz, who has mixed feelings about Trump, that this didn’t exactly sound like a compliment. But he insisted that it was. “I would not have survived it; I’m impressed that she did,” he said. “In every possible sense, she won. I do not believe he would be president without her.”

CONWAY’S NEW WEST WING QUARTERS are upstairs from the Oval Office, in a space previously occupied by Valerie Jarrett, Obama’s longtime friend and confidante. Before it was Jarrett’s, Conway told me, the office was Karl Rove’s. And before that, in a bit of trivia Conway relishes, it belonged to Hillary Clinton, who demanded a West Wing office for her policy work in addition to the first lady’s traditional East Wing quarters.

As we talked, a makeup artist from Fox News entered, setting her supplies out on an otherwise bare side table and draping a black-plastic cape over Conway’s shoulders. “I’ve got to multitask, or I go on TV looking like *this*,” Conway said, unpinning her platinum-dyed hair. She has a disarming matter-of-factness about her looks. Despite her claim that she has bad hair and she will retort, “I have other assets—feet and hair are not among them,” then go on to tell you about the bunion surgery she badly needs but has no time for.

A few days earlier, Conway had appeared on *Meet the Press* and coined a term that neatly encapsulated the administration’s relationship with the truth: *alternative facts*. The phrase spawned dozens of think pieces, the British prime minister used it to accuse a political rival of lying, and sales of George Orwell’s *1984* spiked.

When I asked Conway about the incident, she insisted that it was no big deal in Trumpworld—a blip, a trivial error, virtually a typo. “What I meant to say was *alternative information*,”

she said, giving an example: Three plus one equals four, but so does two plus two.

Anyway, she contended, nobody cared about “alternative facts” except the elite, out-of-touch intelligentsia who spend all day winding one another up in the echo chamber of Twitter and cable news. “It was haters talking to each other and it was the media,” she said, adding that requests from TV bookers continued to stream in.

Most important, Trump himself loved it. After the appearance, Conway texted Chuck Todd, the show’s host, to let him know that Trump thought he’d been disrespectful to her, and Todd wrote back. “He said, ‘I’m sorry you feel that way,’” she told me. “I said, ‘That wasn’t me. The president asked me to send that to you.’ So anybody trying to divide us here is going

BANNON TOLD ME CONWAY WAS PART OF A “CABAL” HE BEGAN BUILDING WITH JEFF SESSIONS AND STEPHEN MILLER BEFORE THE ELECTION.

to have the opposite effect. He thought that was one of my best appearances. Because he watched the whole thing.”

A week later, the “Bowling Green massacre” inspired a similar outcry—and a similarly nonchalant response from Conway. I texted her afterward to ask whether she was in trouble with Trump. “Not at all,” she replied. “Why would I be?”

It was, of course, impossible to know whether this was true.

With each successive Conway outrage, her “haters” hold their breath and wait to see if the ax will finally fall. Trump bestows his favor unpredictably, and veterans of past Republican administrations look at the chaos in the White House and say a shake-up is inevitable. “The White House was not set up in a functional way,” a former high-ranking official in George W. Bush’s administration told me. “This is unsustainable.”

But insiders say Conway is largely untouchable. Jason Miller, who worked for the campaign and the transition team, told me he couldn’t imagine Conway losing her job: “One thing people don’t quite get is that she is a living, breathing folk hero for millions of people around the country.”

To doubt that Conway’s comeuppance awaits is to question the laws of political gravity, or even the basic concept of right and wrong. “She’s able to sit there with a straight face and say, over and over, ‘No, the sky has never, ever been blue, and it’s true because we won,’” says Rick Wilson, the anti-Trump consultant. “She’s going to have to, at some point, reckon with the moral compromises it takes to do the things she’s doing.”

In a universe that operates according to normal rules, that might be true—actions are supposed to have consequences; people are supposed to stop listening to you when you prove that you can’t be trusted. But as Donald Trump showed again and again throughout the campaign, those rules aren’t as binding as we may have once believed. **A**

Molly Ball is a staff writer at The Atlantic.

WHAT YOUR THERAPIST DOESN'T KNOW

**BIG DATA HAS REVOLUTIONIZED
EVERYTHING FROM SPORTS TO POLITICS
TO EDUCATION. IT COULD REVOLUTIONIZE
THERAPY, TOO—IF ONLY THERAPISTS
WOULD STOP IGNORING IT.**

BY TONY ROUSMANIERE
ILLUSTRATIONS BY GUYCO



GRACE

WAS A HEROIN ADDICT WHO HAD BEEN CLEAN FOR ABOUT SIX MONTHS; I WAS A 34-YEAR-OLD THERAPIST IN TRAINING. WHEN WE STARTED PSYCHOTHERAPY, IN 2006, GRACE HAD A LOT GOING AGAINST HER.

She was an unemployed single mother who had been in a string of relationships with violent men and was addicted to drugs. Yet despite these challenges, she was struggling bravely to put her life back together and retain custody of her young son. (I've changed my patients' names and some details about them to protect their privacy.)

Our therapy focused on supporting Grace's attendance at Narcotics Anonymous meetings and reducing the anxiety she said had driven her to drugs. The first few months seemed to go well. Every week, she told me about her successes: She attended the NA meetings, got a job, and found a boyfriend who respected her.

We both knew the stakes—custody of her son, and perhaps her life—and we refused to consider failure. Frequently, I asked Grace for feedback about our work together. She always assured me that the therapy was proving productive. However, her enthusiasm had a desperate, hard edge; she often spoke quickly, with a tight, forced smile.

I received weekly supervision from a psychologist at my community-counseling training site. She was smart and perceptive, with decades of experience helping addicts; I was lucky to have her guidance. Three months into treatment, I told my supervisor Grace was doing so well that we had agreed to cut our sessions from weekly to biweekly. "It's remarkable how quickly she's improving," I said. But my supervisor was cautious. "Getting clean is hard," she told me, "but staying clean is harder."

She was right. Soon thereafter, Grace no-showed for three straight therapy appointments. When she finally reappeared, she had relapsed on heroin. Over the next several months, everything she had built fell apart. She lost her job and her boyfriend, and kept going back to drugs. Yet she came faithfully to therapy, so I had a front-row seat to her painful unraveling. I tried every therapeutic technique I could find, but nothing stuck. Through it all, she insisted she could do it. "I've just got to stay positive," she said.

A few months after relapsing, Grace died of a drug overdose, and her son was sent to foster care. I was devastated. The episode sparked a crisis in me: What could I have done differently? How could I become a more effective therapist?

Casting about for solutions, I recalled an idea that one of my professors had discussed in class a year earlier. He had read the book *Moneyball*, which described the Oakland Athletics' revolutionary use of performance metrics, and he was curious whether psychotherapy could also benefit from more data and analytics. He showed us promising preliminary research, but also noted that many therapists were skeptical.

I'd had little interest in this topic when my professor first mentioned it. The very idea seemed too hypothetical, too academic, and almost insulting to the profession. *Psychotherapy is unlike any other field*, I'd thought, with the arrogance that comes from being untested. *We work in a human relationship. What we do can't be measured*. However, after Grace died, I found myself more open to different approaches—to anything that might help me fix my blind spots and weaknesses.

A SMALL MOUNTAIN of clinical research shows that therapists—that is, anyone who provides talk therapy, from psychologists to social workers—vary widely in effectiveness. One study, led by John Okiishi of Brigham Young University, compared clinical outcomes from 91 therapists and found that the highest-performing among them helped clients improve 10 times faster than the overall average. On the other end of the spectrum, a study led by the psychologist David R. Kraus found that clients of the lowest-performing therapists were significantly worse off in the areas of violence and substance abuse at the end of treatment.

My introduction to the field came from my own therapist, who'd helped me greatly during my troubled teens. "Psychotherapy," he once told me, "is a relational art. You can't quantify personal growth." I hadn't really understood what he'd meant at the time, but meeting with him over a period of years had helped me considerably when I was depressed, angry, and anxious; whatever he did, it worked.

A decade and a half later—after many adventures and odd jobs in my 20s and early 30s—I entered graduate school with this same perspective on psychotherapy: that it was an art too nuanced and complex to be measured. Still, I couldn't help

but notice that, at my first training site, many of my clients remained stuck in neutral despite our best efforts together. A quarter or more of my clients dropped out without explanation a few weeks or months into treatment. And at least 10 percent were deteriorating. Because many of them had started treatment feeling suicidal or on the edge of needing hospitalization, they couldn't afford to get worse. Unnervingly, I couldn't predict which clients would stall, drop out, or deteriorate.

Psychotherapy, on the whole, can be very effective. This bears emphasis, because many people are still skeptical that it is a bona fide treatment. There is no shortage of empirical evidence demonstrating that psychotherapy helps patients with a wide range of problems, from the relatively simple (fear of flying, for example) to knotty and treatment-resistant conditions

such as borderline personality disorder. It may not help everyone, but neither does a whole host of medicines for physical ailments. The point is, it *does* help a lot of people.

That said, as in any profession, there is still considerable room for improvement. My training experience was typical of broader trends: Across the field, dropout rates are estimated to be about 25 percent or more, and, most disheartening of all, 5 to 10 percent of clients deteriorate during treatment. These problems have been acknowledged since the birth of psychotherapy, when Freud himself wrote about "analysis terminable and interminable."

In recognition of this challenge, psychotherapists have been working hard to boost outcomes. During the past three decades, much of this effort has focused on

studying and debating which models of therapy are most effective. However, the results of these initiatives have been largely disappointing. Plenty of models—such as interpersonal therapy, emotion-focused therapy, and cognitive behavioral therapy—have performed well in studies. But larger meta-analyses suggest that most models are not consistently more successful than any other. This research was summarized in a 2012 statement by the American Psychological Association, which declared that "most valid and structured psychotherapies are roughly equivalent in effectiveness."

Certainly, some models may be better or worse for individual clients. But encouraging therapists to generally favor one model over others hasn't improved client outcomes. For example, a recent study in Britain examined the results of a major effort to train psychotherapists in cognitive behavioral therapy. Despite a massive investment of time and money, client outcomes did not improve.

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If promoting one model over others doesn't improve client outcomes, what does? As the APA put it, "Patient and therapist characteristics, which are not usually captured by a patient's diagnosis or by the therapist's use of a specific psychotherapy, affect the results." In other words, more important than the model being used is the skill of the therapist: Can therapists engender trust and openness? Can they encourage patients to face their deepest fears? Can they treat clients with warmth and compassion while, when necessary, challenging them?

Doctors rely on a wide range of instruments—stethoscopes, lab tests, scalpels. Therapists, by contrast, *are* the main instruments of psychotherapy. But this merely brings us back to the central question I faced after Grace died: How can those instruments—the therapists themselves—be improved?

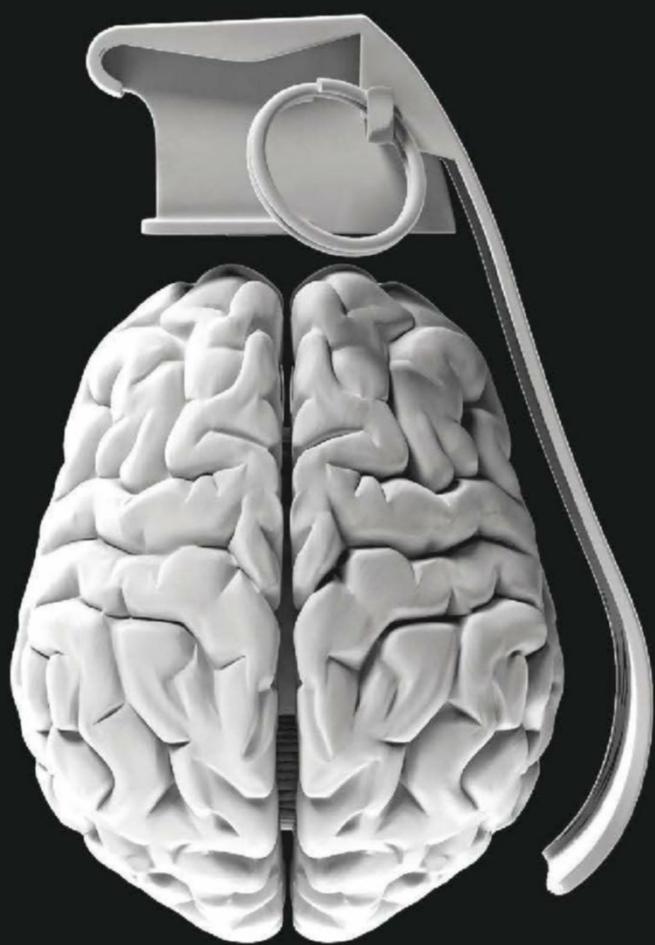
MOST FIELDS HAVE EXPERIENCED dramatic advancements over the past century. The story of how they moved forward often involved two closely related phenomena, both of which were brought about by technology.

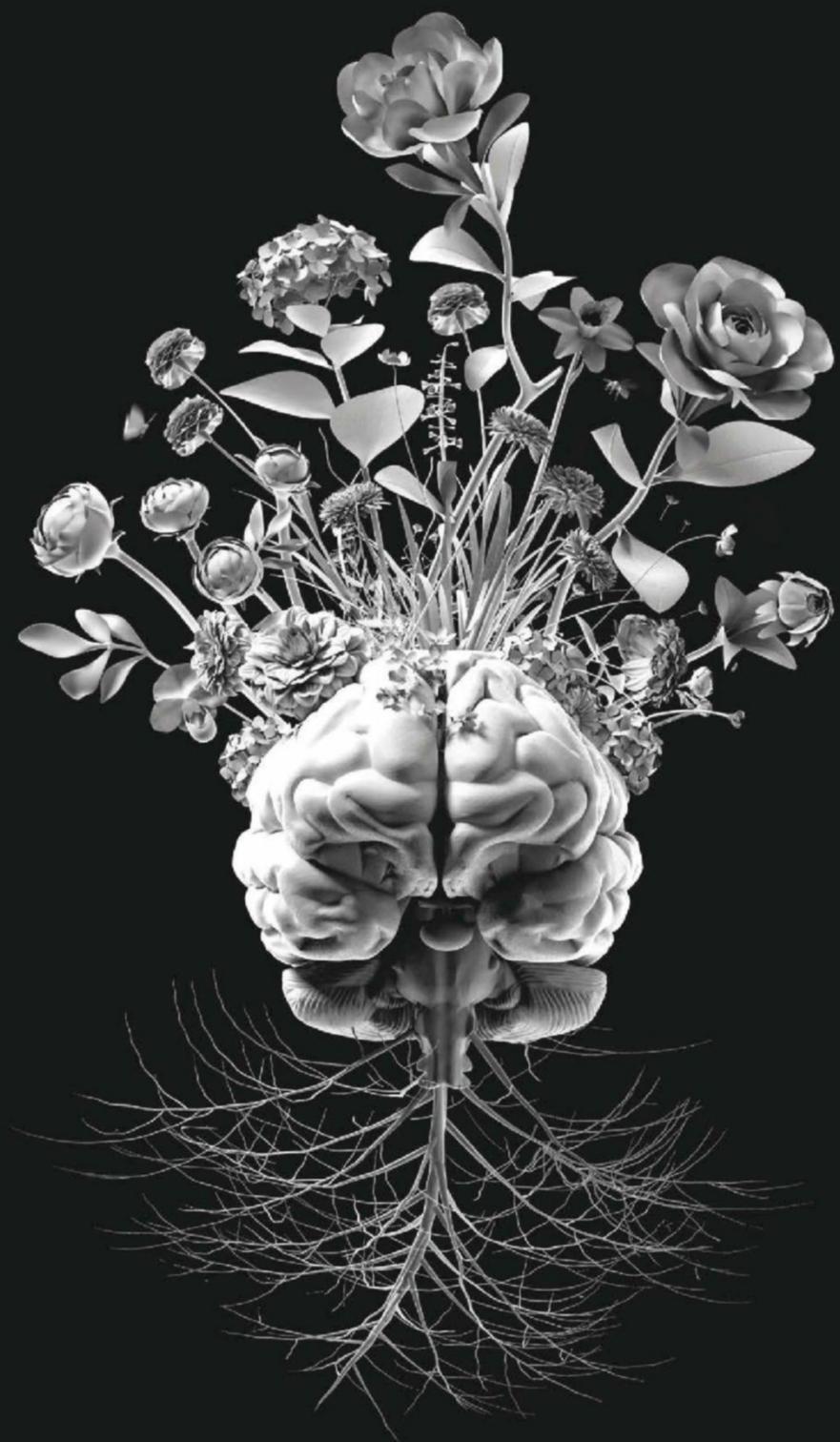
The first of these is performance feedback, which gives individuals a heightened awareness of how well or poorly they're doing their job. Consider the recent impact of slow-motion video technology on professional dance. In 2015, *Wired* argued that "for dancers, it's become an incredibly useful tool for honing their craft. The newfound affordability of slow motion has enabled them to improve their technique, spruce up their audition reel, and isolate aspects of their performance that were once intangible."

Unfortunately, perhaps no field faces higher barriers to incorporating performance feedback than psychotherapy. Because of the personal, sensitive nature of our work—which is protected by laws, regulations, and the general norms of the profession—therapists function largely in private, sheltered from objective feedback. Try to imagine a surgeon, a dancer, or any type of athlete learning without someone observing their work, but instead by simply sharing with their boss reflections on their recent performance. That's the predicament many therapists are in.

Sure, we can ask our clients for feedback about what's helping and what isn't; most therapists do. However, asking only helps if clients are forthcoming with their answers. And many clients withhold critical feedback, especially when therapy is unhelpful. In a recent survey, Columbia University's Matt Blanchard and Barry Farber asked 547 clients about their honesty in therapy. A whopping 93 percent reported whitewashing feedback to their therapists, commonly by "pretending to find therapy effective" and "not admitting to wanting to end therapy." And if patients aren't telling us the truth, how can we know whether they are likely to deteriorate, as Grace did before my eyes?

Which leads to the other 20th-century development that spurred many professions forward, while largely bypassing psychotherapy: the use of metrics to forecast likely outcomes. The most famous application of metrics is the "moneyball" concept that inspired my professor in graduate school: In the 1970s, a baseball fan named Bill James collected reams of performance data that had previously been ignored (or at least underappreciated) by professional teams, such as slugging percentage and on-base percentage. From this, he developed statistical tools for predicting the performance of baseball players. Ultimately, those tools transformed how baseball teams are





managed. Could a similar approach—looking for statistical patterns among a vast array of psychotherapy outcomes—help therapists better predict our patients' trajectories?

OVER THE PAST FEW DECADES, Michael Lambert, a researcher at Brigham Young University, has developed a system in which therapy clients take a 45-question survey before each appointment, and a computer tabulates their responses. The results are then displayed as a graph that quantifies the trajectory of each client's symptoms, allowing his or her therapist to track the progress being made.

Lambert and his team have also been at the forefront of developing psychotherapy metrics. Drawing on historical data from thousands of cases, they created algorithms predicting when clients are at risk of deterioration. If, based on their answers to survey questions, clients appear to be at risk, their therapists are sent alerts that are color-coded for different concerns: red for risk of dropout or deterioration, yellow for less-than-expected progress. In an initial test, the algorithms were able to predict—with 85 percent accuracy and after only three therapy sessions—which clients would deteriorate.

