

# WIRED

JAN 2020 • MACHINE LEARNER

PLUS

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Benioff's  
Gospel of  
Wealth

The Best  
Snow Gear

Is 5G  
Here Yet?

# Build What You Want

Why the Queen of Sh\*tty Robots  
Simone Giertz renounced her crown

BY LAUREN GOODE

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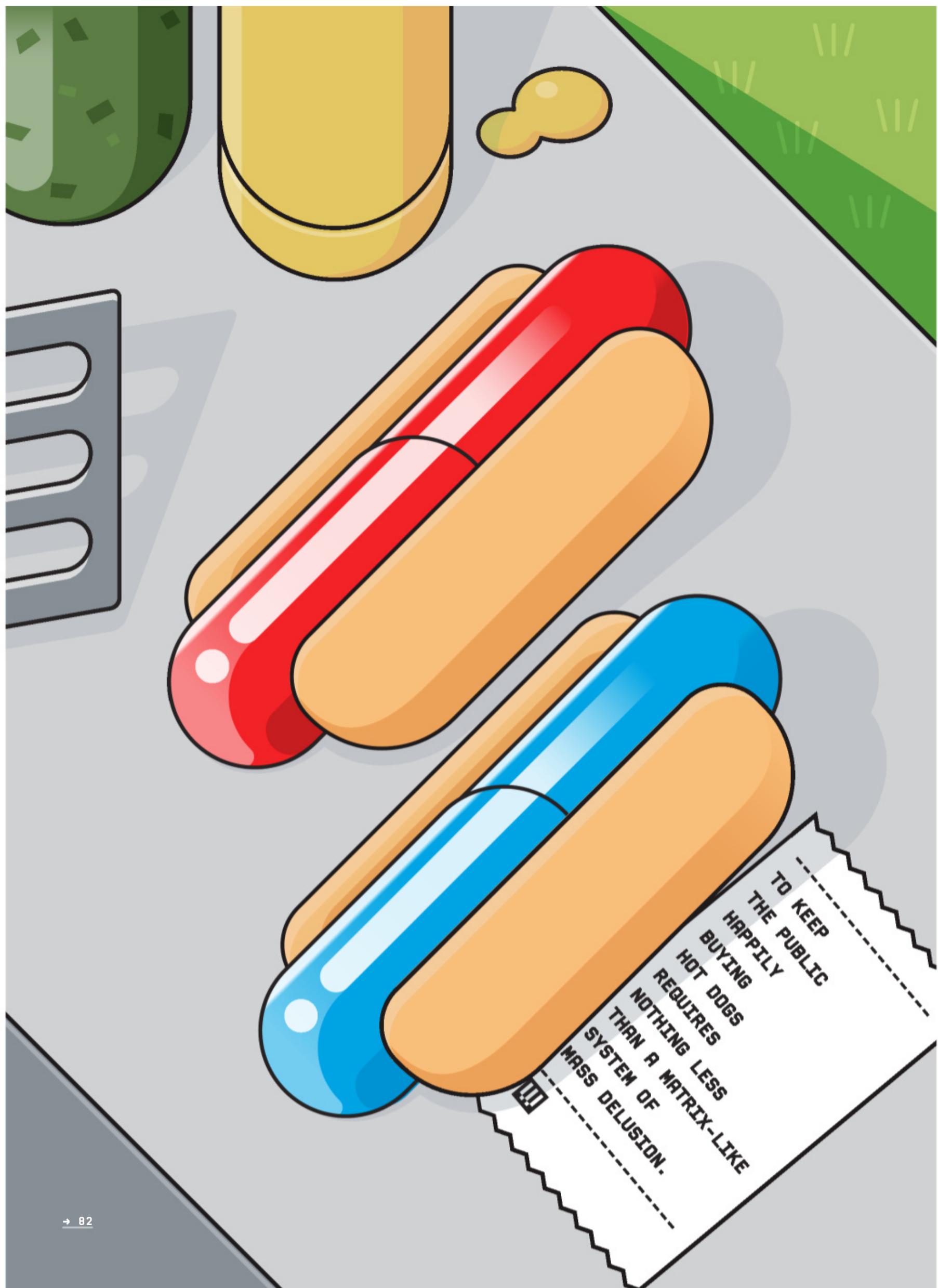
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A man with dark hair and glasses, wearing a blue button-down shirt, is seated in a Cathay Pacific Business Class seat. He is holding a clear wine glass filled with a golden liquid. The background shows the interior of the aircraft cabin with beige and dark blue seats. On the left side of the image, there is a collage of three smaller images: one showing a close-up of a meal with green vegetables and a white sauce, another showing a dark blue headrest cover with a white 'b' logo, and a third showing a white tray with a dark blue napkin featuring the Cathay Pacific bird logo.

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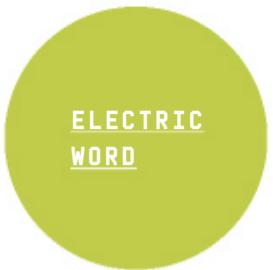
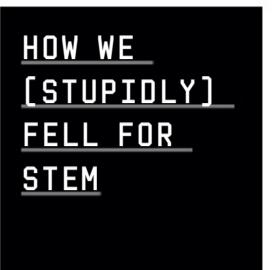
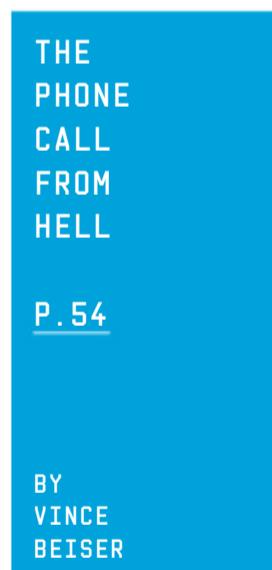
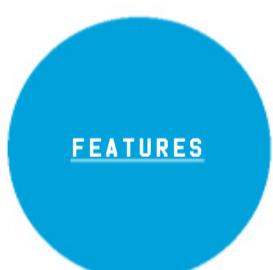
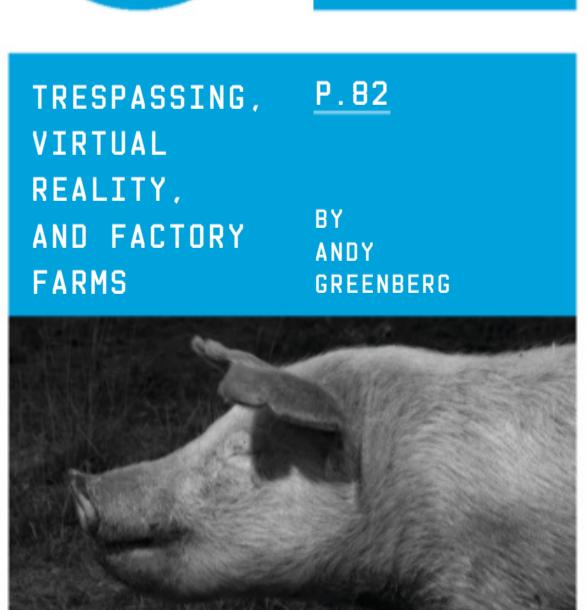
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# TOTALLY WIRED

DIARIES OF  
AN UNBRIDLED  
DIGITOPIAN



**Cold winter nights** offer me, sunniest of sapiens, precious few comforts. TV only numbs the pain, and Twitter wriggles a finger in it. For deliverance, I turn to Spotify, that jolly green thumbprint. Pulling up Friend Activity, I'm transfixed and touched by how loved ones are shooting away their own shivery horrors. Hassan, a new dad searching for a new career, was just playing "I'm Dragging a Dead Deer Up a Hill," a mumbling trance by Grouper. My sister chose an Avett Brothers track that I know is her sonic security blanket. Hilary, I see from the tooting speaker doodle beside her avatar, is still up on the East Coast, combating insomnia with Yves Montand. I join her stream, and a mournful French lullaby I've never heard before swells my soul.

With apologies to Apple, I can't imagine a lovelier service for listening to music, *healing* with music, reaching for the harmony of the spheres. It's not the 50 million songs themselves, fortified with biorhythm-attuned algorithms, that weaken winter's icy grip. Or Discover Weekly's jolting swerves into Taiwanese psycho-pop and Brazilian punk. Or even, heady salvation, the Retro Rewind playlist. It's the superpower Spotify bequeaths—the osmotic soul-slippage between me and my near and dear. Today, I declare this: Spotify is the world's truest, wholesomest, most binding social network.

It is metaphysically impossible for new tunes to sound better than in the passenger seat of a friend's car. But if you live in a city—as I, being a hopeless neophiliac, happily must—such sacraments are rare. Friend Activity, white text against a black background, queues up a digital traffic jam. I boogie between hatchbacks, jump lanes, tailgate and hotbox with relatives, all the while communicating in that most universal and luxuriously limbic of languages. And unlike an IRL roommate putting a Whirlwind Heat B-side onto the record player with a smug "rejoice in my exquisite analog taste" smirk, there's nothing performative here. Unique to social media, Friend Activity reveals your amigos *unmasked*, their anxiety, lust, pride, and rage broadcast in the sounds with which they're filling their addled craniums. Brendan may have just posted his job promotion on LinkedIn, but he's been playing Mount Eerie's "Death Is Real" on a loop all week, and I know it's time to reach out.

Friend Activity follows a lineage of love. In the 1980s there was tape trading, Grateful Dead and Black Flag fanatics snail-mailing one another bootleg cassettes. In the 2000s there was Last.fm, which "scrobbled" what you listened to on Napster, Rhapsody, and their ilk to publicly reveal your top tracks, a chorus of your obsessions. Spotify scrobbles in real time, a legato pulse check. Yet for all its giddy technological whimsy, a quaintness remains in Friend Activity—it's available only on desktop. A koan for winter, for always: Without an anchor, you cannot sail.

RIPLEY D. LIGHT  
@RIPLEYDLIGHT

WE ASKED CONTRIBUTORS:

## "WHAT WAS THE MOST SURPRISING THING YOU LEARNED WHILE WORKING ON THIS ISSUE?"

"Humans just can't fathom a billion dollars. Casually we mix 'billion' and 'million' in the same sentence, but they're apples and Death Stars. And until we get our arms around that, some fundamental stuff about the American economy will elude us."

—Contributor Chris Colin (page 70)

"The Arecibo radio telescope in Puerto Rico is 1,000 feet wide, but it has the resolution of a 0.8-mm optical telescope, which is significantly smaller than the average backyard variety." —Contributor Laura Mallonee (page 24)

"Segregation has such a nasty, knotty history in America. And when the idea struck—*Would the internet actually work better if users were isolated along cultural lines?*—I shied away. But the most dangerous ideas are sometimes the most worthwhile, especially if there's truth embedded within. Over time I was amazed at how much I began to embrace the concept. It was a reminder to welcome more radical ideas in my writing." —Senior writer Jason Parham (page 20)

"The value of a community that exists beyond our screens, of getting extra sleep, and of a laptop keyboard with a working e key, which I currnly do not hav." —Senior writer Lauren Goode (page 44)





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## SYSTEM BREACH

In our November issue, Andy Greenberg described how digital detectives solved the mystery behind the cyberattack on the 2018 Winter Olympics, and Clive Thompson considered why the most successful entrepreneurs are middle-aged. On November 8–9, we held our WIRED25 festival in San Francisco. And in our December issue, Jessica Bruder profiled a group of Somali warehouse workers who have taken on Amazon.



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### Readers share their theories, emoticons, and frustration:

#### RE: THE MOST DECEPTIVE HACK IN HISTORY

Stories like this, which break down the process of attributing cyber-attacks in a way readers can understand, are crucially important today, and this by @a\_greenberg is a riveting read to boot. —Matthew Luxmoore (@mjluxmoore), via Twitter

Attribution in cyberspace is almost impossible. A professional hacker can make an attack be attributable to anyone they want. —Ike, via Schneier.com

#### RE: OLD SCHOOL

From the most future-oriented magazine of all, WIRED: “We might get more innovation if we let the elders take the lead.” :-) —Kåre Håkonsen (@Bluebird\_n1), via Twitter

#### RE: WIRED25

“Science at its core is systematically racist and sexist,” said computational biologist Laura Boykin at the WIRED25 conference. The mindless war against Western Civilization continues. —Newt Gingrich (@newtgingrich), via Twitter

Bravo @rianjohnson: “If anyone’s complaining about diversity in a movie ... fuck ‘em.” #WIRED25. —Chris Taylor (@FutureBoy), via Twitter

I’ve had several fictional characters floating around in my head for years. After @nkjemisin’s world-building workshop at #WIRED25, I finally feel prepared to design worlds worthy of them. —Molly McLeod (@mollyamper-sand), via Twitter

#### RE: THE IMMIGRANTS WHO TOOK ON AMAZON

The fact that WIRED put immigrant workers in Shakopee, Minnesota, who

are protesting Amazon warehouse conditions on its cover feels indicative of how tech reporting is changing in important ways. —Tonya Riley (@TonyaJoRiley), via Twitter

Amazon has met its match! ... Don’t sleep on Somali women. We don’t play. —US Representative Ilhan Omar (@IlhanMN), via Twitter

If these people aren’t happy with their jobs at Amazon, they should work in good faith with management to find a solution. If they can’t get to a satisfactory compromise, they are free to work elsewhere—that is the American way. —John DeMartino, via mail@WIRED.com



#### RE: THE MOST DECEPTIVE HACK IN HISTORY

# “Reads like a classic espionage thriller.”

—Steven Rood (@StevenRoodPH), via Twitter

## 2020 DESK DIARY

Juggle work and play with  
a much needed dose of humor.



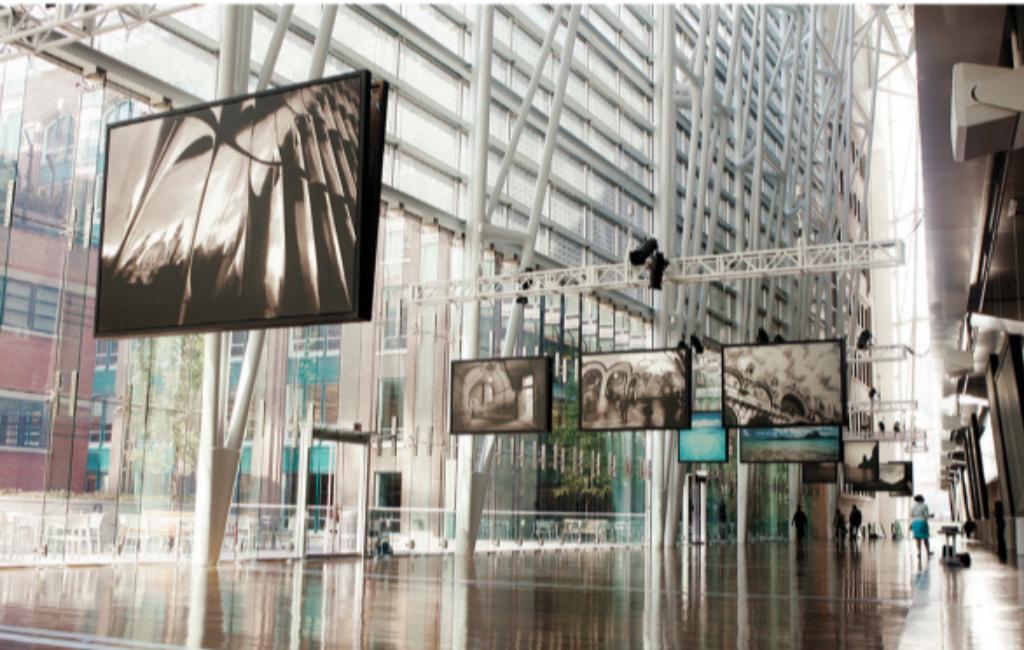
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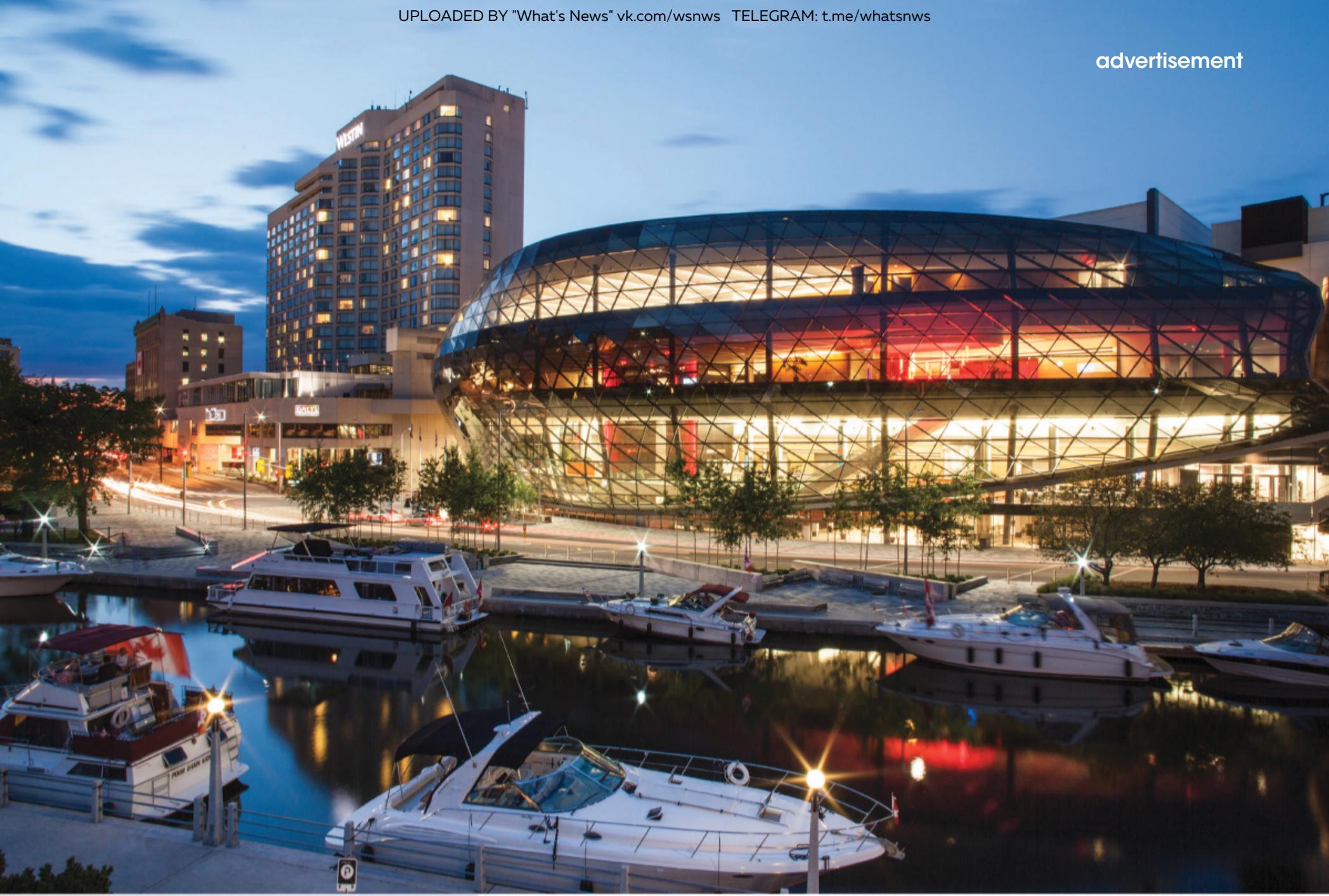


The vision and hard work of generations of trailblazers have led Canada to become an internationally known destination for tech. The Canadian government stands fully behind its researchers and innovators, and today they're leading the pack. Canada now has ownership of the global AI race and is the first country to have a national AI strategy. With no fewer than 500 global AI firms making their home there, artificial intelligence is only one aspect of Canada's new tech dominance.

Last year, the government launched a super cluster initiative, setting aside hundreds of millions for five industry clusters in areas as diverse as augmented reality and advanced manufacturing. This has created an environment in which experts, businesses, universities, and nonprofits have come together in the service of international problem-solving.

More than 39,000 IT companies have sprouted up throughout the country to bring in \$181 billion annually. The country's culture and government foster and support the kind of research and collaboration that attract innovators to multiple regions and industries. For all these reasons, top execs are coming to think of Canada as a world leader in all that technology can mean, now and into the future.

Take Toronto for example, part of the third-largest tech cluster in North America, the city houses some 14,000 tech companies, more than 65 incubators, and the world's highest concentration of AI startups. You'll also find the MaRS Discovery District, North America's largest innovation hub, and one of Canada's leading tech accelerators. Travel east to find



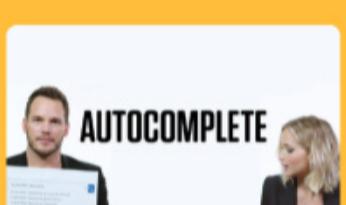
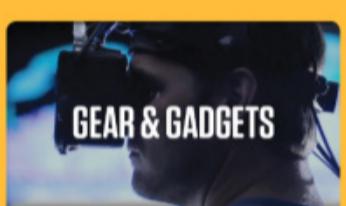
Montreal, home to over 120,000 IT jobs, and most recently the World Summit AI Americas. That's not all- Ottawa, Quebec City, Vancouver, Winnipeg, Edmonton, and the Waterloo region are just a few other key technology centers where daring innovators are creating the future.

Canada is clearly primed to share its intellectual capital with visiting conference-goers. Connecting conference organizers with Canadian thought leaders, industry, academia, and government bodies is the work of **Destination Canada's Business Events** team, the nation's leading advocate for international business events seeking to host in Canada. Industry leadership and leading-edge research are just two of the reasons event planners and C-level execs are choosing to hold business events here more than ever. With more tech giants living, working, and starting labs here every day, there's a wealth of local talent to draw from, and an unlimited source of inspiration.

Curious to learn more about Canada's technology sector? **Take a deep dive at:** [wired.com/brandlab/canada](http://wired.com/brandlab/canada)



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# STEMTRAILS

**How we learned to love pedagogical vapor.**

BY VIRGINIA HEFFERNAN

When American public schools macramé'd together the words *language*, *arts*, and *English*, starting in the 1970s, they created a tangle: ELA. ■ The neo-discipline must have bewildered teachers. There's a long tradition of teaching individual languages and their literatures, a long tradition of teaching fine arts, and a less long but still solid tradition of teaching linguistics. But how do you teach ELA? The phrase *English language arts* itself comes to kick off what should be a kid's lifelong awe at the boundlessly beautiful English language with jargon that is neither English, nor language, nor art. ■ But STEM: come on. Way worse. The acronym, coined in the early 1990s, is pedagogical vapor. It Pasteur-pipettes into a flask all kinds of clashing and differently scaled fields of study, with no shared methodology or pedagogical tradition. Then STEM Bunsen-burns this brew to ashes and calls the precipitate "progress," "rigor," a "competitive edge," and "gross domestic product." And now, as parents of school-age kids have been told at least since 2001, STEM requires our reverence and our investment. ■ Well, OK, show me where to donate to the rambunctiously merry STEM events—STEMStars, STEMlympics. But first just tell me what STEM *is*. Above all, I want to know how science, a byword for all knowledge, and mathematics, the great harmonies of the universe—two august disciplines that have defined education since antiquity—yoked themselves to the vocational field of engineering and, worst of all, to "technology." ➔

which could mean almost anything from space mirrors to VSCO girls. Technology is conceptually chaotic, even if the chaos can be glorious. See: WIRED magazine.

Think of what STEM might reasonably be expected to cover: fluid mechanics, C++, the periodic table, PEMDAS, Python, botany, the Krebs cycle, Instagram curation, polymer chemistry, robotics, making an investor deck, formal logic, electrodynamics, the quadratic formula, GIFs, quantum mechanics, JavaScript, civil engineering, machine learning, virology, drones, particle physics, acoustics, the supply chain, astronomy, YouTube memes, natural selection, anatomy, multiplication tables, remote surgery using 5G, and ...

Everything else. And yet why do I suspect that almost none of this is core to most STEM programs? The contemporary STEM curricula in lower schools seem, in fact, to have very little as a through line, unless you count the popular Scratch app, a production of the Siegel Family Endowment, which is heav-

Alas, a box within the report called “What Is STEM?” muddied the waters again. Far from clarifying the concept, government agencies have proposed simply saddling it with *more* sprawling disciplines, including psychology and economics. The Department of Homeland Security, it noted, included information sciences in STEM but excluded social sciences. It seems the only thing about STEM that policymakers could agree on is what the report calls “the relationship between STEM education and national prosperity and power,” and the significance of STEM to national security and immigration policy.

