

THAT'S WHAT I'M TALKING ABOUT

Inside the labs where scientists restore speech

18110

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STANFORD

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Budget woes and gender-equity concerns have contributed to the death of many NCAA men's gymnastics programs. But at Stanford, the sport is ascendant—to the tune of four consecutive national championships and a skills trajectory that's helping vault the U.S. Olympic team to greater heights. Coach Thom Glielmi and his squad dish on the Card's secret sauce.

Weather Man

Wildfires, megafloods, bomb cyclones: Daniel Swain, PhD '16, is the kind of guy to look a storm in the eye. He's also shaping the field of climate communication at a time when the public has a pressing need to know why extreme weather events are striking from all sides.

Give It Some Thought

Scientists are using brain-computer interfaces to connect the interior of the mind with the outside world, a feat that may enable people with a range of neurological conditions to regain function in movement, speech, and vision. In the next five years, one researcher predicts, "there will be approved medical devices for restoring communication."

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Studying sea life gives her insights into past mass extinctions on Earth. It also affords this PhD student in earth and planetary sciences some fantastic—and sometimes fungal—fodder for her next space opera.



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A lot of Stanford students talk about impostor syndrome—that pitfall of comparing themselves to classmates that can cause a crisis of confidence. But for Allan Lopez, '23, it was an imagined view of his father's life that threw him for a loop.



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Dialogue

Free Thinking

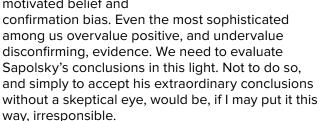
Our December cover story delved into Stanford neuroscientist Robert Sapolsky's latest book, in which he contends that a multitude of factors drives our decisions, leaving no room for free will.



There is much in Sapolsky's discussion of free will and moral responsibility that are not essentially scientific questions, and that I find seriously problematic from a philosophical point of view. I develop these concerns in my review of Sapolsky's book in Notre Dame Philosophical Reviews. Here, I will be content to note something striking about the science Sapolsky invokes to establish his conclusion. There are many pitfalls in such research, including difficulties with replication, publication bias (in which there is a preference for provocative conclusions), and so forth. The many theories and their applications to which Sapolsky points are particularly worrisome in these and related respects, rendering the science as dubious as the philosophy, in my opinion.

But here's the most puzzling and concerning thing. Why did the adolescent Robert not believe in free will? He could not have invoked the copious evidence from myriad disciplines presented in the book to yield this result. (Much of it wasn't even in existence back then.) Somehow, for reasons totally different from those he brings forward in the book, Sapolsky did not believe in free will

(and, presumably, moral responsibility). He then approached the analysis of the scientific evidence, throughout his life, with this antecedent view. (He does not report that he ever changed it, and evidently it became stronger as he proceeded.) A famous scientist is still a human being subject to well-known tendencies toward motivated belief and



John Martin Fischer, '75, MA '75
Distinguished Professor of Philosophy
UC Riverside

The moment that Sapolsky had his "epiphany" that there must be no free will is essentially identical to a moment of religious revelation described by fanatics through all of human history as the moment they received their "message from God."

We humans are barely out of the trees. Our understanding of the universe is primitive in the extreme. This may indeed be a vast, indifferent, empty universe, but the sad fact is that we don't even know if we are but one universe or one of an infinity of universes. A little humility here would be very much in order.

David E. James, '62, MS '63, PhD '67 Nashville, Tennessee My graduate studies taught me that humans willfully manipulate materials and technologies to create a more desirable future. When done well, the design of shelter, transportation, communication, apparel, and a vast array of products and services can—should—improve the human condition. Design is a creatively optimistic pursuit that has, at its essence, the exercise of free will.

Steven McCarthy, MFA '85 St. Paul, Minnesota

We humans have many layers of decision algorithms. The experiences that condition us can be real or imaginary—stories, ideologies,

cultural imperatives—as Sapolsky would agree. We can be so physically constrained—imprisoned by literal bars or by a dysfunctional body—that the best that free will can manage is wishful thinking. Our biological constraints—hunger, sleep deprivation, addiction—wax and wane, imprisoning us at their worst or releasing us to choose our course when they are assuaged.