Today, these surveys and algorithms are known as feedback-informed treatment, or FIT. The system aids therapy in two primary ways. First, it provides an element of blunt performance feedback that therapists too often lack. Many clients are more willing to report worsening symptoms to a computer—even if they know that their therapist will see the results—than disappoint their therapist face-to-face.

The second benefit comes from the metrics: Risk alerts allow therapists to adjust treatment, and can help them compensate for natural overconfidence and clinical blind spots. In one study, 48 therapists, seeing several hundred clients at a single clinic, were asked to predict which of their patients would “get worse.” Only one of the therapists accurately identified a client at risk. Notably, this therapist was a trainee. The licensed therapists in the study didn’t accurately predict a single deterioration. Only three clients were predicted to get worse, despite therapists being informed by the researchers that the clinic-wide deterioration rate hovered around 8 percent—and despite the fact that 40 clients, or about 7 percent of those in the study, ultimately did deteriorate.

SOME YEARS AFTER GRACE'S DEATH, I began working with a client named June. At that point—inspired by talks given by Scott D. Miller, who co-founded the International Center for Clinical Excellence and helped develop a FIT system that uses algorithms built from 250,000 completed cases around the world—I was using FIT as part of my approach to therapy.

June, who had recently dropped out of a local community college, was seeking help with anxiety, depression, and social isolation. She told me that she had been experiencing these symptoms her whole life. Her parents, with whom June still lived, were religious fundamentalists and very controlling.

Our therapy sessions seemed to start well. June was shy and quiet, and never made eye contact with me. But she seemed genuinely interested in learning skills to reduce her anxiety and reported practicing the skills between sessions. When I asked June for feedback at the end of each session, she told me the therapy was helpful. “The skills you’re teaching me are good,” she replied in her soft, careful voice.

Before each session, June took a few minutes to complete the FIT survey on an iPad in the waiting room, responding to statements like “I feel fearful” and “I enjoy my spare time” with preset answers ranging from “never” to “almost always.” Though I had access to her clinical graph every session, I didn’t bother checking it at first, because she seemed to be progressing so well.

After a few sessions I finally checked the graph—more because I felt like I should than because I thought it would be helpful. I was shocked to see that June’s chart showed a red alert. Her symptoms had not improved since our first session. The algorithms reported that she was actually at a high risk of deterioration and suicide.

My gut reaction to the alert was skepticism—as it almost always is, to this day, when the program’s algorithms contradict my instincts. *There must be a mistake in the software*, I thought. June had repeatedly told me that therapy was helpful. At the beginning of our next session, I asked her how she was doing. Looking

METRICS SIGNIFICANTLY IMPROVE THE EFFECTIVENESS OF PSYCHOTHERAPY, REDUCING DROPOUT RATES AND SHORTENING THE LENGTH OF TREATMENT.

into the corner of the room, she replied that the skills I was teaching her were useful; but this time, I persisted: “I’m glad to hear the skills are helpful, but how are you doing?” June was silent for a while and shifted in her chair, clearly uncomfortable. I felt my own anxiety rise, and resisted the urge to change the subject. “Take your time,” I said. “There’s no rush.” After a period of silence, June looked me in the eye for perhaps the first time ever and said, “I’m sorry, but I think I’m worse. I just don’t want you to think it’s your fault; it’s mine. You’ve been really helpful.”

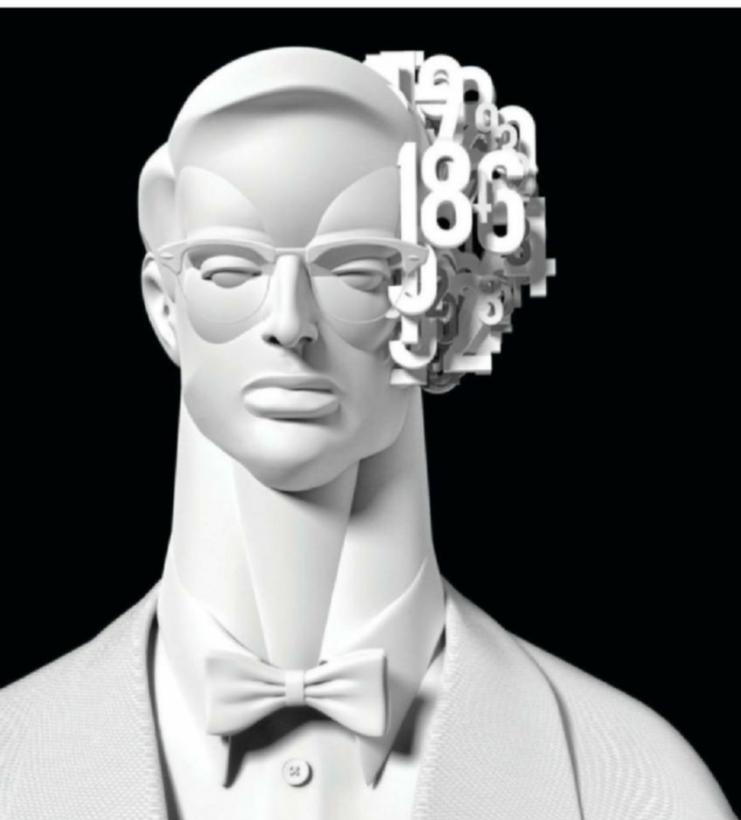
June was deteriorating, but I never would have seen it without the program.

My experience mirrors that of therapists around the world. The success of Michael Lambert’s research sparked a surge in the creation of feedback systems: Close to 50 have been developed over the past two decades. As the systems have spread, they have accumulated ever larger banks of clinical data. Studies have shown that metrics significantly improve the effectiveness of psychotherapy, including reducing dropout rates and shortening the length of treatment. What’s not to like?

UNFORTUNATELY, IN PROFESSION after profession, metrics have not been received with open arms. The history of the thermometer provides a classic example. In the mid-19th century, 250 years after the thermometer’s invention, Carl Wunderlich analyzed patient temperature data from more than 25,000 cases. He found that the average normal temperature of a healthy person ranged from 98.6 to 100.4 degrees. Going

further, Wunderlich proposed the radical idea of tracking an illness by reading the patient's temperature at regular intervals.

Many medical professionals were skeptical. Thermometers of that era were cumbersome—almost a foot long—and took 20 to 25 minutes to register a patient's temperature. They had reliability problems, and doctors and nurses weren't sure about the best ways to use them. Aside from the inconvenience, many physicians were affronted by the suggestion that they should use data from medical instruments to inform their diagnoses. Previously, physicians had diagnosed a fever by touching various parts of the patient's body with their hands and making a determination from their blend of intuition and experience. Some worried that use of thermometers would lead to the “de-skilling” of physicians.



A century and a half later, psychotherapy metrics and feedback systems have met with much the same reaction. Dozens of studies attesting to the benefit of metrics and feedback have been published since the systems were first introduced. Yet therapists have been slow to adapt. One 2003 study led by Ann Garland of UC San Diego found that, among a sample of therapists in San Diego County who received client-outcome scores, 92 percent didn't use them. And a 2013 paper by SUNY Albany's James Boswell and colleagues—citing research published in 2002, 2004, and 2008—noted, “Surveys spanning different countries indicate that few clinicians actually employ [FIT] in their day-to-day work.”

Few, if any, more recent studies contain solid data on FIT usage, but my anecdotal impression is that use of FIT today remains disappointingly low among therapists. In my experience talking with peers, the most common reason for non-adoption is the belief that quantitative data—or worse, a

computer—cannot possibly capture the nuances of psychotherapy; accordingly, many therapists feel that the whole idea of psychotherapy metrics should be rejected at face value.

The first part of this argument is correct: A single mental-health measure can't identify the full range of psychological illnesses any more than a thermometer can detect cancer, diabetes, or heart disease. Moreover, the FIT systems can give false positives and false negatives, thereby overstating or under-stating risks. But that isn't a good reason to entirely ignore the data—just as the thermometer still provides valuable information even if it isn't the final word on whether a patient is sick.

“It is probably true,” the historian A. J. Youngson wrote, “that one of the commonest features of new ideas—certainly of practical new ideas—is their imperfection.” Two hundred and fifty years elapsed between the invention of the thermometer and Wunderlich's creation of a reliable protocol for clinical thermometry. Similarly, the refinement of FIT will take time. For example, a recent meta-analysis suggested that the systems do not automatically improve therapy outcomes for all clients, only for clients at risk of deterioration (a limitation Michael Lambert had previously acknowledged). And, of course, the metrics are not helpful unless clinicians know how to use them to improve treatment. Collecting psychotherapy data is a key step in better understanding our patients. But it can't cure mental illness any more than sticking a thermometer in a patient's mouth can, by itself, treat the flu.

ROBBIE BABINS-WAGNER has experienced both the extraordinary potential and the severe growing pains associated with using metrics. She's the CEO of the Calgary Counselling Centre, a large community mental-health organization in Western Canada with 24 staff therapists and 55 trainees. I first heard of the CCC when, a number of years ago, I asked Scott Miller for examples of clinics that were implementing FIT. “You've got to talk with Robbie,” he said. “She's at the leading edge, a decade ahead of everyone else.”

Babins-Wagner had 14 years of clinical experience when the CCC hired her as director of counseling in 1992. Looking for ways to improve the center, she read about the new metrics system created by Michael Lambert, and initiated a plan to implement psychotherapy metrics at the CCC—working collaboratively with the staff along the way. As Babins-Wagner put it in a paper she later co-authored, the hope was to use the FIT data to help create a “climate for therapist improvement.”

At the conclusion of a four-year trial, Babins-Wagner aggregated and analyzed the data the CCC had collected. While the average outcomes were good, it turned out that only half of the therapists were using FIT—even though everyone had been asked to. Because of the thick cloak of privacy that protects the therapy room, skeptics had been able to ignore the instructions they'd been given.

The most common complaints from therapists were “the data is wrong, we shouldn't have to do it, and I know better,” Babins-Wagner says. “Meaning that my intuition tells me—my experience in the sessions tells me—that I know how my client is doing.”

Babins-Wagner listened to the therapists' concerns and requested feedback on how to improve the metrics system. She also clarified that collecting outcome data was mandatory. Within a few months, 40 percent of the therapists resigned.

Yet Babins-Wagner was unyielding, and her perseverance has paid off. Simon Goldberg of the University of Wisconsin at Madison recently examined data from the CCC (I was one of eight co-authors on the study, but Goldberg did the vast majority of the work) and found a tiny but steady improvement in clinical effectiveness every year for seven years. As far as I can tell, this is only the second time year-over-year improvement in therapist effectiveness—measured by improved client outcomes—has been empirically demonstrated in psychotherapy research. (Other studies do show improvement in therapists’ “competence” in using models or “adherence” to those models—but a meta-analysis of 36 studies showed that “therapist adherence and competence play little role in determining symptom change.”)

Despite these impressive results, adjusting to the use of data remains difficult for many. Michelle Keough, a counselor at the CCC, told me she had been skeptical of the system when she’d started as an intern a few years back. “I had some apprehension in terms of how a graph and how stats could be used in a way to benefit clients,” she recalled. She also worried that it could cause tension and impair her relationship with patients. But over time, she said, she came to realize the system actually improves communication: “Now I can’t imagine not using it in my practice.” She told me many of the trainees she supervises go through a similar journey—from early apprehension to embracing the system.

The intuitive reluctance to use metrics is something I understand well. It’s never pleasant to have my blind spots pointed out. It’s humbling at best, and humiliating at worst. It requires a daily fight with my own brain, which persistently tells me to ignore or distrust any new data that don’t fit my assumptions and expectations.

But while I know how difficult it is for therapists to override their gut instincts in favor of cold data, I also know, firsthand, how difficult it is for a patient when a therapist simply cannot see his or her condition accurately. In my early 30s, before I became a therapist, the anxiety and depression I had confronted as a teenager returned, and I started using drugs to self-medicate. When I realized I was in trouble, I reentered therapy with the psychologist who had previously helped me so effectively. However, this time around, our sessions didn’t seem to help. As had happened with Grace and me, I sat squarely in the middle of my own therapist’s blind spot. He did not use metrics, and he simply never believed that I was deteriorating, even when I started coming to sessions high.

Luckily, I had friends who encouraged me to seek out more-effective therapy. I used to be angry at my former therapist. But now I’m more understanding: I’ve failed to anticipate plenty of deteriorations and dropouts among my own patients. We therapists need to always remain aware that there is much we can’t see in the fog—and be open to tools that might compensate for our limited vision.

IN JUNE’S CASE, metrics and performance feedback may have saved her life. Like a psychological homing beacon, the feedback program drew my attention to her deterioration. And being alerted to the problem opened the door to finding a solution. I got June’s permission to record one of our sessions, and showed the video to a consultant, Jon Frederickson. Originally trained as a classical musician, Frederickson switched careers in his 30s. In graduate school, he was surprised that

psychotherapy training didn’t use some of the principles—such as frequent performance feedback—that form the foundation of musical training. Now, with a few decades of experience as a therapist, Frederickson specializes in helping other therapists improve their effectiveness.

We watched the video of June’s therapy session together, and Frederickson spotted a few problems. For one thing, he observed that June was holding her stomach—suggesting that her anxiety was making her nauseated. He also noticed that during the session, June diligently practiced the skills I taught her, but never talked about how she actually felt while doing so. “You’ve unintentionally gotten into a top-down relationship with her, where you are in the teacher role, and she is trying to be a good student by minimizing her symptoms,” he

explained. “She isn’t telling you about her discomfort out of deference to you.”

When I asked how I could help her, he counseled me to get out of the authority role, approach June as an equal partner, and help her acknowledge her pain and anxiety rather than defer to me. When I saw June next, I told her what Frederickson had said, and asked what she thought. She was quiet for a moment, then I saw a faint glimmer of a smile on her face. “He may be right,” she admitted.

We agreed to approach our work together with more attentiveness to her anxiety and more equal collaboration. This was not easy for either of us. June felt a constant internal pull to adopt the submissive role of a good student and minimize her painful symptoms, and I frequently felt a pull to teach

her more skills rather than listen to her more carefully. Throughout this process, the feedback program served as an indispensable guide, helping us see what we were both tempted to ignore. Every time the system gave me an alert that June’s symptoms were worsening and she was back at risk of deterioration, I videotaped a session and got a consultation to help fix my errors.

Over the following year, June’s anxiety gradually eased. Two years later, she graduated from college with honors. In our last session, I asked her what about our therapy she thought had helped her the most. “You saw me,” she said with a shy smile, “from so far away.” Then she reached out and shook my hand for the very first time. 

Tony Rousmaniere is the author of Deliberate Practice for Psychotherapists: A Guide to Improving Clinical Effectiveness and a co-editor of The Cycle of Excellence: Using Deliberate Practice to Improve Supervision and Training.

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WHY IS SILICON VALLEY SO AWFUL TO WOMEN?

TECH COMPANIES ARE SPENDING HUNDREDS OF MILLIONS OF DOLLARS TO IMPROVE CONDITIONS FOR FEMALE EMPLOYEES. HERE'S WHY NOT MUCH HAS CHANGED—AND WHAT MIGHT ACTUALLY WORK.

By Liza Mundy

PHOTOGRAPH BY ANDREW B. MYERS
STYLING BY GRACE HARNETT

One weekday morning in 2007, Bethanye Blount came into work early to interview a job applicant. A veteran software engineer then in her 30s, Blount held a senior position at the company that runs Second Life, the online virtual world. Good-natured and self-confident, she typically wore the kind of outfit—jeans, hoodie, sneakers—that signals coding gravitas. That day, she might even have been wearing what's known as the "full-in start-up twin set": a Second Life T-shirt paired with a Second Life hoodie. ¶ In short, everything about her indicated that she was a serious technical person. So she was taken aback when the job applicant barely gave her the time of day. He knew her job title. He knew she would play a key role in deciding whether he got hired. Yet every time Blount asked him a question about his skills or tried to steer the conversation to the scope of the job, he blew her off with a flippant comment. Afterward, Blount spoke to another top woman—a vice president—who said he'd treated her the same way. ¶ Obviously Second Life wasn't going to hire this bozo. But what the heck: He was here, and they had a new employee, a man, who needed practice giving interviews, so they sent him in. When the employee emerged, he had an odd look on his face. "I don't know what just happened," he said. "I went in there and told him I was new, and all he said was he was so glad I was there: 'Finally, somebody who knows what's going on!'" ¶ All Blount could do was laugh—even now, as she looks back on the incident. In the hierarchy of sexist encounters, it didn't rank very high. Still, it was a reminder that as a woman in tech, she should be prepared to have her authority questioned at any moment, even by some guy trying to get a job at her company.



BETHANYE BLOUNT, CO-FOUNDER AND CEO, CATHY LABS

One reason her career had gone so well, she thinks, is that she'd made a point of ignoring slights and oafish comments. Awkward silences, too. Over the years, she's experienced—many times—the sensation of walking up to a group of male colleagues and noticing that they fell quiet, as though they'd been talking about something they didn't want her to hear. She's been asked to take notes in meetings. She's found herself standing in elevators at tech conferences late at night when a guy would decide to get, as she puts it, handsy. When she and a male partner started a company, potential investors almost always directed their questions to him—even when the subject clearly fell in Blount's area of expertise. It drove him crazy, and Blount had to urge him to curb his irritation. "I didn't have time to be pissed," she says.

But at some point, something inside her broke. Maybe it was being at tech conferences and hearing herself, the "elder stateswoman," warning younger women to cover their drinks, because such conferences—known for alcohol, after-parties, and hot women at product booths—have been breeding grounds for unwanted sexual advances and assaults, and you never knew whether some jerk might put something in your cocktail. She couldn't believe that women still had to worry about such things; that they still got asked to fetch coffee; that she still heard talk about how hiring women or people of color entailed "lowering the bar"; that women still, often, felt silenced or attacked when expressing opinions online.

"I am angry that things are no better for a 22-year-old at the beginning of her career than they were for me 25 years ago when I was just starting out," Blount says. "I made decisions along the way that were easier for me and helped me succeed—don't bring attention to being a woman, never talk about gender, never talk about 'these things' with men," unless the behavior was particularly egregious. "It helped me get through. But in retrospect I feel I should have done more."

Blount decided it was never too late to start speaking out, and teamed up with other women who had undergone a similar awakening. This past May, they formed a group called Project Include, which aims to provide companies and investors with a template for how to be better. One of her collaborators on the effort, Susan Wu, an entrepreneur and investor, says that when she was teaching herself to code as a teenager, she was too naive to perceive the sexism of internet culture. But as she advanced in her career and moved into investing and big-money venture capitalism, she came to see the elaborate jiu-jitsu it takes for a woman to hold her own. At one party, the founder of a start-up told Wu she'd need to spend "intimate



STEPHANIE LAMPKIN, FOUNDER AND CEO, BLENDOR

time" with him to get in on his deal. An angel investor leading a different deal told her something similar. She became a master of warm, but firm, self-extrication.

Looking back, Wu is struck by "the countless times I've had to move a man's hand from my thigh (or back or shoulder or hair or arm) during a meeting (or networking event or professional lunch or brainstorming session or pitch meeting) without seeming confrontational (or bitchy or rejecting or demanding or aggressive)." In a land of grand ideas and grander funding proposals, she found that the ability to neatly reject a man's advances without injuring his ego is "a pretty important skill that I would bet most successful women in our industry have."