Hmm. I can’t imagine what noodling around with Scratch has to do with immigration policy, but the report reminds readers that “the Soviet Union’s Sputnik satellite in the 1950s” is still cited as “a key turning point for STEM education policy.”

The Race to Space—1957. Is *that* when education finally abandoned the idea of

be cultivated but, rather, to be conscripted in an army fighting an ever changing enemy—the Russians, Japanese, Chinese—with a weapon made of vapor, namely STEM?

A brainchild like STEM has many fathers, and one who has credibly claimed paternity is Charles E. Vela, a virtuoso entrepreneur who currently serves as president and chief architect at a Maryland outfit called Afilon, which describes itself as “a strategy, systems engineering, innovation, and program support company.” Before Afilon, Vela had a consulting company called Expertech Solutions, and before that he founded the Center for the Advancement of Hispanics in Science and Engineering Education. That’s where, in 1992, he says he first implemented his idea of STEM. In Vela’s telling, STEM was not just the magic word that would turn uncompetitive Americans into heavyweights, but the word that would help disenfranchised people get good jobs.

With Joseph Barba, who is now a professor of electrical engineering at the City College of New York, Vela imagined a STEM Institute that would prepare Hispanics, and other groups underrepresented in STEM, for higher education in STEM. The two men seem to have parted ways, with Barba going on to be president of the STEM Institute at City College and Vela trying his hand at various complex enterprises. In 2004, the plan was for the STEM Institute to teach “analytical and abstract thinking skills in a cooperative learning environment.” Today, the STEM Institute holds weekend and after-school programs that teach everything from “critical thinking” to 3D printing to English.

But is there arithmetic? And will 3D printing let us make better real estate decisions—and count out two 10-ml doses of Advil? It seems possible that early ill-defined STEM programs succeed to the degree that they get students into still more ill-defined STEM programs in preparation for ever changing STEM jobs in unstable STEM industries which metamorphose so rapidly that formal education can’t keep up. (IT and “social media” are currently the two best fields for STEM majors, according to career-information company Vault.com.)

The long-held anxiety that Americans are somehow “falling behind” the other great powers in math and science—or is it engineering and computer programming?—has let up a bit as data has emerged showing more students than ever

## **Early ill-defined STEM programs succeed to the degree that they get students into still more ill-defined STEM programs.**

ily subsidized by Google and the Cartoon Network. The app lets kids learn loops and if-then blocks in a kind of baby programming language that no adult uses. It’s fun.

Scratch is perhaps less useful for learning algebra or metallurgy, which, unlike Scratch, are less brandable, having spent millennia in the public domain.

In 2012, a 38-page congressional intro to STEM education called “Science, Technology, Engineering, and Mathematics (STEM) Education: A Primer” offered some insight into the new field of study. The report styles STEM as the shot of anabolics our workforce needs to stay in fighting shape. I derived what STEM means, at least in part, from the report’s assertion that a numerate citizenry—one that knows basic arithmetic—might be more adept at managing risk, taking proper doses of medications, and even avoiding mortgage scams. These would indeed seem to be adaptive skills. Maybe STEM is simply addition, subtraction, multiplication, division. If so, I’m in.

addressing the well-being and decency of the citizenry in private and public life, and turned instead to a project of laying to waste our geopolitical enemies? To that end—winning a Cold War, a trade war, or a war war—American students must evidently be prepared with if-then blocks. The paper also argues that no less a vanquisher of geopolitical enemies than George Washington pledged that the new nation would teach its sons “science and literature” because “knowledge is in every country the surest basis of public happiness.”

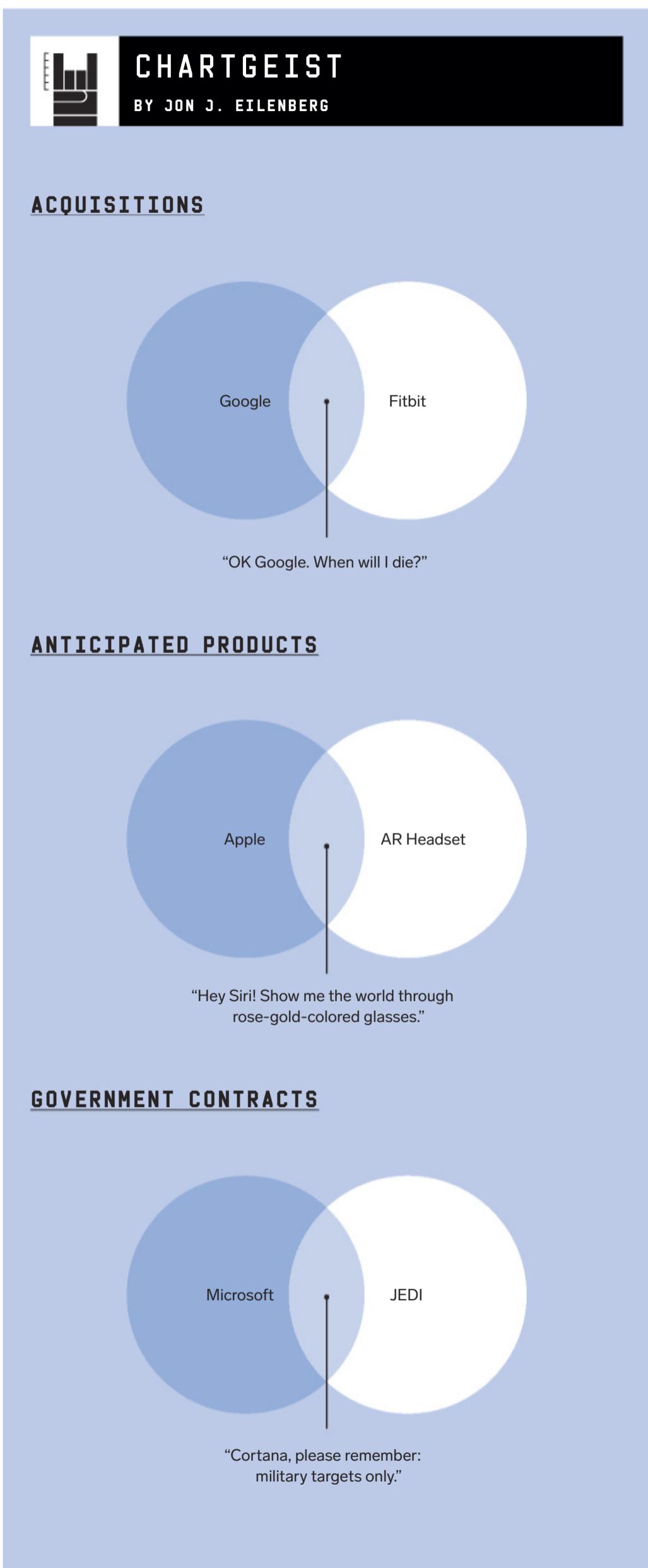
There I paused again. Public ... *happiness*. And that word “literature.” By my lights, Washington’s convictions don’t sync *in the least* with the panic about Sputnik or the present panic about Americans somehow “losing ground” to our rivals. Washington might not have even understood that education would ever exist to serve exclusively as the royal road to world domination. But how did Americans 230 years later come to sign on to the idea that their brains were not to

are enrolled in higher-ed STEM programs. Thus they qualify for STEM jobs, presumably, and increase America's wealth and power in a STEM world. No one seems worried about the pedagogy here, and STEM is, more or less, a success story, so maybe I should drop it. But I can't.

A few years ago, Marilynne Robinson, the Pulitzer-winning novelist and essayist, who won a National Humanities Medal in 2012, the year the STEM study came out, gave an interview in which she quoted her teachers: "You have to live with your mind your whole life," she'd been told. "You build your mind. So make it into something you want to live with."

I have repeated this to my kids so many times they now actually run to their rooms when I rev the engine: *You have to live with your mind your whole life*. But as soon as I encountered these words of Robinson, five years ago, the purpose of education was never again unclear. If my kids can pursue education for its mental pleasures, I believe, it will naturally increase their well-being—and, in time, their capacities to be of service. Maybe they won't even need to spend their *higher* education learning banal tips to well-being (take naps, look at flowers, etc.) in courses called Positive Psychology (among Harvard's most popular courses) or Psychology and the Good Life (the most popular course ever at Yale). That time, when the brain is in high gear, can be used for advanced physics—or maybe Chinese literature. Here I go again: *Sooner or later, you'll be alone with your mind. It ought to be a beautiful place to be.*

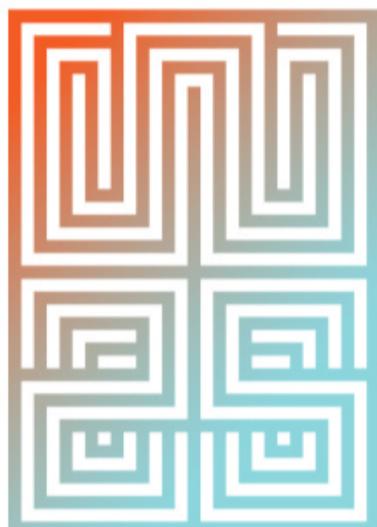
When all this is possible for a beginning student, what a shame it is for them to be pressed into service in an obsolete and inchoate conflict that requires they spend their grade-school years tapping away at Scratch—all while Sputnik, of all things, still haunts lawmakers and motivates them to seek massive investments in a flimsy experiment in pedagogy that no one seems to understand. And for the kids? To submit to STEM, which is fundamentally an artifact of marketing, is to lose time, irreplaceable time, when you might be creating a mind, living in the harmonies of prime numbers and the elementary particles, and getting a chance at an unscientific notion that George Washington called happiness. ■



# WIRED 25



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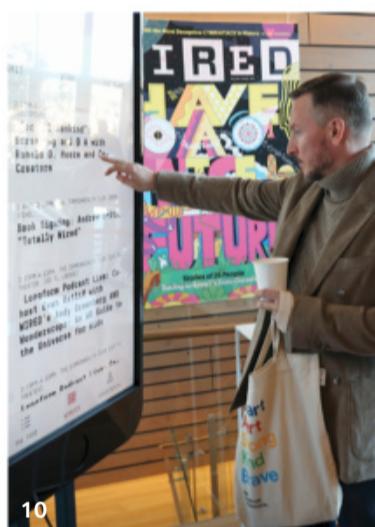


WATCH THE TALKS: [WIRED.COM/25](http://WIRED.COM/25)

Photos from top:  
1. Jeff Weiner with Nicholas Thompson 2. Chase Center tour 3. Chris Evans and Rian Johnson with Nicholas Thompson 4. N. K. Jemisin 5. Google's Be Internet Awesome carnival 6. Paper airplane workshop with John Collins 7. Rob McElhenney and Megan Ganz



Photos from top:  
8. Tracee Ellis Ross and Adam Mosseri with Arielle Pardes  
9. Incite 10. Isobar 11. Mihir Shukla 12. Adam Savage  
13. Vic Barrett, Levi Draheim, and Kelsey Juliana with Sandra Upson 14. Misty the robot



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# BY US, FOR US

Why we should think about segregating the web.

BY JASON PARHAM

The days of June 1996 were honeyed with promise. In San Francisco's SoMa district, electronic music animated a loft dance floor as E. David Ellington and Malcolm CasSelle raised their glasses in celebration. Along with friends and colleagues, they had gathered to toast the success of their new platform, NetNoir Online, a hub of "Afrocentric culture." ■ Though scrubbed from so much official history, black culture on the web thrived in the mid-'90s. NetNoir launched on the 130th anniversary of Juneteenth, a day that marks the end of slavery, and users flocked to its news articles, online classes, and discussion forums. ■ The platform soon found itself among a loose constellation of digital havens that together constituted "the soul of the internet": Melanet, GoAfro, Universal Black Pages, and the Brooklyn-founded Cafe Los Negroes, whose advertising copy exclaimed "Representin' Bed-Stuy in Cyberspace" (years before the neighborhood assumed a ghostlier hue). Naturally, black users were not alone in jockeying for visibility. Sites like LatinoLink and CyberPowWow built communities of their own. ■ For a time, these sites operated as self-governed metropolises. Charlton D. McIlwain, author of the new book *Black Software*, notes



that the black footprint on the early internet “was relatively enormous.” Of NetNoir, he writes: “They had accomplished something truly great and consequential for black America to think that blackness was at the center of the internet universe, something responsible for ushering the masses online.” You could read music reviews by Greg Tate, dine out on the latest sports commentary (“If O. J. is ever again mentioned here, we do not

predated even Friendster—had ballooned into a global diasporic nerve center? What if CyberPowWow became an identity-specific Twitter and Universal Black Pages our Google? What if alongside Reddit we had LatinoLink? To push the thought experiment a step further, let’s imagine that these cultural sites not only endured but, as a result, created a more segmented, racially divided internet. What I suppose I’m asking

as the company has shifted toward corralling users into Groups, they’re stuck in a spiderweb of chaos, prone to bullying, harassment, and campaigns of disinformation that read like the twisted fantasies of Orwell’s juiciest fiction. Imagine, instead, an internet of micro-utopias.

What I’m proposing is not a firewalled splinternet; it has more to do with where I see us evolving as a society—into enclaves. In one form or another, this sort of purposeful bundling already informs our day-to-day life. Netflix groups its users into “taste clusters.” The global population has become more siloed with the mass introduction of premium subscription and paywalled services—those who have and those who don’t. On Reddit, users bond and bicker in shelled communities. We’re already walling off.

So why not be more intentional about it? What many black, brown, and even queer users are losing in this digital jambalaya is a sense of ownership—all of us remain beholden to the reach and grip of Big Tech. You could assume the worst, of course—that in an internet of micro-utopias there would be, say, a NaziGram. But communities of hate already and will always exist, in the name of “free speech.”

Culturally, our differences are what make us. There’s no shame in wanting to protect and even ossify that camaraderie. “Someone could call it separatist. I would call it survival,” McIlwain tells me when I propose a newly segregated internet. “The way I get ahead is the way that other folks have gotten ahead. It doesn’t mean I stay walled off and disconnected. It means I start from a place of strength, which is a network of people I consider *my* people, and I build from there.” When I joined BlackPlanet in high school, around 2002, I had that very feeling—it all seemed so idyllic and endless then. It felt like home. Like mine. Like ours.

The real danger, it seems, is not in asking for my own internet. It’s the fear and confusion such a prospect instills in the minds of everyone else. In spaces for us and by us, black users can talk and build and innovate the way we want, without the threat of thievery by the mainstream. We can build our own Wakandan corner of the web—and decide for ourselves what we want to give away. ■

## What I’m proposing is not a firewalled splinternet; it has more to do with where I see us evolving as a society—into enclaves.

mean Kato’s friend. We mean orange juice”), or gossip with friends—a pioneering model for community building when people were still figuring out the rhythms of being online.

It didn’t last.

Functionally, the web is still very black. Our identities are embedded in Black Twitter-fueled memes and reaction GIFs, from Kermit sipping tea to *Real Housewives* star NeNe Leakes’ virtuoso shade-serving. Black culture is likewise a major artery of platforms like TikTok and our beloved Vine (RIP). Even the very modes of exposure find root in blackness: Black death and its digital-era companion, the police brutality video, became a terrifyingly mundane 21st-century spectacle, recorded, uploaded, and shared with perverse frequency. “Blackness gave virality its teeth. Turned it into trauma,” the writer and academic Lauren Michele Jackson has said. In life and in death, black people are the bones and lungs of the web, its very body.

Yet as the web has scaled, with corporate gentrifiers like Google and Facebook moving in and taking over, the black-owned presence has shrunk. Today, there seem to be fewer websites, networks, apps, and cultural ports in which to find a kind of sanctuary for black people—perhaps when we need it most. “The provincial portals that once invested heavily in steering users to black content suddenly had little stake in doing so,” McIlwain writes, blaming Google’s “traffic cop” algorithm in particular. “Those walled gardens came down. The web opened.”

But what if it hadn’t? What if the fortunes of NetNoir and Cafe Los Negroes had stayed strong? What if BlackPlanet—which

is this: Would the internet work better if it were more segregated?

I admit it’s an ugly question, one that betrays the values of inclusivity. It shouldn’t sit well. It’s not meant to go down easy. But if we begin from a place of discomfort, maybe we can get to a place of illumination. In fact, my premise is not without precedent.

Separatist societies are mainstays of popular culture. There’s the futuristic East African nation of Wakanda from *Black Panther*, which thrives in isolation. The town of Ruby, Oklahoma, from Toni Morrison’s *Paradise*, is populated by black residents who carry “eight-rock” blood. Think, too, of Themyscira from the Wonder Woman comics and the town of Macondo from Gabriel García Márquez’s kaleidoscopic sagas.

The most potent example, though, comes from real life. The Greenwood district of Tulsa, Oklahoma, was known as Black Wall Street during the early 1900s. The freedom colony was home to 10,000 residents and was one of the wealthiest black communities in the US until 1921, when a white mob burned it to the ground. On HBO’s tangled superhero crime noir *Watchmen*, creator Damon Lindelof uses the Tulsa race riots, and the violent destruction of that self-sustained black enclave, to lob a question at the American center: How would the world be different if white supremacists had not done what they always do—take what is not theirs?

Juxtapose the vision of Greenwood to Mark Zuckerberg’s original mandate to make Facebook into a utopia, a one-size-fits-all network for your every need. Even



# **ARBOR IN THE COURT**

**Is it time to give nature legal rights—and the power to fight back?**

BY CLIVE THOMPSON

In the summer of 2014, Markie Miller discovered she'd been drinking toxic coffee. Miller lives in Toledo, Ohio, where fertilizer runoff from farms had caused blooms of toxic cyanobacteria in Lake Erie, her water supply. The city issued an alert at 2 am, but by the time Miller saw it she'd already been sipping her morning java. "I'm like, shit, what did I just expose myself to?" she says. ■ The warning not to drink or wash in the tap water lasted for two days, but the anger did not subside quickly. Miller started meeting with other residents to figure out how to protect their water. But what to do? There aren't great options for individual citizens to take legal action when a lake has been wrecked. ■ You could sue a polluter (for polluting) or a government agency (for neglecting its regulatory duties), but even if you won, the damages would be too small to be a deterrent. You could assemble a class action suit of hurt residents, but that's a ponderous and uncertain process. The real and wretched problem, of course, was that the lake itself was polluted—and individuals

can't sue over that. In the eyes of the law, they don't have "standing."

That's when one activist raised an idea: What if the lake itself had standing? What if the citizens of Toledo passed a law giving it legal rights?

So working with advice from the Community Environmental Legal Defense Fund, the residents wrote the Lake Erie Bill of Rights and convinced 60 percent of Toledoans to vote for it. In the spring of 2019 it became law. Now anytime the lake is polluted, a city resident can sue on its behalf.

the Chippewa tribe in Minnesota gave legal rights to wild rice in their tribal courts. The rice "is part of our migration and creation stories," notes Frank Bibeau, a tribe member and lawyer.

As intrigued as I am by the idea of mountains suing mining companies, though, I'm not sure the rights of nature will hold up in US courts. Corporations are against it. One Ohio farm has sued to have the Lake Erie Bill of Rights struck down, claiming, among other things, that cities legally aren't allowed to create new types of felonies and that the

## **It sounds like a sci-fi plot device. Bodies of water throwing it down in court: "Your honor, the river objects to this line of questioning!"**

The idea of giving personhood to nature has been slowly gaining adherents. Environmentalists have prodded governments and courts to award rights to lakes, hills, rivers, and even individual species of plants. The New Zealand parliament has given legal rights to the Whanganui River, while Colombia has made the Páramo de Pisba region in the Andes—threatened for years by mining—a "subject of rights." About three dozen towns across the US are passing Toledo-style bills, and the Florida Democratic Party lists the rights of nature in its party platform.

This sounds like a plot device ripped from an Ursula Le Guin sci-fi novel, no? Bodies of water throwing it down before the judge: "Your honor, the river objects to this line of questioning!" But it's not as weird as it sounds. In 1972 the legal scholar Christopher Stone wrote a paper called "Should Trees Have Standing?" in which he pointed out that courts have long recognized entities that possess rights but require someone to sue on their behalf, from corporations to ships to children.

What's more, the concept that nature has a discrete identity of its own is thousands of years old. Pretty much every indigenous culture has such a tradition. Indeed, indigenous groups have been at the forefront of this legal movement: It was New Zealand's Maori who advocated for the Whanganui's rights and who now serve as legal guardians for the river. In 2018 the White Earth Band of

bill reaches beyond Toledo's purview. (There are "multiple tiers of problems," as Yvonne Lesicko, vice president of public policy for the Ohio Farm Bureau, tells me.) Ohio's governor signed a budget bill with an amendment that seems aimed at invalidating Toledo's law. Even some indigenous thinkers aren't keen on the idea, arguing that these new laws could infringe their treaty rights. And there's some hubris here too. How do we humans know what nature wants or if it cares if humans survive?

Still, I think the approach is worth trying. The climate crisis is fully main stage, with California burning and Florida drowning. If we're going to forestall worse to come, we need innovation not just in tech—more clean energy, resilient cities, genetically modified crops that need less fertilizer—but in law, the rule sets that architect our behavior.

The deep value of the personhood movement isn't merely legal. It's cultural. We've spent generations regarding the wilderness as a bottomless box of Kleenex, to be used and discarded at will. So we need a better way of talking about hills and forests and oceans; we need to see them with fresh eyes. Indigenous wisdom got this right, millennia ago. If we're going to rein in our abuse of nature, we need to see it as our equal. ▀

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### **STILL TUESDAY ...**

Only sad sacks and lunaediesophobes think Monday is the worst day of the week. The real life-ruiner is Tuesday. Existentially, it's diseased. The parched wasteland of the planetary hours, it stretches on and on, and in its stinking heat the precious seedlings of Monday's hopes wither and perish. (Wednesday offers meager redemption, unless you count the freedom to say "hump" with impunity. Which—what of it?—I do.) Yet it's Friday that Americans spend their vacation days on. Friday that half-caring employers declare half days. Friday that Microsoft's Japanese division experimentally eliminated from the workweek for one month in summer 2019, resulting in a 39.9 percent spike in labor productivity, the panegyric gyrations of tech journalists everywhere, and—I suspect—a cascade of Silicon Valley copycats clamoring to follow suit. This is lunacy on a level with lunaediesophobia. Look around your joyless open-plan office space on a Friday afternoon. Many people are, in fact, smiling. That's because freedom beckons. It's a proprietary species of corporate chicanery that says Friday needs saving. It doesn't. Tuesday does. Imagine it: a weekend followed by a Monday followed by a little more weekend, noncontiguously. Where's Elon Musk when I need him? That guy should be treating with sabbatical sacrality the weekday associated with the god of Mars, his favorite planet. He could—the most Muskan disruption imaginable—call for its official designation as the New Day of Rest. For the love of Tíw, Elon, free Tuesday. Terraform it from red hellscape into livable oasis, and the surge in happiness and innovation might just get us to Mars.