When we are not immovably imprisoned, we will weigh the results of our decision algorithms, rerun them with different inputs, discard some and magnify others, and dither at length while we do so (unless in imminent danger, and sometimes even then). Finally, we decide.

This is the process of human free will.

Eric E. Sabelman, '68, MS '69, PhD '76 Santa Rosa, California

As a physicist, I am also in the strict determinism camp, though at a more fundamental level than Sapolsky's fascinating analysis. I find it amusing to consider that his campaign—to treat those who commit heinous acts as simply broken people destined to commit crimes, and to put them into recall status—is itself an effort predetermined by his own upbringing (which was predetermined). Further, society's response (likely to continue to punish such people) is itself predetermined. It is like a stage production. Sapolsky is destined to undertake this quixotic mission and society is destined to ignore him (or is it?). Such logical loops can quickly make one mad, which is why I choose to pretend my decisions and behaviors are, at least to some degree, made willingly. Like writing this letter.

John E. LaSala, MS '74, PhD '87 Wilmington, North Carolina

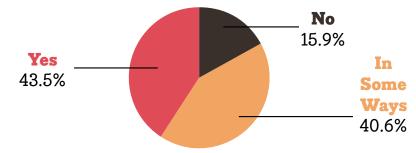
What is doing the choosing is the unique personal brew of every biological, physical, chemical, and psychologic process or structure that has ever pertained to you. But what is "you" if not that extended biological and experiential universe? I maintain they are one and the same. In which case, saying you have the ability to act or choose is the same as what Sapolsky says. I guess he has a different definition of an individual. I vote with the jury on this one; without [free will] we'll be living in a world of pain.

Martin Gelbard, '72 Sherman Oaks, California

I chose to write this letter. The reasons why are unimportant. Whether they were a choice made from free will or predestination is irrelevant. They could be fascinating topics for a philosopher or theologian, but they have no business in a court of law. Sapolsky's own thesis presumes that part of the environment driving a person's decisions is society and its rules and repercussions. Those rules aren't random.

People form societies by agreeing to live by shared rules, some encoded in law precisely to emphasize their significance.

Do we have free will? Here's what you said:



Yes

If there is no free will, then there really are good and bad people—something we no longer admit.

Bob Avakian, MS '70 Tulsa, Oklahoma

I strongly believe we are God's favorite creation, and one of the greatest gifts—with the most responsibilities—we were given is free will. We have amazing capabilities to go beyond our personal current circumstances.

JB Blackwelder, '93 Middleburg Heights, Ohio

In Some Ways

To make a clumsy analogy to particle physics, I think that deterministic factors can map the probability space of human behavior similar to how one would map the probable location of an electron, but there is some element of randomness or conscious choice that ultimately determines what choices we make. While I will not rule out some ultimate explanation of all behavior, I personally think the mystery of free will makes consciousness terrific to experience and contemplate.

Stephen Galdi, MS '18, PhD '22 New York, New York

Life is not a level playing field. However, we should exercise our apparent free will to believe we have free will for at least two pragmatic reasons: [If] we do, then we have profound moral responsibilities, and if we don't, nothing has been lost; and even if we have only a smidgen of free will, as we see in chaos theory, tiny factors can have unimaginably disproportionate effects.

Bennett Barouch
San Francisco, California

Nο

We ascribe to "free will" those behaviors that we do not understand. We often do not understand why other people act the way they do, and the easiest explanation is that their behavior is something intrinsic to their character, not a complex mixture of external influences over which they have no control.

Matthew Pauly, '21, MS '22 Stanford, California

We are chemical machines: nothing more, nothing less.

Pierre Beynet Houston, Texas

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Stanford | alumni

Dialogue .

As a feedback mechanism we examine the more extreme failure cases to decide—by choice or predestination—both how to respond in the specific case and how to evolve the rules. The predestination of the criminal act, true or not, is not part of the law, because it does not usefully contribute to the outcome. The legal process is predestined to ignore it.

Donald Woods, PhD '81 Los Altos. California

Asserting that there is no human free will and never has been or will be is something like trying to read a story or a novel backward. You might be able to do it, but it's hard to grasp how anyone would ever enjoy it!