Wu learned how to calibrate the temperature of her demeanor: friendly and approachable, neither too intimate

nor too distant. She learned the fine art of the three-quarters smile, as well as how to deflect conversation away from her personal life and return it to topics like sports and market strategy. She learned to distinguish between actual predators and well-meaning guys who were just a bit clueless. And yet to not be overly wary, because that, too, can affect career prospects.

The dozens of women I interviewed for this article love working in tech. They love the problem-solving, the camaraderie, the opportunity for swift advancement and high salaries, the fun of working with the technology itself. They appreciate their many male colleagues who are considerate and supportive. Yet all of them had stories about incidents that, no matter how quick or glancing, chipped away at their sense of belonging and expertise. Indeed, a recent survey called “Elephant in the Valley” found that nearly all of the 200-plus senior women in tech who responded had experienced sexist interactions.

As Bethanye Blount’s and Susan Wu’s examples show, succeeding in tech as a woman requires something more treacherous than the old adage about Ginger Rogers doing everything Fred Astaire did, only backwards and in high heels. It’s more like doing everything backwards and in heels while some guy is trying to yank at your dress, and another is telling you that a woman can’t dance as well as a man, oh, and could you stop dancing for a moment and bring him something to drink?

Such undermining is one reason women today hold only about a quarter of U.S. computing and mathematical jobs—a fraction that has actually fallen slightly over the past 15 years, even as women have made big strides in other fields. Women not only are hired in lower numbers than men are; they also leave tech at more than twice the rate men do. It’s not hard to see why. Studies show that women who work in tech are interrupted in meetings more often than men. They are evaluated on their personality in a way that men are not. They are less likely to get funding from venture capitalists, who, studies also show, find pitches delivered by men—especially handsome men—more persuasive. And in a particularly cruel irony, women’s contributions to open-source software are accepted more often than men’s are, but only if their gender is unknown.

For women of color, the cumulative effect of these slights is compounded by a striking lack of racial diversity—and all that attends it. Stephanie Lampkin, who was a full-stack developer (meaning she had mastered both front-end and back-end systems) by age 15 and majored in engineering at Stanford, has been told when applying for a job that she’s “not technical enough” and should consider sales or marketing—an experience many white women in the field can relate to. But she has also, for instance, been told by a white woman at a conference that her name ought to be Ebony because of the color of her skin.

In the past several years, Silicon Valley has begun to grapple with these problems, or at least to quantify them. In

2014, Google released data on the number of women and minorities it employed. Other companies followed, including LinkedIn, Yahoo, Facebook, Twitter, Pinterest, eBay, and Apple. The numbers were not good, and neither was the resulting news coverage, but the companies pledged to spend hundreds of millions of dollars changing their work climates, altering the composition of their leadership, and refining their hiring practices.

At long last, the industry that has transformed how we learn, think, buy, travel, cook, socialize, live, love, and work seemed ready to turn its disruptive instincts to its own gender inequities—and in the process develop tools and best practices that other, less forward-looking industries could copy, thus improving the lives of working women everywhere.

Three years in, Silicon Valley diversity conferences and training sessions abound; a cottage industry of consultants and software makers has sprung up to offer solutions. Some of those fixes have already started filtering out to workplaces beyond the tech world, because Silicon Valley is nothing if not evangelical. But the transformation hasn’t yet materialized: The industry’s diversity numbers have barely budged, and many women say that while sexism has become somewhat less overt, it’s just as pernicious as ever. Even so, there may be reason for hope as companies begin to figure out what works—and what doesn’t.

Women leave tech at more than twice the rate men do. It's not hard to see why.

WHEN SILICON VALLEY was emerging, after World War II, software programming was considered rote and unglamorous, somewhat secretarial—and therefore suitable for women. The glittering future, it was thought, lay in hardware. But once software revealed its potential—and profitability—the guys flooded in and coding became a male realm.

The advent of the home computer may have hastened this shift. Early models like the Commodore 64 and the Apple IIc were often marketed as toys. According to Jane Margolis, a researcher at UCLA, families bought them and put them in their sons’ rooms, even when they had technologically inclined daughters. By the time the children of the ’80s and ’90s reached college, many of the boys already knew how to code. Fewer girls did.

But that was a long time ago. Consider where we are today. More than half of college and university students are women, and the percentage of women entering many STEM fields has risen. Computer science is a glaring exception: The percentage of female computer- and information-science majors peaked in 1984, at about 37 percent. It has declined, more or less steadily, ever since. Today it stands at 18 percent.

Claudia Goldin, a Harvard economist, told me that tech would seem to be an attractive field for women, since many companies promise the same advantages—flexibility and reasonable hours—that have drawn women in droves to other professions that were once nearly all male. The big tech companies

also offer family-friendly perks like generous paid parental leave; new moms at Google, for instance, get 22 paid weeks. “These should be the best jobs for people who want predictability and flexibility,” Goldin said. “So what’s happening?”

A report by the Center for Talent Innovation found that when women drop out of tech, it’s usually not for family reasons. Nor do they drop out because they dislike the work—to the contrary, they enjoy it and in many cases take new jobs in sectors where they can use their technical skills. Rather, the report concludes that “workplace conditions, a lack of access to key creative roles, and a sense of feeling stalled in one’s career” are the main reasons women leave. “Undermining behavior from managers” is a major factor.

The hostility of the culture is such an open secret that tweets and essays complaining of sexism tend to begin with a disclaimer acknowledging how shopworn the subject feels. “My least favorite topic in the world is ‘Women in Tech,’ so I am going to make this short,” wrote one blogger, noting that after she started speaking at conferences and contributing to open-source projects, she began to get threatening and abusive emails, including from men who said they “jerked off to my conference talk video.” Another woman tweeted that, while waiting to make a presentation at Pubcon, a prestigious conference, she was told by a male attendee, “Don’t be nervous. You’re hot! No one expects you to do well.”

In the office, sexism typically takes a subtler form. The women I spoke with described a kind of gaslighting: They find themselves in enviably modern workspaces, surrounded by right-thinking colleagues and much talk of meritocracy, yet feel disparaged in ways that are hard to articulate, let alone prove.

Telle Whitney, the president and CEO of the Anita Borg Institute, a nonprofit that supports women in technology, says gender bias is a big problem in start-ups, which are frequently run by brotherhoods of young men—in many cases friends or roommates—straight out of elite colleges. In 2014, for instance, Snapchat CEO Evan Spiegel was two years out of Stanford and already leading a \$10 billion company when his frat-boy-at-his-misogynistic-worst undergraduate emails were published and went viral. In them, his only slightly younger self joked about shooting lasers at “fat girls,” described a Stanford dean as “dean-julie-show-us-your-tits,” and for good measure, saluted another fraternity because it had decided to “stop being gay.”

But while start-ups may be the worst offenders, it’s notable how often the staid older companies also make missteps. Just last year, Microsoft hosted a party that featured “school-girl” dancers wearing short uniform-type skirts and bra tops, dancing on podiums. The event followed the Game Developers Conference in San Francisco—where, earlier that day, the company had sponsored a Women in Gaming Luncheon to promote a culture of inclusivity.

And then there are the public utterances that reveal what some leading men in tech think of women and their abilities. When Sir Michael Moritz, the chair of Sequoia Capital, one of Silicon Valley’s most venerable venture-capital firms, was asked by a Bloomberg reporter why the firm had no female investing partners in the U.S., he responded, “We look very hard,” adding that the firm had “hired a young woman from Stanford who’s every bit as good as her peers.” But, he added, “what we’re not prepared to do is to lower our standards.”

When Ellen Pao sued another prominent venture-capital firm, Kleiner Perkins Caufield & Byers, for gender discrimination, the 2015 trial sent a frisson through the tech world. Former Yahoo President Sue Decker wrote an essay for *Recode*, the tech-industry website, saying that she had been obsessively following the trial because it resonated so deeply with her. She took her daughters out of school to hear the closing arguments. “I, and most women I know, have been a party to at least some sexist or discriminatory behavior in the workplace,” she wrote, explaining that she and many other women had witnessed things like “locker-room discussion during travel with colleagues,” which they tried to brush aside, since “any individual act seems silly to complain about.” The Pao trial, however, shifted her attitude.

Pao lost the case, but the trial was a watershed. Afterward, a group of seven senior women in tech conducted the “Elephant in the Valley” survey. Eighty-four percent of the respondents had been told they were too aggressive; 66 percent had felt excluded from key networking opportunities because of their gender; 90 percent had witnessed sexist behavior at conferences and company off-site meetings; 88 percent had had clients and colleagues direct questions to male peers that should have been addressed to them; and 60 percent had fended off unwanted sexual advances (in most cases from a superior). Of those women, one-third said they had feared for their personal safety.

Pao went on to co-found Project Include with Blount, Wu, and others, including Tracy Chou. A software engineer who graduated from Stanford, Chou told me about working at a start-up where a co-founder would often muse that a man they’d just hired would turn out to be better and faster than she was. When Chou discovered a significant flaw in the company’s code and pointed it out, her engineering team dismissed her concerns, saying that they had been using the code for long enough that any problems would have been discovered. Chou persisted, saying she could demonstrate the conditions under which the bug was triggered. Finally, a male co-worker saw that she was right and raised the alarm, whereupon people in the office began to listen. Chou told her team that she knew how to fix the flaw; skeptical, they told her to have two other engineers review the changes and sign off on them, an unusual precaution. Her co-workers rationalized

“Workplace conditions, a lack of access to key creative roles, and a sense of feeling stalled” are the main reasons women leave tech.



TRACY CHOU, CO-FOUNDER, PROJECT INCLUDE

their scrutiny by explaining that the bug was important, and so was the fix.

"I knew it was important," she told me recently. "That's why I was trying to flag it."

For Chou, even the open-office floor plan was stressful: It meant there was no way to escape a male co-worker who liked to pop up behind her and find fault with her work. She was called "emotional" when she raised technical concerns and was expected to be nice and never complain, even as people around her made excuses for male engineers who were difficult to work with. The company's one other female engineer felt the same way Chou did—as if they were held to a different standard. It wasn't overt sexism; it was more like being dismissed and disrespected, "not feeling like we were good enough to be there—even though, objectively speaking, we were."

THAT THE TECH INDUSTRY would prove so hostile to women is more than a little counterintuitive. Silicon Valley is populated with progressive, hyper-educated people who talk a lot about making the world better. It's also a young field, with none of the history of, say, law or medicine, where women were long denied spots in graduate schools intended for "breadwinning men."

"We don't have the same histories of exclusion," says Joelle Emerson, the founder and CEO of Paradigm, a firm in San Francisco that advises companies on diversity and inclusion. But being new comes with its own problems: Because Silicon Valley is a place where a newcomer can unseat the most established player, many people there believe—despite evidence everywhere to the contrary—that tech is a meritocracy. Ironically enough, this very belief can perpetuate inequality. A 2010 study, "The Paradox of Meritocracy in Organizations," found that in cultures that espouse meritocracy, managers may in fact "show greater bias in favor of men over equally performing women." In a series of three experiments, the researchers presented participants with profiles of similarly performing individuals of both genders, and asked them to award bonuses. The researchers found that telling participants that their company valued merit-based decisions only increased the likelihood of their giving higher bonuses to the men.

Such bias may be particularly rife in Silicon Valley because of another of its foundational beliefs: that success in tech depends almost entirely on innate genius. Nobody thinks that of lawyers or accountants or even brain surgeons; while some people clearly have more aptitude than others, it's accepted that law school is where you learn law and that preparing for and passing the CPA exam is how you become a certified accountant. Surgeons are trained, not born.

In contrast, a 2015 study published in *Science* confirmed that computer science and certain other fields, including physics, math, and philosophy, fetishize "brilliance," cultivating the idea that potential is inborn. The report concluded that these fields tend to be problematic for women, owing to a stubborn assumption that genius is a male trait.

The study authors considered several alternative explanations for the low numbers of women in those fields—including that women might not want to work long hours and that there might be more men at the high end of the aptitude spectrum, an idea notoriously put forward in 2005 by then-Harvard President Larry Summers.

But the data did not support these other theories.

"The more a field valued giftedness, the fewer the female PhDs," the study found, pointing out that the same pattern

held for African Americans. Because both groups still tend to be “stereotyped as lacking innate intellectual talent,” the study concluded, “the extent to which practitioners of a discipline believe that success depends on sheer brilliance is a strong predictor of women’s and African Americans’ representation.”

That may be why, for years, the tech industry’s gender disparity was considered almost a natural thing. When Tracy Chou was an intern at Google in 2007, she says, people would joke about the fact that the main Mountain View campus was populated mostly by male engineers, and that women tended to be relegated to other parts of the operation, such as marketing. But for all the joking, Chou says, it was strangely difficult to have a conversation about why that was, how women felt about it, and how it could be changed.

In October 2013, Chou attended the Grace Hopper conference, an annual gathering for women in computing, where Sheryl Sandberg, Facebook’s chief operating officer, warned that the number of women in tech was falling. Chou was startled. She realized that for such a data-driven industry, few reliable diversity statistics were available. That same month, she wrote a post on Medium in which she called on people to share data from their own companies, and she set up a spreadsheet where they could do so. “This thing that had been an open secret in Silicon Valley became open to everybody,” Chou told me.

At the time, some of the big tech firms were fighting a Freedom of Information Act request from the *San Jose Mercury News* asking the Department of Labor to release data on the makeup of their workforces. The companies contended that such statistics were a trade secret, and that exposing them would hurt their competitive edge. But Chou was not the only voice calling for transparency. Jesse Jackson and his Rainbow PUSH Coalition were advocating on behalf of both women and people of color, and activist investors began pressuring companies to reveal information about salaries and gender pay gaps.

In January 2015, in a keynote speech at the International Consumer Electronics Show, in Las Vegas, Brian Krzanich, the CEO of Intel, announced that his company would devote \$300 million to diversity efforts over the next five years. Two months later, Apple pledged \$50 million to partner with nonprofits that work to improve the pipeline of women and minorities going into tech, and that spring Google announced that it would increase its annual budget for promoting diversity from \$115 million to \$150 million. This past June, 33 companies signed a pledge to make their workforces more diverse.

According to Nancy Lee, Google’s vice president of people operations until she retired in February, the company saw



JOELLE EMERSON, FOUNDER AND CEO, PARADIGM

both a business imperative—it is, after all, designing a global product—and a moral one. She points to the “original vision” of Google’s founders, which was that “we’re going to build this company for the long haul. We’re not going to be evil.” Google released detailed information on its workforce, and because “our numbers weren’t great,” Lee told me, other companies felt safe releasing theirs. Google wanted to disclose its data, she said, because “then we’re on the hook. There’s no turning back.”

Indeed. At Google, the initial tally showed that just 17 percent of its technical employees were women. The female technical force was 10 percent at Twitter, 15 percent at Facebook, and 20 percent at Apple. Granted, women currently make up just 18 percent of computer-science majors, but these companies are so well funded and attractive that they should be able

to get a disproportionate percentage of the pipeline. The firms resolved to do better, and began looking for new ways to attract and retain women. Their approaches include measures like recruiting from a broader array of colleges and creating more internships. But the flashiest—and most copied—approach is something called unconscious-bias training.

LATELY, UNCONSCIOUS-BIAS TRAINING has emerged as a ubiquitous fix for Silicon Valley's diversity deficit. It's diversity training for the new millennium, in which people are made aware of their own hidden biases. It rests on a large body of social-psychology research—hundreds of studies showing how women and minorities are stereotyped. Google turned to it, Lee told me, in part because the company felt that its engineers would appreciate an approach grounded in social science: "That sort of discipline really, really resonated effectively with the hard scientists we have here." Facebook put unconscious-bias training front and center in its diversity efforts, too; both companies have posted online videos of their training modules, to offer a model for other workplaces. Since then, talk of unconscious bias has spread through Silicon Valley like—well, like a virus.

On a Thursday morning last summer, Joelle Emerson, the diversity consultant, visited a midsize start-up to give a talk on unconscious bias. Emerson knows employees don't like being dragged to diversity-training sessions, so she strives to keep her presentations upbeat and funny and full of intriguing findings, much like a TED Talk. "We as individuals become smarter, better versions of ourselves when we are working on teams that are diverse," she told the audience, pointing out that when you're in a meeting with people who don't share your background or demographic profile, you sit up a little straighter, intellectually. Expecting more pushback, you become more persuasive. "Our brains just function a little bit differently; we're more vigilant, we're more careful," she said, citing a study that found diverse juries demonstrate better recall of courtroom proceedings. Her talk then segued—as many training sessions do—into what's known as an implicit-association test.

An implicit-association test is a popular way to demonstrate how unconscious bias works. It was pioneered by Anthony G. Greenwald, a psychology professor at the University of Washington, in 1995. The idea is to have people very quickly sort words and concepts, revealing the implicit, or hidden, associations their brains make and the stereotypes that underlie them.

Emerson started by having everybody practice raising his or her right hand and saying "right," then raising his or her left hand and saying "left." "I know it feels condescending that I make you practice, but the goal here is to be as quick as you can," she said winningly. The audience obeyed, and there was clapping and laughter.

Then she gave the test, flashing a series of words on a screen and having the audience members raise their left hand if the word referred to a male—*son*, say, or *uncle*—and their right if it referred to a female. She then flashed words pertaining to science (right hand) or liberal arts (left hand). Next she upped the ante: They had to raise their right hand if the word pertained to a male or to science, and their left hand if it was female- or liberal-arts-related. The audience accomplished this without much trouble. But then came the revelatory moment. "This time we're going to swap the categories," Emerson said, instructing the group to raise their left hand if a word was male- or liberal-arts-oriented, and their right hand for a female- or science-leaning term. A series of words flashed on the screen—*chemistry, history, sister, son, English, grandpa, math, girl, physics, niece, boy*—and the room devolved into chaos and chagrined laughter: People's brains just wouldn't go there. They couldn't keep up.

Emerson explained that regardless of what order the tasks are presented in, about three-quarters of the people who take the test are slower to respond when asked to link women with science and men with liberal arts. She talked about her own first time taking a version of the test, but with the categories of

family and work. "I thought, *I'm going to nail this,*" she said, but confessed that even with a working mother, a career, and years of immersion in gender research, she had a tendency to associate women with family and men with work. Unconscious bias, revealed.

The idea that everyone holds biases and that there is nothing wrong with having them is a core tenet of unconscious-bias training. It's a core tenet of the training. Presenters often point out that bias and stereotyping are a natural, evolutionary defense, a mechanism that goes back to our early human roots: When primitive man saw a snake, he didn't have time to determine whether it was poisonous or harmless; his brain said *Snake!* and he reacted. Our brains today take in more than 11 million pieces of information at any given moment; because we can process only about 40 of those consciously, our nonconscious mind takes over, using

biases and stereotypes and patterns to filter out the noise.

The message of these sessions is that snap judgments are usually biased. This is a problem in a field like tech, where hiring managers may have to fill hundreds of positions. Too many decisions are made on gut instinct, the training argues: A time-pressed hiring manager looks at a résumé and sees a certain fraternity or hobby, or a conventionally white or male name, and *bang*—thanks to the unconscious brain making shortcuts, that person gets an interview. People listen respectfully to that person, while others—women, people of color—are interrupted and scrutinized.