# ONE FOR ALL

**The first piece of the largest scientific structure ever built powers up in Africa.**

BY LAURA MALLONEE

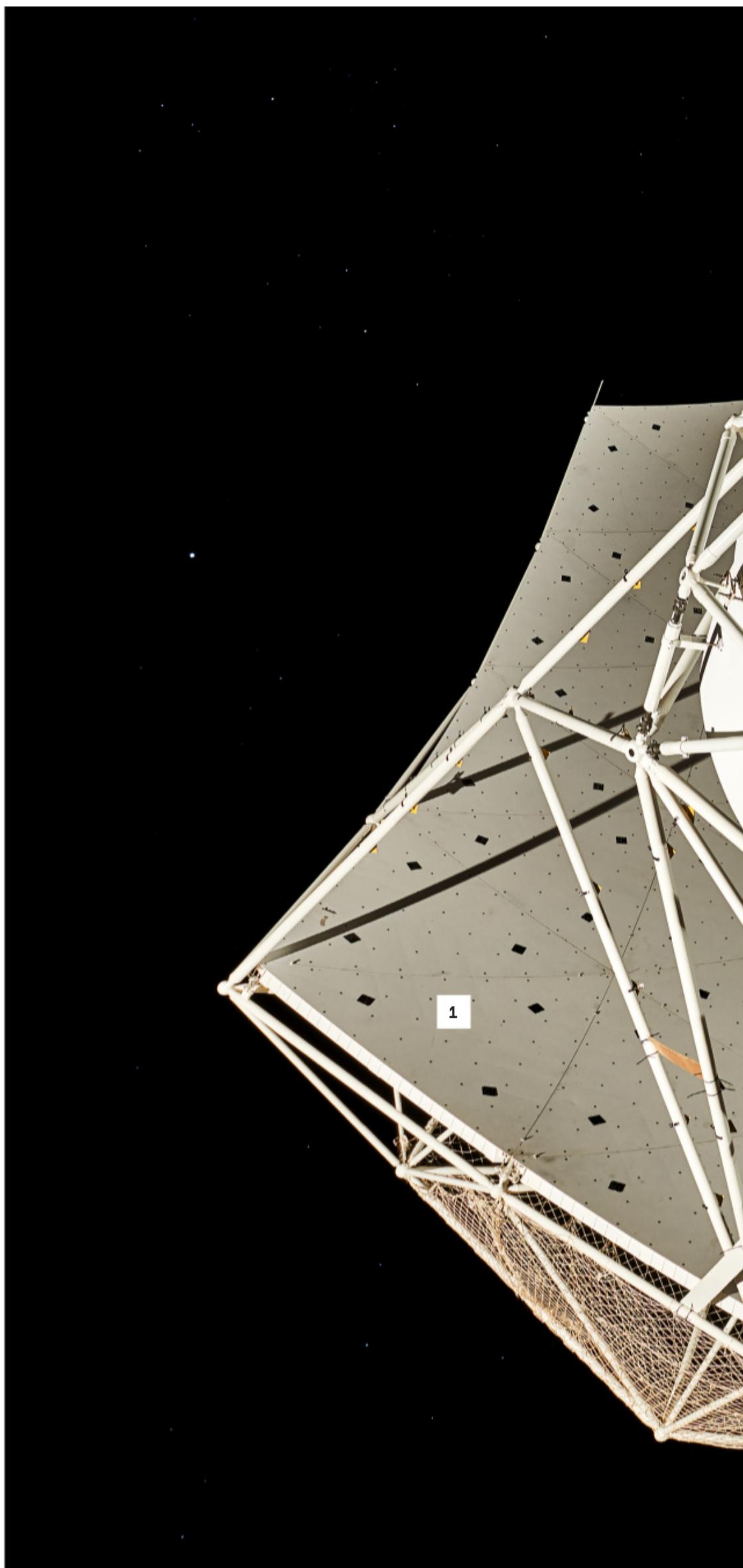
This dish antenna rises seven stories above an ancient seabed in the Karoo, a remote semidesert in South Africa. Later this year it will start scanning the universe for radio waves emanating from charged particles billions of light-years away, probing some of science's deepest questions: Was Einstein right about gravity? What are the origins of magnetism? Are we humans alone?

The 50-foot-wide dish, though, will have friends. It's among the first of up to 3,000 dishes that will eventually spread from South Africa into eight additional African countries. That spiraling array of mid-frequency dishes will join up to 1 million much smaller low-frequency antennas planned for Australia. Combined, they'll form a single observatory called the Square Kilometre Array, the largest scientific structure on the planet, to gather 10.8 million square feet of radio waves.

Unlike visible light, radio waves can reveal phenomena like hydrogen ionized in the early days of the universe, pulsars orbiting black holes, and maybe even alien signals. But detecting those long, frail frequencies requires a monstrous instrument, and dish antennas top out around 1,600 feet in diameter. So engineers build sprawling arrays to simulate much bigger telescopes. When complete, SKA will be 1,800 miles wide, and it'll see 50 times as much detail as the Hubble Space Telescope and record electromagnetic radiation up to a quadrillion times weaker than what your cell phone emits.

SKA was dreamed up over beers at a conference in 1990. Some 1,500 engineers have worked on it since. But it took until 2011 to form the 13-country consortium that'll fund the project and share its data. Collaboration, says director-general Philip Diamond, is SKA's biggest challenge. "I sometimes spend more time being a diplomat and firefighter than a scientist." The first phase of construction, expected to end in 2027 and cost nearly \$1 billion, will erect 133 dishes. On each, incoming waves will bounce off the reflector to a 16-foot subreflector that focuses them onto receivers. Each second, 8.8 terabytes of data will fly down fiber-optic lines to a main supercomputer. The timeline for phase 2? "It's something for my successor to pursue," Diamond says. ■

LAURA MALLONEE (@LauraMallonee) writes about photography for WIRED.





1. The 66 triangular aluminum panels in the main reflector are made at a facility in China.

2. A German-designed drive unit rotates the dish as little as 1/1,000 of a degree at a time.

3. Receivers behind the polymer subreflector can capture signals emitted by interstellar hydrogen.



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**WIRED**

**Frost Hammer**

When you're trying to ride an electric bike in the icy tundra, it's good to have both wheels pulling for you. —Parker Hall

**FETISH**

**CHRISTINI FAT E-5 EBIKE**

Christini's winter "fatbike" has all the appointments expected of a premium electric snow chariot: high-torque, 1,000-watt motor; 52-volt battery with a range of 50 miles; and husky, 4.8-inch-wide tires to help plow through the wintry trails. But this beast has a trick up its frame. A switch on the handlebars engages an all-wheel-drive mechanism; flip it on and the spiral gears running through the hollow tubing start to turn, delivering power to both wheels at once and providing better traction and control on wet, snowy, and slick surfaces. If the rear wheel starts to slip, all of your e-assisted pedal strokes get transferred to the front wheel. So instead of stalling out, the Fat E-5 will crawl up and over roots, rocks, and icy patches like a yeti.

\$5,695



# Four Sticks

Spiked with lab-developed materials, these skis make the most of whatever conditions the mountain serves up.

—Parker Hall

\$1,200

## HEAD SUPERSHAPE I.TITAN

**Best for:** Groomer gremlins

Graphene, a crystalline carbon that's 100 times stronger than steel, is sandwiched between the wood and polymer that make up the bulk of these skis. This combination of materials gives the skis extra stiffness, keeping the skier in control even through icy turns. The shape of the i.Titan is aimed more at all-mountain skiing than aggressive speed runs, with wider tips and tails that let them float over powdery snow. Look for graphene to show up in more sports equipment in the coming years; the material can make just about anything stronger and lighter, from tennis rackets to Formula 1 cars.

## RENOUATLAS 80

**Best for:** Piste rockets

The maple cores of these handmade skis are fortified with strips of HDT, a polymer that stiffens as pressure is applied. That means the material gets harder as you ski faster, dampening vibrations on groomed runs and stiffening the ski to provide better stability during aggressive turns. When the pressure eases up—like when you're floating through powder or cruising slowly—the HDT strips soften and the ski regains a bit of the flexibility you want at those times. The polymer is also 50 percent lighter than the wood that surrounds it, resulting in a featherlight ski.

\$1,299

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ACTION  
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OFF THE  
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# Into the Woods

**Don't let winter interrupt your hiking routine. Strap on snowshoes and make trudging through drifts feel like a stroll in the park. —Matt Jancer**

GEARHEAD



\$649

## THE NORTH FACE PURIST FUTURELIGHT JACKET

The Purist is a packable but protective shell for when winds, snow, and rain are heaviest. The three-layer jacket is spun from a waterproof but breathable membrane that's lighter and softer-feeling than other hydrophobic fabrics. The coat also has an overabundance of pockets for things like headphones or bags of trail mix.



\$320

## MSR LIGHTNING ASCENT SNOWSHOES

Aluminum frames make these snowshoes light—around 35 ounces each—and steel crampons underfoot make them tough enough to stomp over gravel and boulders without losing their edge. The mesh bindings wrap around nearly any size of boot to grip snugly and uniformly without any blister-causing pressure points.

\$50

**PHOOZY XP3 THERMAL CAPSULE**

Carrying a naked phone into the frozen outdoors can permanently hurt its ability to hold a charge. Clothe it in Phoozy's thermal pouch, which insulates and protects the device while extending its battery life. It won't block cell, Wi-Fi, or Bluetooth signals either.



\$329

**SUUNTO 5**

Pick a mapped backcountry route to conquer, or navigate on the fly using the color touchscreen of this GPS-equipped smartwatch. Heart rate and movement are monitored on the trail; stress levels and sleep quality are tracked 24/7. Select one of its 80 modes to collect data on almost any sport activity, snowshoeing included.



\$140

**VASQUE COLDSPARK ULTRADRY**

Your feet might be your most essential outdoor tools, so coddle them. The waterproofed leather on Vasque's rugged kicks keeps droplets from soaking through to your socks as you march through snow. Thinsulate, a synthetic alternative to goose down, adds warmth. A nub on the heel helps grip a snowshoe strap.

# Cool Runnings

Leave that old plastic disc in the snowdrift and hop on a sled that suits your size and your powder-carving ambition. —Adrienne So

**YUKON HAMMERHEAD PRO HD**

**Best for:** Sled shredders  
If you watch the Olympic skeleton event with envy, Yukon's sled is the closest you're likely to get. Just lie on your belly, grip the handle, and go. The powder-coated aluminum frame suspends any size rider on two pairs of runners made from a durable combination of polycarbonate and high-density thermoplastic polymer. Maneuver down wooded trails with the leaf-spring steering system, or hold it steady to bomb down the big hills at top speed. Helmet not included.

\$220

\$50

**ZIPFY FREESTYLE MINI LUGE**

**Best for:** Wee winterlings  
The Zipfy's unique design—a comfortable, molded vinyl seat and a sticklike handle for steering—comes from the Bavarian tradition of sledding on coal shovels. But unlike a coal shovel, the Zipfy weighs just 3.5 pounds and has no sharp edges that could injure the limbs of young snow enthusiasts. It's easy to pilot as well: Just lean to slalom back and forth, and dig in both heels when it's time to stop for hot cocoa at the lodge.

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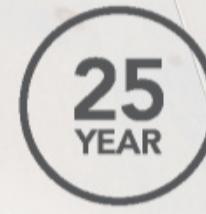
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# Me Cozy

**Baby, it's cold outside. Stay in tonight—and stay warm—with these nesting accoutrements.**

**—Michael Calore**

**GEARHEAD**



**\$99**

PHILIPS HUE WHITE  
AMBIANCE WELLNER  
TABLE LAMP

This lamp is perfect for dialing in a mellow mood. The LED bulb can display over 50,000 shades of white, from daylight-bright to dim and drowsy. There are two ways to connect: Use a Philips' Hue Bridge (\$60) to add it to your Wi-Fi network and control it through an existing smart-home setup, or screw in a Hue White Ambiance Bulb (\$25) with Bluetooth and adjust the light using Philips' mobile app.

\$100

EMBER MUG 2

It looks like a regular coffee cup, but Ember's invention has a heating element inside. Set a specific drinking temperature using the companion mobile app—yes, this mug has Bluetooth—and your spiked cocoa stays at exactly 140 degrees long enough to get through the first two *Godfather* movies. (You can skip the third.)

**AMAZON KINDLE**

I loved *Doctor Sleep* in the theater, so when it came time to revisit the source material, I gobbled up Stephen King's novel on the newest iteration of Amazon's ubiquitous e-reader. It can still store thousands of books and last for weeks on a charge like previous Kindles, but the new one has a light-up screen so you can keep reading long into the night.

\$90

**KEEN HOWSER SLIPPER**

The microfiber lining of these slippers gives them a sock-like softness on bare feet. But the memory foam footbed and firm midsole provide the supportive feel of real shoes. A grippy rubber sole handles kitchen tile and driveway gravel—perfect for when I suddenly remember at bedtime to take out the trash. And unlike the countless options made from leather or shearling, these are vegan.

\$85



\$99

**RUMPL ORIGINAL PUFFY BLANKET**

With a sleeping-bag-like shell stuffed with synthetic NanoLoft, Rumpl's blanket is a cozy option for warming up a frigid night. It's also a sound choice for the planet: All the materials come from recycled plastic bottles. The throw covers a single person, two if they snuggle—or just get the double Rumpl for \$159.



# Under Warmers

**These base layers use new kinds of fabric that trap warm air next to the skin and omit chafing seams.**

—Adrienne So

\$120

## SMARTWOOL INTRAKNIT MERINO 200 CREW

This light, soft thermal layer is knit so finely you almost can't detect its three-dimensional texture, until you stretch the fabric and see how it's thicker in some places and thinner in others. For example, the crew shirt has gender-specific ventilation and articulation zones—in the women's version, there's a ventilated criss-cross pattern over the belly and across the clavicle—that help cool down my core, even when I work hard.



\$149

## PATAGONIA CAPILENE AIR HOODY

Patagonia blended merino wool with a recycled polyester called Capilene to create an ultrafine 18.5-micron-gauge yarn. The material is then woven into a uniform pattern of tiny little heat-trapping fabric pyramids. The garment is snug—it expands and contracts as satisfyingly as a Slinky—but is also entirely seamless.



\$90

## COLUMBIA OMNI HEAT CREW

Columbia's proprietary Omni Heat material lines the inside of this stretchy polyester shirt, where it works like a silver space blanket by reflecting thermal radiation back to the wearer's body. The lining is patterned into thousands of domelike puffs that lie on the surface of your skin, where it traps the warmth that's being reflected back. It looks like it might be itchy, but it's surprisingly soft. Allergic to wool? No problem. This fabric is made from a hypoallergenic polyester-elastane blend.

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POST

# THE 5G DATA STORM IS COMING

Blazing-fast speeds! Zero latency! Moar data to moar devices! Unless you've been trapped in a tech-news dead zone, you've heard that the rollout of the next generation of wireless broadband has begun. Still, smartphone data addicts shouldn't hold their breath for speeds of 10 gigabits per second. To provide the kind of 5G coverage consumers will expect, carriers will need to install as many as 20 access points per square kilometer, an expensive endeavor that will take years. Until then, we'll have to accept that 5G is here, but it's unevenly distributed. Here are some places to watch for it in the (nearish) future.

roll, their liberated occupants will demand streaming entertainment (and advertisers will demand to pummel them with targeted ads). But that's all for the current kind of self-driving car, the one that watches but doesn't talk to its surroundings. Way more exciting, if we're talking real 5G, is not replacing human drivers but completely rethinking the way cars drive.

Link vehicles together and we'll solidly surpass human limitations. Cars could move like schools of fish, in unison, smoothly and tightly, without colliding.

Engineers have longed to let cars swap data on location, speed, and heading for decades, and since the '90s many have pinned their hopes on short-range radio transmitters. In 2017, UC Berkeley researchers sent a trio of connected semi-trucks down a highway with just 60 to 140 feet between them. Such convoys could improve fuel efficiency by letting vehicles draft each other and might even allow for going human-free in all but the lead truck. But the tech's max range is only about 3,000 feet, it can't handle many vehicles at once, and it requires special hardware in each car. Which helps explain why such luxuries are available only in a top-line Cadillac—leaving precious few chances for meaningful carversation.

But the anticipation of 5G has tickled engineers' minds, enabling a new approach called "cellular vehicle to everything." CV2X lets vehicles, infrastructure, and anyone with a cell phone link up over short distances and tap into cellular networks for long-range transmissions. Plus, many automakers are already putting wireless modems in their rides. (Then again, all these wireless connections will be irresistible to hackers, posing a formidable security challenge.)

In a demo last year, Audi, Ducati, and Ford used CV2X to warn drivers about oncoming vehicles that were outside their line of sight. A recent test by Ericsson, Qualcomm, and other companies helped cars merge smoothly and safely onto a highway, not just by communicating with one another but by taking orders from a central control system that worked like an omnipotent traffic cop. That central authority, enabled by 5G, underlines engineers' high hopes for CV2X: Cars that can talk to each other will stop hitting each other and will warn each other about hazards ahead. Cars that can listen to directions will start traveling in schools, maybe

## Cars Will Flow Like Schools of Fish

BY ALEX DAVIES

**The folks who** are gunning to make cars drive themselves are itching for 5G connectivity. Why? The faster you can get data into and out of a rolling robot, the better the experience. Constantly updated, ultrahigh-res maps of their environment make the ride safer and smoother. Developers in remote operation centers will also be monitoring lidar and camera feeds to keep an eye on their creations. And, of course, while they

**POST**

even turning roads that aren't getting any bigger (and shouldn't!) from clogged arterials to free-flowing speedways.

With data flying between cars, then, it isn't hard to imagine the next curious change. We'd need fewer of the algorithms that manufacturers are so madly uploading into today's self-driving vehicles. And like most kids who think they're too cool for school, our current cars of tomorrow might quickly be left behind.

## Can You Heal Me Now? Surgery Goes Wireless

BY TOM SIMONITE

The catheter inched down the middle-aged man's coronary artery. As he lay on the operating table at Apex Heart Institute, a hospital in Gujarat, India, the instrument inflated a tiny balloon to widen the blocked vessel and installed a stent to keep it that way. The angioplasty went off without complications, but there was one big anomaly: The surgeon was not in the room, or even the building.

In fact, Tejas Patel, Apex's chief interventional cardiologist, was some 20 miles from the patient. In the world's first remote human heart surgery, he manipulated a teleoperated robot via joysticks at a makeshift workstation in a Hindu temple, chosen for its unmistakable spiritual significance and reliable internet connection.

The angioplasty wasn't the first-ever surgery via the internet: In 2001 two surgeons in New York extracted a person's gallbladder in France. Nonetheless, most robotic procedures these days involve patient, surgeon, and robot in fairly close proximity. But as connectivity improves and mobile networks get faster and less laggy, some startups and surgeons think it's time to make internet surgery a routine option. "This technology is going to eliminate distance between doctors and patients in underprivileged areas," Patel says. "I will love to do this procedure transcontinentally."

The angioplasty in Gujarat was one of five, all successful, performed using a robot called CorPath, built by Boston-area startup Corindus Vascular Robotics. (The company was recently acquired by Siemens Healthineers for \$1.1 billion.) Corindus started selling its bot in 2012, for use by a surgeon at a patient's side. But a few years ago its leaders began investing heavily in telesurgery. The bet was that internet and wireless networks could let surgeons phone it in from almost anywhere—if carriers could fix the occasional glitches that mar video calls. "You don't want that if you're inside someone's heart or brain," says Corindus CEO Mark Toland. "You have to feel that you're in the room."

Internet connections are now looking reliable enough. In Gujarat, the procedure was performed over a fiber-optic link; in the US, Corindus is testing surgeries over 5G mobile networks. In one recent trial, a doctor in Boston steered a catheter through a surgical simulator, complete with digital beating heart, laid out on a table thousands of miles away at a test facility in San Francisco. Imagine: If doctors were able to perform remote emergency procedures to treat heart attacks or strokes on, say, military vessels, or in parts of the world like rural India that have few heart specialists but are relatively rich in mobile coverage, a lot of lives could be saved. "There are millions of patients who die—or live with severe problems—because treatment was not available on time," Patel says. Surgeons won't all become remote workers overnight, and internet infrastructure evolves slowly, but with 5G, eventually, there might always be a doctor in the house.

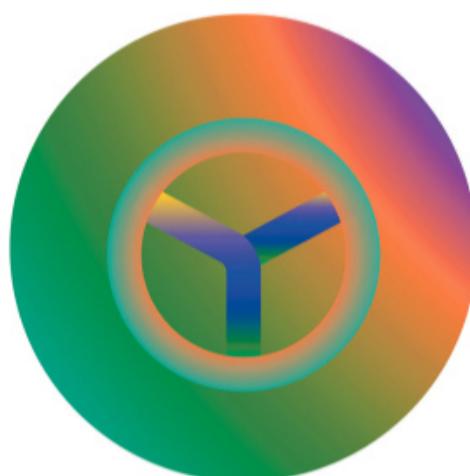
## Assembly Lines Powered By Data—and Fewer Humans

BY WILL KNIGHT

At Foxconn's megafactory in Shenzhen, China, thousands of young people shuffle between cramped dorms and monotonous production lines. But in one vast space, where green lights glow atop rows of humming equipment, robots ferry parts between machines, mechanical arms grab and place widgets at superhuman speed and precision, and cameras inspect circuit boards for defects. Few humans are present.

This is a new kind of assembly line, and it may someday put many humans out of a job. Behind all the automation is a tsunami of data. The machines send incredible amounts of information at astonishing speed—every detail of their behavior and performance—to 5G transmitters dotted around the building. It's called Industry 4.0, and it promises to spark a revolution in productivity.

Citing rising wages and a tight labor market, Foxconn has added ever more automation to its factories. And faster, more powerful wireless tech will help choreograph the increasingly complex dance between robots and human workers. Of course, assembling an iPhone with robots



remains a challenge—human fingers are still superior at manipulating fiddly electronics—but 5G will inch production closer to that goal.

Foxconn Industrial Internet, a spinout of the manufacturing giant, is using 5G to provide a real-time picture of the assembly line. The sensor data from each machine could let, say, Apple engineers in California monitor production of the latest iPhone, allowing them to make tweaks to boost output or fix a defect in minutes instead of days.

When assembly bots are able to share their data, a factory's customers will also be able to take better advantage of machine learning. Fed gigabits of data per second, an AI thousands of miles away could unearth signals that point to potential problems (imagine a motor that's wearing out) well before they occur—like a minority report for robots.

Foxconn isn't the only manufacturer keen to take advantage of the new wireless technology. With sensors, 5G, and machine learning, “we can predict a robot failure three months in advance,” explains Michael Raiford, a VP at Samsung Semiconductor, which recently partnered with AT&T to set up a 5G network at a chipmaking facility in Austin, Texas. They’re testing wireless sensors that will monitor workers’ vital signs for indications of accident or illness—humans wearing out.

Not everyone sees 5G as a revolution. “People think it’s this big turning point,” says Willy Shih, a Harvard professor who studies manufacturing, “but I think it’s kind of a natural evolution.” In other words, 5G is simply another adaptation to a world that ceaselessly demands more data, faster.

# The Next Virtual Reality Will Become the New Reality

BY PETER RUBIN

**Alex Davies**  
(@adavies47)  
covers transportation  
for WIRED.

**Tom Simonite**  
(@tsimonite) writes  
about smart machines  
for WIRED.

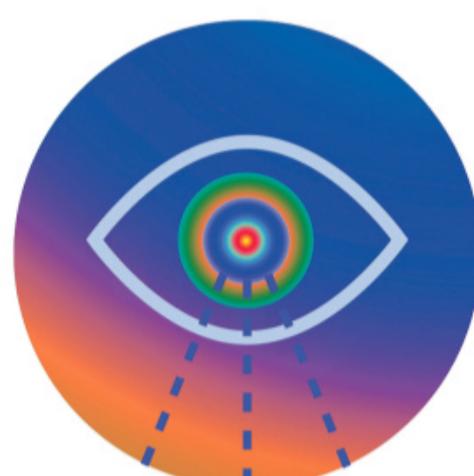
**Will Knight**  
(@willknight) reports  
on artificial intelligence  
for WIRED.

**Peter Rubin**  
(@provenself) is  
the author of a book  
about VR, *Future Presence*.

Even if you've got every virtual reality headset ever made—HoloLens, Magic Leap, exfiltrated prototype of Apple's long-rumored smart glasses—you haven't experienced the best that AR and VR have to offer. Not even close. That's because the magic is stuck in labs, where the computing is exponentially more powerful and the gigabit wireless networks plentiful. Headsets that look back at you and reproduce your face in bits; real-world environments digitized in real time so users miles apart can share the same space: With 5G, these projects will finally burst out of the pipeline and into your eyeballs.

Granted, the hardware needs to get better, from optics and battery life to thermal management, but there's only so much VR any device can handle at 4G. Now, once you start pulling down data at speeds more than 100 times faster than your current phone, wireless headsets will be able to render VR representations that look exactly like you, doppelgängers that vault across the uncanny valley and ape your features and tics as you talk. It's how you'll be able to peer through your glasses to see not the windowless room you and your colleagues are sitting in but the sun-drenched quarters of a Swiss ski chalet. Today, you call your mom on FaceTime. Tomorrow she'll see hologram—you in her real kitchen while you see the virtual version of all of it: Mom, kitchen, and the new router she wants your help installing. No, the cable goes there!

It doesn't stop at familial IT duty. The mirrorworld, that global layer of data driving augmented reality, will finally leap past *Pokémon Go* and *Minecraft Earth* to become a ubiquitous, useful infrastructure: AI-powered avatars (some corporate mascots, others puckish indie counterbalances) will populate public spaces like discreet concierges, supplying everything from directions to sightseeing tips. You'll capture photos and videos that aren't just flattened images but places, then share them with friends so they too can stroll through the secluded Roman piazza you just explored. This isn't an information superhighway, it's a *Super Mario Bros.* warp pipe, big enough and fast enough to make the entire world broadcastable at the exact speed of experiencing it. It won't be all fun and games, though. There'll need to be robust antiharassment and safety tools built in—because if today is a picnic for trolls, it's up to us to make sure a virtualized future isn't their goddamn paradise. ■



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# BRUTAL WANT

How the  
**QUEEN OF SHITTY ROBOTS**  
renounced her crown  
and confronted her  
fears of imperfection

(while facing her own mortality and making a  
**F\*\*\*\*\*G AWESOME** electric pickup truck)

by Lauren Goode

 Joe Pugliese

## I SPOT THE

# TESLA

long before I see the strawberry-blonde ponytail of its driver. The car is a candy-apple-red Model 3 sedan that appears to have had part of its rear half deleted, so that it looks like a modish Chevy El Camino. Simone Giertz, the YouTuber behind the wheel, is meeting me under a highway overpass in northern Sonoma County so she can lead me to one of the secret workshops where, for the past year, she's been hacking away at the sharky EV to transform it into a pickup truck. Ten days ago, she posted a 31-minute YouTube video about building the "Truckla." Eight million people have already watched it, but barely anyone has seen the mutant EV up close.