Kurt Pocsi, MA '63 San Francisco, California

Professor Sapolsky's theory isn't just a poor belief system to set up for anyone facing difficult challenges, it seems a terrible example for our kids. It suggests there's little point in learning from history, or trying very hard to master lessons our parents or professors try to teach, and that when undecided about how to deal with difficult times, we might as well just shrug. It also seems pretty insulting to the accomplishments of people who overcame so many hardships to contribute so much to humanity. I could go on, but I choose not to.

Bernie Lahde, '72 La Quinta, California

Philosophers should have no fear that determinism is a school of philosophy but rather just a simple history of every one of our lives. Free will, on the other hand, will be grist for the philosophers for a while to come. The concept is nothing but humanity's effort at self-promotion and self-aggrandizement. It is also a construct to soften the anxiety of the mystery of life and death, and to counter mankind's feebleness.

Myron Gananian, '51, MD '59 Menlo Park, California

About the ACC

A December story covered Stanford's and Cal's move to the Atlantic Coast Conference. It included a reference to Roy "Wrong Way" Riegels, whose blunder once cost the Golden Bears a Rose Bowl victory.

My father, Roy Riegels, whom I characterize as famous rather than infamous, played against Georgia Tech in the '29 Rose Bowl. With Cal and Stanford in the ACC, Cal finally will have the opportunity to again play Georgia Tech and to avenge its narrow Rose Bowl loss.

Dave Riegels, '65, JD '68 Sacramento, California

Beyond the common knowledge that it is football revenues that dominate the rationale, there are other compelling criticisms of the move to the Atlantic Coast Conference. The first is the obvious

geographically absurd fact that Stanford will compete with 15 schools well east of the Mississippi and only two others that are not. No well-educated sports fan will overlook this incongruity. Of more significance is the toll on the athletes themselves in time and travel, which the article mentions but attempts to minimize and justify on the basis of "competing against the best." Furthermore, in an age where travel by jet airplane is a major cause of carbon release leading to the current climate crisis, multiple Pacific Coast teams flying routinely to Atlantic Coast campuses places the athletic program at odds with emerging climate, energy, and environmental policy.

There are ways to remedy this blatantly irrational move: Allow most sports to continue competing in western athletic conferences; other West Coast campuses do exactly that. Let the football team's donors pay for the extra air travel to the ACC campuses. And finally, why not advocate for change to the now absurdly named Big Ten, Big 12, SEC, and ACC, and name them after the television and media corporations which, in truth, drive such decisions about who should compete with whom? Perhaps honesty is the best policy, even in sports.

Robert Thayer, MA '71 Davis. California

One of the mitigation measures described is to hire more sports psychologists to help student-athletes deal with the stress of extended travel across multiple time zones. Is that really going to be our new recruiting pitch? "We've got more sports psychologists than any other school."

Robert H. Ellis, MS '73 Carmel Valley, California

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Speaking One's Mind

A story worth sharing.

WE STANFORD EDITORS are usually good at sharing-handing off a story to a colleague to rebalance our workloads, even after we've developed the concept and assigned it to a writer. So when senior editor Jill Patton, '03, MA'04, generously offered to edit our feature on brain-computer interfaces, I surprised myself:

"No," I said immediately. "It's about restoring communication."

I have a 19-year-old son with nonstandard

speech. Which means I know in my soul that current speech-generating deviceswhich users operate via switch, touch screen, or eye trackingare better than nothing but ultimately inadequate to the task. They're a vital outlet for those who have no other path to speech, but they're slow and cumbersome. People like my son, who can communicate orally if listeners hold up their end of the bargain, have been known to resist them. (Since pre-

Which means I've long been interested in the potential to more directly tap the brain to decode and amplify what people have to say. So have professor of neurosurgery Jaimie Henderson and the late professor of electrical engineering Krishna Shenoy. Like me, they had family experiences that imbued them with an understanding of the profound importance of speech. Unlike me, they were in a position to do something about it. The Neural Prosthetic Translation Lab, which they cofounded, creates and tests brain-computer

interfaces (BCIs). Henderson implants sensors the size of baby aspirins into the brains of research participants, and Shenoy devised systems to decode the neural commands they receive. Through their efforts and those of their collaborators at Stanford and elsewhere, speech BCIs may soon become the first type available to patients, ahead of those that move robotic limbs or operate smartphones.