Shelley Correll, the faculty director of the Clayman Institute for Gender Research at Stanford, gave her first unconscious-bias talk, at Cornell University, in 2003, when, she says, the topic was mostly of interest to academic departments. Now,

The idea that everyone holds biases and that there is nothing wrong with having them is a core tenet of unconscious-bias training.

ANTI-BIAS APPS

A wealth of apps and software platforms now exists to circumvent unconscious bias. Here are a few of the offerings:

Textio uses data and machine learning to scan job postings and flag phrases that are likely to repel women. Some are obvious: *rock star*, *Ping-Pong*, *Nerf gun*. But Kieran Snyder, Textio's co-founder, says that other words can exhibit a subtler masculine bias. Examples include language that is what she calls "turned all the way up": phrases like *hard-driving* and *crush it* as well as superlatives like *flawless*, *relentless*, and *extremely*. The software suggests gender-neutral alternatives.

GapJumpers hides résumés and other identifying information, including gender, until job applicants perform a test devised to assess their skills. It's an attempt to duplicate one of the most renowned studies in the gender-bias genre: In 2000, Claudia Goldin and Cecilia Rouse showed that when major U.S. orchestras allowed musicians to audition behind a screen that hid their gender, the percentage of women selected rose dramatically. They demonstrated that when people are assessed on pure ability, women are much more likely to make the cut.

Blendoor is "Tinder for recruiting," as its founder, Stephanie Lampkin, calls it. The app lets job candidates and recruiters check each other out: Candidates can see how a company rates on diversity; recruiters can see a person's skills, education, and work history, but not his or her race, age, and gender.

Interviewing.io offers a free platform that lets engineers do mock technical interviews, giving women (and anyone else who might feel out of place) a chance to practice. It also has software that companies can use to mask applicants' voices during actual interviews.

Unitive is based on the philosophy of "nudges," or small changes that have a big effect. It guides managers through the hiring process, finding ways to prevent them from acting on bias. Names and gender are masked during résumé evaluation, for instance, and during interviews the software guides the managers through questions designed to evaluate relevant skills.

she says, demand has spiked as tech companies have adopted the training. "Virtually every company I know of is deploying unconscious-bias training," says Telle Whitney of the Anita Borg Institute. "It's a fast and feel-good kind of training that helps you feel like you're making a difference."

But there's a problem. Unconscious-bias training may not work. Some think it could even backfire. Though the approach is much more congenial than the "sensitivity training" popular in the 1980s and '90s—in which white men were usually cast as villains—it suffers from the same problem: People resent being made to sit in a chair and listen to somebody telling them how to act. Forcing them to do so can provoke the fundamental human urge to reply: No thanks, I'll do the opposite.

Worse, repeatedly saying "I am biased and so are you" can make bias seem inescapable, even okay. People feel more accepting of their own bias, or throw their hands up, figuring that nothing can be done.

They may even become more biased. A 2015 study by Michelle M. Duguid of Cornell University and Melissa C. Thomas-Hunt of the University of Virginia demonstrates the peril of normalizing bad behavior. Stigmatizing certain behaviors, such as littering and alcohol abuse, makes people realize they are acting outside the norm and has proved to be a powerful way of changing these behaviors. Conversely, messages presenting good behavior as a social norm—"the majority of guests reuse their towels"—can make people embrace this behavior.

So what happens when you say that bias is natural and dwells within all of us? Duguid and Thomas-Hunt found that telling participants that many people hold stereotypes made them more likely to exhibit bias—in the case of the study, against women, overweight people, or the elderly. The researchers also suggest, provocatively, that even just talking too much about gender inequities can serve to normalize them: When you say over and over that women come up against a glass ceiling, people begin to accept that, yes, women come up against a glass ceiling—and that's just the way it is.

I talked about all these issues with Maxine Williams, the global director of diversity at Facebook, who conducts part of the company's online training module. Williams is originally from Trinidad and Tobago; in the module, she mentions a study that found that dark-skinned people of color are seen by white job interviewers as less smart than light-skinned people of color. She told me she finds such studies hard to talk about, and had to force herself to do so.

At Facebook, she says, "managing bias" sessions are "suggested," not mandated, which she hopes cuts down on any resentment. The goal is to create a culture where, even if you opt out of training, you can't avoid the lessons, because managers come around talking about bias, and people are encouraged to call out colleagues in meetings when, say, they interrupt someone. "Have you interrupted an interrupter recently?" Williams likes to ask audiences. She believes that talking about the pervasiveness of bias serves to disabuse people of the meritocracy fallacy.

She also told me that if you are going to be serious about bias training, you have to create a workplace where people feel safe giving voice to their own biases—where they can admit to thinking that men are better at math, for instance, or that new moms are less committed to their work—a perilous task,



SHELLEY CORRELL, FACULTY DIRECTOR, CLAYMAN INSTITUTE FOR GENDER RESEARCH

she acknowledges. “Once you start going down that road and saying to people, ‘Be open!’, all sorts of things are going to come out,” Williams said. “We’re going to have to go through this mud together. It means you have to be forgiving as well.” She added that it’s necessary to assume that people, no matter what bias they are confessing, are well intentioned. “Presuming good intent” is crucial.

When I mentioned this conversation to Bethanye Blount, who is a former Facebook employee (and thinks it’s a great place to work), she laughed at the “presuming good intent” part. “They’re catering to the engineers,” Blount said—engineers constituting a coveted and often sensitive cohort who like to think of themselves as “special snowflakes” and whom Facebook is smart to handle with care. One of the unspoken advantages of unconscious-bias training is that in an environment

where companies are competing for talent, it promises to help attract talented women without scaring away talented men.

I also talked with Bo Ren, a former Facebook employee who’s now a product manager at Tumblr. Ren said the atmosphere at Facebook was tranquil and feel-good on the surface, but—as in all workplaces—there were power dynamics underneath. To succeed anywhere in Silicon Valley, she said, you need to have social credibility, to be able to bring people around to your point of view and get them on board with a new product or solution—to be able to “socialize” your ideas. “You would think all things are equal,” she said, “but these backdoor conversations are happening in settings that women are not invited to. The whole boys’-club thing still applies. If you party with the right people at Burning Man, you’re going to be part of this boys’ club.” As for calling people out in meetings, it sounds like a good idea, she said, but she never saw anyone do it. “It’s just—are you really going to be that person?”

Of late, the problems with unconscious-bias training have become more widely known. None other than Anthony Greenwald, the inventor of the implicit-association test, has expressed his doubts. “Understanding implicit bias does not actually provide you with the tools to do something about it,” he told *Forbes*. Kara Swisher, a co-founder of *Recode*, has said that talk about unconscious-bias training is “exhausting to listen to,” and an excuse for not trying hard enough. One tech executive, Mike Eynon, wrote in a Medium post that bias training makes “us white guys feel better” and lets the “privileged realize everyone has bias and they aren’t at fault,” while nothing changes for discriminated groups.

In 2016, Google reported incremental improvements: 31 percent of its overall workforce is now female, up one percentage point

over the previous year. Nineteen percent of technical roles are held by women, also up a percentage point. At Facebook, women’s overall representation went up from 32 percent to 33 percent. In technical roles, women’s representation also increased a single percentage point, from 16 percent to 17 percent.

Telle Whitney points out that for a large workforce like Google’s, a one-percentage-point rise is not peanuts. But while the companies’ commitment seems genuine, the slow pace of change underscores how far they have to go. If they want to truly transform, they may need to take more-drastic measures.

LATELY, A NEW FIX has emerged. Trying to change people’s unconscious attitudes is messy and complicated. But if you can’t easily dispel bias, what you can do is engineer a set of structural changes that prevent

people from acting on it. Joelle Emerson talks about this a lot in her presentations, and works with companies to embed the insights of anti-bias training into hiring and promotion processes. One way to head off bias in hiring is to make sure that the job interviewer writes down a defined skill set beforehand, asks every applicant the same questions, and assesses the quality of answers according to a rubric, rather than simply saying, after the fact, “I really liked that person who went to the same school I did and likes ice hockey just as much as I do.”

Google has been a proponent of such changes. In his 2015 book, *Work Rules!*, Laszlo Bock, who was the company’s senior vice president of people operations until last summer, cited a study from the University of Toledo that found that the first 20 seconds often predict the outcome of a 20-minute interview. The problem, he wrote, is that such quick impressions are meaningless. He added that Google strongly encourages interviewers to use a combination of skill assessments and standard questions rather than relying on subjective impressions.

Other experts say that what companies need is an anti-bias checklist. The idea is spreading—Pinterest, for one, has worked with Emerson to develop a six-point checklist that includes measures such as reserving plenty of time for evaluating an employee’s performance, to counteract cognitive shortcuts that can introduce bias. But it’s early days: At Emerson’s talk on unconscious bias last summer, someone in the audience asked her which Silicon Valley companies are managing bias well. “No one,” she said, “because the idea of embedding it into organizational design is pretty new.”

This being Silicon Valley, new companies have already cropped up to digitize the checklist idea, offering tech solutions to tech’s gender problem: software that masks an applicant’s gender, or that guides hiring managers through a more objective evaluation process. (See the sidebar on page 70.)

Even when they work, however, these bias interventions get you only so far. Diversity consultants and advocacy groups say they remain frustrated by tech companies’ unwillingness to change core parts of their culture. It is, for example, a hallowed tradition that in job interviews, engineers are expected to stand up and code on whiteboards, a high-pressure situation that works to the disadvantage of those who feel out of place. Indeed, whiteboard sessions are rife with opportunities for biased judgment. At Stanford, Shelley Correll works with a graduate student who, for his dissertation, sat in on a whiteboarding session in which a problem had an error in it; when one female job candidate sensed this and kept asking questions, evaluators felt that all her questions suggested she wasn’t competent.



BO REN, PRODUCT MANAGER, TUMBLR

“Until we see changes in the way we work, I don’t think we’re going to crack this nut,” Correll says. “I worked with one company that insisted that the best way for good ideas to emerge was to have people on teams screaming their ideas at each other. When you watch these teams work, they literally scream at each other and call each other names. They believe this dynamic is essential to scientific discovery—absolutely essential. I said, ‘Could you at least say you disagree with someone without saying you think they are an idiot?’”

There’s a term for the screaming-and-name-calling approach to scientific discovery. It’s called “constructive confrontation,” and it was pioneered by the company that helped give Silicon Valley its name. That would be Intel, maker of the silicon chip. Intel came into existence in a postwar America in which corporate offices were male as far as the eye could

see. It and other early tech companies “were founded exclusively by men, and for better or worse they just had a male sensibility,” says Telle Whitney. As the former Intel CEO Andrew Grove put it in his book *Only the Paranoid Survive*: “From all the early bickering, we developed a style of ferociously arguing with one another while still remaining friends.”

Now, of course, the talk is of inclusion, not confrontation. And I was surprised to hear Intel—old-fashioned Intel—mentioned as one of the companies successfully innovating around gender. It had been releasing diversity numbers since 2000, though not with as much fanfare as some of its peers, and without much improvement. But in the past couple of years, Intel decided to try a few other approaches, including hiring quotas.

Well, not quotas. You can’t say quotas. At least not in the United States. In some European countries, like Norway, real, actual quotas—for example, a rule saying that 40 percent of a public company’s board members must be female—have worked well; qualified women have been found and the Earth has continued turning. However, in the U.S., hiring quotas are illegal. “We never use the word *quota* at Intel,” says Danielle Brown, the company’s chief diversity and inclusion officer. Rather, Intel set extremely firm hiring goals. For 2015, it wanted 40 percent of hires to be female or underrepresented minorities.

Now, it’s true that lots of companies have hiring goals. But to make its goals a little more, well, quota-like, Intel introduced money into the equation. In Intel’s annual performance-bonus plan, success in meeting diversity goals factors into whether the company gives employees an across-the-board bonus. (The amounts vary widely but can be substantial.) If diversity efforts succeed, everybody at the company gets a little bit richer.

Granted, Intel has further to go than some other companies, in part because most of its workforce is technical, unlike newer social-media companies. And with about 100,000 employees worldwide and decades of entrenched culture, it’s a slow and hulking ship to turn around.

But since it began linking bonuses to diversity hiring, Intel has met or exceeded its goals. In 2015, 43 percent of new hires were women and underrepresented minorities, three percentage points above its target. Last year, it upped its goal to 45 percent of new hires, and met it. These changes weren’t just happening at the entry level: 40 percent of new vice presidents were women and underrepresented minorities. Intel’s U.S. workforce in 2014 was just 23.5 percent female. By the middle of last year, the percentage had risen two points, to 25.4 percent.

Intel has also introduced efforts to improve retention, including a “warm line” employees can use to report a problem—feeling stuck in their career, or a conflict with a manager—and have someone look into it. A new initiative will

take data from the warm line and from employee exit interviews to give managers customized playbooks. If a group is losing lots of women, for instance, the manager will get data on why they’re leaving and how to address the issue.

Intel isn’t perfect—its \$300 million pledge for diversity efforts was seen by some as an effort to rehabilitate its image after the company got caught up in Gamergate, a complex scandal involving much gender-related ugliness. And women who have worked there say Intel’s not immune to the sexism that plagues the industry. But I was struck by how many people talk about the company’s genuine commitment.

Elizabeth Land, who worked at Intel for 18 years before leaving in 2015, says the hiring goals did foster some resentment among men. Still, she wishes more companies would adopt a similar approach, to force hiring managers to look beyond their immediate networks. “If you’re willing to spend the effort and the time to find the right senior-level females, you can.”

Shelley Correll agrees. “Tying bonuses to diversity outcomes signals that diversity is something the company cares about and thinks is important,” she says. “Managers will take it seriously.” In fact, she points out, the idea has history: PepsiCo did something similar starting in the early 2000s. When, in

the second year, the company didn’t meet its goal of 50 percent diversity hires, executive bonuses suffered. But eventually the company’s workforce did become more diverse. From 2001 to 2006, the representation of women and minorities among executives increased from 34 percent to 45 percent.

There are other reasons for hope: Venture-capital firms have formed specifically to invest in start-ups run by women, and certain colleges—notably Carnegie Mellon, Stanford, and Harvey Mudd—have dramatically increased the number of female students in their computer-science programs.

Perhaps most encouraging is that as new companies come along, some of them are preemptively adopting the lessons that places like Intel and Google have already learned. Among these is Slack, the group-messaging company, which is widely praised for

having made diversity a priority from early on, rather than having to go back and try to reengineer it in. Last year, when Slack received the TechCrunch award for Fastest Rising Startup, the company sent four black female software engineers—rather than the CEO, Stewart Butterfield (who’s white)—onstage to accept the award. “We’re engineers,” one of the women, Kiné Camara, said, meaningfully. From September 2015 to February 2016, as Slack grew, its technical workforce went from 18 percent to 24 percent female. However slowly, the industry seems to be changing its mind about innate talent and where genius comes from. ■

Liza Mundy’s forthcoming book, *Code Girls*, about female code breakers during World War II, will be published in October. She is a senior fellow at New America.

In Siberia, a plan is under way to repopulate the grasslands with ancient grazers, including, in the near future, **genetically engineered woolly mammoths**. Much more than an experiment in biodiversity, this is a radical scheme to **slow one of the most dangerous contributors to global warming**—before it's too late.



Pleistocene Park

BY ROSS ANDERSEN

ILLUSTRATIONS BY KEVIN TONG

NIKITA ZIMOV'S NICKNAME for the vehicle seemed odd at first. It didn't look like a baby mammoth. It looked like a small tank, with armored wheels and a pit bull's center of gravity. Only after he smashed us into the first tree did the connection become clear.

We were driving through a remote forest in Eastern Siberia, just north of the Arctic Circle, when it happened. The summer thaw was in full swing. The undergrowth glowed green, and the air hung heavy with mosquitoes. We had just splashed through a series of deep ponds when, without a word of warning, Nikita veered off the trail and into the trees, ramming us into the trunk of a young 20-foot larch. The wheels spun for a moment, and then surged us forward.

A dry crack rang out from under the fender as the larch snapped cleanly at its base and toppled over, falling in the quiet, dignified way that trees do.

I had never seen Nikita happier. Even seated behind the wheel, he loomed tall and broad-shouldered, his brown hair cut short like a soldier's. He fixed his large ice-blue eyes on the fallen tree and grinned. I remember thinking that in another age, Nikita might have led a hunter-gatherer band in some wildland of the far north. He squeezed the accelerator, slamming us into another larch, until it too snapped and toppled over, felled by our elephantine force. We rampaged 20 yards with this same violent rhythm—churning wheels, cracking timber, silent fall—before stopping to survey the flattened strip of larches in our wake.

"In general, I like trees," Nikita said. "But here, they are against our theory."

Behind us, through the fresh gap in the forest, our destination shone in

the July sun. Beyond the broken trunks and a few dark tree-lined hills stood Pleistocene Park, a 50-square-mile nature reserve of grassy plains roamed by bison, musk oxen, wild horses, and maybe, in the not-too-distant future, lab-grown woolly mammoths. Though its name winks at *Jurassic Park*, Nikita, the reserve's director, was keen to explain that it is not a tourist attraction, or even a species-resurrection project. It is, instead, a radical geoengineering scheme.

"It will be cute to have mammoths running around here," he told me. "But I'm not doing this for them, or for any other animals. I'm not one of these crazy scientists that just wants to make the world green. I am trying to solve the larger problem of climate change. I'm doing this for humans. I've got three daughters. I'm doing it for them."

Pleistocene Park is named for the geological epoch that ended only 12,000 years ago, having begun 2.6 million years earlier. Though colloquially known as the Ice Age, the Pleistocene could easily be called the Grass Age. Even during its deepest chills, when thick, blue-veined



glaciers were bearing down on the Mediterranean, huge swaths of the planet were coated in grasslands. In Beringia, the Arctic belt that stretches across Siberia, all of Alaska, and much of Canada's Yukon, these vast plains of green and gold gave rise to a new biome, a cold-weather version of the African savanna called the Mammoth Steppe. But when the Ice Age ended, many of the grasslands vanished under mysterious circumstances, along with most of the giant species with whom we once shared this Earth.

Nikita is trying to resurface Beringia with grasslands. He wants to summon the Mammoth Steppe ecosystem, complete with its extinct creatures, back from the underworld of geological layers. The park was founded in 1996, and already it has broken out of its original fences, eating its way into the surrounding tundra scrublands and small forests. If Nikita has his way, Pleistocene Park will spread across Arctic Siberia and into North America, helping to slow the thawing of the Arctic permafrost. Were that frozen underground layer to warm too quickly, it would release some of the world's most dangerous climate-change accelerants into the atmosphere, visiting catastrophe on human beings and millions of other species.

In its scope and radicalism, the idea has few peers, save perhaps the scheme to cool the Earth by seeding the atmosphere with silvery mists of sun-reflecting aerosols. Only in Siberia's empty expanse could an experiment of this scale succeed, and only if human beings learn to cooperate across

centuries. This intergenerational work has already begun. It was Nikita's father, Sergey, who first developed the idea for Pleistocene Park, before ceding control of it to Nikita.