Leaning out of the Truckla's window, Giertz tells me she's been busy cleaning hay out of its bed. She gestures for me to follow her about a mile down a winding road in my 12-year-old gas guzzler. Thickets of tall trees give way to dry, grassy hills. The workshop where we're headed is a place where Burning Man artists and other tinkerers fabricate their work. As we get closer, a few cottage-sized kinetic sculptures appear in the fields alongside us, as if they'd been dropped from outer space.

When we arrive, Giertz introduces me to her main collaborator on the Truckla, Marcos Ramirez, an affable, bearded guy in a turquoise cap and overalls. It's midday-hot in the heart of wine country, and in the hangar-like workspace the two begin to rattle off everything they have left to do before the vehicle is truly finished.



There's still some welding to do on the panel that divides the cabin from the truck bed, the car's interior needs to be waterproofed, and the tailgate doesn't work yet. In the beginning, Giertz (pronounced "Yetch") intended to just graft a flatbed kit onto the front quarters of a Model 3. But she ultimately decided to preserve as many of the Tesla's svelte lines as possible—a plan that has required vastly more labor and finesse.

For the past couple of years, Giertz's primary vehicle has been a homely 1970s Comuta-Car—a golf-cart-sized electric vehicle sheathed in yellow ABS plastic—that she nicknamed Cheese Louise for its strong resemblance to a wedge of cheddar. Her new ride will no doubt draw just as many stares on the streets of San Fran-

↑  
Giertz  
stands atop  
her heavily  
customized  
Truckla.

cisco. But in contrast to the famously janky Comuta-Car, what matters most to Giertz right now is that the Truckla is functional. Elegant, even.

This, to say the least, is not the approach to design that made Giertz internet-famous. Four years ago, she jump-started her YouTube career by building a series of what she calls “shitty robots”—sloppy, hilarious, barely functioning gizmos. There’s the Wake-Up Machine, an alarm clock with a rubber hand attachment that repeatedly slaps her awake; the Breakfast Machine, a robotic arm that pours cereal and milk into a bowl with comical lack of precision; and the Hair-Cutting Drone, a quadcopter with automated shears dangling from it by wire. (Giertz notes in her video about the drone that she’s just moved to the US and doesn’t yet have health insurance, so she opts to test the device on a bewigged mannequin. It goes badly for the mannequin.)

When she takes me for a ride in the Truckla, she tells me I’m among the first passengers to sit shotgun, and she’s supremely confident behind the wheel. She beams when we stop for pizza in Geyserville and a handful of people pause to admire the parked Frankencar.

These days, at 29, Giertz is intent on making things that *work*. She’s trying to design and ship useful products. She’s in the early stages of producing a video series that she hopes will culminate in her traveling to space—and if there’s anything you’d want to go off without a hitch the first time you try it, it’s a trip to space. She’s confronting for the first time in her life what family and friends describe as a complicated relationship with perfectionism.

“I still put a lot of time into things like editing a video and want to make it as good as it can be, but it’s not the same as it was before,” she says. “I can’t remember the last time I started crying because I felt like I hadn’t been enough.”

For a long time, building shitty robots meant Giertz never had to face failure, even if the robots themselves failed. “One of the things that I’ve been trying to figure out is: Was building shitty robots in some way a method for me to minimize myself, to make myself smaller?” Giertz says. “Because that’s what I notice—a lot of women being really scared to step up and be an expert.” Giertz’s older videos are full of congeniality and persistent self-deprecation, which doesn’t feel so charming to Giertz anymore.

“I think that’s one of the reasons that a lot of male audiences didn’t really come after me,” she says. “Because I wasn’t puffing up my chest and saying, ‘I know what I’m doing.’ In some ways that makes me really sad.”

In order to stop undermining herself, Giertz is saying sayonara to shitty robots. She’s plotting her next move, trying to navigate past her anxieties over control and failure and competence. At the same time, she’s also contending with an entity that has literally taken up residence in her head—a kind of physical insult to the very idea of control and perfection. Simone Giertz has a brain tumor, and she’s trying to be as creative as possible while her doctors try to destroy it.

**Giertz grew up** in Saltsjö-Duvnäs, Sweden, about 6 miles outside of Stockholm. For 16 years, her mother was a ghost-hunter on Swedish reality TV; Giertz calls her “the face of the paranormal community in Sweden.” Her father was a TV producer who now works in media licensing.

Giertz’s mother, Caroline, describes her daughter’s upbringing as comfortable but middle class—“no fancy cars, summer houses, or big boats.” She was a bracingly self-sufficient child in comparison to her two older siblings, who liked to have their parents linger at bedtime and read story after story. “Simone was not like that,” her mother says.

As she grew up, Giertz was defiantly creative. She remembers being the only girl in her elementary school class who chose woodworking over sewing. Eventually, she would exhibit a kind of media savvy that may have derived from having two parents in TV. She also became intensely driven. “I think Simone felt

obliged to overachieve, from some inner urge,” her mother says. “It was a bit painful to see.”

At age 16, Giertz went off as an exchange student to Hefei, China, where she studied Mandarin (and made an appearance on a Chinese sitcom). When she returned home, her mother picked her up at the airport. “It might have been one of the most surreal days in my life,” Giertz recalls. “It took about five minutes in the car before she told me she and my dad had gotten a divorce while I was gone.”

“I just said, ‘Oh wow, that’s very brave of both of you.’ And then I decided to move to Kenya,” Giertz says.

“(That’s one of the very few things I feel I could have done better,” her mother says. “I was trying to apologize for that just a week or two ago.”)

After three months back in Stockholm, Giertz departed for a Swedish boarding school in Nairobi to learn Swahili—and to flee the confusion of a disintegrating home. Then, after finishing high school, she went back to China for another half year; this time in Nanhai, outside of Guangzhou.

As a kid, Giertz was obsessed with getting good grades, but she attended university for only a year before dropping out. In 2012, she took a job as an editor for Sweden’s official website, putting her Chinese language skills to work by retooling the Chinese version of the site. The following year she enrolled in a vocational school, this time to study advertising. As part of

that program Giertz was required to get an internship. She nabbed one building products at a San Francisco engineering firm called Punch Through Design—which changed everything.

Her first builds involved Bluetooth Arduino boards. She made an iPhone accessory that turned the smartphone's screen into a makeshift guitar fretboard, giving the user actual strings to pluck. She made a motion-triggered bike light so riders wouldn't have to remember to turn it on. "It was fucking great, because I was the only nonengineer in a team of electrical engineers," Giertz says. "I could come up with these ideas and build them and write tutorials on them." After her internship, without a visa that would allow her to stay in the US, she decided to move back in with her mom in Sweden and live as frugally as she could, so she could keep making stuff. She was 24 at the time.

"I had just been pushing myself so hard my entire life, always trying to do the most difficult thing," Giertz says. "And I thought, what would happen if I just freed up a bunch of time and let myself spend time on things I was excited about?"

Giertz uploaded her first robot video to YouTube in August 2015, and it was then that she introduced the persona of the shitty robot queen. The video was unceremonious and brief; only seven seconds long, more a GIF than a short film. In it, Giertz wears a teal helmet rigged with a robotic arm and a yellow toothbrush. For a few seconds, the arm sends the brush swooshing, paste-free, across Giertz's face while she grins.

Over time the shitty robot videos grew longer and more elaborate. By the end of that year, Giertz had uploaded a dozen clips—all documenting her attempts to build and test devices that solve everyday problems in the most inelegant, bruisishly futuristic way possible. One showed a servo-motor-powered contraption

that uses two butcher-knife blades to chop vegetables; watching it makes me instinctively pull my fingers back from my laptop. Another offered up an Arduino hack that sent electric shocks to electrodes on Giertz's face as she responded to YouTube comments.

Most of her early videos racked up views in the high hundreds of thousands. But it was a clip uploaded in February 2016 that propelled Giertz beyond YouTube's orbit. In it, Giertz unassumingly reads on an iPad while wearing a professional-looking pinstriped blouse, her hair cascading down the side of her face as a robot arm smears bright red lipstick on and around her mouth. Giertz blinks as if irritated, but she pays no mind to the robot or the makeup. She never seems overly concerned about her appearance. The six-second lipstick robot video—a kind of YouTube *anti*-makeup tutorial—cemented her image as the smart, funny, self-titled shitty robot queen who couldn't be bothered with your expectations of her.

That video was viewed 1.3 million times, and at least once by Adam Savage of *MythBusters* fame. Giertz's video hit him, as he puts it, like a ton of bricks. "There's something so subversive and yet loving about technology at the same time, right?" he says. "Here was this awesome, jocular Swedish girl building robots, and this is a fairly sophisticated thing to try to do—and yet you're repeatedly watching these bots fail."

Savage and his production team reached out to Giertz soon afterward and asked if she wanted to collaborate with him. They made a helmet that shoveled popcorn into its wearer's mouth, and Giertz later helped create paywalled videos for Savage's website, Tested.com. Despite Savage's delight in her early work, Giertz was intimidated. "I had the worst impostor syndrome," she said in a video several months later about her first work with Savage. "I'm just a hobbyist. I don't know what I'm doing."

After Savage came calling, so did Stephen Colbert. One night in the fall of 2016, Giertz and three of her barely functioning robots, including the lipstick machine, made an appearance on *The Late Show*. The clip is as much a display of Giertz's wit as it is of her contraptions, and she glows

under the bright lights of late-night TV. "This is perfect for a nutritious meal," she deadpans as the live studio audience loses it over her vegetable-chopping robot. Then she convinces Colbert to get his makeup done by the lipstick bot.

One of the more telling signs of Giertz's ascent to internet stardom was that, by the end of 2016, she was turning her arguments with advertisers into video content for her channel. According to Giertz, sponsors were suddenly taking issue with her language on YouTube, *young lady*. On the heels of the 2016 US presidential election, she teamed up with German YouTuber Laura Kampf to build a Pussy Grabs Back machine, a rubber hand hanging from a belt that's designed to thwart any vagina-grabbing attempts with an upper-cut slap delivered to the attacker's groin. Advertisers bristled.

Giertz initially bowed to the pressure, deleting five of her videos at the behest of sponsors. Later, she posted a YouTube video titled "Why My Sponsors are Leaving." (She cursed throughout the video.)

"To me, it's crazy that it has such weight," Giertz tells me, referring to her language. "I really understand that parents are concerned, but kids know these words. I'm waiting for the documentary of someone with the blurred-out face and the morphed voice that's like, 'Yeah, things really started going wrong for me when I heard *shit* and *fuck* on television.'"

So in December 2016, Giertz launched a page on Patreon, a subscription service platform for internet content creators,

# Giertz, in a pinstriped blouse, reads an iPad

## WHILE A ROBOT ARM smears red lipstick around her mouth.

and said she would let STEM toymaker GoldieBlox make kid-friendly versions of her videos. It was a very Simone solution: She would publish her work on another platform, one that let her keep “Shitty” in her brand name but also do something nice for the kids.

What’s notable about Giertz’s body of work is that the shitty robots, as entertaining as they may be, aren’t her most popular videos. Her most-viewed YouTube video to date is the 31-minute minidoc about the making of the Truckla. Her second most popular—9.4 million views—is titled “I Locked Myself in My Bathroom for 48 Hours,” which is exactly what it sounds like. Giertz experimented with confining herself to a small space for two days as part of a DIY astronaut training program of her own design. Her third-most-watched video chronicles the last of the astronaut prep sessions and shows Giertz floating around the padded cabin of a zero-gravity airplane flight.

Bathroom captivity aside, these videos would eventually become nods to the kind of projects that Giertz really wanted to spend her time on: long-term builds, products that have an actual purpose and not merely a cheeky one. But among Giertz’s most-watched videos, three others stand out. They’re videos she would never have willingly set out to make. These are titled “I Have a Brain Tumor,” “Back From Brain Surgery,” and, in January 2019, “My Brain Tumor Is Back.”

**In the spring of 2017,** Giertz started to notice that her right eyelid was swollen. A fan on Twitter even commented on it: “What happened to your right eye? It’s like a bump above the eyelid.” A year later, in April 2018, the eye started to ache. MRI scans revealed a noncancerous meningioma growing on the front of her brain. The tumor, which she nicknamed

Brian, was remarkable chiefly because of its size: 4.6 centimeters across.

“Plot twist,” Giertz says in a subdued voice during a YouTube dispatch about the golf-ball-sized growth at the time. “I don’t even like golf. But I like my brain a lot.” Her face crumbles on camera, and she starts to cry, faced with the reality of potentially losing sight in one eye, being paralyzed on one side of her face, or suffering a stroke. By the end of the video, Giertz is joking about eye patch designs and ponders sending the excavated tumor into space.

When I ask Giertz about the decision to go public with her diagnosis, she says she’s “very external” in how she processes things. “I wanted to tell absolutely everyone. Friends, colleagues, Lyft drivers, waitresses—absolutely everyone,” she says. “Seeing how other people reacted to it became a way for me to navigate the situation when I didn’t really trust my own thoughts and feelings.” Her mother echoes this: “I think that was the best thing she could do. Why should you hide something like that? Her audience likes her.” But an internet audience is not the same as a group of real-life friends, something Giertz would become more aware of as her treatment went on.

Also, Giertz might not have anticipated how drawn out the process would become. On the day of her surgery, she chronicled her pre-op jitters, posting a 59-second video just before having her skull cut open, closing out with “I hope you’re having a good day” and her signa-

ture “Byeee.” After a nine-hour surgery (“Shortest day of my life,” she says), Giertz began her recovery process.

Doctors weren’t able to remove the entirety of the tumor, due to its proximity to other critical structures in her head. What remained of Brian grew, and much more quickly than anyone anticipated. Eight months after the surgery, in January 2019, Giertz announced that her brain tumor was back. She had T-shirts made with an imprint of her holey brain and began selling them in an online Teespring store. But it’s clear in the video announcing the tumor’s resurgence that Giertz is crestfallen.

If the campaign for 2018 was to evict Brian, Giertz says, the goal of 2019 was to burn Brian through radiation therapy. This required rounds of treatment that would sap her of energy, making it difficult for the typically healthy, yoga-practicing, meditating, mostly vegan Giertz to even get out of bed. In her non-vlogging moments, Giertz felt vulnerable and alone, despite her many fans expressing support. Her family had flown in for her surgery, and her mother returned for her radiation treatments, but at some point they all went back to Sweden. Giertz had to ask her Bay Area friends, like her main collaborator, Marcos Ramirez, for help.

Giertz’s prognosis is good. But Brian has already altered her life deeply. “When you’re young and reckless, you think you’re never going to need people,” Giertz tells me at the wine-country workshop on that warm day in June. “But that was the first time in my life I’ve really, genuinely needed people.”

In a lot of ways, this required Giertz to embrace a role reversal. “She looks out for everyone on set,” says Laura Kampf, the YouTuber who collaborated with Giertz on the Pussy Grabs Back robot. “She’s always worried that someone is hungry or didn’t sleep enough.” I see this instinct as well. As I continue to meet with Giertz over a period of six months, she starts probing into how I’m doing and at one point says with a straight face that she’s writing a magazine profile on me too.

“There’ve been times when I was working with people, and she’s called me up and said, ‘Hey, when you weren’t looking that person was kind of shitty to someone



→  
Having abandoned  
shitty robots,  
Giertz is now work-  
ing on a video  
series about going  
to space.

←  
Giertz's workbench.



# Did I tell you that my BRAIN HAS FILLED OUT?"

else on the crew, and I thought you should know that," Savage says. "Her values are just never not present in all the things that she's doing."

Giertz lets me sit in on one of her many doctor's visits, provided that I agree not to record audio, take photos, or share the name of her ophthalmologist. (At one point, she texts me, "Asking for a friend: Is it really naive to let a journalist come along to a doctor's appointment?") Most people in the waiting room are octogenarians, and the still-youthful Giertz, in her faded black jeans, blue denim jacket, and ponytail, won't sit unless everyone else has a seat.

After she is moved into an examination room, a doctor comes in and goes over Giertz's most recent scans. Her optical nerve doesn't look stressed, which is good, he says. The internal swelling has gone down, and he doesn't see evidence of persistent pressure on the nerve. The bigger concern is long-term damage, something Giertz has mentioned before. She doesn't know, and might not know for a decade, whether the tumor and subsequent radiation will have a lasting effect on her hormones and pituitary gland.

The doctor says he's going to run through some additional procedures today, to determine if Giertz's eye might offer up other subtle indicators of what her long-term recovery will look like. While the doctor and a nurse are examining the scans, Giertz turns to me and says, "Did I tell you that my brain has filled out?" as casually as if she had told me she was thinking of taking next Friday off, or that her neighbor had adopted a puppy. Recent scans show that there's been regrowth in the chunk of her brain that had been pushed aside when the giant tumor had taken up residence in her eye vault. "One side is still a little floofy," she says. "But I was so, so happy."

**In July 2019,** Giertz shared a blog post on Patreon explaining why she was no longer making shitty robot videos. Her energy had been limited since her surgery, she wrote, "so I have tried my best to only spend it on things I really want to do. And for now, that has not been shitty robots." I

**Giertz says, as casually as if she had told me she was taking next Friday off.**

ask her whether Brian helped mark this turning point for her. The answer is yes, but also no. Even before the brain tumor, Giertz says, she was starting to feel like "it was harder and harder to come up with ideas. I was always concerned that it was eventually going to be like beating a dead horse, and that the joke was going to be over and I didn't have anywhere else to go."

Abandoning shitty robots was definitely detrimental to the success of her channel, she says, as beneficial as it may be for her well-being. Giertz has never really succumbed to the pressures of the internet content machine. She publishes her YouTube videos weeks, sometimes even months, apart from each other. A video with millions of views is sometimes followed by one with a few hundred thousand. Her Patreon dispatches are slightly more consistent but take different forms. Sometimes they're videos. Sometimes they're simply blog posts, like the one explaining why she wasn't building shitty robots anymore.

"She's doing it exactly right," Kampf says. "I think the brain tumor slowed her down, but it made the community around her so much stronger, and I think she's completely unattached from the pressure of uploading on a regular basis."

Giertz acknowledges that there are plenty of creators who produce more than she does, and that she may be sacrificing views in exchange for what she

calls a healthier relationship with YouTube. Basically, by not producing as many videos, YouTube's system may not be bubbling her videos to the top of watch lists as much as it would for creators who post a video every week, or even every day. "The algorithm, it's a black hole," she says.

She won't say much else about YouTube, even as the platform faces continuing scrutiny for facilitating the spread of misinformation, toxic content, and harmful videos, and for its management (or mismanagement) of all of the above. "I think social media platforms are trying to be responsible, but there are also definitely instances where they try to make it seem like they're being responsible, and for revenue or profit they're doing another thing," Giertz says cryptically.

In the car on the way back to San Francisco from her doctor's appointment, Giertz asks me if she can read aloud a draft of something she's been working on. She's nervous about it, she says, and later she'll corner a top newspaper executive at a media confab to try to convince him to print it. It's an open letter to YouTube creators, urging them to reconsider taking sponsor money from fossil fuel companies. Giertz won't call out the YouTubers by name, but she'll speak candidly about what she sees as hypocrisy at a systemic level. "Oil companies trying to convince us that they're green is the gaslighting effort of the century," Giertz tweeted in November.

Every time I talk to Giertz, she's hatching plans. One day over lunch in San Francisco, she is forlorn because the shipments of her Every Day Calendar—a habit-tracking wall calendar that raised more than half-a-million dollars on Kickstarter—arrived at her workshop damaged. She plans to ship them to customers in December, and her old fear of failure has let itself in again. A few weeks later she tells me she's going to build a coffee table made of matchsticks. (When it reaches the end of its useful life, you can just light it on fire.) When I call her again in October to ask about her post-Truckla plans, Giertz head fakes and tells me about her puzzle project. She's building a solid white puzzle with one piece missing, which she wants to ship to provoke the cringey feeling creators have when something is incomplete. The puzzle box reads, "499/500 pieces included."

All of these embody what Giertz calls exploratory building—a grown-up version of playtime. I get the sense that they're important to her, fulfilling that inner drive. I also get the sense that they're projects to fill time while she's incubating bigger ideas. Like Truckla.

Her Truckla project has been, by almost all metrics, a success. At nearly 10 million views, it's her most popular video to date. More important, it proved that a new formula was feasible for Giertz; that she could invest as long as a year on a project and people would respond to it all the more. Even Elon Musk, who has trailed Giertz in his efforts to launch an EV pickup truck, took note of the video. He invited her to his own "Cybertruck" unveiling in late November.

It was all so encouraging that for a while last summer, Giertz flirted with the idea of moving to Los Angeles to launch

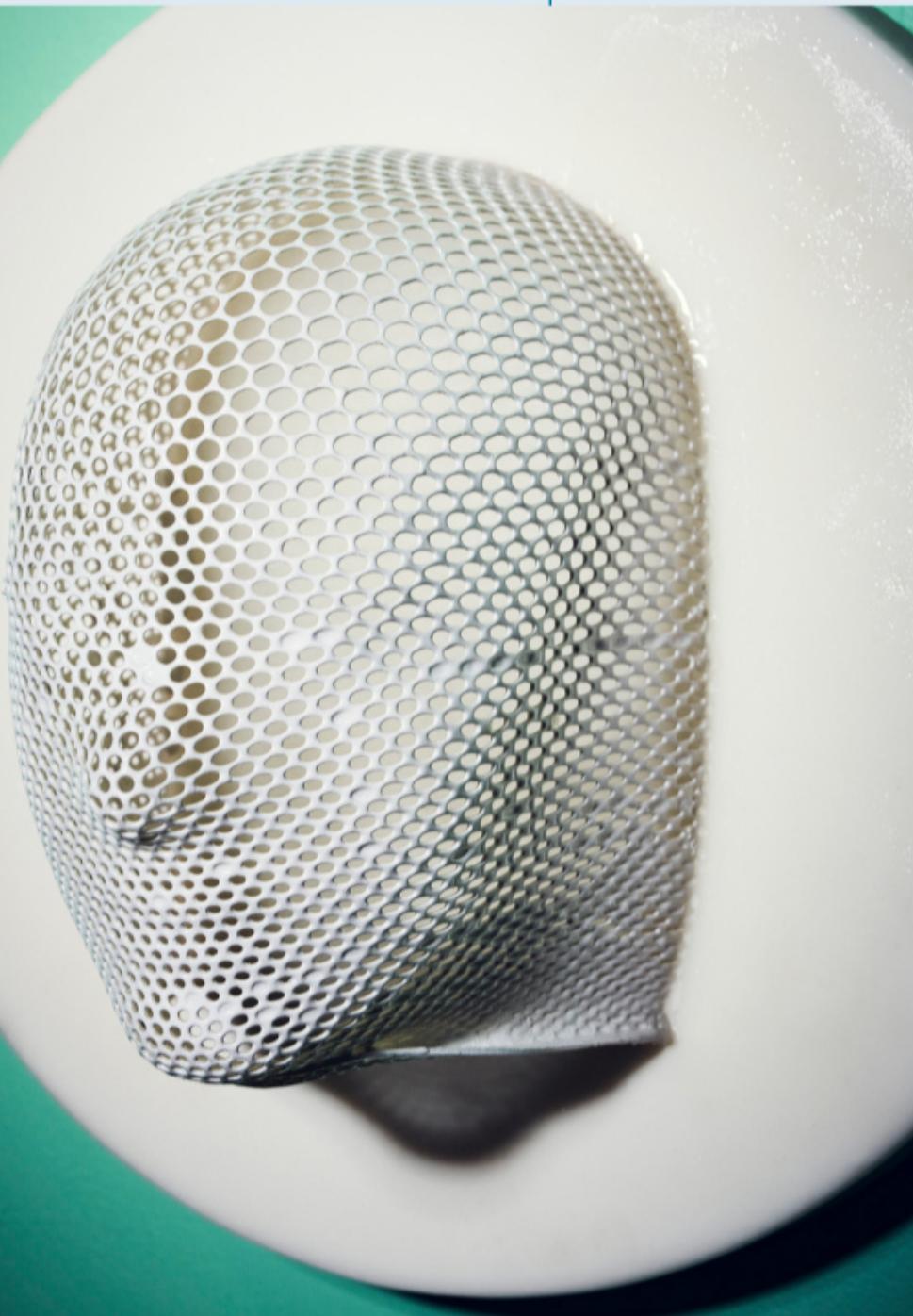
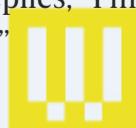
a video series about building cars, almost ditching her San Francisco workshop for a much larger space in Tinseltown. Later, she scrapped that idea as she set her sights on something even bigger. Now she's in contract negotiations with a media company—she refuses to say which one—to make a TV show in space.