In our story, which begins on page 54, you'll meet two of the community members whose participation in studies has proved invaluable to the scientists. One, Dennis DeGray, has

helped progress the research from

cursor movement to imagined

hunt-and-peck typing to creat-

ing a mental version of a handwritten alphabet. (Lately, he also gets to fly a drone with his mind.) "I like to think of it like we're developing the alphabet that other people will use to write books," he says. The other, Pat Bennett, recently

demonstrated that a BCI could

decode her speech at more than 60 words a minute. "So many years of not being able to communicate and then suddenly the people in the room got what I said," she recalled in an email interview. "I don't remember what I exactly said after the prescribed script finished, but it had to be along the lines of 'Holy shit, it worked, I'm so happy, and you guys did it."

I may not have been willing to share this story with my colleague. But I'm thrilled to share it with you. ■

Email Kathy at kathyz@stanford.edu.

STANFORD

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EDITOR, STANFORDMAG, ORG

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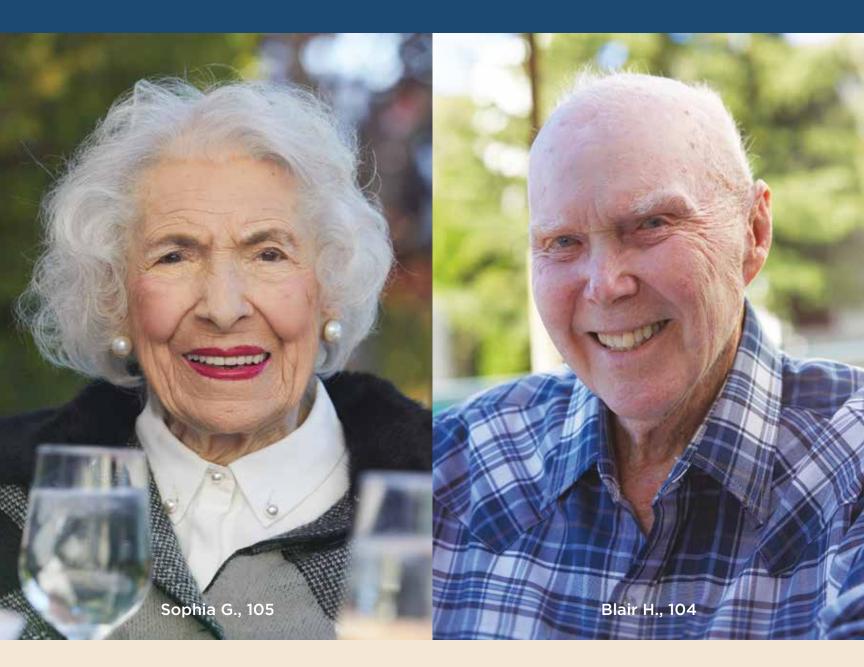
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CARMEL VALLEY MANOR





Stanford Athletics: A Great Tradition



IN THE FIRST MONTHS of my presidency, the Israel-Hamas war and its ramifications on campus have occupied the largest share of my attention. Not far behind is intercollegiate athletics and the historic change that is occurring nationally.

In January, we celebrated with women's basketball coach Tara VanDerveer as she broke the record for most career wins by an NCAA basketball coach. Tara already was a legend across the country and here at Stanford. This joyful new milestone provided a reminder of what Tara embodies: unsurpassed excellence with deep humility.

Tara's achievement adds to a proud history of athletics at Stanford. Throughout our history, athletics has been an integral part of the university. Sports play a vivid role in the student experience, propelling traditions, creating memories, and adding to the education we provide in the classroom.

Stanford also has been a special place for athletics because of our commitment to providing student-athletes with two things simultaneously: an education of the highest caliber and the opportunity to compete nationally at the highest levels. By integrating academics with sports, we are carrying on a tradition of the ancient Greeks, who invented the Olympics.

I am especially proud of the academic success of our student-athletes. In 2023, Stanford Athletics registered an overall graduation rate of 97 percent in the NCAA Graduation Success Rate, with 17 programs scoring 100 percent.