The Zimovs have a complicated relationship. The father says he had to woo the son back to the Arctic. When Nikita was young, Sergey was, by his own admission, obsessed with work. "I don't think he even paid attention to me until I was 20," Nikita told me. Nikita went away for high school, to a prestigious science academy in Novosibirsk, Siberia's largest city. He found life there to his liking, and decided to stay for university. Sergey made the journey to Novosibirsk during Nikita's freshman year and asked him to come home. It would have been easy for Nikita to say no. He soon started dating the woman he would go on to marry. Saying yes to Sergey meant asking her to live, and raise children, in the ice fields at the top of the world. And then there was his pride. "It is difficult to dedicate your life to someone else's idea," he told me.

But Sergey was persuasive. Like many Russians, he has a poetic way of speaking. In the Arctic research community, he is famous for his ability to think across several scientific disciplines. He will spend years nurturing a big idea before previewing it for the field's luminaries. It will sound crazy at first, several of them told me. "But then you go away and you think," said Max Holmes, the deputy director of Woods Hole Research Center, in Massachusetts. "And the idea starts to makes sense, and then you can't come up with a good reason why it's wrong."

Of all the big ideas that have come spilling out of Sergey Zimov, none rouses his passions like Pleistocene Park. He once told me it would be "the largest project in human history."

AS IT HAPPENS, human history began in the Pleistocene. Many behaviors that distinguish us from other species emerged during that 2.6-million-year epoch, when glaciers pulsed down from the North Pole at regular intervals. In the flood myths of Noah and Gilgamesh, and in Plato's story of Atlantis, we get a clue as to what it was like when the last glaciation ended and the ice melted and the seas welled up, swallowing coasts and islands. But human culture has preserved no memory of an *oncoming* glaciation. We can only imagine what it was like to watch millennia of snow pile up into ice slabs that pushed ever southward. In the epic poems that compress generations of experience, a glaciation would have seemed like a tsunami of ice rolling down from the great white north.

One of these 10,000-year winters may have inspired our domestication of fire, that still unequaled technological leap that warmed us, warded away predators, and cooked the calorie-dense meals that nourished our growing brains. On our watch, fire evolved quickly, from a bonfire at the center of camp to industrial combustion that powers cities whose glow can be seen from space. But these fossil-fueled fires give off an exhaust, one that is pooling, invisibly, in the thin shell of air around our planet, warming its surface. And nowhere is warming faster, or with greater consequence, than the Arctic.

Every Arctic winter is an Ice Age in miniature. In late September, the sky darkens and the ice sheet atop the North Pole expands, spreading a surface freeze across the seas of the Arctic Ocean, like a cataract dilating over a blue iris. In October, the freeze hits Siberia's north coast and continues into the

**SERGEY
ZIMOV SAYS
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land, sandwiching the soil between surface snowpack and subterranean frost. When the spring sun comes, it melts the snow, but the frozen underground layer remains. Nearly a mile thick in some places, this Siberian permafrost extends through the northern tundra moonscape and well into the taiga forest that stretches, like an evergreen stripe, across Eurasia's midsection. Similar frozen layers lie beneath the surface in Alaska and the Yukon, and all are now beginning to thaw.

If this intercontinental ice block warms too quickly, its thawing will send as much greenhouse gas into the atmosphere each year as do all of America's SUVs, airliners, container ships, factories, and coal-burning plants combined. It could throw the planet's climate into a calamitous feedback loop, in which faster heating begets faster melting. The more apocalyptic climate-change scenarios will be in play. Coastal population centers could be swamped. Oceans could become more acidic. A mass extinction could rip its way up from the plankton base of the marine food chain. Megadroughts could expand deserts and send hundreds of millions of refugees across borders, triggering global war.

"Pleistocene Park is meant to slow the thawing of the permafrost," Nikita told me. The park sits in the transition zone between the Siberian tundra and the dense woods of the taiga. For decades, the Zimovs and their animals have stripped away the region's dark trees and shrubs to make way for the return of grasslands. Research suggests that these grasslands will reflect more sunlight than the forests and scrub they replace, causing the Arctic to absorb less heat. In winter, the short grass and animal-trampled snow will offer scant insulation, enabling the season's freeze to reach deeper into the Earth's crust, cooling the frozen soil beneath and locking one of the world's most dangerous carbon-dioxide lodes in a thermodynamic vault.

To test these landscape-scale cooling effects, Nikita will need to import the large herbivores of the Pleistocene. He's already begun bringing them in from far-off lands, two by two, as though filling an ark. But to grow his Ice Age lawn into a biome that stretches across continents, he needs millions more. He needs wild horses, musk oxen, reindeer, bison, and predators to corral the herbivores into herds. And, to keep the trees beaten back, he needs hundreds of thousands of resurrected woolly mammoths.

AS A SPECIES, the woolly mammoth is fresh in its grave. People in Siberia still stumble on frozen mammoth remains with flesh and fur intact. Some scientists have held out hope that one of these carcasses may contain an undamaged cell suitable for cloning. But *Jurassic Park* notwithstanding, the DNA of a deceased animal decays quickly. Even if a deep freeze spares a cell the ravenous microbial swarms that follow in death's wake, a few thousand years of cosmic rays will reduce its genetic code to a jumble of unreadable fragments.

You could wander the entire Earth and not find a mammoth cell with a perfectly preserved nucleus. But you may not need one. A mammoth is merely a cold-adapted member of the elephant family. Asian elephants in zoos have been caught on camera making snowballs with their trunks. Modify the genomes of elephants like those, as nature modified their ancestors' across hundreds of thousands of years, and you can make your own mammoths.

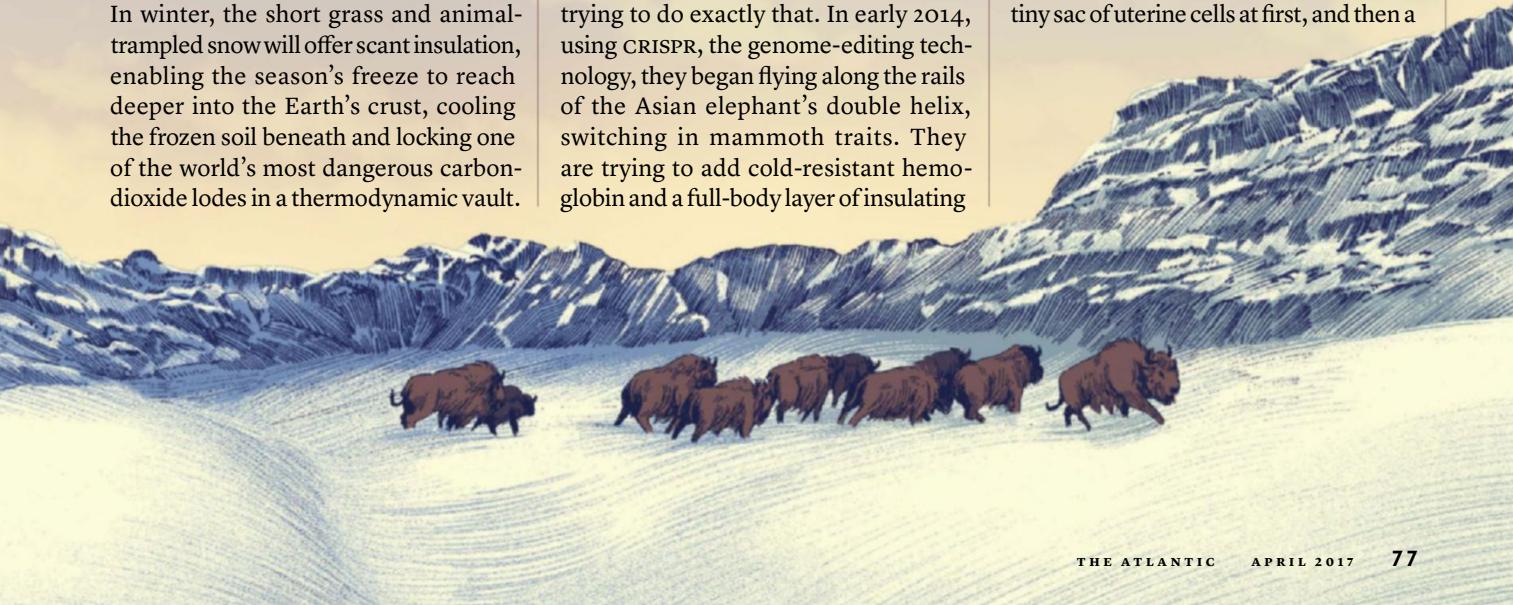
The geneticist George Church and a team of scientists at his Harvard lab are trying to do exactly that. In early 2014, using CRISPR, the genome-editing technology, they began flying along the rails of the Asian elephant's double helix, switching in mammoth traits. They are trying to add cold-resistant hemoglobin and a full-body layer of insulating

fat. They want to shrink the elephant's flapping, expressive ears so they don't freeze in the Arctic wind, and they want to coat the whole animal in luxurious fur. By October 2014, Church and his team had succeeded in editing 15 of the Asian elephant's genes. Late last year he told me he was tweaking 30 more, and he said he might need to change only 50 to do the whole job.

When I asked Beth Shapiro, the world's foremost expert in extinct species' DNA, about Church's work, she gushed. "George Church is awesome," she said. "He's on the right path, and no one has made more progress than him. But it's too early to say whether it will take only 50 genes, because it takes a lot of work to see what each of those changes is going to do to the whole animal."

Even if it takes hundreds of gene tweaks, Church won't have to make a perfect mammoth. If he can resculpt the Asian elephant so it can survive Januarys in Siberia, he can leave natural selection to do the polishing. For instance, mammoth hair was as long as 12 inches, but shorter fur will be fine for Church's purposes. Yakutian wild horses took less than 1,000 years to regrow long coats after they returned to the Arctic.

"The gene editing is the easy part," Church told me, before I left for Pleistocene Park. Assembling the edited cells into an embryo that survives to term is the real challenge, in part because surrogacy is out of the question. Asian elephants are an endangered species. Few scientists want to tinker with their reproductive processes, and no other animal's womb will do. Instead, the embryos will have to be nurtured in an engineered environment, most likely a tiny sac of uterine cells at first, and then a



closet-size tank where the fetus can grow into a fully formed, 200-pound calf.

No one has yet brought a mammal to term in an artificial environment. The mammalian mother-child bond, with its precisely timed hormone releases, is beyond the reach of current biotechnology. But scientists are getting closer with mice, whose embryos have now stayed healthy *in vitro* for almost half of their 20-day gestation period. Church told me he hopes he'll be manufacturing mice in a lab within five years. And though the elephant's 22-month gestation period is the longest of any mammal, Church said he hopes it will be a short hop from manufacturing mice to manufacturing mammoths.

Church has been thinking about making mammoths for some time, but he accelerated his efforts in 2013, after meeting Sergey Zimov at a de-extinction conference in Washington, D.C. Between sessions, Sergey pitched him on his plan to keep Beringia's permafrost frozen by giving it a top coat of Ice Age grassland. When he explained the mammoth's crucial role in that ecosystem, Church felt compelled to help. He told me he hopes to deliver the first woolly mammoth to Pleistocene Park within a decade.

LAST SUMMER, I traveled 72 hours, across 15 time zones, to reach Pleistocene Park. After Moscow, the towns, airports, and planes shrunk with every flight. The last leg flew out of Yakutsk, a gray city in Russia's far east, whose name has, like Siberia's, become shorthand for exile. The small dual-prop plane flew northeast for four hours, carrying about a dozen passengers seated on blue-felt seats with the structural integrity of folding chairs. Most were indigenous people from Northeast Siberia. Some brought goods from warmer climes,

including crops that can't grow atop the permafrost. One woman held a bucket of grapes between her knees.

We landed in Cherskiy, a dying gold-mining town that sits on the Kolyma River, a 1,323-mile vein of meltwater, the largest of several that gush out of northeastern Russia and into the East Siberian Sea. Stalin built a string of gulags along the Kolyma and packed them with prisoners, who were made to work in the local mines. Solzhenitsyn called the Kolyma the gulag system's "pole of cold and cruelty." The region retains its geopolitical cachet today, on account of its proximity to the Arctic Ocean's vast undersea oil reserves.

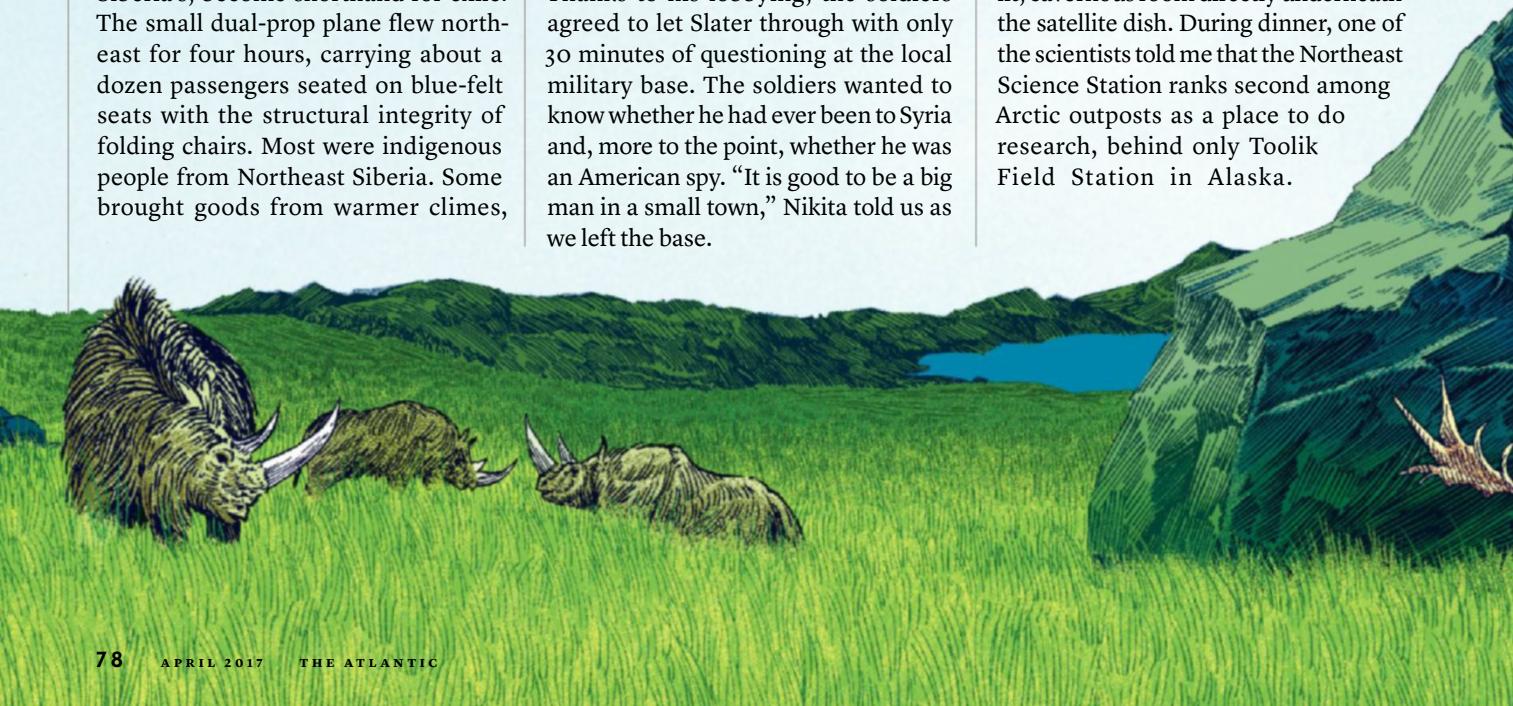
Cherskiy's airstrip is one of the world's most remote. Before it became a Cold War stronghold, it was a jumping-off point for expeditions to the North Pole. You need special government permission to fly into Cherskiy. Our plane had just rolled to a halt on the runway's patchy asphalt when Russian soldiers in fatigues boarded and bounded up to the first row of the cabin, where I was sitting with Grant Slater, an American filmmaker who had come with me to shoot footage of Pleistocene Park. I'd secured the required permission, but Slater was a late addition to the trip, and his paperwork had not come in on time.

Nikita Zimov, who met us at the airport, had foreseen these difficulties. Thanks to his lobbying, the soldiers agreed to let Slater through with only 30 minutes of questioning at the local military base. The soldiers wanted to know whether he had ever been to Syria and, more to the point, whether he was an American spy. "It is good to be a big man in a small town," Nikita told us as we left the base.

Nikita runs the Northeast Science Station, an Arctic research outpost near Cherskiy, which supports a range of science projects along the Kolyma River, including Pleistocene Park. The station and the park are both funded with a mix of grants from the European Union and America's National Science Foundation. Nikita's family makes the 2,500-mile journey from Novosibirsk to the station every May. In the months that follow, they are joined by a rotating group of more than 60 scientists from around the world. When the sky darkens in the fall, the scientists depart, followed by Nikita's family and finally Nikita himself, who hands the keys to a small team of winter rangers.

We arrived at the station just before dinner. It was a modest place, consisting of 11 hacked-together structures, a mix of laboratories and houses overlooking a tributary of the Kolyma. Station life revolves around a central building topped by a giant satellite dish that once beamed propaganda to this remote region of the Soviet empire.

I'd barely stepped through the door that first night when Nikita offered me a beer. "Americans love IPAs," he said, handing me a 32-ounce bottle. He led us into the station's dining hall, a warmly lit, cavernous room directly underneath the satellite dish. During dinner, one of the scientists told me that the Northeast Science Station ranks second among Arctic outposts as a place to do research, behind only Toolik Field Station in Alaska.



Nikita later confided that he felt quite competitive with Toolik. Being far less remote, the Alaskan station offers scientists considerable amenities, including seamless delivery from Amazon Prime. But Toolik provides no alcohol, so Nikita balances its advantages by stocking his station with Russian beer and crystal-blue bottles of Siberian vodka, shipped into Cherskiy at a heavy cost. The drinks are often consumed late at night in a roomy riverside sauna, under a sky streaked pink by the midnight sun.

Nikita is the life of the station. He is at every meal, and any travel, by land or water, must be coordinated through him. His father is harder to find. One night, I caught Sergey alone in the dining room, having a late dinner. Squat and barrel-chested, he was sitting at a long table, his thick gray rope of a ponytail hanging past his tailbone. His beard was a white Brillo Pad streaked with yellow. He chain-smoked all through the meal, drinking vodka, telling stories, and arguing about Russo-American relations. He kept insisting, loudly and in his limited English, that Donald Trump would be elected president in a few months. (Nikita would later tell me that Sergey has considered himself something of a prophet ever since he predicted the fall of the Soviet Union.) Late in the night, he finally mellowed when he turned to his favorite subjects, the deep past and far future of humankind. Since effectively handing the station over to his son, Sergey seems to have embraced a new role. He has become the station's resident philosopher.

NIKITA WOULD PROBABLY think *philosopher* too generous. "My dad likes to lie on the sofa and do science while I do all the work," he told me the next day. We were descending into an ice cave in Pleistocene Park. Step by cautious step, we made our way down a pair of rickety ladders that dropped 80 feet through the permafrost to the cave's bottom. Each time our boots found the next rung, we came eye to eye with a more ancient stratum of chilled soil. Even in the Arctic summer, temperatures in the underground network of chambers were below freezing, and the walls were coated with white ice crystals. I felt like we were wandering around in a geode.