Or ... at least a TV show *about* space. Giertz alternates between saying "about" and "in" when she's talking about the show she wants to make. I point out that the preposition matters. Will she film this TV series from orbit? Or would the videos just chronicle what it might take to get there? Hopefully both, she says.

This thread of space exploration has been running through her work for years: the DIY astronaut training, the zero-gravity flight, locking herself in confined spaces for days, publicly fantasizing about blasting her brain tumor into orbit. I ask her why going to space captivates her so much. "Because it's such a worthy goal," she says. "I started studying physics because I wanted to be an astronaut. Now I want to show a flawed human going to space."

For the new Simone Giertz, accepting her own flaws and embracing grand, non-shitty designs are of a piece. "There are so many things that are amazing that are not perfect. And there are so many things that are perfect that are fucking boring," she says. "Perfect is a corset. It doesn't let you breathe. It doesn't let you roll around. It's a small pen to be in."

Space is pretty much the opposite of all that (notwithstanding all those confined capsules). For Giertz, getting there is more a matter of when than if. When I ask if she has a planned timeline for lift-off, she replies, "I mean, I have time next weekend."



# PHONE CALL

THE



# FROM HELL



BY VINCE BEISER



Afghanistan combat veteran Jared Johns found out too late that swapping messages with the pretty girl from a dating site would mean serious trouble.

If only he had known who she really was.



PHOTOGRAPHS BY CAROLYN DRAKE



# IT REALLY WASN'T

much of an exchange. Jared Johns had met a young woman on a dating site, swapped messages, and sent her a photo of himself in a baseball cap. She'd responded with one of herself, lying down in a lacy bra. Jared grinned as he typed out a message on his iPhone's scuffed screen.

"I'm a us army veteran I'm a father of two.. 3 if you count my dog," Jared wrote. "I just got out of a relationship with my youngest sons mother and I'm looking for friends to hang out and chat with and maybe more later."

"Sound interesting well I'm originally from Myrtle Beach and now live in Greenville with my parents. I'll be 18 in a few weeks," replied the girl.

They swapped a few more messages; she asked Jared how old he was and he told her he was 24. Then he pocketed his phone and got on with his day. That brief conversation turned out to be the worst mistake of Jared's life.

In their exchange, Jared sent a photo of himself in a baseball cap; in return, he got a photo of an attractive young woman. Previous page: Jacob Johns, in the window of his mom's house.

**J**ared had wanted to be a soldier ever since he was 7. That's how old he was on September 11, 2001, when he saw the Twin Towers collapse in smoke and fire on television and heard President George W. Bush declare that America was under attack. That day, Jared turned to his family and announced that he was going to join the Army when he grew up, just like his grandpa and his uncles.

That wasn't an unusual ambition in Jared's hometown of Greenville, a river-side manufacturing city in the foothills of western South Carolina. Still, Jared wasn't exactly the most macho type by the time he hit high school. He loved chorus, and many of his friends were gay. "We can be manly, but also we have a feminine side," says his twin brother Jacob. "We got bullied because of that."

While Jared was still a lean, mop-topped high school junior, a friend joined the Army and was sent to Afghanistan. Just 19 days into his deployment, the friend was killed by a roadside bomb. Half the town turned out for the funeral.

"Please don't go!" Jared's mother, Kathy Bowling, begged him. "This is why I don't want you to go!"

"This is why I *have* to go," he told her.

Two months after he graduated, in May 2012, Jared packed his bags to join the Army. In his spare time during training, he recorded videos of himself in his camouflage uniform, singing pop songs and Christian hymns, which he uploaded to his YouTube channel. He was deployed to Afghanistan less than a year later, manning a .50-caliber gun atop a Buffalo, a moving-truck-sized armored vehicle.

Jared had wanted to see combat, but the reality of it hit him harder than he'd imagined. He was terrified one night when his base came under rocket fire. Two of his buddies were blown up in a truck. But that wasn't the worst of it. Jared told his brother about one particular firefight where he was blasting away with the .50-caliber gun. "I don't know for sure, but I might have killed a child," he told Jacob. He didn't want to say much more about it.

After a patrol in Kandahar Province one day, Jared injured his back while getting off the Buffalo. He was flown to a hospital on a

# The caller said he was a police detective. He'd been contacted by Caroline's parents, who were outraged that Jared had sexually propositioned their daughter.



base in Germany. There, the doctors put him on painkillers and told him he couldn't go back into combat. After barely six months in the field, he was done as war-fighter.

Stuck on base, his ambitions crushed, Jared started coming unglued. He hit the bars every night, drinking heavily. He got a local woman pregnant. He was caught driving drunk and confined to barracks. He made a clumsy suicide attempt with pills, which got him placed in psychiatric care for a few days. By October 2015 he was discharged and back home in Greenville.

Though his parents, sister, and two brothers gave him a hero's welcome, Jared was lost. "All my life I wanted to be a soldier, and now I can't do that," he told Jacob. "I just feel worthless." He bounced from job to job and between his divorced parents' houses. As the months went by, his once muscular physique turned soft. Jared had nightmares and occasional panic attacks and got into bar fights. He was diagnosed with PTSD and prescribed antidepressants. Stuck for a job, he bought a Jeep and started driving for Uber. Over Kathy's objections, he also bought a stubby black 9-mm pistol to keep in the car, for protection.

By mid-2018, though, things were looking up. He was dating a local girl. He had a dog, a lively German shepherd he called Tex. He'd landed a great job for a chatterbox like him, selling phones and internet service plans at the local AT&T store, and he and Jacob had moved into an apartment with a balcony overlooking the complex's pool. The brothers would cook, watch football games, stream Netflix with their girlfriends. Once a week they'd have dinner with their mom and then go into town to drink tequila and sing at DT's, their favorite karaoke bar. Just about every time, Jared would wail through his three signature songs—"Drops of Jupiter," "Bohemian Rhapsody," and "No Diggity."

Though he and his girlfriend didn't mean to get pregnant, Jared was overjoyed when his son Jaxon was born. He stopped taking the antidepressants; he wanted to keep his head clear to be a good dad to the baby.

Before long, however, Jared split with Jaxon's mom. Suddenly he was a part-time single dad, fighting regularly with his ex. He turned to Tinder and soon started seeing a young woman whom I'll call Lisa—



When the twins were small, Jared (left) was the outgoing, talkative one; Jacob (above, wearing Jared's Superman shirt) was more quiet, subdued.

she doesn't want her real name published. But from time to time, he still cruised dating sites, and in early September he came across the pretty blonde who said her name was Caroline Harris. The two chatted on the dating app. When she said, "I'll be 18 in a few weeks," he replied, "Oh that's cool when will you be 18?"

"On the 15th."

"Of September" he asked.

"Yea," she replied. "How old are you"

"Oh ok are you still in high school? And I'm 24."

That was the end of the conversation.

On September 10, Jared had the day off, so he washed his dog, then ran some errands with Lisa. A little after 6 pm, the two were settling into his Jeep Cherokee, making their way back from Walmart, when Jared's phone rang. He didn't recognize the number. Puzzled, Jared stuck an AirPod in his ear and answered.

The caller identified himself as a police detective. He'd been contacted, he said, by Caroline's parents, who were outraged that Jared had sexually propositioned their underage daughter. They wanted Jared arrested, but the detective suggested he try to work things out with the parents directly. The man on the phone gave him a number to call. Jared was bewildered and shaken. He told Lisa about the girl, and about the caller. He said he didn't think he'd done anything wrong—but if he hadn't, why the hell had a cop just called him? He thought it had to be some kind of misunderstanding.

He called the number and got a man who said he was James Harris, Caroline's dad. Caroline's mother, the man said, was furious and wanted to press charges.

Jared started to panic. Had he written something explicit while on the dating app and forgotten about it? If he had Caroline's picture on his phone, would that be enough to be charged with soliciting a minor or possessing child porn or something? If he were convicted, could he be barred from seeing his two sons—the one in Greenville and the one in Germany? Could he go to jail?

As soon as they got back to his apartment, Lisa watched as Jared Googled the number for the call he got in the car; sure enough, it was a number for the local police department. Leaving Lisa in the living room with Jaxon, Jared retreated to his bedroom

and texted the Harrises' number. A person who said she was Caroline's mother wrote back. At a minimum, she told Jared, he would need to reimburse them for the cost of canceling Caroline's cell phone contract, which they had done to punish her. Jared could either pay them \$1,189 or take his chance with the police. When he came back to the living room, he was distraught. "There's nothing they can charge you with," Lisa assured him. "You didn't say anything sexual." But Jared was badly rattled. He told her that he wasn't feeling up to the game night they had planned.

Throughout the evening, Jared called and texted back and forth with Caroline's parents, trying to talk them down or at least figure out what evidence they had. "Mam I really don't remember talking to your daughter and I'm really sorry for all the trouble and if I knew she was under age I would never willing ask for explicit photos. Of a minor. I have two kids of my own ... I understand where you are coming from," he wrote to Mrs. Harris. "Is there a text where I asked for a explicit photo?"

"Son you plainly read where she said she wasn't of age ... so you can't say you didn't know," came the reply. She added: "I'm not going to sit here and bicker about this ... I'd rather let the police take care of it."

Jared couldn't sleep that night. By the morning of September 11, he was terrified. "I won't be able to go to my kid's soccer games, because I'll be a registered pedophile," he whimpered to Lisa, tears in his eyes. Lisa was sympathetic but had to leave to get to her job. "Don't go to work today," she told him. "Take Jax to his mom's place. I'll come back. We'll ask somebody for help."

Jared took her advice. Partly. He called in sick, dropped off Jaxon, and drove back home. On the way, he called his mother and told her he was feeling unwell. Lie down and take it easy, she said. He parked the Jeep, took out the pistol, and climbed the two flights to his apartment.

Jared had texted the Harrises, asking if they could talk. At 11:59 am, he got a response from James. "I don't see where we have anything to talk about," it read. "You know what you did you saw the picture of yourself the picture of my daughter." The text continued: "You know I really don't hate it for you because you knew what you was

doing I hate it for your two kids."

"So what are you saying?" wrote Jared.

"She is going to the police and you are going to jail."

**D**oug Fodeman could have reassured Jared. For years, Fodeman has been hearing about calls just like the ones that had been terrifying Jared. Along with a friend, the 64-year-old Massachusetts grade school educator started a website called [TheDailyScam.com](http://TheDailyScam.com) in 2015, after Fodeman's son and mother were both hit up by con artists. His son was pressured to fork over thousands of dollars, ostensibly to help a recently widowed woman get a wheelchair for her disabled son. Fodeman's mother was suckered out of \$900 by a caller who said he was her handyman, and then claimed he had been arrested and needed bail money. Fodeman, who teaches internet safety to his students, figured even if the police couldn't do much, he could at least try to warn other people. So he set about building a simple, text-heavy WordPress site where he details the seemingly infinite abundance of online rip-offs, along with advice on how to detect and avoid them. (The site is basically a labor of love. "We hoped it would become a business, but we found that no one would pay!" Fodeman says. "But I get lots of heartfelt thanks, so I figure it's the right thing to do.")

Since late 2016, more than 800 men—some of them service members—have contacted him, each with a story of an "underage girl" shakedown. Sometimes a fake cop would call first, sometimes a fake parent. The "parents" would say they wanted to be compensated because they had damaged a computer fighting with their daughter (or son—some scam victims were gay men) or had smashed her phone. Or to cover therapy because the whole incident was so traumatic. Often one payment led to another: If a victim handed over a few hundred bucks to cover, say, a broken cell phone, the scammers would soon call again to say the girl now needed expensive medical treatment because she had tried to kill herself. In at least one case, the scammers squeezed about \$1,000 out of a mark to pay for a non-existent girl's funeral.

Many targets realized it was all a con, but plenty of others didn't—or were suspicious but paid anyway because they were so scared. They followed orders to send the money via Western Union, PayPal, Walmart, and other cash transfer services.

Fodeman began collecting all the material he could from everyone who contacted him and posted much of it—text messages, photos, even recordings of the scam calls—on his website, to help other potential victims. He also passed everything along to a sympathetic FBI agent he eventually connected with.

Meanwhile, a number of service members were also reporting shakedown calls to military investigators and police. Taken individually, each case probably would have been too trivial to motivate law enforcement to do much. But eventually, their sheer numbers started to get the attention of authorities. According to documents I obtained from the Naval Criminal Investigative Service, a variety of federal agencies, including the NCIS and its counterparts with the Army and Air Force, began investigating reports of the underage girl scam in 2015. The FBI eventually ceded its investigation to the NCIS, handing over the information it had gathered from Fodeman and other sources.

It's easy to write off online scams as penny-ante crimes, small-time rip-offs that infuriate and embarrass victims but don't do them serious harm. But the pain they inflict can be devastating. On December 12, 2016, Douglas Ross, a 31-year-old warehouse worker in Delaware, sent his mother a text saying, "The site said you had to be 18 to be on. There profile said they were 22, there was an incident parent's got involved said she was only 15. I can't go to prison. I'm sorry I didn't know." Then he lit a charcoal grill on the back seat of his car and suffocated on carbon monoxide fumes.

Doug Fodeman estimates he's heard from at least 40 victims who have contemplated suicide. "I've talked several off the ledge," he says. Fodeman put me in touch with one of them, a 29-year-old man in Tennessee who doesn't want his name published. "I've never been in any trouble with the law besides a speeding ticket," he told me. "I was thinking, 'If the police come, I'll end it.' I was terrified of going to jail."

## **By the morning of September 11, Jared was terrified. "I won't be able to go to my kid's soccer games, because I'll be a registered pedophile," he whimpered.**

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Jacob got home from work about 6 o'clock on September 11. Jared hadn't called him all day, which was weird; they usually talked to each other constantly. Tex, Jared's German shepherd, came running up to him as soon as he walked in, barking furiously. Also weird. "Hey bro, you home?" Jacob called. There was no response. Then he saw the note on the whiteboard in the entryway. "I'm sorry," it said. "I've messed up I love you all this isn't what I wanted Tell my sons I was a Good man love Jared."

Jacob bolted to Jared's door; it was locked. He fumbled a key from his pocket and burst into the room. Jared lay on his bed, wearing a mint-green T-shirt, propped up by a pillow, his face gray. For a second Jacob thought he was taking a nap. Then he saw the gun in Jared's right hand and the blood all over the wall.

Jared had shot himself within minutes of the final text from James Harris. *She is going to the police and you are going to jail.* He died at noon.

Dozens of Jared's friends and family—siblings, parents, nieces, nephews, and Jaxon—came out for his funeral a few days later, filling the local church where Jared's body lay in a flag-draped open casket. Jacob, his voice hoarse, sang "Drops of Jupiter." A squadron of local veterans on motorcycles bedecked with the Stars and Stripes escorted his hearse to the cemetery.



Jared's extended family in Greenville, South Carolina, includes, from left, his brother Bryan, young stepbrother Evan with Kathy's husband Gary, Kathy (his mom, in pink) with stepsister Evie, Jacob, Kevin (his dad), and sister Kimilee.





If Lisa hadn't been with Jared on his last night, it's quite possible no one would ever have realized what had helped push him over the edge. Jacob called her about an hour after he'd found Jared's body. She rushed over to their apartment. Cops and coroners were scouring the place. Jared's relatives were wandering around in shock. Kathy, his mother, was hysterical. Jacob had retreated to the pool outside. Lisa found him and said, "I have to tell you something." She explained about the calls and texts. Jacob told the police and, the next day, his parents.

It was only a couple of weeks later, when the cops returned Jared's phone, that the family saw the suicide video Jared had recorded. The phone shook in his hand as he pointed it at his weeping face. "I love you so much, Mom. I love you so much, Dad," he says. "I messed up, and I'm so sorry. I can't live my life the way it's gonna be if I keep living."

Alone the next day, Kathy dug through Jared's phone and found the texts from James Harris and his wife with their demands for money. Kathy's grief mutated into rage. She fired off a couple of texts of her own. "This is Jared Johns' mother. I need to speak to you," she wrote. "He can't speak to you anymore because he's dead. He took his own life. Did you have a clue that you were dealing with a 24-year-old veteran that had fought Afghanistan and was very much dealing with PTSD? So your threats of him going to jail and how much he messed up really freaked him out ... I hope [your daughter] knows what she's done in her part here too because I'll find out who she is ... Shame on you and your wife and your daughter for doing this to him. I hope he haunts you."

Within half an hour, she got a reply. "I'm sorry for your lose ... plainly he should not have been texting my underage daughter. I spoke with a detective today and explained what was going on so please don't have me contact him tomorrow about your threats."

When Jacob got home from work, he saw the whiteboard with Jared's note and ran to his brother's bedroom door.

## "I went down on my knees and started screaming," Kathy says. "It was so unbelievable."

Kathy responded with pictures of Jared in his coffin and 17-month-old Jaxon at his funeral. She got no reply.

In early October, the *Greenville News* ran a heart-wrenching piece about Jared's life and early death. Kathy texted the link to "James Harris" and added a PS: "I hope you feel like shit."

Again there was no reply. But a few days later, Kathy received a Facebook message from someone calling themselves Angel Amongus. "You don't know me, but I know you are grieving," the message said. "Someone who knows why Jared took his life has asked me to contact you for them because they are unable to do so ... He doesn't know you or your son, but the people who caused Jared to do what he did told him all about it. He is willing to help you to prosecute these people but will need protection from them."

Kathy was frightened, but she wrote back. She had already begun to suspect things were not as they appeared—why else all the insistence on money? Sure enough, over a series of messages, Angel Amongus revealed that there was no Mr. and Mrs. Harris. But this was no garden-variety con job, Angel explained. The scammers, like the anonymous informant himself, were prisoners in South Carolina's Lee Correctional Institution.

"I went down on my knees and started screaming," Kathy says. "It was so unbeliev-

able." She immediately called Jared's dad, Kevin. "Our son was scammed by fucking prisoners!" she howled.

Jared could never have been prosecuted for propositioning Caroline, for the simple reason that she didn't exist. The pretty teenage girl Jared thought he was flirting with was, according to charges later filed by local authorities, two thickset, middle-aged, male inmates working contraband cell phones. Jared, it turns out, was just one of hundreds of US military service members and veterans suckered by a massive wave of catfishing scams launched from South Carolina correctional facilities over the past few years.

From fake Nigerian princes to fake bank security messages, scams often have long histories. They are passed along by word of mouth, propagating through time and space like viruses, mutating in response to new conditions. Prisoners have been catfishing people into an "illicit" relationship with a nonexistent lover, and then blackmailing them, since at least the 1990s. Back then, inmates would post personal ads in gay magazines, strike up a sexy snail-mail correspondence with men who responded, and then extort the ones who admitted they were closeted. (John Grisham reprised this idea in his 2000 potboiler *The Brethren*.)

In the digital age, the "underage girl" version of this ruse has popped up many times—as Fodeman's archives show—in many parts of the country. It isn't clear how it started spreading among South Carolina prisoners, but what is clear is that since at least 2015, lots of inmates have tried it on lots and lots of people on the outside, especially vets and active military members. Victims have posted their stories about how they almost fell for the scam on Reddit, YouTube, and elsewhere.

Military investigators have caught a number of scammers by following the money. They've tracked victims' payments to Walmarts and other pickup spots, then used surveillance footage and cash receipts to identify and interrogate the people who collected the money. Under questioning, some of them admitted they were working with inmates. Authorities also ran money mules' names against JPay records, a service

## At least 442 service members across almost every branch of the armed forces had been conned—by prisoners—out of a total of more than half a million dollars.

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that provides financial transfers to prisoners. When they found prisoners who were receiving large contributions from those civilians, they had their answer.

The investigations led to a few minor indictments. But none drew much attention until November 2018, when federal prosecutors charged five men locked up in South Carolina prisons, along with 10 outside accomplices, with running the scam on an astonishing scale. At least 442 service members across almost every branch of the armed forces had been conned out of a total of more than half a million dollars. (Three of the prisoners pleaded guilty; the other two are awaiting trial.)

Service members and recent vets are often young and subject to military discipline, both of which can make them especially vulnerable to scammers. "They targeted military members because they could threaten them with getting kicked out of the service," says Rhett DeHart, one of the assistant US attorneys prosecuting the South Carolina prisoners. "They'd play on the idea—I'll talk to your commanding officer, you're going to be in a lot of trouble."

These scams are just the latest manifestation of a major threat that authorities just can't seem to get a handle on. Prisoners, of course, are forbidden from having private cell phones—but there is a booming trade in black-market mobiles behind bars. Phones are smuggled in food shipments, with med-

ical supplies, and in the pockets of corrupt prison staff. Ten years ago, I wrote a feature for this magazine about how prisoners were using cell phones for everything from taunting their victims to ordering murders. Since then, the problem has only grown worse. Authorities confiscate tens of thousands of phones every year—and those are just the ones they find.

Inmates do use phones to report abuses and human rights violations to journalists and others on the outside. More often they just want to call their families and friends without prison officials listening in. But they can also put the devices to terrifying use. In Alabama, prison extortionists have sent menacing texts and photos to other inmates' relatives, threatening to rape or murder their fellow prisoners unless the family pays a ransom. In Georgia, a baby was killed in a shooting allegedly ordered by an incarcerated gang leader via phone. In California, 16 members and associates of the white supremacist Aryan Brotherhood prison gang have been charged with using phones to direct murders and drug trafficking throughout the state.

"Cell phones in prisons are the number one public safety problem in America," says Bryan Stirling, director of the South Carolina Department of Corrections. He can be forgiven for sounding a tad hyperbolic, given the history of phone-related mayhem in his state. The catfishing scams are just the tip of the iceberg. In 2010 a correctional officer was shot six times in his home in an attack directed by a prisoner via a cell phone. In 2018, a massive prison riot partly sparked by, spread with, and filmed via cell phones left seven dead.

Stirling took me on a tour of the Broad River Correctional Institution, a maximum security prison in Columbia, to show me the lengths to which his department is going to combat contraband cell phones. The entire sprawling facility is surrounded with 50-foot-high wire nets, the kind you see at golf course driving ranges, to prevent people from throwing phones over the old barbed-wire-topped fences. Trucks patrol the perimeter equipped with hardware to detect drones, which have been used to air-drop mobiles. Airport-style metal detectors are in place at all entrances. In the corridors and common areas inside, 6-foot

metal-detecting poles are scattered around. Despite all that, just a month after my visit, a child rapist locked up at Broad River was caught harassing a young woman on Facebook. A few days after that, a sweep of the prison turned up 36 contraband mobiles.

"We're spending millions to control the problem," Stirling says. "But it's like water. They'll find a way to get phones in."

Stirling is one of many correctional officials who have argued loud and long that the solution is to simply jam the signals of unauthorized phones inside state and local prisons. That seems like an obvious move, but it's actually illegal. The Communications Act of 1934 stipulates that only the federal government is permitted to interfere with radio communications—which includes cellular traffic. For years, correctional and law enforcement officials and members of Congress have been pushing to get the rule changed. The telecom industry, however, has successfully lobbied against all such attempts to interfere with their business. "Jammers are very imprecise," says Patrick Donovan, until recently the senior director of regulatory affairs for the Cellular Telecommunications Industry Association. Deploying them in prisons could interfere with calls and GPS service to legitimate customers as well as police and firefighters, he says. (Recent research, however, casts doubt on that notion.)

Last year, the cellular association set up a task force to assess jamming options and explore other technological solutions. Some prisons are now experimenting with technologies known as managed-access systems, which are supposed to allow only signals from preapproved mobile numbers to reach the cellular network. They perform well in tests for the most part, but less so in the real world. In fact, a \$1.5 million managed-access system was up and running at Lee Correctional in 2018. And yet the men who conned Jared apparently had no trouble getting through to him.

**A**fter Kathy told Jared's dad about Angel and the Facebook messages, the two agreed that he should be the one to talk to the inmate. Kathy sent Kevin's number to Angel and, pretty soon, he got a call from a prisoner.

"Tell her to quit texting these guys. They don't play," he said. He then offered to provide the scammers' names—in exchange for getting his own case reopened. Kevin called the Greenville police and the Army's Criminal Investigation Division and told them about the proposition.