In addition to their academic prowess, our student-athletes are unmatched on the field, on the court, and in the arena. Stanford teams have won a nation-leading 134 NCAA championships, well ahead of second-place UCLA with 121. More than 170 Stanford-affiliated athletes have won a combined total of 296 medals in Olympic competition, and at the 2020 Tokyo Games, only 10 countries had a higher medal count than Stanford's 26.

The past few years, and especially the past few months, have made clear that we are operating in a quickly changing national landscape.

Last summer, the Pac-12 Conference faltered after eight universities decided to leave for other conferences despite Stanford's efforts to stabilize the conference and its proud tradition. It was imperative to join a new conference that would provide our outstanding athletes with top-notch competition. After exploring the available alternatives, President Marc Tessier-Lavigne secured an agreement for a new home

in the Atlantic Coast Conference (ACC). This move will provide a foundation of stability for our teams but will also challenge us to ensure that our student-athletes receive the support they need for their academic success.

To complicate matters, college sports are undergoing a major transformation with new and powerful incentives. The transfer portal has enabled athletes to switch schools with unprecedented ease. Institutions have begun making education-related payments of up to \$5,980 to student-athletes under the *Alston* court decision; we will begin doing this for our own scholarship student-athletes. In addition, our student-athletes are eligible to benefit from their name, image, and likeness (NIL). The changes in the relationship between student-athletes and their institutions are likely to continue at a rapid pace unless legislation provides a framework.

Fortunately, I have been able to rely on the advice of Professor Condoleezza Rice, trustee emerita Mariann Byerwalter, '82, and a new Athletic Affairs Committee to chart a course that navigates these dynamics and stays true to our values while minimizing the financial impact of the transfer to the ACC.

The scale of change that is occurring in collegiate athletics is remarkable, yet Stanford always has confronted change with optimism and innovation. Amid the uncertainty and turbulence, the university will continue its commitment to supporting our student-athletes' pursuit of academic and athletic excellence.

The scale of change that is occurring in collegiate athletics is remarkable, yet Stanford has always confronted change with optimism and innovation.



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Children's Health School of Medicine Health Care



Confetti at the Ready

Fans packed Maples Pavilion on January 21 to watch Stanford women's basketball defeat Oregon State-and to witness history. The crowd-which included Stanford luminaries past and present, from players to provosts to practiced pros-chanted "Tara! Tara!" in the game's final moments, and the sweet, sweet sound of the buzzer sealed the deal: Head coach Tara VanDerveer had notched her 1,203rd career win, breaking former Duke and Army coach Mike Krzyzewski's record to become the winningest coach in college basketball history.

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WHO WE ARE

Meet Kemi Ashing-Giwa

Her planetary adventures are both fact and fiction.



KEMI ASHING-GIWA was in the middle of a college biology class, learning about *Ophiocordyceps unilateralis* (aka the zombie-ant fungus), when an idea sprang to mind. "I was like, 'Ah, I love fungi. I'm going to write a short story about fungus zombies.'" As soon as class ended, she opened a Google document and began.

Ashing-Giwa was a sophomore at Harvard when the COVID-19 pandemic hit. After a long day on Zoom, she would scroll for hours through an unrelenting stream of depressing news updates. Writing fiction offered both an escape and a way to process reality, with some intergalactic espionage thrown in. "Lots of bad things [were] happening. It was a lot to take on at one time, and I needed a healthy way to work through the things that I was feeling," she says. In 2023, The Splinter in the Sky, the space opera she'd begun writing during quarantine, was published by Saga Press/Simon & Schuster. A USA Today bestseller, the book follows a young scribe-turned-assassin living on an icy moon that's been colonized by imperial forces. Ashing-Giwa—flexing her scientist muscles-precisely calculated the details of her solar system, from the travel time between planets to the metal content of asteroids.

It's no surprise Ashing-Giwa is drawn to the science side of fiction. She's currently a second-year PhD student studying ecophysiology and conservation biology, particularly the ocean conditions that wiped out an estimated 96 percent of all marine species at the end of the Permian period, some 252 million years ago. In the lab, you might find her adding sulfidic water to tanks filled with clams. And she never misses a chance to blend lab and lit. Between experiments, she's written three more sci-fi books, two of which are scheduled to be published. "I am paying attention in class," she says, laughing, "but I'm also paying attention to what I can put into a story." ■





"Writing has always been a solace for me. One of my first best friends, every time we had a sleepover we would just hang out together and write, write, write. That became the natural way for me to deal with stress or work through things that I was thinking about in life.