Not every wall sparkled with fractals of white frost. Some were windows of clear ice, revealing mud that was 10,000, 20,000, even 30,000 years old. The ancient soil was rich with tiny bone fragments from horses, bison, and mammoths, large animals that would have needed a prolific, cold-resistant food source to survive the Ice Age Arctic. Nikita knelt and scratched at one of the frozen panels with his fingernail. Columns of exhaled steam floated up through the white beam of his headlamp. "See this?" he said. I leaned in, training my lamp on his thumb and forefinger. Between them, he held a thread of vegetable matter so tiny and pale that an errant breath might have reduced it to powder. It was a 30,000-year-old root that had once been attached to a bright-green blade of grass.

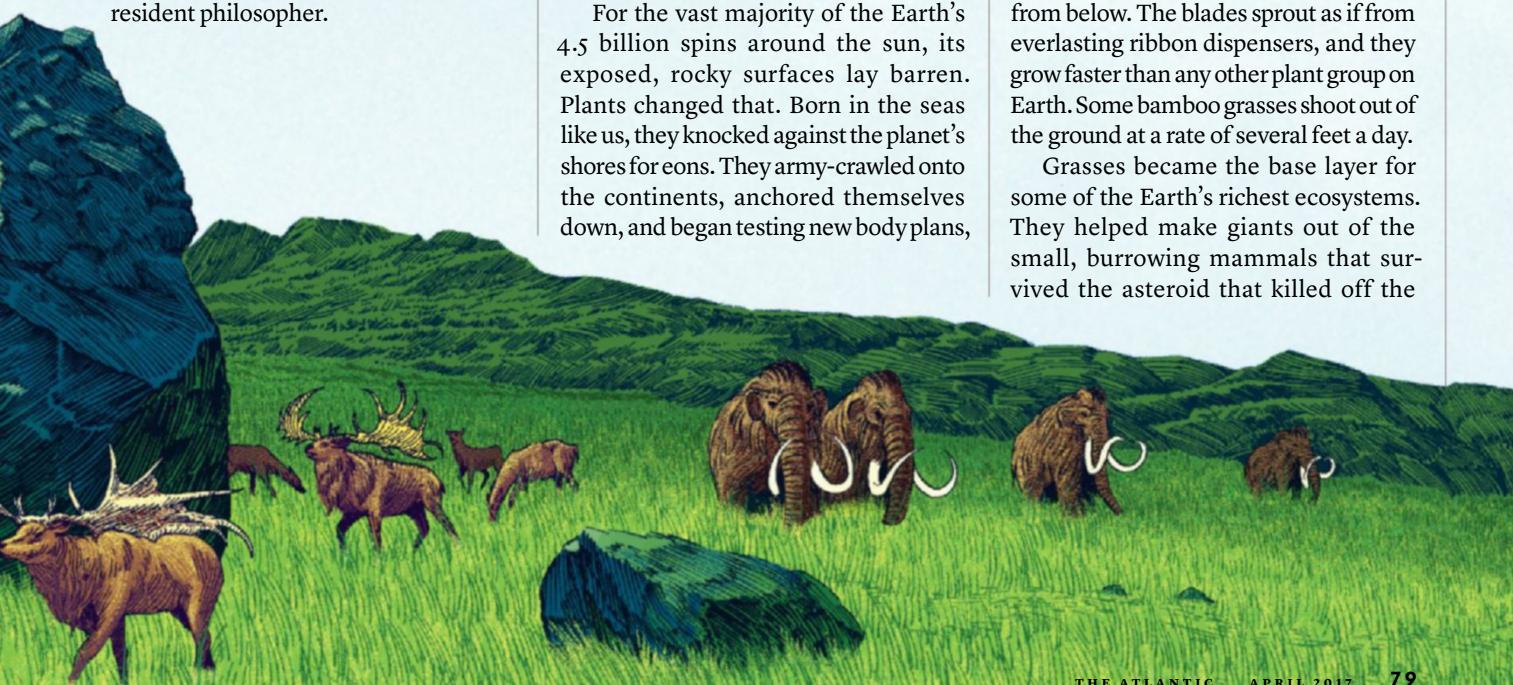
For the vast majority of the Earth's 4.5 billion spins around the sun, its exposed, rocky surfaces lay barren. Plants changed that. Born in the seas like us, they knocked against the planet's shores for eons. They army-crawled onto the continents, anchored themselves down, and began testing new body plans,

performing, in the process, a series of vast experiments on the Earth's surface. They pushed whole forests of woody stems into the sky to stretch their light-drinking leaves closer to the sun. They learned how to lure pollinators by unfurling perfumed blooms in every color of the rainbow. And nearly 70 million years ago, they began testing a new form that crept out from the shadowy edges of the forest and began spreading a green carpet of solar panel across the Earth.

For tens of millions of years, grasses waged a global land war against forests. According to some scientists, they succeeded by making themselves easy to eat. Unlike other plants, many grasses don't expend energy on poisons, or thorns, or other herbivore-deterring technologies. By allowing themselves to be eaten, they partner with their own grazers to enhance their ecosystem's nutrient flows.

Temperate-zone biomes can't match the lightning-fast bio-cycling of the tropics, where every leaf that falls to the steamy jungle floor is set upon by microbial swarms that dissolve its constituent parts. In a pine forest, a fallen branch might keep its nutrients locked behind bark and needle for years. But grasslands are able to keep nutrients moving relatively quickly, because grasses so easily find their way into the hot, wet stomachs of large herbivores, which are even more microbe-rich than the soil of the tropics. A grazing herbivore returns nutrients to the soil within a day or two, its thick, paste-like dung acting as a fertilizer to help the bitten blades of grass regrow from below. The blades sprout as if from everlasting ribbon dispensers, and they grow faster than any other plant group on Earth. Some bamboo grasses shoot out of the ground at a rate of several feet a day.

Grasses became the base layer for some of the Earth's richest ecosystems. They helped make giants out of the small, burrowing mammals that survived the asteroid that killed off the



dinosaurs some 66 million years ago. And they did it in some of the world's driest regions, such as the sunbaked plains of the Serengeti, where more than 1 million wildebeests still roam. Or the northern reaches of Eurasia during the most-severe stretches of the Pleistocene.

The root between Nikita's thumb and forefinger was one foot soldier among trillions that fought in an ecological revolution that human beings would come to join. We descended, after all, from tree-dwellers. Our nearest primate relatives, chimpanzees, bonobos, and gorillas, are still in the forest. Not human beings. We left Africa's woodlands and wandered into the alien ecology of its grassland savannas, as though sensing their raw fertility. Today, our diets—and those of the animals we domesticated—are still dominated by grasses, especially those we have engineered into mutant strains: rice, wheat, corn, and sugarcane.

"Ask any kid 'Where do animals live?' and they will tell you 'The forest,'" Nikita told me. "That's what people think of when they think about nature. They think of birds singing in a forest. They should think of the grassland."

Nikita and I climbed out of the ice cave and headed for the park's grassland. We had to cross a muddy drainage channel that he had bulldozed to empty a nearby lake, so that grass seeds from the park's existing fields could drift on the wind and fall onto the newly revealed soil. Fresh tufts of grass were already erupting out of the mud. Nikita does most of his violent gardening with a forest-mowing transporter on tank treads that stands more than 10 feet tall. He calls it the "mama mammoth."

When I first laid eyes on Pleistocene Park, I wondered whether it was the

grassland views that first lured humans out of the woods. In the treeless plains, an upright biped can see almost into eternity. Cool Arctic winds rushed across the open landscape, fluttering its long ground layer of grasses. On the horizon, I made out a herd of large, gray-and-white animals. Their features came into focus as we hiked closer, especially after one broke into a run. They were horses, like those that sprinted across the plains of Eurasia and the Americas during the Pleistocene, their hooves hammering the ground, compressing the snow so that other grazers could reach cold mouthfuls of grass and survive the winter.

Like America's mustangs, Pleistocene Park's horses come from a line that was once domesticated. But it was hard to imagine these horses being tamed. They moved toward us with a boldness you don't often see in pens and barns. Nikita is not a man who flinches easily,

but he backpedaled quickly when the horses feinted in our direction. He stooped and gathered a bouquet of grass and extended it tentatively. The horses snorted at the offer. They stared at us, dignified and curious, the mystery of animal consciousness beaming out

from the black sheen of their eyes. At one point, four lined up in profile, like the famous quartet of gray horses painted by torchlight on the ceiling of Chauvet Cave, in France, some 30,000 years ago.

We walked west through the fields, to where a lone bison was grazing. When seen without a herd, a bison loses some of its glamour as a pure symbol of the wild. But even a single hungry specimen

is an ecological force to be reckoned with. This one would eat through acres of grass by the time the year was out. In the warmer months, bison expend some of their awesome muscular energy on the destruction of trees. They shoulder into stout trunks, rubbing them raw and exposing them to the elements. It was easy to envision huge herds of these animals clearing the steppes of Eurasia and North America during the Pleistocene. This one had trampled several of the park's saplings, reducing them to broken, leafless nubs. Nikita and I worried that the bison would trample us, too, when, upon hearing us inch closer, he reared up his mighty, horned head, stilled his swishing tail, and stared, as though contemplating a charge.

We stayed low and headed away to higher ground to see a musk ox, a grazer whose entire being, inside and out, seems to have been carved by the Pleistocene. A musk ox's stomach contains exotic microbiota that are corrosive enough to process tundra scrub. Its dense layers of fur provide a buffer that allows it to graze in perfect comfort under the dark, aurora-filled sky of the Arctic winter, untroubled by skin-peeling, 70-below winds.

Nikita wants to bring hordes of musk oxen to Pleistocene Park. He acquired this one on a dicey boat ride hundreds of miles north into the ice-strewn Arctic Ocean. He would have brought back several others, too, but a pair of polar bears made off with them. Admiring the animal's shiny, multicolored coat, I asked Nikita whether he worried about poachers, especially with a depressed mining town nearby. He told me that hunters from Cherskiy routinely hunt moose, reindeer, and bear in the surrounding forests, "but they don't hunt animals in the park."

"Why?" I asked.

THE MAMMOTH'S EXTINCTION MAY HAVE BEEN OUR ORIGINAL ECOLOGICAL SIN.



"Personal relationships," he said. "When the leader of the local mafia died, I gave the opening remarks at his funeral."

FILLING PLEISTOCENE PARK with giant herbivores is a difficult task because there are so few left. When modern humans walked out of Africa, some 70,000 years ago, we shared this planet with more than 30 land-mammal species that weighed more than a ton. Of those animals, only elephants, hippos, rhinos, and giraffes remain. These African megafauna may have survived contact with human beings because they evolved alongside us over millions of years—long enough for natural selection to bake in the instincts required to share a habitat with the most dangerous predator nature has yet manufactured.

The giant animals that lived on other continents had no such luxury. When we first wandered into their midst, they may have misjudged us as small, harmless creatures. But by the time humans arrived in southern Europe, we'd figured out how to fan out across grasslands in small, fleet-footed groups. And we were carrying deadly projectiles that could be thrown from beyond the intimate range of an animal's claws or fangs.

Most ecosystems have checks against runaway predation. Population dynamics usually ensure that apex predators are rare. When Africa's grazing populations dip too low, for instance, lions go hungry and their numbers plummet. The same is true of sharks in the oceans. But when human beings' favorite prey thins out, we can easily switch to plant foods. This omnivorous resilience may explain a mystery that has vexed fossil hunters for

more than a century, as they have slowly unearthed evidence of an extraordinary die-off of large animals all over the world, right at the end of the Pleistocene.

Some scientists think that extreme climate change was the culprit: The global melt transformed land-based biomes, and lumbering megafauna were slow to adapt. But this theory has weaknesses. Many of the vanished species had already survived millions of years of fluctuations between cold and warmth. And with a climate-caused extinction event, you'd expect the effects to be distributed across size and phylum. But small animals mostly survived the end of the Pleistocene. The species that died in high numbers were mammals with huge stores of meat in their flanks—precisely the sort you'd expect spear-wielding humans to hunt.

Climate change may have played a supporting role in these extinctions, but as our inventory of fossils has grown, it has strengthened the case for extermination by human rampage. Most telling is the timeline. Between 40,000 and 60,000 years ago, during an ocean-lowering glaciation, a small group of humans set out on a sea voyage from Southeast Asia. In only a few thousand years, they skittered across Indonesia and the Philippines, until they reached Papua New Guinea and Australia, where they found giant kangaroos, lizards twice as long as Komodo dragons, and fury, hippo-size wombats that kept their young in huge abdominal pouches. Estimating extinction dates is tricky, but most of these species seem to have vanished shortly thereafter.

It took at least another 20,000 years for human beings to trek over the Bering land bridge to the Americas, and a few thousand more to make it down to the southern tip. The journey seems to have taken the form of an extended hunting

spree. Before humans arrived, the Americas were home to mammoths, bear-size beavers, car-size armadillos, giant camels, and a bison species twice as large as those that graze the plains today. The smaller, surviving bison is now the largest living land animal in the Americas, and it barely escaped extermination: The invasion of gun-toting Europeans reduced its numbers from more than 30 million to fewer than 2,000.

The pattern that pairs human arrival with megafaunal extinction is clearest in the far-flung islands that no human visited until relatively recently. The large animals of Hawaii, Madagascar, and New Zealand disappeared during the past 2,000 years, usually within centuries of human arrival. This pattern even extends to ocean ecosystems. As soon as industrial shipbuilding allowed large groups of humans to establish a permanent presence on the seas, we began hunting marine megafauna for meat and lamp oil. Less than a century later, North Atlantic gray whales were gone, along with 95 percent of North Atlantic humpbacks. Not since the asteroid struck have large animals found it so difficult to survive on planet Earth.

NNATURE, no event happens in isolation. A landscape that loses its giants becomes something else.

Nikita and I walked all the way to the edge of Pleistocene Park, to the border between the grassy plains and the forest, where a line of upstart saplings was shooting out of the ground. Trees like these had sprung out of the soils of the Northern Hemisphere for ages, but until recently, many were trampled or snapped in half by the mighty, tusked force of the woolly mammoth.

It was only 3 million years ago that elephants left Africa and swept across southern Eurasia. By the time they crossed the land bridge to the Americas, they'd grown a coat of fur. Some of them would have waded into the



shallow passes between islands, using their trunks as snorkels. In the deserts south of Alaska, they would have used those same trunks to make mental scent maps of water resources, which were probably sharper in resolution than a bloodhound's.

The mammoth family assumed new forms in new habitats, growing long fur in northern climes and shrinking to pygmies on Californian islands where food was scarce. But mammoths were always a keystone species on account of their prodigious grazing, their well-digging, and the singular joy they seemed to derive from knocking down trees. A version of this behavior is on display today in South Africa's Kruger National Park, one of the only places on Earth where elephants live in high densities. As the population has recovered, the park's woodlands have thinned, just as they did millions of years ago, when elephants helped engineer the African savannas that made humans into humans.

I have often wondered whether the human who first encountered a mammoth retained some cultural memory of its African cousin, in song or story. In the cave paintings that constitute our clearest glimpse into the prehistoric mind, mammoths loom large. In a single French cave, more than 150 are rendered in black outline, their tusks curving just so. In the midst of the transition from caves to constructed homes, some humans lived *inside* mammoths: 15,000 years ago, early architects built tents from the animals' bones and tusks.

Whatever wonderment human beings felt upon sighting their first mammoth, it was eventually superseded by more-practical concerns. After all, a single cold-preserved carcass could feed a tribe for a few weeks. It took less than 50 millennia for humans to help kill off the mammoths of Eurasia and North America. Most were dead by the end of the Ice Age. A few survived into historical

times, on remote Arctic Ocean outposts like St. Paul Island, a lonely dot of land in the center of the Bering Sea where mammoths lived until about 3600 B.C. A final group of survivors slowly wasted away on Wrangel Island, just north of Pleistocene Park. Mammoth genomes tell us they were already inbreeding when the end came, around 2000 B.C. No one knows how the last mammoth died, but we do know that humans made landfall on Wrangel Island around the same time.

The mammoth's extinction may have been our original ecological sin. When humans left Africa 70,000 years ago, the elephant family occupied a range that stretched from that continent's southern tip to within 600 miles of the North Pole. Now elephants are holed up in a few final hiding places, such as Asia's dense forests. Even in Africa, our shared ancestral home, their populations are shrinking, as poachers hunt them with helicopters, GPS, and night-vision goggles. If you were an anthropologist specializing in human ecological relationships, you may well conclude that one of our distinguishing features as a species is an inability to coexist peacefully with elephants.

But nature isn't fixed, least of all human nature. We may yet learn to live alongside elephants, in all their spectacular variety. We may even become a friend to these magnificent animals. Already, we honor them as a symbol of memory, wisdom, and dignity. With luck, we will soon re-extend their range to the Arctic.

"Give me 100 mammoths and come back in a few years," Nikita told me as he stood on the park's edge, staring hard into the fast-growing forest. "You won't recognize this place."

THE NEXT MORNING, I met Sergey Zimov on the dock at the Northeast Science Station. In winter, when Siberia ices over, locals make long-distance treks on the Kolyma's frozen surface, mostly

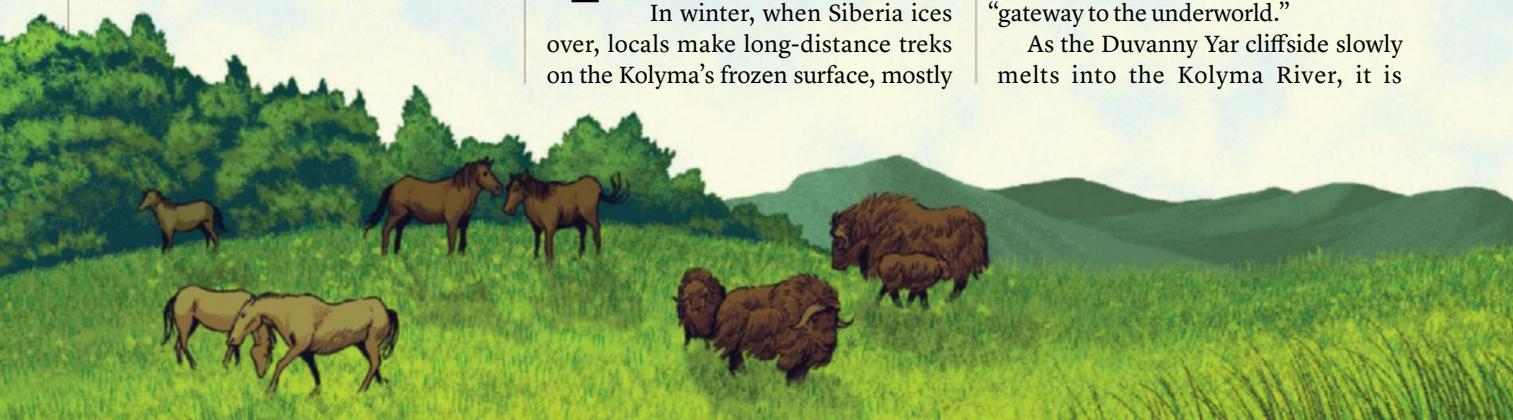
in heavy trucks, but also in the ancestral mode: sleighs pulled by fleet-footed reindeer. (Many far-northern peoples have myths about flying reindeer.) Sergey and I set out by speedboat, snaking our way down from the Arctic Ocean and into the Siberian wilderness.