In February, under the guise of a fake medical appointment, an Army agent had the informant moved from prison to a police office, where he could be interviewed without tipping off other inmates that an investigation was underway. The scam, the informant told the agent, was known as "johning." Spoofing the phone number was easy, he explained; scammers just needed to download Caller ID Faker or one of several easily available apps.

The culprits in Jared's death, he said, were John William Dobbins and Carl Richard Smith. Dobbins, a 59-year-old, 5'6", 185-pound high school dropout with a graying goatee and blue eyes, was serving time for his third meth conviction. Smith, 43, is a little taller and a little heavier, with a stubbly brown mustache. He has several drug offenses on his record but is currently locked up on an assault and battery charge for shooting his girlfriend in the face. Neither were among the five prisoners already facing federal charges for running the same scam.

Since Jared wasn't an active-duty soldier at the time of his death, the Army agent kicked the case back to the Greenville PD. A detective, James Lee-Wood, went to talk with Dobbins and Smith, who were cell-mates at the time. According to police records, both said they had heard of "johning" but insisted they weren't involved with any scams. Dobbins told Lee-Wood he had "nothing to do with" Jared's death, cautioning the detective that he was messing with the wrong people.

The evidence Lee-Wood and his colleagues slowly pieced together, however, seemed to tell another story. Phone company records showed that at least one of the mobile numbers used to contact Jared was pinging off a cell tower near Lee Correctional. Thousands of text messages and phone calls to and from both numbers that had called Jared showed they had also been used to contact family members and associates of Dobbins and Smith on the out-

side. There were also texts instructing other apparent scam victims to send money via Western Union and other services to people connected with Dobbins. One of the cops remarked that Dobbins appeared to be running new scams even after police had interviewed him about Jared's death.

In May, Greenville's chief of police convened a press conference to announce they had cracked the case: They were charging Dobbins and Smith with the blackmail and extortion of Jared Johns. Those charges could get each of them an additional 10 years behind bars. In a video posted to Facebook later that day, Kathy said through tears, "He may have been holding the gun, but it feels like they were the ones who took his life."

Smith and Dobbins are still awaiting trial as of this writing. Smith did not respond to several letters I sent him in prison, but has pleaded not guilty. "My client feels terrible for the family," his lawyer said. Dobbins is currently out on parole, and I reached him on his phone. After asking me if he could get paid for an interview (no, he couldn't), he said, "I didn't even know about it until the police came and started talking to me." The man who fingered him and Smith, he speculated, was just looking to get his own sentence reduced by helping the cops. Dobbins said he might have used a contraband cell phone once or twice while he was locked up—everyone does, he said—but as for the catfish scam, he said, "I didn't have anything to do with that. Hell, I'm 60 years old. That sounds like some shit kids would do." Having two sons and four grandchildren of his own, he said, the accusation that he contributed to the death of someone else's son pains him. "I can only imagine what [Jared's mother] is going through," he said. "Lord have mercy. I mean, she lost a son."

**W**hatever happens to Smith and Dobbins, Jared's family will never fully recover. Jacob lost his job after Jared's death because he was too distraught to function at work. He has nightmares every night and has had suicidal thoughts of his own. It's especially rough when Jaxon mistakes Jacob for his daddy. Kathy is so consumed with grief at times, she says, she can't cope with the basics of

**"Those men were behind bars, but they were able to bully and shame and scare my son to death."**

everyday life. She has developed ulcers she blames on the stress. She's so afraid of the scammers that she's started carrying a Taser. Kevin keeps a gun on his nightstand.

One thing that does keep both Kathy and Kevin going is advocating for prisons to be allowed to block cell signals. "Those jammers should have been put in a long time ago," Kathy says. "Those men were behind bars, but they were able to bully and shame and scare my son to death." In March, several members of Congress introduced twin bills that would allow correctional facilities to jam cell phones. Kevin and Kathy are hoping to join Bryan Stirling in testifying in support of it. Neither bill has made much progress.

Meanwhile, in November, South Carolina authorities indicted more than 50 people for involvement in a drug trafficking ring run from state prisons via contraband cell phones. And a couple of times a week, Doug Fodeman at TheDailyScam.com gets contacted by frightened men, asking for help because they seem to have gotten into serious trouble with a pretty young woman they met online. ■

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Kathy with Jared's military uniform.

THE

# GOSPEL

OF

# WEALTH

ACCORDING TO

MARC

BENIOFF

THE SALESFORCE FOUNDER HAS DONATED A FORTUNE TO RIGHT CAPITALISM'S WRONGS, AND HE THINKS HIS FELLOW BILLIONAIRES SHOULD TOO. WHY CAN'T WE JUST BE GRATEFUL?

BY CHRIS COLIN

ILLUSTRATIONS BY JOHANNA GOODMAN



# MAYBE

**every period seems** dark from a certain angle; maybe the autumn of 2018 was extra murky. Mark Zuckerberg was answering for Facebook's latest security breach, CBS chief Les Moonves had recently resigned amid sexual misconduct allegations, Google CEO Sundar Pichai had been disputing the EU's record \$5 billion fine for antitrust violations. The righteousness of powerful businessmen had been looking extra iffy, but in San Francisco change was coming. ¶ A municipal election approached. Amid an unremarkable assortment of ballot initiatives was one that, on its face, also looked unremarkable. The Homelessness Gross Receipts Tax Ordinance, or Proposition C, sought to stem the city's spiraling homelessness problem by raising taxes by an average of half a percent on big companies—tech ones, most prominently. Doing so would bring in up to an estimated \$300 million a year for various initiatives, from new beds in shelters to expanded mental health services. In the way certain votes do, Prop. C struck many as a referendum on good versus evil: not just a means of addressing San Francisco's housing emergency but a shot across the bow of the booming industry that was partly responsible for it, and perhaps across capitalism-as-usual.

Enter Marc Benioff, founder and co-CEO of Salesforce, the city's largest employer. Declaring that "our city is in a crisis," he threw his full support behind the measure that promised to take his company's money. He publicly outflanked the city's ostensibly liberal mayor, London Breed—who opposed it on grounds that the measure didn't allow for enough accountability—and pledged upward of \$2 million to the Prop. C campaign. But it was on Twitter that Benioff truly went to town. "As SF's largest employer we recognize we are part of the solution," he declared on October 9.

Jack Dorsey, cofounder and CEO of Twitter and founder and CEO of Square, surely still smarts from what followed.

"I want to help fix the homeless problem in SF and California. I don't believe this (Prop C) is the best way to do it," Dorsey replied. "Mayor Breed was elected to fix this. I trust her."

Maybe Dorsey hadn't spent much time on Twitter. In 279 characters Benioff calmly eviscerated him.

"Hi Jack. Thanks for the feedback. Which homeless programs in our city are you supporting? Can you tell me what Twitter and Square & you are in for & at what financial levels? How much have you given to heading home our \$37M initiative to get every homeless child off the streets?"

In *his* response, Dorsey claimed he was simply following his mayor's strategy for dealing with the crisis; indeed, people who work on homelessness issues have told me the question was hardly open and shut. But this was no time for nuance. The spectacle of two billionaires virtue-squabbling lit up the internet, and the Twitter mob came for Dorsey, hoisting atop its shoulders a triumphant Benioff. Publications around the world heralded a rare instance of C-suite selflessness. One headline read, "Marc Benioff is 2018's Most Woke."

I'd been curious about the 55-year-old software entrepreneur for some time. In addition to his Prop. C efforts, Benioff had spent the previous year running a powerful company (the bulk of Salesforce's revenue comes from its cloud-based customer relationship management software); he'd overseen annual revenue growth of more

than 25 percent; and he'd written his fourth book, *Trailblazer*. For San Franciscans, the 61-story Salesforce Tower visually dominates the city, as does Benioff's name—there it is on buildings, in headlines, and now on the masthead of *Time* magazine, the world's biggest newsweekly, which he purchased in 2018 with his wife, Lynne. But these are the kinds of adrenalized and quasi-random achievements we expect of our tech billionaires. What piqued my curiosity about Benioff was his upending of the genre altogether.

On the surface were superficial departures. Where the modern tech-billionaire template reflects a certain nerdy abstemiousness—slender Paleo physique, bio-hacked sleep program, the whiff of a cryo appointment earlier that day—Benioff, 6'5", playful and feisty, calls to mind a big old bear. (Metallica's Lars Ulrich told me he longs for a milk crate when his large friend comes in for a hug.) Chief among Benioff's distinguishing characteristics, though, is his incessant public munificence, emphasis on incessant, emphasis on public.

Scarcely a month goes by without another grant, another ribbon-cutting, another broadside against complacent CEOs. He and Lynne gave \$250 million to build UCSF Benioff Children's Hospitals in San Francisco and Oakland. Between 2017 and 2019, Salesforce and the Salesforce Foundation gave away about \$130 million, and the Benioffs personally donated nearly \$200 million in roughly the same time period. Via large individual and company donations, a philanthropy-centric business model, and a general irrepressibility on social issues, Benioff has set his sights over the years on homelessness, oceans, public schools, local hospitals, LGBTQ+ rights, the gender pay gap, and the country's gun crisis. *Forbes* referred to him as "San Francisco's Giant of Generosity." To *The Silicon Review* he's "the intrepid tech visionary who pioneered a groundbreaking philanthropic model." *Pando* went so far as to call him "a people's billionaire."

Integral to Benioff's reputation for goodness is the insistent *badness* regularly displayed by his ultrarich brethren. Benioff does not offer the Russians a handy plat-

form for derailing our democracy or erode civil discourse 280 characters at a time. He doesn't use his wealth to undermine public education or fund climate change denial. He does not accuse British rescue divers of pedophilia. At a moment when his plutocrat peers seem increasingly hell-bent on mucking everything up, Benioff has carved out a different brand altogether: the good billionaire.

The particulars of the brand can be dissected, but the point is a *feeling*, a man-sized dollop of hope that powerful interests might start working *for us* rather than *against*. On November 6, 2018, San Francisco residents passed Prop. C. But in a sense the biggest victor was the magnanimous billionaire behind it.

Anyway, that's one way of telling it.



**As Bay Area childhoods go,** Marc Russell Benioff's was solitary and geeky. He was shy, favoring the company of his golden retriever or, better yet, circuit boards. A streak of defiance ran through him. Once, in kindergarten, his teacher asked him to draw a circle. He looked her in the eye and drew a straight line.

In 1966, when Benioff was 2, his father, the son of an immigrant from Kyiv, took the helm at a local dress shop chain. The job ruled him. Most nights he'd be at the kitchen table until 11, going over the books. On Sundays, Marc would climb into his father's 1970 Buick station wagon. His "most formative business classroom wasn't a classroom at all," he writes in *Trailblazer*. It was delivering bolts of wool, poplin, and polyester in that hot Buick. Among the lessons he absorbed: work ethic, integrity, *I hate retail*.

Electronics beckoned. At 12 he relocated to the family basement, where he could geek out unimpeded. At 14 he bought his first computer, a TRS-80, and wrote a program called How to Juggle, which he sold to a computer magazine for \$75. At 15 he founded Liberty Software, which made games for the Atari 800. Soon he was bringing in \$1,500 a month, which he used later to enroll at USC.

At college, Benioff rushed Tau Kappa Epsilon and did the normal frat boy thing of buying two Macintosh computers and hooking them together. The plan was to start writing code—all he needed was the company's developer software to arrive in the mail. When months passed with no sign of it, he phoned Guy Kawasaki, Apple's head of developer relations. It would be the first of many conversations. "Why don't you spend the summer of 1984 at Apple?" Kawasaki eventually asked the insistent kid on the other end of the line. A summer at Apple led to a job answering the sales line at Oracle soon after graduation.

With apologies to Benioff completists, I'm about to fast-forward through some of his most noteworthy career turns. His time as the youngest vice president in Oracle's history. His complex relationship with Larry Ellison. His Ferrari, reportedly a more expensive version

of Ellison's. I'm even skimming over the pivotal moment when he came up with his software-as-service idea and his father cautioned against leaving a stable job, but he did it anyway, and the company that started in a rented apartment on card tables and folding chairs now has a market cap dwarfing the GDP of many countries.

More interesting to me is the sabbatical he took before starting Salesforce, after more than a decade at Oracle. For five months he swam with dolphins in Hawaii and traveled throughout India, where he had "an incredible awakening." He met with the humanitarian leader Sri Sri Ravi Shankar, as well as the Dalai Lama, who "talked about finding one's calling and the importance of community service." But most profound, he says, were the words of the Hindu guru Mata Amritanandamayi, known as the hugging saint or Amma.

"It was she who introduced me to the idea, and possibility, of giving back to the world *while* pursuing my career ambitions," Benioff wrote. "I realized that I didn't have to make a choice between doing business and doing good."

This was the birth of both a generous mindset and a savvy personal narrative. Over the course of four books, countless speeches, and 25,000 tweets, Benioff has created a public persona that marries audacious business acumen with ambiguously spiritual beneficence, all inextricable from Salesforce. Over the years, he would proselytize Salesforce's 1-1-1 model, in which the company donates 1 percent of its revenue, 1 percent of its product, and 1 percent of its employees' time to the community. He would install meditation rooms on every floor of Salesforce Tower. He would be periodically subject to epiphanies of rectitude, like "I am not gonna have any more meetings that aren't at least a third women." And in the nation's most influential publication, *The New York Times*, he would call on "my fellow business leaders and billionaires" to create a "more fair, equal and sustainable capitalism that actually works for everyone."

San Francisco's mayor proclaimed May 22, 2018, as Salesforce Tower Day to mark the completion of the city's tallest building. Benioff used his office's opening ceremonies to address the city's less fortunate:

"Kids in schools across the Bay Area, families walking down the sidewalk, families and children in shelters, sleeping in cars—they're all looking up at this tower. I want to say to them, 'When you look up and see this tower, I want you to know you are not alone. We are thinking of you, and I hope you see this tower as a beacon, a symbol of hope.'"

But times change, even for the affluent, and just two years later those words have a different ring.



**By happenstance** I've worked for two billionaires in my life. From those experiences I concluded that one of civilization's great chal-

lenges stems from *millionaire* rhyming with *billionaire*. In holding them in the same linguistic corner of our minds, we conflate them, yet they're so mathematically distinct as to be unrelated. A millionaire can, with some dedicated carelessness, lose those millions. Billionaires can be as profligate and eccentric as they wish, can acquire, without making a dent, all the homes and jets and islands and causes and thoroughbreds and Van Goghs and submarines and weird Beatles memorabilia they please. Unless they're engaging in fraud or making extremely large and risky investments, they're simply no match for the mathematical and economic forces—the compounding of interest, the long-term imperatives of markets—that make money beget more money. They can do pretty much whatever they want in this life, and therein lies the distinction. A millionaire enjoys a profoundly lucky economic condition. A billionaire is an existential state.

This helps explain the cosmic reverence draped over so many billionaires, their most banal notions about innovation and vision repackaged as inspirational memes, their insights on markets and customers spun into best sellers. Their extravagances are so over the top as to inspire legend more often than revolution. Benioff has rented out the entire San Francisco Giants stadium for a corporate event, and he once got David Bowie to perform at a Salesforce Foundation soiree at Carnegie Hall. He owns an estate in Hawaii and multiple homes in the Bay Area. When a hotel room shortage threatened to leave out in the cold some of the 160,000 attendees of the 2015 Dreamforce conference—"four days of innovation, fun, and giving back"—the company brought in a cruise ship.

He is regularly invited to spread the gospel of Benioff, as he did in April at NationSwell Summit West, a conference designed to "feature creative, cutting-edge solutions and the problem-solvers behind them." From the back of a small hall, I watched him deliver a rollicking stream of thoughts on his family roots, negativity, writing down intentions, his friend Stevie Wonder, and radical trust. ("Can you even hold fear in your mind if you truly have rad-

A MILLIONAIRE ENJOYS A PROFOUNDLY LUCKY ECONOMIC CONDITION. A

# BILLIONAIRE

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ical trust?" But the heart of his remarks, delivered to this room full of business, tech, VC, nonprofit, and philanthropy types, was clear: From immigration to plastic in the ocean, enlightened leaders have no shortage of opportunities to make a better world. This led him to recall his role in Prop. C.

"What I was not expecting was a huge surge against me by many, many, many business leaders, who are friends of mine, close friends of mine, who are completely opposed to paying any kind of taxes ... We're in a world where we have to look at taxes as a key part of the solution," he said. Mentioning corporate tax rates, individual tax rates, and city tax rates, he added that "we've got to look at that as part of the solution."

The room broke out in applause. Just 16 months earlier, in 2017, Congress had passed President Trump's Tax Cuts and Jobs Act, the largest tax overhaul in more than three decades. The law lowered the top marginal tax rate for individuals from 39.6 percent to 37 percent and reduced corporate rates from 35 percent to 21 percent. It was a love letter to the very wealthiest, written hastily behind closed doors. Those new

cuts, atop years of tax avoidance, cuts to estate taxes, and rising payroll taxes, meant that, for the first time ever recorded, the 400 richest Americans are now paying a lower overall tax rate than almost anyone else, according to a study by two UC Berkeley economists.

Benioff possesses an acute awareness of this reality. He has called for increasing taxes "on high-income individuals like myself" to "generate the trillions of dollars that we desperately need to improve education and health care and fight climate change."

But it's worth noting a few asterisks in his call to arms. For one, Prop. C taxes certain sectors differently than others, making it more burdensome to, say, a fintech company like Square, which would have to pay twice as much tax as Salesforce, despite bringing in a fraction of its revenue. But more important is the part Benioff never mentions: the zero dollars his company paid in federal income tax that year, according to the Institute on Taxation and Economic Policy.

"This is a company that had \$7.8 billion in gross profit in 2018 and didn't pay a dime in federal income tax," Frank Clemente, executive director of Americans for Tax Fairness, told me, before running through the assorted mechanisms used by the country's corporations to avoid contributions to the federal treasury: patents held by foreign subsidiaries. The so-called stock options loophole, which allows companies to lower their taxable income by paying executives in stock options. Offshore accounts. (As of 2017, Salesforce had 14 tax haven subsidiaries, in Hong Kong, Luxembourg, Singapore, the Netherlands, Switzerland, and Ireland, according to a report from the advocacy group US PIRG and ITEP.)

To put it in further perspective, the tax burden Salesforce stood to face under Prop. C amounted to roughly \$10 million a year—a



fraction of what a multibillion-dollar company's federal income tax would be without those loopholes.

Benioff was whisked away after the NationSwell event; asking him questions was proving difficult. It wasn't that Benioff owed me anything. He's a private citizen. But at the same time, he's *not* a private citizen. Without running for office, he's attained a phenomenal level of influence; the *San Francisco Business Times* called him "the most influential man in San Francisco." If a local elected official had as much power and sway as Benioff, they'd feel some responsibility to answer to the press.

So I went back to watching him from afar and talking to those who know him. His friends and even Mayor Breed described his genuine love for his city and fellow citizens; I also heard accounts of an oversize ego, a superficial wokeness rooted in vanity or optics. But parsing the personality of a billionaire seemed to be missing the broader significance of his existence. How he wielded those billions seemed more to the point.

Benioff can't make laws. But as a billionaire and corporate titan, he can influence them. According to public records, Salesforce increased its lobbying expenditures in 2017 and lobbied directly on the Trump tax bill. Was it one of the many companies that had pushed for a lower corporate tax rate, despite Benioff's public appeals for more taxes? The records shed no light. Salesforce wouldn't comment on specifics, and the members of Congress and lobbyists I contacted couldn't or wouldn't help.

It was starting to look as if I might never know what happened that year in Washington.



**Andrew Carnegie** was around Benioff's age when he published *The Gospel of*

*Wealth*, and in so doing all but invented modern philanthropy. Describing the moral necessity of distributing "the millionaire's hoard" in one's lifetime, the steel magnate advocated a "true antidote for the temporary unequal distribution of wealth." Carnegie's money—and that of other philanthropists he inspired—created remarkable institutions, from public libraries to Carnegie Mellon University. But this is also true: The temporary unequal distribution of wealth persists.

This partly explains the critique of philanthropy that's gathered steam in recent years. In a 2013 *New York Times* op-ed, Peter Buffett, son of Warren, described the "conscience laundering" that's rampant in that world—giving that "just keeps the existing structure of inequality in place. The rich sleep better at night, while others get just enough to keep the pot from boiling over." More recently, in his influential book *Winners Take All*, Anand Giridharadas zeroed in on the righteous do-gooderism of tech elites, whose beneficence merely papers over deeper ills—the "lube of corporate profiteering," as he has put it.

Skepticism swirled even during Carnegie's time. Was he selfless or a heartless union crusher? Was such accumulation of wealth natural, as he argued, or the contrivance of unfair laws and regulations? By the end of the Gilded Age, philanthropy had assumed an explicitly legitimizing purpose, according to Ben Soskis, a historian and research associate at the Urban Institute's Center on Nonprofits and Philanthropy. "The pitchforks were directly invoked at the time," Soskis said. "It was understood that if you want to be able to maintain this kind of wealth, you have to give back."

From here, Soskis says, the ideas behind what we now call philanthro-capitalism gradually took root: The people who make the most money are also the best equipped to address the world's problems. The belief has proven remarkably resilient, given its regular brushes with reality. The passage of the 16th Amendment and the creation of a progressive federal income tax in 1913 arguably did far more for national welfare than all of philanthropy combined. The big, consequential crises—the Great Depression, the millions of people without health insurance that led to Medicare, the 2008 financial crisis—have been marked by a sobering recognition of the limits of voluntary giving and an understanding of the unique power of the state. Meanwhile, though philanthropists traffic in the idea that they're engaging root causes, a focus on actual structural reform is rare. As Soskis put it, philanthropy "has stayed far away, for the most part, from the systems of economic distribution that it gets its money from."

At the same time, the tax obligations for the country's wealthiest that could address the larger issues have been steadily diminished. Under Ronald Reagan, the top marginal tax rates were slashed from 70 percent to 50 percent. And the top rates have fallen further over time. As the richest accumulated more wealth, as unions lost power and wages stagnated, the nation's wealth disparity has only grown. Today the country's three richest billionaires hold the same wealth as more than half the nation's population. As the collective wealth of the world's poorest 3.8 billion people fell by 11 percent in 2018, billionaire fortunes increased by 12 percent,

according to Oxfam. Consider Benioff: Between 2017 and 2018, his net worth rose by \$2.47 million *a day*, according to *Business Insider*. Meanwhile, recent Federal Reserve data revealed that tens of millions of Americans would be unable to cover a \$400 emergency expense.

The 1 percent have entered a new period of interrogation. That inspiring tale of success: At whose expense did it come? These philanthropic gestures: Are they distracting from, and delaying a reckoning with, deeper problems they themselves exacerbate? Towering accumulations of capital start to seem less like symbols of hope than monuments to dysfunction. In Benioff's case, a penchant for good deeds coincides with a shifting public conversation about good itself—a waning tolerance for symptomatic fixes, a growing appetite for structural change. A simple but persistent question hovers around even a generous, well-intentioned billionaire, in some ways hovers more, *because* of those intentions. Is extreme wealth part of the solution or part of the problem? As Rob Reich, codirector of Stanford University's Center on Philanthropy and Civil Society and author of *Just Giving*, told me, major philanthropy “is an exercise of power by the wealthy that deserves our scrutiny, not our automatic gratitude.”

If this scrutiny results in less munificence from Benioff—if he takes his philanthropy ball and goes home—that would be a great shame. As nonprofits and foundations shoulder more and more of the civic burden, their reliance on charitable giving only grows. Nor can government solve all problems; a vibrant and varied civic sector has been indispensable to the country from the beginning. Still, throwing money at symptoms of inequality without addressing its underlying causes presumably seems foolhardy to big-picture, see-around-the-corner guys like Benioff. “I’m somebody who can see things that other people can’t see,” he has said. Indeed, his company’s success rests on its ability to sell a whole system, rather than bite-size solutions. If anyone can see structural problems—defects in the operating system itself—it should be him.

In a sense, Benioff has painted himself into a corner of good intentions, one avoided by the many CEOs who don’t purport to care in the first place. To speak so much about disrupting the status quo and improving the rapidly deteriorating world—and to increase one’s profile in so doing—is, eventually, to court a response: *OK, let’s see then.*



**The grounds of San Francisco’s Presidio Middle School** were swarming when I arrived on a hot September afternoon to witness Benioff’s latest good deed: TV crews, the mayors and superintendents from two cities, and roughly 1,000 amped-up middle schoolers well into a daylong Salesforce-themed fair, complete

with Salesforce employees, Salesforce mascots, a Salesforce virtual reality experience, and Salesforce T-shirts for everyone. Benioff’s philosophy on discreet, low-key giving can best be described as: *nah*.