"I grew up watching
Star Trek with my mom.
That's why I minored
in astrophysics—I thought
we would just be looking
at pictures of galaxies,
and I'd be like, 'Wow.
Space. So beautiful.'
They're like, 'No. Just
math. Just calculus.'

"The earth and planetary sciences department was the place for me because it's a mix of astronomy and biology and geology. I like having my hands on things and being able to study the world around me while also keeping my toe in things that might be happening on other planets.

"In fiction writing you're telling a story, and for science you're also telling a story. I've been applying for grants—even though the form that the story takes is very different, you're still trying to convince someone of something, whether you're convincing someone that they're on another planet or that your research is worth funding.

"Writing in a science fiction universe lets me delve into issues with a freedom I would not have if I were writing historical fiction, for example.

I think people have a lot more sympathy for Luke Skywalker defeating the Empire than a real-life activist who's trying to effect change, because in the real world things tend to be more complicated."





SEE ASHING-GIWA
ON VIDEO
ALU.MS/KEMIASHINGGIWA

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American Bald Eagles

Crested Caracara

Birdie, Birdie in the Sky

Juan Aguayo's calming COVID hobby has taken him places he never envisioned. Including the water treatment plant.

WHEN JUAN AGUAYO gets into something, he gets really into it. Once it was mariachi. Another time it was genealogy. Lately? It's birding. "A lot of it's the chase," he says. When he likes something, "I want to get good at it."

Aguayo, '97, MS '98, a senior principal mechanical engineer for Volkswagen of America and the father of four, started birding in 2020 as a way to get outdoors during long workfrom-home days. Then—well, you know—he got into it. According to eBird, where birders around

the world log more than 100 million sightings every year, in 2023 Aguayo was the No. 7 birder (out of 6,091) in Dallas County, Texas, with 225 species sighted locally. His "anywhere" goal for the year was 300, a mark he hit during a latesummer business trip in London.

One find he'll always remember: two bald eagles. In Dallas. "I felt lucky," he says. "I saw this eagle in the water. I was just snapping as many pics as I could, and while I was snapping, a second one flew in. I couldn't think straight for like two hours after this picture." Last year, Aguayo also managed to snap a photo of a pileated woodpecker—one of the largest forest birds in North America, at 15 to 20 inches long, and sporting a fabulous red mohawk—after months of trying.

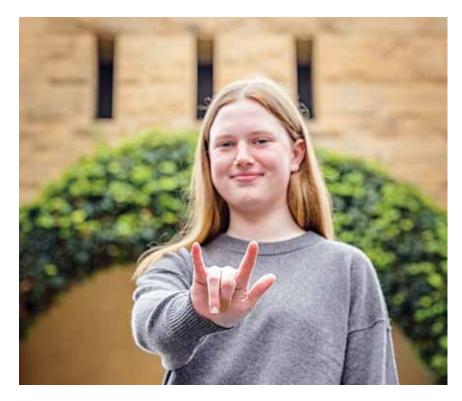
During busy migration seasons, you might find Aguayo scouting a lake after taking his kids to school, dodging a

neighborhood red-tailed hawk as it hunts a squirrel, or touring areas many of us might avoid. ("After I got access to the water treatment plant, my numbers skyrocketed.") He finds birding to be calming, even if he doesn't always nab a photo of the bird he was looking for. "I still come back refreshed, with a clear mind. And I'll just have to try again." When the 2023 stats wrapped, Aguayo was a mere 27 species behind the top birder in Dallas County. This year's crown is in sight. ■









Caption This

A frosh's company makes kids' flicks more accessible.

WHEN MARIELLA SATOW'S high school closed during the COVID-19 lockdown, she took the opportunity to enroll in an American Sign Language (ASL) class.

"I immediately fell in love with it," she says. Several of her relatives have hearing loss, but none had learned to sign.