Wearing desert fatigues and a black beret, Sergey smoked as he drove, burning through a whole pack of unfiltered cigarettes. The twin roars of wind and engine forced him to be even louder and more aphoristic than usual. Every few miles, he would point at the young forests on the shores of the river, lamenting their lack of animals. "This is not wild!" he would shout.

It was early afternoon when we arrived at Duvanny Yar, a massive cliff that runs for six miles along the riverbank. It was like no other cliff I'd ever seen. Rising 100 feet above the shore, it was a concave checkerboard of soggy mud and smooth ice. Trees on its summit were flopping over, their fun-house angles betraying the thaw beneath. Its aura of apocalyptic decay was enhanced by the sulfurous smell seeping out of the melting cliffside. As a long seam of exposed permafrost, Duvanny Yar is a vivid window into the brutal geological reality of climate change.

Many of the world's far-northern landscapes, in Scandinavia, Canada, Alaska, and Siberia, are wilting like Duvanny Yar is. When Nikita and I had driven through Cherskiy, the local mining town, we'd seen whole houses sinking into mud formed by the big melt. On YouTube, you can watch a researcher stomp his foot on Siberian scrubland, making it ripple like a water bed. The northern reaches of the taiga are dimpled with craters hundreds of feet across, where frozen underground soil has gone slushy and collapsed, causing landslides that have sucked huge stretches of forest into the Earth. The local Yakutians describe one of the larger sinkholes as a "gateway to the underworld."

As the Duvanny Yar cliffside slowly melts into the Kolyma River, it is



spilling Ice Age bones onto the riverbank, including woolly-rhino ribs and mammoth tusks worth thousands of dollars. A team of professional ivory hunters had recently picked the shore clean, but for a single 30-inch section of tusk spotted the previous day by a lucky German scientist. He had passed it around the dinner table at the station. Marveling at its smooth surface and surprising heft, I'd felt, for a moment, the instinctive charge of ivory lust, that peculiar human longing that has been so catastrophic for elephants, furry and otherwise. When I joked with Sergey that fresh tusks may soon be strewn across this riverbank, he told me he hoped he would be alive when mammoths return to the park.

The first of the resurrected mammoths will be the loneliest animal on Earth. Elephants are extremely social. When they are removed from normal herd life to a circus or a zoo, some slip into madness. Mothers even turn on their young.

Elephants are matriarchal: Males generally leave the herd in their teens, when they start showing signs of sexual maturity. An elephant's social life begins at birth, when a newborn calf enters the world to the sound of joyous stomping and trumpeting from its sisters, cousins, aunts, and, in some cases, a grandmother.

Mammoth herds were likewise matriarchal, meaning a calf would have received patient instruction from its female elders. It would have learned how to use small sticks to clean dirt from the cracks in its feet, which were so sensitive that they could feel the steps of a distant herd member. It

would have learned how to wield a trunk stuffed with more muscles than there are in the entire human body, including those that controlled its built-in water hose. It would have learned how to blast trumpet notes across the plains, striking fear into cave lions, and how to communicate with its fellow herd members in a rich range of rumbling sounds, many inaudible to the human ear.

The older mammoths would have

taught the calf how to find ancestral migration paths, how to avoid sinkholes, where to find water. When a herd member died, the youngest mammoth would have watched the others stand vigil, tenderly touching

the body of the departed with their trunks before covering it with branches and leaves. No one knows how to re-create this rich mammoth culture, much less how to transmit it to that cosmically bewildered first mammoth.

Or to an entire generation of such mammoths. The Zimovs won't be able to slow the thawing of the permafrost if they have to wait for their furry elephant army to grow organically. That would take too long, given the species's slow breeding pace. George Church, the Harvard geneticist, told me he thinks the mammoth-manufacturing process

can be industrialized, complete with synthetic-milk production, to create a seed population that numbers in the tens of thousands. But he didn't say who would pay for it—at the Northeast Science Station, there was open talk of recruiting a science-friendly Silicon Valley billionaire—or how the Zimovs would deploy such a large group of complex social animals that would all be roughly the same age.

Nikita and Sergey seemed entirely unbothered by ethical considerations regarding mammoth cloning or geo-engineering. They saw no contradiction between their veneration of "the wild" and their willingness to intervene, radically, in nature. At times they sounded like villains from a Michael Crichton novel. Nikita suggested that such concerns reeked of a particularly American piety. "I grew up in an atheist country," he said. "Playing God doesn't bother me in the least. We are already doing it. Why not do it better?"

Sergey noted that other people want to stop climate change by putting chemicals in the atmosphere or in the ocean, where they could spread in dangerous ways. "All I want to do is bring animals back to the Arctic," he said.

As Sergey and I walked down the riverbank, I kept hearing a cracking sound coming from the cliff. Only after we stopped did I register its source, when I looked up just in time to see a small sheet of ice dislodge from the

"GIVE ME 100 MAMMOTHS ... YOU WON'T RECOGNIZE THIS PLACE."



cliffside. Duvanny Yar was bleeding into the river before our very eyes.

In 1999, Sergey submitted a paper to the journal *Science* arguing that Beringian permafrost contained rich “yedoma” soils left over from Pleistocene grasslands. (In other parts of the Arctic, such as Norway and eastern Canada, there is less carbon in the permafrost; if it thaws, sea levels will rise, but much less greenhouse gas will be released into the atmosphere.) When Beringia’s pungent soils are released from their icy prison, microbes devour the organic contents, creating puffs of carbon dioxide. When this process occurs at the bottom of a lake filled with permafrost melt, it creates bubbles of methane that float up to the surface and pop, releasing a gas whose greenhouse effects are an order of magnitude worse than carbon dioxide’s. Already more than 1 million of these lakes dot the Arctic, and every year, new ones appear in NASA satellite images, their glimmering surfaces steaming methane into the closed system that is the Earth’s atmosphere. If huge herds of megafauna recolonize the Arctic, they too will expel methane, but less than the thawing frost, according to the Zimovs’ estimates.

Science initially rejected Sergey’s paper about the danger posed by Beringia’s warming. But in 2006, an editor from the journal asked Sergey to resubmit his work. It was published in June of that year. Thanks in part to him, we now know that there is more carbon locked in the Arctic permafrost than there is in all the planet’s forests and the rest of the atmosphere combined.

FOR MY LAST DAY in the Arctic, Nikita had planned a send-off. We were to make a day trip, by car, to Mount Rodinka, on Cherskiy’s outskirts. Sergey came along, as did Nikita’s daughters and one of the German scientists.

Rodinka is referred to locally as a mountain, though it hardly merits the term. Eons of water and wind have rounded it down to a dark, stubby hill. But in Siberia’s flatlands, every hill is a mountain. Halfway up to the summit, we already had a God’s-eye view of the surrounding landscape. The sky was lucid blue but for a thin mist that hovered above the Kolyma River, which slithered, through a mix of evergreens and scrub, all the way to the horizon. At the foot of the mountain, the gold-mining town and its airstrip hugged the river. In the dreamy, deep-time atmosphere of Pleistocene Park, it had been easy to forget this modern human world outside the park’s borders.

Just before the close of the 19th century, in the pages of this magazine, John Muir praised the expansion of Yellowstone, America’s first national park. He wrote of the forests, yes, but also of the grasslands, the “glacier meadows” whose “smooth, silky lawns” pastured “the big Rocky Mountain game animals.” Already the park had served “the furred and feathered tribes,” he wrote. Many were “in danger of extinction a short time ago,” but they “are now increasing in numbers.”

Yellowstone’s borders have since been expanded even farther. The park is now part of a larger stretch of land cut out from ranches, national forests, wildlife refuges, and even tribal lands. This Greater Yellowstone Ecosystem is 10 times the size of the original park, and it’s home to the country’s most populous wild-bison herd. There is even talk of extending a wildlife corridor to the north, to provide animals safe passage between a series of wilderness reserves, from Glacier National Park to the Canadian Yukon. But not everyone supports Yellowstone’s outward expansion. The park is also home to a growing population of grizzly bears, and they have started showing up in surrounding

towns. Wolves were reintroduced in 1995, and they, too, are now thriving. A few have picked off local livestock.

Sergey sees Pleistocene Park as the natural next step beyond Yellowstone in the rewilding of the planet. But if Yellowstone is already meeting resistance as it expands into the larger human world, how will Pleistocene Park fare if it leaves the Kolyma River basin and spreads across Beringia?

The park will need to be stocked with dangerous predators. When they are absent, herbivore herds spread

out, or they feel safe enough to stay in the same field, munching away mindlessly until it’s overgrazed. Big cats and wolves force groups of grazers into dense, watchful formations that move fast across a landscape, visiting a new patch of vegetation each day in

order to mow it with their teeth, fertilize it with their dung, and trample it with their many-hooved plow. Nikita wants to bring in gray wolves, Siberian tigers, or cold-adapted Canadian cougars. If it becomes a trivial challenge to resurrect extinct species, perhaps he could even repopulate Siberia with cave lions and dire wolves. But what will happen when one of these predators wanders onto a city street for the first time?

“This is a part of the world where there is very little agriculture, and very few humans,” Sergey told me. He is right that Beringia is sparsely populated, and that continuing urbanization will likely clear still more space by luring rural populations into the cities. But the region, which stretches across Alaska and the Canadian Yukon, won’t be empty anytime soon. Fifty years from now, there will still be mafia leaders to appease, not to mention indigenous groups and the governments of three nations, including two that spent much of the last century vying for world domination. America

“PLAYING GOD DOESN’T BOTHER ME IN THE LEAST. WE ARE ALREADY DOING IT.”



and Russia often cooperate in the interest of science, especially in extreme environments like Antarctica and low-Earth orbit, but the Zimovs will need a peace that persists for generations.

Sergey envisions a series of founding parks, "maybe as many as 10," scattered across Beringia. One would be along the Yentna River, in Alaska, another in the Yukon. A few would be placed to the west of Pleistocene Park, near the Ural mountain range, which separates Siberia from the rest of Russia. As Sergey spoke, he pointed toward each of these places, as if they were just over the horizon and not thousands of miles away.

Sergey's plan relies on the very climate change he ultimately hopes to forestall. "The top layer of permafrost will melt first," he said. "Modern ecosystems will be destroyed entirely. The trees will fall down and wash away, and grasses will begin to appear." The Mammoth Steppe would spread from its starting nodes in each park until they all bled into one another, forming a megapark that spanned the entire region. Humans could visit on bullet trains built on elevated tracks, to avoid disturbing the animals' free movement. Hunting could be allowed in designated areas. Gentler souls could go on Arctic safari tours.

When Sergey was out of earshot, I asked Nikita whether one of his daughters would one day take over Pleistocene Park to see this plan through. We were watching two of them play in an old Soviet-military radar station, about 100 yards from Rodinka's peak.

"I took the girls to the park last week, and I don't think they were too impressed," Nikita told me,

laughing. "They thought the horses were unfriendly." I told him that wasn't an answer. "I'm not as selfish as my father," he said. "I won't force them to do this."

Before I left to catch a plane back to civilization, I stood with Sergey on the mountaintop once more, taking in the view. He had slipped into one of his reveries about grasslands full of animals. He seemed to be suffering from a form of solastalgia, a condition described by the philosopher Glenn Albrecht as a kind of existential grief for a vanished landscape, be it a swallowed coast, a field turned to desert, or a bygone geological epoch. He kept returning to the idea that the wild planet had been interrupted midway through its grand experiment, its 4.5-billion-year blending of rock, water, and sunlight. He seems to think that the Earth peaked during the Ice Age, with the grassland ecologies that spawned human beings. He wants to restore the biosphere to that creative summit, so it can run its cosmic experiment forward in time. He wants to know what new wonders will emerge. "Maybe there will be more than one animal with a mind," he told me.

I don't know whether Nikita can make his father's mad vision a material reality. The known challenges are immense, and there are likely many more that he cannot foresee. But in this brave new age when it is humans who make and remake the world, it is a comfort to know that people are trying to summon whole landscapes, Lazarus-like, from the tomb. "Come forth," they are saying to woolly mammoths. Come into this habitat that has been prepared for you. Join the wolves and the reindeer and the bison who survived you. Slip into your old Ice Age ecology. Wander free in this wild stretch of the Earth. Your kind will grow stronger as the centuries pass. This place will overflow with life once again. Our original sin will be wiped clean. And if, in doing all this, we can save our planet and ourselves, that will be the stuff of a new mythology. ■

Ross Andersen is a senior editor at The Atlantic.



Making ATHENS GREAT AGAIN

How does a citizen respond when a democracy that prides itself
on being exceptional betrays its highest principles?
Plato despaired, but he also pointed the way to renewal.

By REBECCA NEWBERGER GOLDSTEIN

Illustration by Owen Davey

WHAT HAPPENS WHEN a society, once a model for enlightened progress, threatens to backslide into intolerance and irrationality—with the complicity of many of its own citizens?

How should that society's stunned and disoriented members respond? Do they engage in kind, resist, withdraw, even depart? It's a dilemma as old as democracy itself.

Twenty-four centuries ago, Athens was upended by the outcome of a vote that is worth revisiting today. A war-weary citizenry, raised on democratic exceptionalism but dis-

illusioned by its leaders, wanted to feel great again—a recipe for unease and raw vindictiveness, then as now. The populace had no strongman to turn to, ready with promises that the polis would soon be winning, winning like never before. But hanging around the agora, volubly engaging residents of every rank, was someone to turn on: Socrates, whose provocative questioning of the city-state's sense of moral superiority no longer seemed as entertaining as it had in more secure times. Athenians were in no mood to have their views shaken up. They had lost patience with the lively, discomfiting debates sparked by the old man. In 399 B.C., accused of impiety and corrupting the young, Socrates stood trial before a jury of his peers—one of the great pillars of Athenian democracy. That



spring day, the 501 citizen-jurors did not do the institution proud. More of them voted that Socrates should die than voted him guilty in the first place.

It's all too easy to imagine, at this moment in American history, the degree of revulsion and despair Plato must have felt at the verdict rendered by his fellow Athenians on his beloved mentor. How could Plato, grieving over the loss of the "best man of his time," continue to live among the people who had betrayed reason, justice, open-mindedness, goodwill—indeed, every value he upheld? From his perspective, that was the enormity Athenians had committed when they let themselves be swayed by the outrageous lies of Socrates's enemies. Did truth count for nothing?

A despondent Plato left the city-state of Athens, whose tradition of proud patriotism and morally confident leadership at home and abroad had been recently and severely shaken. Whether he was witnessing the end of Athenian exceptionalism or a prelude to the long, hard work of rebuilding it on firmer foundations, he could not have begun to predict.

PLATO WAS in his late 20s when he lost Socrates. Born an aristocrat, he boasted a lineage that went back, on his mother's side, all the way to Solon the Lawgiver, the seventh-century sage often credited with laying the cornerstone of Athenian democracy. As Plato confessed in the famous *Seventh Letter* (which, if it wasn't written by Plato himself, was composed by an intimate familiar with the details of his life), he had planned to take an active role in the leadership of his illustrious polis.

Enshrined in the city-state's mythology was the fiction that its inhabitants were autochthonous: They had literally "sprung from the earth," which gave them a special claim to the soil they occupied. The Athenian triumph in the Greco-Persian Wars in 479 B.C., after a dozen years of on-and-off fighting, had intensified the pride in autochthony. Eligibility for citizenship—already an exclusive privilege denied to women and slaves, of course, but also to most tax-paying alien residents (some of them very wealthy)—was tightened. In 451 B.C., the statesman Pericles proposed a law that only those with two Athenian-born parents, rather than just a father, qualified. Still, as Ath-

ens asserted dominance throughout the region, presiding as the standard for Hellenic greatness, the emerging imperial power drew in immigrants. The best and the brightest arrived, hoping to engage in the city-state's achievements, its art and its learning, even if they were excluded from its vaunted participatory democracy.

But Plato, born and bred to play a prominent role within "the Hellas of Hellas"—as Athens had lately been anointed—turned his face away. On a voyage that lasted about 12 years, he ventured well beyond the borders of the Greek-speaking lands. He went south and studied geometry, geography, astronomy, and religion in Egypt. He went west to spend time with the Pythagoreans in southern Italy, learning about their otherworldly mixture of mathematics and mysticism, absorbing from them esoteric sources of *thaumazein*, or ontological wonder. Plato, already primed by Socrates not to take Athenian exceptionalism for granted, was on a path toward metaphysical speculations and ethical and political reflections beyond any entertained by his mentor.

HI GH ON THE LIST of presumptions that Socrates had aimed to unsettle was his fellow citizens' certainty that their city-state brooked no comparison when it came to outstanding virtue. To be an Athenian, ran a core credo of the polis, was to partake in its aura of moral superiority. Socrates dedicated his life to challenging a confidence that he felt had become overweening.

Athens was undeniably extraordinary, and the patriotic self-assurance and democratic energy that fueled its vast achievements did stand out. But the Greek quest for an overarching ethos to guide human endeavor hadn't happened in isolation. It was part of a normative explosion under way in many centers of civilization—wherever a class of people enjoyed enough of a respite from the daily grind of life to ponder the point of it all.

How to make one's brief time on Earth matter? That was the essential question at the heart of ambitious inquiries into human purpose and meaning. Every major religious framework that still operates, the philosopher Karl Jaspers pointed out, can be traced back to a specific period: from

800 to 200 B.C.—the Axial Age, he called it. The sixth century (roughly a century before Socrates's prime) was the most fertile interlude, when not only Pythagoras but the Buddha, Confucius, Lao-tzu, and several Hebrew prophets including Ezekiel lived and worked. From Greece emerged Western secular philosophy, which brought reasoned argument to bear on the human predicament and the reflections it inspired. Those reflections, no less urgent now than they were then, can be roughly summed up this way:

Untold multitudes have come before us who have brought all the same passions to living their lives as we do, and yet nothing of them remains to show that they'd ever been. We know, each one of us, or at least we fear, that the same will happen to us. The oceans of time will cover us over, like waves closing over the head of a sailor, leaving not a ripple, to use an image that inspired abject terror in the seafaring Greeks. Really, why do any of us even bother to show up for our own existence (as if we have a choice), for all the difference we ultimately make? Driven to pursue our lives with single-minded passion, we are nevertheless, as the Greek poet Pindar put it in the fifth century B.C., merely "creatures of a day."

The Athenians' conviction that they mattered uniquely—the entitled spirit that prevailed by Plato's time—had long been in the making. For several generations of ancient Greeks before him, a less assured proposition had served as a guide: We aren't born into lives that matter but have to achieve them. Such an endeavor demands a great deal of individual striving, because what counts is nothing less than outstanding accomplishments. Theirs was an ethos of the extraordinary, and its pitiless corollary was that most lives don't matter. The deeper, and humbler, sources of the ethos dated back even further, to a time of anomie and illiteracy—the Greek Dark Ages, scholars used to call the period that followed the mysterious destruction of the great palace kingdoms of the Bronze Age around 1100 B.C. The wondrous ruins left behind—the massive bridges and beehive tombs, the towering edifices inscribed with indecipherable lettering—spoke of daunting feats of engineering. "Cyclopean," the awestruck successors called the remains, for how could mere humans have wrought



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such marvels without the collaboration of the one-eyed giants?