The occasion was the announcement of an \$18.2 million grant from Salesforce to the San Francisco and Oakland Unified School Districts and two education nonprofits. At 1 o’clock, inside a large white tent erected on the school blacktop, Benioff approached the lectern, a phalanx of mayors and other VIPs behind him. Massive in a stylish navy suit, hair swept back as though by sheer existential momentum, he was a picture of swaggering largesse.

To the assembled kids he issued a warning: They were about to get seriously bored.

“It’s going to get worse before it gets better,” he said with a sly grin.

But in truth it was only ever good. His is a frisky charisma that simultaneously commands attention and diffuses it, and when your defenses are weakened, he hits you with some unimpeachable compassion for whatever global problem he’s currently addressing. At the middle school, he told a story of simple civic duty.

“This is my neighborhood,” he declared, for indeed he lives nearby. That was how he’d come to walk through the school’s front door a few years ago and ask the principal how he could help.

Soon Benioff was meeting with faculty and students, asking what needed fixing. Before long there were new computers arriving in classrooms and plans in place for an overhaul of their joyless schoolyard. Gesturing out at the beautifully remade blacktop, Benioff took a moment to crow.

“Did you like the prison yard you had before?” he asked the kids.

The speech culminated in an account of Salesforce’s sustained commitment to public education in the Bay Area. “We’ve now given more than \$67 million to these schools, so congratulations to you,” he said, turning to the superintendents behind him. Those donations have led to computer science education at all grade levels, a dramatic rise in the number of students in AP computer science classes,

# BENIOFF “WILL DO ENORMOUS GOOD AND HE’LL ALSO SHOW ITS LIMITS.”

and improved technology in schools, says Chris Armentrout, an official with the San Francisco school district. He even attributed the money to helping improve math scores.

Afterward, I followed Benioff and his entourage into the school for a private event. Inside the library, with its inspirational posters and droning box fans, sat three dozen Bay Area middle school principals. On the agenda was a check-in about a component of Salesforce’s public school grant, called the Principal’s Innovation Fund, in which every middle school principal in the two districts is awarded \$100,000 to do with as they see fit. For the next hour Benioff listened as each principal thanked him and explained how the money would hire another teacher or facilitate extra planning time.

By far, though, the biggest issue for some of the principals was teacher retention, a challenge made virtually unsolvable by the Bay Area’s astronomical housing costs. Increasingly, San Francisco schools see members of their staffs spending two or three hours a day commuting from less expensive exurbs, as rents continue to skyrocket. The high cost of housing in the Bay

Area is a complex issue, more complicated than well-paid tech workers pricing everyone else out—but that’s part of it, which made the irony hard to miss. The man presenting this enormous gift was also partly responsible for its need.

Beyond that, though, an even deeper truth seemed to be surfacing. Here was a classic use case for the vision of Benioff and other wealthy philanthropists, one in which the private sector steps up to address problems traditionally the province of government. But this was the thing: It wasn’t enough. As immense as Salesforce’s grant was, as profoundly *welcome* as it was, it was also no match for the deepest challenges faced by two major urban school districts. Clarifying itself there in the library was the simple arithmetic of private versus public, the inescapable difference in scale between what even the most generous corporation or individual can accomplish and what tax-collecting governments can.

The meeting went on, Benioff listening patiently until each educator had weighed in. He was at last bringing things to a close when a thought appeared to occur to him. He cocked his head. How would everyone feel, he wondered, if he doubled the amount in the principal’s grant this year?

In the days that followed, I replayed the moment several times. If any of the principals felt a little queasy—if they deeply appreciated the grant but less so the *Apprentice*-like theatrics that it came with, or the spectacle of public educators relying on the whims of a wealthy individual—they didn’t let on. Nobody stood and said, *This isn’t how the system should work*, because that just doesn’t happen. The room erupted in gasps and whoops, and Benioff beamed. “You’ll be leaving the room with a double,” he said.



**Benioff is a great salesman** and his grasp of optics and spin is unparalleled. He was at Davos last January shortly after Giridharadas tweeted a crack about the surfeit of hollow corporate sanctimony there—phrases like *win-win*, *do well by doing good*, and *conscious capitalism*. Rather than pick up his sword, Benioff, who frequently invokes those very ideas, simply co-opted the critique.

“Anand, there are many companies & CEOs committed to systemic change—yes We need a lot more than to awaken! You are helping—Your message & book are so powerful we need you to be part of Davos discussion.”

Several people I spoke with—in the nonprofit world, in the tech world, in politics—would only criticize Benioff when my recorder was off. Giridharadas, who is now an editor at large for *Time*, hired by Benioff himself, declined to be interviewed. (His most recent cover story: “Party’s Over: The Fall of America’s Ruling Class.”) When critics do come at him directly, Benioff has proven adept at deflecting them. In the summer of 2018, as border detentions were being widely condemned, more than 650 Salesforce employees signed a letter asking that the company drop its contract with Customs and Border Patrol, which used its software for its operations. When that didn’t work, protesters showed up with a 14-foot cage outside San Francisco’s Moscone Center in September, where the company was hosting its massive Dreamforce conference. Eventually Tony Prophet, the company’s chief equality officer, agreed to meet with some of the activists. Salesforce insisted the conversation be off the record, but someone who attended told me two facts: Prophet had worn a T-shirt emblazoned with the word *Feminist*, and the company’s CBP contract remained.

A few months later, Salesforce created a position ostensibly to handle this very sort of issue. In January, Paula Goldman became the company’s first chief ethical and humane use officer. Six months later we spoke by phone, touching on the various causes Salesforce had championed in recent years: sustainability, gun control, LGBTQ+ rights.

“I will say universally we are a company that does the right thing,” she said.

But as I began drilling into particulars, the conversation swerved. At one point Goldman referred to equality being a core value for the company and quoted Benioff’s frequently stated commitment to “the equality of every human being.” I asked what, exactly, “equality” meant in the Salesforce parlance. She laughed. “I think it’s a self-explanatory statement,” she replied.

I tried a different approach. “Do you feel like it’s possible to have a company as large as Salesforce is, in a city like San Francisco, without exacerbating inequality?”

“I’m not sure how to respond to that question,” Goldman said. “It

feels like a little bit of a leading question.”

I conceded that it was, but to no avail. Finally, I asked about the CBP contract, assuming it had been around long enough for a coherent answer to have formed.

“As you can imagine, I think a lot about that,” she replied. “We have a whole set of principles and processes in place to work through a number of questions around how customers use our products and what gets raised.”

But the contract?

“I’d say we’re working on it.”



**After months of observing Benioff** from a distance, I was granted a half-hour interview with him. It happened after the Presidio Middle School festivities, in an empty office on the first floor of the building. Like many seasoned public speakers, Benioff’s one-on-one persona felt like a quieter version of his stage presence. He told me a much-repeated Salesforce origin story, involving a group of Marines installing a hundred computers in a Washington, DC, middle school. This gave way to a general leadership word salad, best practices and integrated approaches and operationalizing value. Business and government “should be two dance partners,” he told me, more connected than they are currently. When I mentioned rumors of a future political career, he said—convincingly—that it didn’t appeal. When I asked whether he held too much influence as a private citizen, he demurred, then somehow pivoted to the subject of charter schools. But then he found his way back to the need for compassionate capitalism, which brought him to Prop. C and his frequently stated interest in paying more taxes. I’d been waiting nearly a year for this.

Was it true that Salesforce paid nothing in federal income tax, as ITEP had reported? I asked.

He shifted a little in his seat.

"I don't know exactly what our tax rate is," he replied, "but it probably wasn't what we could be paying. We can afford more, which is why we just said we should be taxed higher—"

"But I'm saying zero. What they're reporting is that there was *none* paid."

"We'll find out. I don't know," he replied, and one of his people jumped in, too, assuring me they'd "call our tax people." Benioff continued: "I'll tell you, I'll give you our tax returns, but my point is that we're not paying enough."

"OK," I said. "But Salesforce lobbied for the Trump tax cuts, right? The Tax Cuts and Jobs Act of 2017?"

"No, not to my knowledge."

"Did they lobby *against* it?"

"I don't know. I don't know if we lobbied against it, but I think ... I don't know. My recollection is that that all happened so fast, which was it all went down in a period of about six months that I don't think anybody was, I certainly was never solicited to—"

A staff member cut in, then brought things back around to Prop. C, reminding me that in that case he'd supported the idea of higher taxes. I asked what he thought of Elizabeth Warren's proposed wealth tax for individuals. Given Benioff's reported net worth of \$6.9 billion, he'd pay \$373 million in the first year. ("Good news—you'll still be extraordinarily rich!" notes the calculator page on Warren's website.)

"I think that those types of taxes are good," he said slowly. "I think it's fine, but I think that it should be looked at on the historical levels of what worked in that and what has not worked."

I asked if that was a yes or a no.

"I don't want to be on the side of saying that I fully support her," he said.

Throughout this whole portion of the exchange, the staff member sitting across from him had begun tapping on her phone. There now came a knock at the door. Another staffer entered and informed Benioff of an important doctor's appointment.

We chatted another few minutes—after the uncomfortable tax conversation, I nudged us back to his outlook for the country's future. It was a softball and he

swung as such, saying what he'd like is for us to be "more united and less divided." Briefly we discussed his role at *Time*, but then the doctor's appointment could be put off no longer.

I spent much of the weeks before and after that interview trying to find out what Salesforce's lobbyists had argued behind closed doors about the tax bill. Despite many calls around Capitol Hill, I found nothing. Finally, the company agreed to put me in touch with Niki Christoff, senior vice president for strategy and government relations.

Our conversation lasted two minutes. She told me that Salesforce had indeed lobbied on the tax bill, but only for two relatively minor items. Regarding the corporate tax cuts, the company had decided not to take a position. Salesforce walked Benioff's talk, in other words.

I would've dropped the matter after that, had my phone not rung sometime later. It seemed my inquiries had found their way to someone with direct knowledge of Salesforce's lobbying efforts, and in exchange for not being identified in this piece, this person agreed to talk.

Salesforce had ramped up its lobbying efforts. The tax bill included a number of provisions, some of which would remove tax benefits that corporations had enjoyed. This source told me that the company was interested in how the lower tax rate would work in conjunction with other aspects of the bill. Like other big companies, Salesforce wanted to make sure it wasn't going to pay *more* after tax reform. Salesforce expressed a keen interest in the durability of the lower rate, as did many companies. The bill was complex but Salesforce's ultimate goal, the source said, was straightforward: the best deal possible. (WIRED reached out to Salesforce for comment; the company was emphatic that it had not lobbied for lower tax rates.)

I hung up and, not for the first time, struggled to know how to think about Salesforce and the man behind it. Whatever else is true, Marc Benioff does more good in a day than most of us will muster in our lifetimes. I found myself flashing on a conversation I'd had with Ben Soskis, the philanthropy historian. As he sees it, Benioff's contradictions and even his existence make him "a clarifying agent" for our times.

His benevolence and its limitations go hand in hand when "the maldistribution itself is the problem," Soskis said. Regarding his philanthropy and other good deeds, he added, "You don't have to dismiss it as unimportant to also insist that it's inadequate ... He will do enormous good *and* he'll also show its limits."

After our interview, Benioff and I walked out of the school together, down the front steps. Palpably, he was done with our interaction. It was nearly dusk. We shook hands and then he climbed into the passenger seat of a Rolls-Royce SUV, which was either gold or champagne, I couldn't tell. ■

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# To Be an Animal

by Andy Greenberg

An uncompromising group of activists wants to be put on trial for breaking into factory farms and filming them with 360-degree cameras. Their goal: force jurors to wear virtual reality headsets and immerse them in the suffering of creatures bound for slaughter.



photographs by Philip Montgomery





# Just before midnight somewhere in the western United States, a white pickup truck's high beams light up a stretch of dark highway.

The driver slows as his three passengers peer through the cab's front and rear windshields, looking for the headlights of any cars that might catch them in the act of trespassing.

"Let's be prepared to jump."

"You have your bag and walkies?"

"Stop here. Here, here, here."

As the truck speeds off, the three figures scramble quietly off the highway shoulder and into a terrain of scrub brush and jagged gullies. For the next 15 minutes, they walk down an unlit dirt road in near total darkness; even the waning moon's sliver of light is hidden behind clouds. But their noses tell them they're in the right place. They're engulfed in a smell that intensifies as they walk: a blend of barnyard animal, excrement, and decaying flesh. The silence is interrupted only by the crunch of their feet on the sand and then, after a few minutes, sporadic, far-off guttural animal bellowing. They're approaching their destination, a massive industrial pig farm.

As the three near the facility's long, low-slung barns arrayed behind giant, man-made lagoons of pig feces and blood, they spot the guardhouse. A TV seems to flicker inside, as it had on the three previous nights. To avoid the building, they leave the road, circling away from the shed through a dry riverbed, and approach the barns from the opposite side.

In the darkness, one of the three intruders switches on a pair of night vision goggles and scans for guards—it's her turn to remain outside and serve as lookout. The other two pull on Tyvek suits and polyurethane boot covers and run toward the barns.

The team's leader and smallest member worms through a hole in the enclosure and lifts a bolt on a door to let the other one in. Then the two activists, members of an animal liberation organization known as Direct Action Everywhere, or DxE, start their work: They pull out cameras and begin documenting the inside of the facility, a typical factory farm of the kind that produces the vast majority of the pork Americans eat.

On one side of the two intruders, stretching beyond the edges of their headlamps' light, full-grown pigs are crammed eight to a cage; the enclosures are just large enough that the activists can see small patches of concrete floor between the animals. On the other side, sows—each at least as intelligent and emotionally sensitive as a dog—are locked individually into metal pens roughly the dimensions of their bodies. The animals in these so-called gestation crates appear not to be able to turn around or even take a step.

Ducking and running through a half-covered hallway between the barns, the two activists enter another barn where they find mothers that have just given birth inside those same crates. Tiny piglets covered in birth fluid and blood stumble around on the metal grate floors. Reaching into a pen, the group's leader helps to free one squealing piglet whose foot is caught in the grate. Others lie dead in corners of the pens or in piles of feces. They return to one pen where, the night before, they freed a group of injured piglets caught under a cage door. Now they see no sign of those injured animals other than a bloodstain on the floor.

I see all of this—the crates, the dead piglets, the bloodstain. Not in person, which would have required me to break the same trespassing laws as the DxE activists, but in their raw video recordings, which they show me the next day as we sit around a dining table of their Airbnb in a nearby town, reviewing the footage while a vegan pizza grows cold in the center of the table.

One of the DxE trespassers shot the footage with a Sony A7 III camera; he also retrieved several tiny cameras, small enough to escape workers' notice, which

**Wayne Hsiung,**  
cofounder of  
Direct Action  
Everywhere.

he'd hidden around the farm on an earlier intrusion. Another activist had carried a less standard piece of equipment: a \$400, 360-degree camera mounted on the end of an extension arm, recording everything around it with a pair of fish-eye lenses for a stripped-down experience of virtual reality.

That crude VR capture is, of course, missing some of the horrors described to me: The squeals are dampened. The smell is absent—I'd only experience it firsthand when we drove near the farm the next day, so that they could film it from above with a quadcopter drone, while swarms of flies from the nearby pig sewage lagoons filled their truck.

But through their ultrawide-angle lenses, I can get a hint of what it's like to be inside the facility. On one of the activists' laptops, sitting on the table of the Airbnb, I use the trackpad to rotate my point of view down an endless corridor of the barn's cages. I swing the perspective to the front, and then to the back. In each direction, rows of doomed animals stretch out, farther than I can see, into the darkness.

**D**irect Action Everywhere's cofounder, a compact 38-year-old Taiwanese American man named Wayne Hsiung, describes the American meat industry as a kind of vast dystopian hoax.

"Animal suffering is something people intrinsically care about," Hsiung says. Americans can't stand to see an animal die onscreen in a TV show. They obsess over a dentist who kills a beloved lion on a hunting trip in Zimbabwe, and they lavish billions of pageviews on cute animal videos on social media. To keep that same public happily buying hot dogs requires nothing less than a Matrix-like system of mass delusion, he argues. "The fight against animal agriculture," Hsiung says, "is the fight against misinformation."

At our first meeting, Hsiung sits cross-legged on a bed in his home in a lush subdivision in Berkeley, California, a house he shares with a rotating cast of guests, currently around half a dozen activists and seven animals. Hsiung speaks a bit like a spiritual guru, albeit one with the accelerated patter and citation-filled arguments of a political podcast host. Before embark-

# "The fight against animal agriculture," Hsiung says, "is the fight against misinformation."

ing on his second career as the leader of DxE's guerrilla animal liberation group—a loose network of thousands of activists in chapters around the world—Hsiung spent years working as a lawyer and academic researching behavioral economics.

From that behavioral economist's perspective, he still marvels at the social influence of the global meat industry, the soothing images of small farms and happy pastures that it puts on packages of bacon, he says, to obscure the reality: a collection of factories whose contribution to climate change rivals that of automobiles, where tens of billions of creatures live out their short lives in confined squalor, overseen by underpaid migrant workers performing dangerous, grueling labor. "That takes some next-level hacking," Hsiung says. "To convince the public that these massive agribusiness concerns, which are inflicting horrible suffering on animals, that are huge assembly line productions—that *this* is good."

Defeating that disinformation has become an "arms race," Hsiung says, one that stretches back to Upton Sinclair's 1906 meat industry exposé, *The Jungle*. For decades, factory farms and slaughterhouses have, for economic reasons as much as PR ones, been moving away from urban areas to remote rural ones, out of the public eye. The companies that run them have lobbied for "ag-gag" laws that criminalize dissemination of video and photos from within their walls. They've tightened security against groups like his that seek to break into their facilities and film surreptitiously—all while processing more animals through their feeding barns and slaughterhouses than ever before.

At the same time, the animal rights movement has gained an arsenal of tools to fight what they see as the information black-out around the meat industry. "Drones, secret cameras, VR, social media," Hsiung says. "Over the past few years there's been an eruption in technology, and that's leading to a cataclysmic battle."

If that description of the conflict sounds hyperbolic, it's perhaps because the stakes are particularly high for Hsiung himself: He faces up to 60 years in prison on charges—including burglary and theft of livestock—related to a series of animal extractions he's carried out over the past two years. In three of those operations, in which he helped remove animals from pig and turkey farms in Utah and an egg farm in California, he and his fellow DxE activists filmed their operations with virtual reality cameras: custom-built stereoscopic depth-capturing rigs far larger and more sophisticated than the simple 360-degree camera footage the activists had shown me at their Airbnb.

Hsiung wasn't caught in the act of those intrusions. He and several other DxE members were charged only after they published the virtual reality footage they'd captured, which included images

**Hsiung with DxE members Priya Sawhney and Paul Darwin Picklesimer, outfitted as they would be for an intrusion into a factory farm.**



of their unmasked faces. DxE carries out what the animal liberation movement calls “open rescue,” a practice dating back decades in which animal rights activists publicly reveal their actions and identities to claim moral high ground. In some cases, hundreds of DxE activists have marched into animal facilities together, in daylight, to take out animals in acts of mass protest, sometimes streaming their actions live on Facebook. Even the anonymous DxE activists I met the day after their midnight pig farm operation intended to eventually reveal themselves—they said they were just waiting for the most strategic moment to do so.

DxE rejects framing these actions as civil disobedience. Instead, the group points to statutes in common law and some US state laws that allow bystanders to trespass to stop animal cruelty or help an animal in a life-threatening situation. Someone who rescues a starving piglet from a factory farm, they say, is no different from someone who breaks a window to save a dog locked in a hot car—an argument that has yet to be tested in court as a defense for factory farm intrusions.

While DxE’s technological savvy has put it in the spotlight, the group’s radical tactics have also set it apart from other animal rights activists, as has its abolitionist view that no “humane certified” or “free-range” certifications represent an acceptable compromise. The agribusiness trade group WATT Global Media has written that DxE “could very well be the most dangerous animal rights organization out there.”

Even some animal rights groups, while sympathetic to DxE’s views, set themselves apart from its absolutist approach—targeting ostensibly conscientious businesses like Whole Foods and Chipotle, along with the very worst animal rights offenders—and acknowledge that, in a world where meat consumption has increased for decades, an incrementalist approach may be more effective. “If people are going to continue to eat animal products, we have an obligation to reduce animals’ suffering,” says Andrew deCoriolis, executive director of Farm Forward, an animal rights group that advocates for smaller-scale, more humane animal farming. “If we can ensure that animals have lives worth living but preserve animals being raised for food, that would be much better than the track we’re currently on.” Other animal rights activists quietly believe that DxE’s approach of inviting criminal prosecution seems more likely to achieve martyrdom than real progress.

But even as Hsiung’s charges mount, he’s never been more optimistic about the effects of his work. This spring, he and a codefendant, Paul Darwin Picklesimer, will face trial in Utah for breaking into Circle Four Farms, one of the world’s largest pig farms, and taking out two piglets. Both say they look forward to the proceedings as a rare opportunity. After years of open rescues that ended in dismissed charges, they believe the meat industry is finally ready for a direct confrontation, one that will allow them to put the industry itself on trial and broadcast the footage they’ve been collecting for years to a far larger audience.

In fact, they hope to use their trial to stage an unprecedented, *Clockwork Orange*-style stunt that will combine DxE’s legal and technological innovations: They plan to request that the jury—and perhaps the prosecutors and judge too—be required to strap on VR headsets and be immersed in the scenes the activists captured inside Circle Four. That footage, the activists point out, constitutes the central evidence against them. The jury’s reaction to it

may determine whether they’re convicted as vandals and thieves or exonerated as rescuers of animals that DxE argues would otherwise have died and been discarded as trash.

Whether this radical legal tactic will fly in court may come down entirely to the discretion of a judge, who will have to decide whether the VR material’s relevance to the case outweighs its emotional impact, which could prejudice the jury against Circle Four. “The big question is whether they’ll be able to talk a judge into letting the VR stuff in,” says Hadar Aviram, a visiting fellow at Harvard Law School’s Animal Law and Policy Program who has focused her recent research on DxE. “The footage is quite arresting. I can see a jury, even in a rural county, a farming county, being very sympathetic to people trying to bring that to light.”

If, in a kind of VR-induced miracle, Hsiung and his codefendants do convince a Utah jury of their legal argument, they believe they’ll have won a victory against factory farms that could unlock a new wave of similar operations. “We’ll have a precedent that says the right to rescue is legally recognized, that if an animal is suffering, ordinary citizens have the right to give them care,” Hsiung says. “I’ll go right back to the factory farm, literally right after the trial, walk right back in and take another piglet out.”

And if he loses? “Then there will be a lot of people asking why a person is sitting in prison for decades,” Hsiung says, “for recording some videos and taking two piglets to the vet.”

**W**ayne Hsiung grew up in a small town in Indiana, the son of two Taiwanese immigrants who moved to the US so that his father could study chemistry and later take a job as a scientist at Eli Lilly. His parents had spent periods of their own childhoods going hungry in the wake of China’s civil war, and they were delighted to discover that Americans ate meat at practically every meal. But Hsiung, one of only two Asian children in his classes, was deeply lonely, ostracized, mocked and bullied for his race and accent. He begged his

**A pig living on a sanctuary farm for rescue animals in Half Moon Bay, California.**



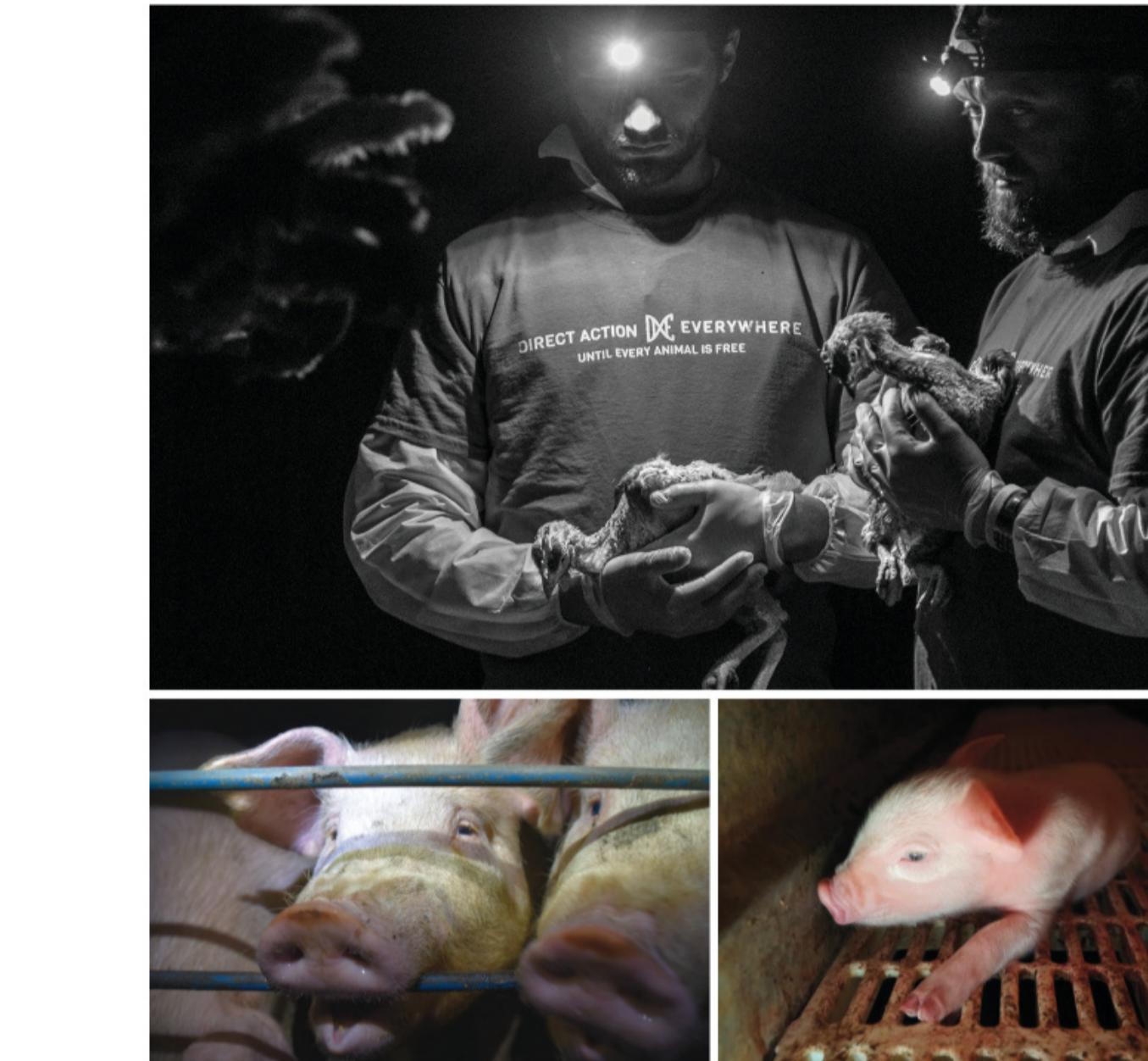
parents to get him a dog, a mutt he found in the classified ads, who he says became his best and only friend.

Not long after, when Hsiung was 8, his family took a trip to mainland China to meet relatives for the first time since the split between communist China and Taiwan. But Hsiung's most vivid memory from that trip remains a dinner his extended family held at a "wildlife" restaurant in Guangzhou, a controversial southern Chinese cuisine that specializes in exotic animals. Hsiung remembers live snakes, raccoons, dogs, and monkeys all captive and available for diners to choose from. Request one, and it would be killed and cooked on the spot.

Hsiung was horrified. He dreamed of the animals' screams for months, he says. "First, that trip instilled in me from a very young age, incontrovertibly, that some of the things we're taught by authority figures must be wrong," Hsiung says. "Secondly, I learned that there was something fundamentally flawed about the way human beings interact with animals."

When Hsiung was 15, a boy from his school ambushed him, held him down, and slashed his face with a blade. His parents were scared enough by the incident that they allowed him to apply to college early, and he enrolled at DePauw University in Indiana when he was only 16; the next year he transferred to the University of Chicago. College was another turning point in his life. He read *Animal Liberation*, the seminal animal rights tract written by the philosopher Peter Singer, which laid out the argument that all beings should be treated in accordance not with their intelligence but with their capacity to feel pleasure and pain, the core tenet in the fight against what Singer calls "speciesism." Soon Hsiung became a vegan, a Buddhist, and then an animal rights activist, leafleting on campus and handing out DVDs of the People for the Ethical Treatment of Animals' documentary *Meet Your Meat*.

Over the next few years, Hsiung started down the path of a career in behavioral economics and law; at one point he cowrote a paper with his mentor, the nationally influential law professor Cass Sunstein, on how climate change would impact animal populations. He was fascinated by Sunstein's theories of social change—how surfacing implicit preferences or emotions in individuals can trigger social "cascades," chain



reactions in which a person's admission of their unspoken feelings or experience can unlock many others to do the same. But over time he began to feel detached from his legal studies and depressed about the academic future ahead of him.

So one night, on a whim, he decided to trespass into a slaughterhouse intending to rescue an animal. Chiappetti Lamb and Veal was one of the last operational meat facilities in urban Chicago, a building Hsiung had walked by repeatedly, whose smells and sounds had haunted him. He entered around 2 am, simply opening a gate and walking in.

Inside the company's stockyard, he found an enclosure of baby cows and lambs cowering in the corners of their pens. He hadn't bargained for the animals' size and quickly realized he wouldn't be able to take any of them out by himself. He left empty-handed but found himself returning to the slaughterhouse again and again. On some of those trips he brought a cheap point-and-shoot camera with him. But the resulting photos never quite captured the feeling of being there. "The key details—the quivering of the lambs, the patches of rotting skin—were lost," he would later write. "And the earth-shattering experience of being surrounded by baby animals suffering in filth would remain locked in my mind." (The company that now owns the Chiappetti facility said it couldn't comment on its conditions in the early 2000s.)

**Top:** A DxE operation at a California egg farm. **Bottom:** Images taken by DxE at Circle Four Farms in Utah.



By that time, Hsiung was working as a visiting law professor at Northwestern University. But he decided to quit his job. He spent the next four years breaking into slaughterhouses and farms around the country by night to rescue animals, working as a full-time activist until he ran out of money and then taking jobs in corporate law to raise enough to continue. Those early operations were anything but open rescues—even now, Hsiung refuses to share details about them, claiming that doing so would endanger collaborators in fragile legal situations. Still, they allowed him to hone the playbook that DxE would use years later, scouting targets, practicing investigative techniques, learning about the supply chain of the US meat industry.

From the beginning, Hsiung believed open rescues would be far more effective. “If we really believe in what we’re doing, we can’t be scared to show people,” Hsiung says. But to take that risk, he’d need a grassroots movement and a media strategy strong enough that every prosecution or lawsuit the group’s rescues triggered would only amplify its message and recruit more followers.

Before cofounding Direct Action Everywhere, Hsiung attempted to launch four other groups, each of which fell apart in turn. Finally, in 2012, he moved to the Bay Area and tried a different strategy, emulating the group Improv Everywhere, whose performance art stunts had gone viral on social media. DxE tried applying the same tactics to animal rights protests, staging die-ins at Chipotle restaurants around the country or lining up to read poems in front of a grocery store meat counter while employees hurled abuse at the protesters.

In 2014, DxE carried out its first open rescue, breaking into a Petaluma, California, egg farm that supplied what it claimed were “cage-free” eggs to Whole Foods. Inside, the activists recorded video that showed hens crammed into crowded sheds—hardly what most consumers would imagine “cage-free” means—and taking out two symbolic hens that they left at an animal sanctuary. (Whole Foods declined to comment for this story.)

By the time DxE released that video, in early 2015, Hsiung had his eyes on a bigger target: Circle Four Farms, one of the world’s largest pig farms. The sprawling facility in Milford, Utah, which belongs to the Chinese-owned conglomerate Smithfield Foods, reportedly sends 1.2 million pigs to slaughter every year from its hundreds of barns, a complex that DxE nicknamed the Deathstar.

In 2007, Circle Four had pledged to phase out the gestation crates that keep pregnant sows practically immobile. In 2013, the company released a YouTube video that showed its new group housing system, with animations and cheery music.

Hsiung was skeptical of those claims, which entailed a massive project that Smithfield had said would cost \$300 million. So he and DxE began to make plans to go in and see the farm for themselves.

**I**n the living room of his house in Berkeley, Hsiung sits me down on a stool and puts an Oculus VR headset on my head, along with a pair of over-ear headphones. Hsiung’s two dogs, one rescued from a dog meat farm in Yulin, China, and the other from a Chicago dogfighting ring, laze on the couch in front of me, warily keeping their distance from the strange cyborg creature that’s invaded their home.

A few seconds later, Hsiung—now a virtual Hsiung, standing in front of me in the dark of a Utah desert night, not the physical one I’d just been talking to—is showing me a dumpster whose floor is lined with dead piglets, the bloody carcass of a full-grown pig thrown face down on top of them. I’m now watching Operation Deathstar.

“All right folks, we’re about to head into Circle Four,” virtual Hsiung says to the camera as he and a group of DxE activists—one holding an elaborate, custom-made VR recording rig that’s been digitally stitched out of the footage—approach a door of one of the barns in the dark. “This is the heart of evil.”

Inside the barn, the sights are largely the same as the ones in the 360 footage I’d been shown by the anonymous DxE activists in the field: countless screaming pigs confined in the dark, claustrophobic gestation crates, crushed and dead piglets lying in their mothers’ feces. But in this more immersive VR version, the pigs’ squeals are louder and more unrelenting, the stereoscopic depths of the barn’s enormity more overwhelming, the visceral stress of the scene far more immediate.

Strapped into the experience, I physically cannot look away. The hairs on my neck stand up, and I find myself feeling something unexpected: fear. “There’s a kind of primal animal connection,” Hsiung says when I recount my experience to him afterward. “You feel that all these animals are scared. You ask yourself, what are they scared of? So you feel scared too.”

Operation Deathstar is, in some senses, the pinnacle of years of attempts to use VR to create this involuntary empathy for farm animals. Those attempts began five years ago, long before Hsiung picked up the idea, when a Spanish animal liberation activist named Jose Valle was reading an issue of WIRED that featured Oculus creator Palmer Luckey on the cover. Valle was one of the cofounders of the animal rights group Animal Equality, and he had carried out investigations in farms and slaughterhouses for nearly a decade in more than 13 countries, though never in the US for fear of America’s draconian Animal Enterprise Terrorism Act and state ag-gag laws banning his techniques.

Valle had infiltrated animal farming facilities around the world, often wearing a tiny camera disguised as a button in his shirt. But

he wasn't satisfied. "I realized that the video doesn't do justice to what's going on in these places," he says. Thinking about how Luckey's headset could create those immersive perspectives, Valle became determined to film VR experiences inside the barns and abattoirs he'd infiltrated. He began experimenting with GoPro cameras, using a Freedom360 rig to mount six of them together in a cube, one facing each direction. He shipped these cams to his Animal Equality colleagues in Germany, Italy, Mexico, Spain, and the UK. The devices were too big to hide as an undercover employee. But the group spent the next year persuading farm and slaughterhouse owners to let them in to film their operations, using pretexts that Valle declined to share with me on the record for fear of compromising future investigations.

In one instance, they went into a pig farm and placed the camera inside a gestation crate, capturing the 13.2-square-foot life of a confined sow. "The technology allows you to experience this from a totally new perspective," Valle says. "When you watch it with a VR headset, you feel like you're the one who's trapped for a lifetime in a cage." He even hung the camera from the shackle that's used to carry birds down the line of a poultry facility, filming from the perspective of the chickens as those around them are dunked in baths of electrified water to stun them before their throats are sliced open.

The next year Valle was approached by a documentary filmmaker who requested that WIRED preserve his anonymity to avoid potential prosecution. The filmmaker had developed his own, superior virtual reality camera, a hulking, custom-machined contraption with 16 GoPros. He then evolved that machine into a smaller, more portable version, using just six GoPro sensors but replacing their lenses with ultrawide-angle fish-eyes sold by the Japanese firm Entaniya and typically used in astronomy. The filmmaker mounted those six lenses in pairs on a vertical PVC pipe with a stabilizing weight at its base, so that the invention resembled a kind of slimmed-down, handheld version of the probe droid that appears on the planet Hoth in *The Empire Strikes Back*.

With that rig, Valle and the documentarian managed to gain access to a series of slaughterhouses across the Mexican state of Jalisco. Animal Equality combined that footage with other VR they'd captured around the world and arranged meetings

with members of the Mexican government, the British and EU parliaments, and the German Bundestag, putting Samsung Gear headsets over their faces and showing them the 360 footage. Many emerged shaken, in disbelief about the practices they'd just seen carried out in their own countries. "I wanted to cry and to throw up at the same time," says Gabriela Cardenas, a city council member in the Mexican city of Zapopan, who watched the footage and later had it screened for a group of the city's policymakers.

Valle's filmmaker partner wanted to go further, capturing VR inside American factory farms. But Valle balked. Animal Equality considered the risk of prosecution in a US court too high. "We think it's better to stay free and continue to do the work than to face trial and detention," he says.

So the VR documentarian went looking for someone more willing to take those wild risks. And he found Direct Action Everywhere, already preparing to film inside one of the world's biggest pig farms.

**W**hen Wayne Hsiung first heard about the idea of bringing a VR camera along on a rescue operation, it struck him as a cumbersome gimmick. But other members of DxE, who had met with Animal Equality's anonymous filmmaking partner at the 2016 Animal Rights National Conference in Los Angeles, insisted on trying it. They brought the filmmaker's custom VR rig along on a nighttime intrusion at a California egg farm owned by a company that DxE would

**"With a VR headset, you feel like you're the one who's trapped for a lifetime in a cage."**





A 360-degree image taken by Animal Equality on an intrusion into a factory farm in Spain.

identify only as a supplier of Whole Foods. In 2008 California had passed a law that banned “battery cages,” rows of wire enclosures that pack most of the world’s chickens into crushing proximity. But the group’s new VR camera showed the facility still using cages that were only slightly larger in size.

When Hsiung put on an Oculus headset and watched the resulting footage, a first-person horror show of thousands of squawking birds lined up side by side in the darkness, he changed his mind. “That’s when I said, ‘We need to show this to as many people as possible,’” Hsiung says. They were ready to take the camera into Circle Four.

A few months later, the group began a series of stealthy reconnaissance missions into barns on Smithfield’s massive Utah property. On their last night in the facility, Paul Picklesimer carried the VR rig behind Hsiung as he chose two piglets from a birthing barn, both of whom he believed looked sick and weak enough that they wouldn’t last much longer on the farm, yet seemed healthy enough to survive their rescue.

Operation Deathstar shows Hsiung plucking the tiny pigs from their cages, comforting them, and putting them in blanketed crates inside a van. The final shot of the film, which began with a dumpster full of piglet carcasses, shows VR close-ups of the two rescued piglets at a sanctuary as they happily root around in a sawdust bed under a clear blue sky.

In late May of 2017, DxE showed the VR film to more than 200 people, all wearing Oculus headsets, at the Animal Liberation Conference in Berkeley. One of them, Lewis Bernier, remembers hearing the people around him gasping and crying. “It felt like I was part of the team taking this action,” says Bernier, who later joined DxE full time. “It made me feel like there was something I could actually do. I decided that day I would move to Berkeley.” DxE gave its footage to *The New York Times*, which published it in a two-dimensional but rotatable 360-degree form on its website in early July 2017. DxE and Hsiung took full responsibility for the rescue operation.

Smithfield Foods responded in a public statement a day later, saying it had launched an investigation and commissioned a third-party audit that resulted in “no findings of animal mistreatment.” Instead, it accused DxE of fraud and of putting the farm’s animals at risk through potential contamination.

"Based on the review of our animal care experts, the video appears to be highly edited and even staged in an attempt to manufacture an animal care issue where one does not exist, the video features blatant inaccuracies and assertions, which could not be farther from the truth," reads the statement, which DxE sent to *The New York Times* and later to WIRED. "The video's creators, who claim to be animal care advocates, risked the life of the animal they stole and the lives of the animals living on our farms by trespassing and violating our strict biosecurity policy that prevents the spread of disease. This policy is particularly critical to the well-being of our piglets—the animals they claim to be rescuing."

In a followup email to WIRED, Smithfield said that, at the time of DxE's intrusion, the company was still in the midst of transitioning to group housing—a transition it says it completed later that year—so some mother pigs remained in gestation crates. It argued that some of the dead piglets shown in the film were still-born and accused DxE of hand-placing piglet carcasses in the same gestation crate as live newborn ones. Hsiung responded by sending two other angles of that same scene, saying that the layers of dried and wet feces below and above dead piglets in the stall would have required hours of careful work to assemble. "This would take quite an elaborate, Hollywood-quality ruse in order to place so perfectly," Hsiung wrote in his response to WIRED. "And then we'd have to wait a few hours for it all to dry, too!"

As for the "well-being" of Circle Four's pigs, Hsiung simply points to the film's footage of crushed and dead piglets and trapped, squealing sows. Smithfield argues that those squeals resulted from DxE themselves disturbing the pigs; DxE's staff say they often hear those squeals even before entering barns, and rarely hear them from pigs in settings like sanctuaries.

A little more than a month after its Operation Deathstar release, Hsiung received a phone call from a rattled volunteer at an Erie, Colorado, animal sanctuary, telling him that FBI agents had just visited and demanded to search the property for the two stolen Circle Four piglets. Not long afterward, DxE learned that the FBI had also visited another sanctuary in Riverton, Utah, hunting for the same piglet pair. Federal law enforcement had started a multi-state search for two baby animals that had been, as far as DxE could tell, destined to die of exposure two months earlier. The group says it has maintained a purposeful ignorance of where the two piglets ended up, but that to DxE's knowledge they haven't been confiscated by the FBI or Circle Four.

In early 2018, in a move that Smithfield says was in the works even before the DxE operation, the company uploaded its own 360-degree video from inside one of its pig farms to YouTube. The virtual tour showed many of the same sights as DxE's VR experience—minus the blood, feces, and dead piglets in crates and a garbage bin—with daytime lighting and uplifting music. Breezy voice-over narration describes the pigs' body-sized crates as individual stalls that "provide a safer and less stressful environment for sows." The video then shows pigs in group pens, where it says they spend 23 weeks of the year, pointing out that Smithfield was the first in its industry to commit to group housing for all pregnant sows. (Smithfield also invited WIRED to visit one of its pig farms to see the same kinds of scenes on an in-person tour, which we declined.)

Close to a year after the Circle Four operation, the first felony

charges against Hsiung and collaborators were filed: Six members of the group were charged for another open rescue, Operation Mayflower, in which they'd filmed virtual reality inside a Utah turkey farm owned by the poultry firm Norbest. DxE had taken four injured turkeys from the massive warehouse, which marketed its meat as coming from "mountain-grown turkeys" but, as shown in DxE footage, packed thousands of birds into every barren, indoor shed on the property. (DxE notes that Norbest has since come under new owners, who have allowed more birds outdoors and even agreed to free 20 turkeys to DxE's care in a show of compromise.) A few weeks later, five DxE members were hit with felony charges for their participation in the Circle Four rescue. And the next month, Hsiung received yet another felony indictment for rescuing a baby goat from a North Carolina meat farm.

As the charges racked up, several of DxE's activists took plea deals, agreeing to pay hundreds of dollars in restitution and accepting gag orders that prevent them from criticizing the particular company they had sought to expose, in exchange for escaping jail time. But Hsiung and his VR cameraman and collaborator Paul Picklesimer have refused all offers. If the charges aren't dropped, their trial for the Circle Four operation will likely begin in the spring of 2020. And the two men will finally put to test whether the empathic power of VR can save not just the lives of factory-farmed animals around the world but also their own freedom.

**F**or someone who has never been to prison before, Wayne Hsiung is unusually well prepared for it. For over a year his bedroom has been a closet—an actual closet, not a room the size of one—with a total footprint smaller than a twin bed. To put his feet on the floor, he has to open the door. The shelves above his closet-bed are filled with posters and other DxE paraphernalia. This is his only private space in a house often populated with over a dozen human and nonhuman animals. In terms of sheer square footage, prison may actually be an upgrade.

That real estate asceticism, Hsiung

explains, is an element of his practice as a Buddhist. Buddhist vegans tend to point to the practice of *ahimsa*, or nonviolence, as the religious underpinning for their diet. Hsiung prefers to emphasize a different tenet known as *anatta*, translated as detachment, or the denial of self. "The wisest masters of Buddhism are supposed to be detached not only from the material world but from their own subjective consciousness," Hsiung says, sitting on a couch surrounded by his two dogs and a very affectionate gray cat named Joan. "The only reason I don't feel your pain—or the cat's pain or the dog's pain—in the same way I feel my own pain is because I'm a limited vessel of consciousness. What we aspire to as Buddhists is to understand that all subjectivity, all consciousness, all sentience is equal and connected."

As Hsiung has come to see it, the experience of living, suffering beings is essentially fungible. None is more valuable than any other, certainly not just because Hsiung happened to have been born into his body in particular. "The idea is, that thing that I see as myself is just one vessel among billions for feeling and aspiration, suffering and terror," he says. "The net addition to suffering in the world from me going to prison is not particularly high."

On other days, Hsiung has seemed a little less certain about this heroic denial of self. "People say this, and they go to jail and it destroys them," he had said in the midst of a similar discussion on the phone a few weeks earlier. "So maybe I'm wrong."

But today he seems more steeled against those momentary doubts. Hsiung has spent the past 20 years focused on creating empathy for a very specific experience, perhaps the most common one among all feeling—suffering—beings on this planet: that of an animal living in captivity. Thanks to the mind-boggling scale of factory farms, 70 billion animals now exist as objects for human consumption, including 60 percent of all mammals on Earth.

Hsiung hopes the empathic power of VR can bring a Utah jury into that animal experience, and even into his own experience as the activist willing to commit felonies to end it. He sees VR as a kind of *anatta* crutch, just like any truly immersive storytelling. "The moment someone starts feeling what the characters in a story feel, they're removing themselves from their own subjectivity and imagining what it's like to be something else," Hsiung says. "VR allows you to get out of your own head and into the head of another."

But if that Hail Mary tactic fails, prison will be a kind of ultimate, personal challenge in Hsiung's own quest for empathy, an all too real experience of life in captivity. "I'm not saying it's not scary," Hsiung admits. "But it will be an opportunity to experience what it's like to be an animal."

Put yourself in that mind-set—the one Hsiung has striven his entire adult life to achieve—and his point becomes manifest: When the average lived experience of this planet is that of an animal in a cage, the cost of becoming one more of those imprisoned sentient beings pales in comparison to the value of any chance to free billions of them. The further Hsiung's empathy expands, the further its cost is divided. Until finally, outmatched by the overwhelming suffering of the world, absorbed by the scale of that pain, Hsiung's own suffering vanishes into oblivion. ■■■

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# COLOPHON

## Transformations that helped get this issue out:

My bed becoming my dog's bed; going incognito by removing my beanie; finally jumping on the wirefree-earbuds bandwagon; morning meditation (Transformed? Maybe. Late to work? Yes.); adapting a decades-old pie recipe to accommodate the gluten-intolerant; turning an 8- by 8-foot garbage fire into a livable child's room; impeachment-hearing-fueled plunge in productivity; parenthood, the true path to vanquishing ego; Baby Yoda; being "killed" in a reenactment of the largest slave revolt in US history; deciding that maybe *Fortnite* is a game worth playing; *The Guns of August*, by Barbara W. Tuchman; discovering the express bus; turning 50 and depersonalizing; watching my elephant ear plant become the most impressive creature in the house—once given the right amount of sunlight; my little baby niece growing into an adorably sassy tween; scandalously revising my mother's bean casserole recipe; going from sleeveless flannel to light flannel to heavy flannel with the change of seasons; surprise bangs; combining bourbon, triple sec, and cinnamon into a truly repulsive cocktail; editing.

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IN SIX WORDS, IMAGINE A ROSY FUTURE FOR FACIAL RECOGNITION.

# YOU LOOK DRUNK— LET ME DRIVE.

—@henriquegeirinhas via Instagram



## Honorable Mentions:

OF COURSE I REMEMBER YOU ... KIM! @KANAFAA VIA INSTAGRAM // MY TWIN PAYS ALL MY BILLS. @KEEGAN1942 VIA INSTAGRAM // AMONG MYRIADS, HER SON WAS FOUND. @ICHBINSUBATOMIC VIA INSTAGRAM // VITALITY LOW—PERSONALIZED PRESCRIPTION DISPATCHED TODAY. @LENIWAY VIA INSTAGRAM // TECHNOLOGICAL MIRRORS PROVIDE VALUE-NEUTRAL FEEDBACK. @PHILOSOPHY\_AT\_WORK VIA INSTAGRAM // YOUR FACE WILL BECOME YOUR PASSPORT. @SAYZEY VIA INSTAGRAM // '80S MAKEUP HAS A HUGE REVIVAL. @JAMESW1981 VIA TWITTER // SMILE REGISTERED, THANKS FOR YOUR PURCHASE. @MHICHEAL\_L VIA INSTAGRAM

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