Clearly there had been a previous age when mortals had realized possibilities all but unthinkable to lesser specimens. Those people had mingled so closely with immortals as to assume an altogether new, heroic category of being, celebrated in tales sung by ordinary Greeks. The reverence is embedded in *The Iliad*, which extols Achilles as the greatest of all the legendary Greek heroes—the man who, given the choice, opted for a brief but exceptional life over a long and undistinguished one. “Two fates bear me on to the day of the death,” he proclaims. “If I hold out here and I lay siege to Troy, my journey home is gone, but my glory never dies. If I voyage back to the fatherland I love, my pride, my glory dies.” Being song-worthy is the whole point of being extraordinary. It’s in *kleos*, in glory and fame, that the existential task of attaining a life that matters is fulfilled. Living so that others will remember you is your solace in the face of the erasure you know awaits.

These pre-monotheists’ way of thinking about how to make the most of our lives is one that we, steeped in social media and celebrity culture, are in a fine position to understand. What is most startling about their existential response is its clear-eyed rejection of transcendence. The cosmos is indifferent, and only human terms apply: Perform exceptional deeds so as to earn the praise of others whose existence is as brief as your own. That’s the best we can do, Pindar said, in the quest for significance:

And two things only
tend life's sweetest moment: when
in the flower of wealth
a man enjoys both triumph and
good fame.

Seek not to become Zeus.

All is yours
if the allotment of these two gifts
has fallen to you.

Mortal thoughts
befit a mortal man.

BUT AN ETHOS of the extraordinary poses a practical problem. Most people are, by definition, perfectly ordinary, the ancient Greeks included. Ultimately, they found a solution to this problem in propounding a kind of participatory exceptionalism, encouraging a shared sense of identity

that also made them highly competitive. Merely to be Greek was to be extraordinary. Their word for all those whose native language wasn't Greek was *barbarians*, because non-Greek languages sounded to them like so much *bar-bar*—Greek for “blah, blah, blah.”

No collective experience transformed the Greeks' perception of themselves more than their unlikely victory over the Persians. In vanquishing the vastly superior forces of this world empire, the Greeks had given their poets a contemporary feat to sing about. Herodotus initiated his *Histories*—which is to say, initiated the practice of history itself—with these words:

These are the researches of Herodotus of Halicarnassus, which he publishes, in the hope of thereby preserving from decay the remembrance of what men have done, and of preventing the great and wonderful actions of the Greeks and the Barbarians from losing their due meed of glory.

The Greco-Persian Wars helped convert the ethos of the extraordinary from ancestor reverence into a motivational agenda. Aristotle, writing his *Politics* a century after the end of the wars, observed the spillover into the life of the mind: “Proud of their achievements, men pushed farther afield after the Persian wars; they took all knowledge for their province, and sought ever wider studies.”

And nowhere were this pride and this pushing more assertively on display than in fifth-century Athens, where business was conducted within sight of the Acropolis. There the monuments emblematic of Athens's newly gained imperialist glory were on display, including the exquisitely proportioned Parthenon, which, despite its immensity, seems to float—an idealized form of materiality. The architectural splendors, proof of undaunted genius and vitality, had arisen out of the ruins to which the older shrines of the Acropolis had been reduced in 480 B.C. by the invading Persians.

The democracy that had gradually developed in Athens added considerably to the ethos of supreme distinction. The contrast to the oligarchic, tyrannical, and monarchical systems elsewhere couldn't have been starker: Every citizen

was expected to partake in decision making directly, not through representatives. And just in case there were any Athenian citizens who didn't fully appreciate the uniqueness of Athens and what it conferred on them, Pericles—whose very name means “surrounded by glory”—articulated it for them.

“In sum, I say that our city as a whole is a lesson for Greece,” he declared in his famous Funeral Oration in 431 B.C., “and that each of us presents himself as a self-sufficient individual, disposed to

A democratic society with an exceptionalist heritage may prove unprepared to respond wisely when arrogance takes over.

the widest possible diversity of actions, with every grace and great versatility.” One of the first battles of the Peloponnesian War had just taken place, the start of what turned into a 27-year struggle, and Pericles called upon Athenian exceptionalism for inspiration. Elevation in the minds of others, now and in the future, went hand and hand with demonstrations of power:

This is not merely a boast in words for the occasion, but the truth in fact, as the power of this city, which we have obtained by having this character, makes evident. For Athens is the only power now that is greater than its fame when it comes to the test ... We are proving our power with strong evidence, and we are not without witnesses: we shall be the admiration of people now and in the future.

But navigating the line between patriotic pride and arrogance wasn't easy. In extolling the greater glory of Athens, its leaders didn't just aim to pump up ordinary citizens. They also hoped to tamp down individual hubris—to keep the city-state's ambitious upstarts committed to the collective cause, rather than to the lawless pursuit of their own personal glory. If that meant stoking political hubris, Pericles was more than ready. He went on to say, “We do not need Homer, or anyone else, to praise our power with words that delight for a moment,” but he was not advising mod-



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esty. Quite the contrary, he celebrated the real-life deeds of imperial Athens as indelible proof of superiority:

For we have compelled all seas and all lands to be open to us by our daring; and we have set up eternal monuments on all sides, of our setbacks as well as of our accomplishments.

Cataloging Athenian achievements, from the uniqueness of the city-state's democracy to its magnanimity, Pericles suggested that its vanquished enemies should take pride in having been bettered by such unparalleled specimens of humanity. "Only in the case of Athens can enemies never be upset over the quality of those who defeat them when they invade; only in our empire can subject states never complain that their rulers are unworthy."

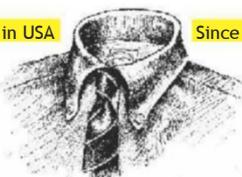
Only an exceptional man would have dared to challenge such a fundamental presumption of his society. But if Socrates was so extraordinary, how did Athenians—who took pride in citizens of distinction and had long been fondly tolerant of their exuberantly eccentric philosopher—come to turn against him? Socrates's conviction and execution are even more puzzling given that his trial was a complete farce, at least as Plato presented it in the *Apology*. The philosopher ran rings around Meletus, the man put up to be the prosecutor. Socrates exposed him as ill-informed and perhaps something of an opportunist, ready to declare one thing one moment and then contradict himself the next.

But the date of the trial reveals a polis whose exceptionalist identity had been challenged and whose citizens had been caught off-balance: How great were they, really? Where was their moral compass? Athens was still reeling from defeat in the Peloponnesian War five years earlier—and at the hands of those uncultivated Spartans, who had no high culture to speak of, no playwrights or Parthenon. They could barely string three words together, much less match the rhetorical brilliance on which the Athenians congratulated themselves. It surely didn't help that the Spartans had behaved far more magnanimously in their final victory than the Athenians had behaved during the long and brutal conflict. (The Spartans didn't burn Athens to the ground. They didn't slaughter its males and cart off its females as booty. Sparta's nobility in declaring that it would treat the vanquished city as befit the great imperial power it once had been must have felt particularly galling.)

Neither Socrates nor Plato ever challenged the Greek conviction that achieving a life that matters requires extraordinary effort and results in an extraordinary state. But Socrates was determined to interrogate what being exceptional means. Personal fame, he contended, counts for nothing if your life isn't, in itself, a life of virtue. Only that kind of extraordinary accomplishment matters—and the same could be said for city-states. Power and the glory it brings are no measure of their stature. The virtuous citizen, indeed, is inseparable from the virtuous polis, his claim to significance rooted in his commitment to the common good. What counts, Socrates taught, is the quest for a better understanding of what virtue is, what justice and wisdom are. The goal is a moral vision so compelling that every citizen, no matter his position, will feel its force and be guided by it. A democratic state that fosters the continuous self-scrutiny demanded by such a vision can hope for greatness. Mere *kleos* is for losers.

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eased the way toward an ameliorating fiction that the Athenians, with the exception of the Thirty and a coterie of their conspirators, had been victims. It was a collective act of willful forgetting. In fact, the citizens were subject to an oath, *me mnesikakein*, which means “not to remember past wrongs.”

The amnesty was an act of political brilliance, and the Athenians, predictably, couldn’t stop praising themselves for it. The rhetorician Isocrates joined in:

For whereas many cities might be found which have waged war gloriously, in dealing with civil discord there is none which could be shown to have taken wiser measures than ours. Furthermore, the great majority of all those achievements that have been accomplished by fighting may be attributed to Fortune; but for the moderation we showed towards one another no one could find any other cause than our good judgement. Consequently it is not fitting that we should prove false to this glorious reputation.

But the plaudits they bestowed on themselves couldn’t hide the fact that Ath-

nian exceptionalism had taken a hit since the glory days of Pericles, when the statesman had declared that any enemy would be proud to be vanquished by so superior a people. Moral shame accompanied military shame. The grueling war had driven the Athenians to atrocities against fellow Greeks, about which the historian Thucydides was heartrendingly vivid. Along with the amnesty’s *me mnesikakein*, the citizens and their leaders might very well have wished to legislate a forgetting of the brutal enslavement and extermination of enemies at Athenian hands.

AT A JUNCTURE like this, as Athenians strived to shore up their vision of themselves, perhaps it shouldn’t come as such a surprise that they lost their tolerance for Socrates’s hectoring. His fellow citizens could afford to appreciate a genuine Athenian original in the days when their worthiness was so manifest, as Pericles had proclaimed, that no Homer needed to spread word of it. But not now, when their famous rhetoricians had been reduced to extolling how uniquely bril-

liant they were at handling defeat. And so at the first opportunity, with the Spartan forces withdrawn and democratic government stabilized, the gadfly of the agora was indicted.

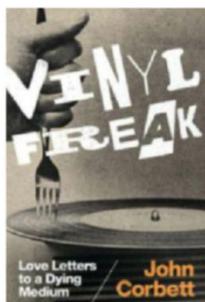
Socrates’s compatriots wanted to make Athens great again. They wanted to

Socrates contended that personal fame counts for nothing if your life isn’t, in itself, a life of virtue.

restore the culture of *kleos* that had once made them feel so terrific about themselves. It’s not hard to understand why Plato fled a citizenry that, in struggling to recover from its sense of diminishment, was prepared to destroy what had been best about the polis—the extraordinary man whose subversive challenges to blinkered opinion and self-righteous patriotism held the key to resurrecting any exceptionalism worth aspiring to.

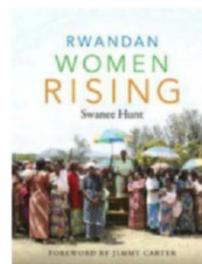
And yet eventually, after his years of self-imposed exile, Plato came back

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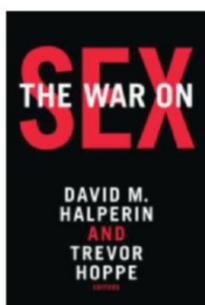
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to Athens, bringing his newly gathered learning along with him, to take up where Socrates had left off. Except Plato didn't philosophize where Socrates had. He abandoned the agora and created the Academy, the first European university, which attracted thinkers—purportedly even a couple of women—from across greater Hellas, including, at the age of 17 or 18, Aristotle. Foremost among the problems they pondered was how to create a society in which a person like Socrates would flourish, issuing stringent calls to self-scrutiny, as relevant now as ever.

Athens may never again have presided as the imperial center it was before the war. Instead, it staked what has proved to be a far more enduring claim to extraordinariness in becoming a center of intellectual and moral progress. Empires have risen and fallen. But the bedrock of Western civilization has lasted, built upon by, among many others, America's Founders—students of Plato determined to create a democracy that could avoid the flaws Plato observed in his own.

In establishing the Academy, Plato didn't forsake the people of the agora, who, as citizens, had to deliberate responsibly about issues of moral and political import. It was with these issues in mind that he wrote his dialogues—great works of literature as well as of philosophy. The dialogues may not represent his true philosophy (in the *Seventh Letter*, he explained that he had never committed his teachings to writing), but for more than 2,400 years they've been good enough for us, as inspiring and exasperating as Socrates himself must have been.

In 25 out of Plato's 26 dialogues—and we have them all—Socrates is present, often as the leading spokesperson for the ideas that Plato is exploring, though sometimes, in the later dialogues, as a silent bystander. It's as if Plato wants to take Socrates along with him on the intellectual quest he pursues during the course of his long life. It's as if he wants us, too, to take Socrates along as we return

LURE

I waited though wanting nothing,
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As if by that I might
become again
the carved and painted lure—

Its two iridescent eyes that stay always open,
its stippled gold sides, deep-orange back,
red threads attached at the gills.

I hummed with its three-pronged shine
of fish who are sweet and fat to the birds above them.

I hummed with its three injured notes to the fish below.

To all the blue-winged, handless distances
and all my blue-finned, handless lives,
I hummed
in borrowed Swedish and the iron-hiding slip of gleam—

The great strangeness still may come, even for you.

—Jane Hirshfield

Jane Hirshfield's most recent collection is The Beauty (2015).

again and again to the Herculean effort of applying reason to our most fervently held assumptions. Socrates's message could not be more timely. The mantle of glorified greatness belongs to no society by right or by might, or by revered tradition, he taught. It belongs to no individual who, ignoring the claims of justice, strives to make a name that might outlast him. Exceptionalism has to be earned again and again, generation after generation, by citizens committed, together,

to the endlessly hard work of sustaining a polity that strives to serve the good of all.

After his beloved mentor was put to death, condemned by his fellow citizens, a despairing Plato left the city-state of Athens.

But he returned. ■

Rebecca Newberger Goldstein is the author, most recently, of Plato at the Googleplex: Why Philosophy Won't Go Away.

The Atlantic (ISSN 1072-7825), recognized as the same publication under *The Atlantic Monthly* or *Atlantic Monthly (The)*, is published monthly except for combined issues in January/February and July/August by The Atlantic Monthly Group, 600 New Hampshire Ave. NW, Washington, DC 20037 (202-266-6000). Periodicals postage paid at Washington, D.C., Toronto, Ont., and additional mailing offices. Postmaster: send all UAA to CFS (see DMM 707.4.12.5); NONPOSTAL AND MILITARY FACILITIES: send address corrections to Atlantic Address Change, P.O. Box 37564, Boone, IA 50037-0564. Printed in U.S.A. Subscription queries: Atlantic Customer Care, P.O. Box 37564, Boone, IA 50037-0564 (or call 800-234-2411). Privacy: we make portions of our customer list available to carefully screened companies that offer products and services we believe you may enjoy. If you do not want to receive this information, please write to the Customer Care address above. Advertising (646-539-6700) and Circulation (202-266-7100): 600 New Hampshire Ave. NW, Washington, DC 20037. Subscriptions: one year \$39.95 in the U.S. and poss., add \$8.00 in Canada, includes GST (123209926); add \$15.00 elsewhere. Canada Post Publications Mail Agreement 41385014. Canada return address: *The Atlantic*, P.O. Box 1051, Fort Erie, ON L2A 6C7. Back issues: send \$7.50 per copy to *The Atlantic*, Back Issues, 1900 Industrial Park Dr., Federalsburg, MD 21632 (or call 410-754-8219). Vol. 319, No. 3, April 2017. Copyright © 2017, by The Atlantic Monthly Group. All rights reserved.

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THE BIG QUESTION



What is the most significant fad of all time?

David Sim, history professor, University College London

A century from now, hardly anyone will cut, roll, and burn tobacco, but demand for it made viable the early American colony of Virginia, supercharged the Atlantic slave trade, and helped reshape the world economy. **Cigarettes** were a symbol of modernity and liberation, and they transformed the aesthetics of cool.

Holly George-Warren, co-author, *The Road to Woodstock*

Rock and roll was considered by its mid-1950s detractors to be a short-lived pop trend soon to go the way of calypso. Those who feared that rock and roll would break down racial barriers and transform our culture were right. It's been declared dead many times over the past six decades, but the "fad" survives.

Cynthia Overbeck Bix, author, *Fad Mania!*

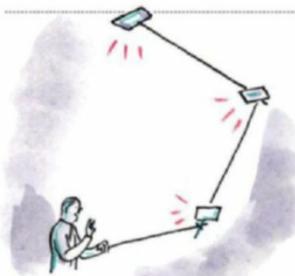
The rock-and-roll king and his music provided a rallying point for an influential new American teen culture.

By tuning in to **Elvis's** TV performances, buying his records, and mobbing his concerts, teens established themselves as powerful consumers and tastemakers.

Emily Lordi, English professor, UMass Amherst

Vacations to sunny locales didn't start in the 1920s, but the desire to get a tan did.

The tanning fad not only prefigures our orange-tinted president but also stands as a silent admission of white people's lasting fascination with dark, exotic "others."



Melanie Whelan, CEO, SoulCycle
The selfie.

Stacy London, host, *Love, Lust or Run*

Over the years, **denim** has gone from straight-legged pants on cowboys and farmers to bell-bottoms on front-

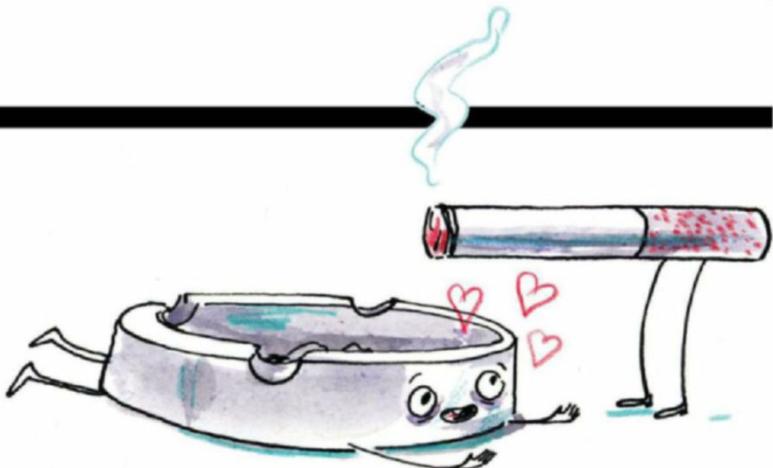
line feminists to boot-cut, skinny-cut, high-waisted, boyfriend, and mom jeans—plus skirts and jackets—for work, weekends, and evenings. It is a blank slate for the expression of any trend. It's durable and looks as good destroyed as it does pristine. Its use, value, and popularity have never faded.

Leslie Berlin, project historian, Silicon Valley Archives, Stanford

From 1980 to 1982, the number of video-game arcades in the United States doubled, and *The New England Journal of Medicine* reported a new type of ligament strain: "Space Invaders' wrist." **The video-game craze of the 1970s and early 1980s** served, for many people, as a gateway to computing. And the fad became an industry worth \$100 billion today—bigger than the movie industry.

Kate White, author, *The Secrets You Keep*

The miniskirt helped power the youth rebellion of the 1960s, as well as the sexual revolution and the women's revolution. Wearing a mini was a delicious, intoxicating, liberating, and empowering experience.



READER RESPONSES

Pat Southward, Lake Mary, Fla.

The Dutch tulip mania of the 17th century was the first well-documented financial bubble. The widespread speculation on bulbs was a sign of things to come.



Phyllis Dryden, Annville, Pa.

For centuries, the fad of **making hats from felted beaver pelts** stimulated the fur trade in North America and other parts of the world. In the U.S., as trappers decimated the beaver population, they had to push farther west, expanding the frontier.

Kirk Miller, Mount Shasta, Calif.

Over a six-month span in 1975–76, 1.5 million **pet rocks** were sold, proving once and for all that there's a sucker born every minute.

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