Satow, '27, searched for free educational resources that would help her gain proficiency in ASL, but she found few. In doing so, however, she learned about the challenges facing people who are deaf or hard of hearing, especially children-from the risk of language deprivation at a critical time in their development to the inaccessibility of TV shows and movies that could expose them to language in the environment. Closed captioning, while widely available, is inaccessible to kids who sign but don't yet read, as well as to readers who find fast-paced dialogue hard to follow. To help bridge this communication gap, Satow launched SignUp Captions, a free browser extension that provides overlays with sign language interpretation for streaming content on Disney+ and Netflix.

Working in close collaboration with the Deaf community, Satow built SignUp on a shoestring. "At the beginning, my budget was so small," she says. "I was using money I had made dog walking."

SignUp landed in the spotlight in August 2021 with its launch of ASL overlays for *Moana, Zootopia*, and *The Incredibles* on Disney+. Surprised by its success, Satow took a gap year to develop the company before matriculating at Stanford. Today, captioning is available for more than 100 titles. Interpretation is available in American, British, and Indian sign language, with Auslan (Australian Sign Language) coming soon.

Satow, whom Forbes recently named to its 30 Under 30 list, points to the importance of showcasing the talent within the Deaf community. SignUp is currently refilming its overlay for Moana, set in ancient Polynesia, with a Pacific Islander interpreter; the interpreter for Ratatouille, set in a busy Parisian restaurant kitchen, is both deaf and a chef. "The interpreters are definitely the unique value of SignUp," she says. —Rachel Kolb, '12, MA '13

Black Gold

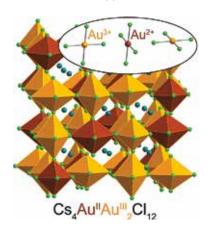
Stanford chemists have a eureka moment.

LIKE BEAKER-SPINNING Rumpelstiltskins, Stanford chemists have discovered an easy, seemingly magical way to create gold—in this case, the rare Au2+, so named for its loss of two negatively charged electrons.

"No one has been able to stabilize Au2+," says Hemamala Karunadasa, an associate professor of chemistry and the study's senior author; Kurt Lindquist, PhD '22, was lead author. But when researchers added vitamin C to a solution of water, cesium chloride, Au3+ chloride, and hydrochloric acid, the greenish-black crystalline material emerged.

"We were very surprised when [the gold] just fell out of solution at room temperature in our lab," says Karunadasa. "It's super simple. You just throw things into solution, and it will crash out."

The unique magnetic properties of Au2+ hold promise for advances in microelectronics, she says. "Right now, the [Au2+] is so new we are just trying to figure out what it can do. It will be really cool to see what happens." ■



This Is Not a Drill

Thea Carlson prepares herself and others for the next blaze.

MANY OF THE TOWERING FIRS that surround Monan's Rill, a 50-year-old collaborative community in rural Sonoma County, are now bare. "All those trees up there that have no green on them burned," says Thea Carlson, '03, motioning toward the charred treetops. "Enough to kill them."

Beginning on September 27, 2020, the Glass Fire ravaged Sonoma County for 23 days. It destroyed 12 of the 13 homes on the Rill, sparing only Carlson and her wife's. Most of the community's 414 acres burned, including gardens, fields, forests, and buildings. Some 40 chickens died, two beehives were destroyed, and three goats were hospitalized because of burns.

Carlson, who has lived on the Rill since 2015, soon left her job as executive director of an agricultural nonprofit and committed herself to studying wildfire resilience and fire ecology. "My mom raised me with a really strong environmental ethic," she says. "After the fire, a lot of people left, and I wanted to be able to more directly take care of the land." She resolved to earn her wildland firefighter qualification so she could participate in prescribed burns. In addition to passing a knowledge test, she had to march three miles



in 45 minutes while carrying 45 pounds of weight. "I'd never run a marathon or done any sort of training for a thing before," Carlson says. "I'd managed to skip PE in pretty much all my schooling."

But her natural inclination, says her wife, E Harris, is to face problems head-on. Carlson next created a course on fire-resilient landscaping at Santa Rosa Junior College, where she also co-leads a wildfire resilience internship program to teach students the basics of controlled burns, such as how to handle a chainsaw to clear brush, and of restoration-focused planting. "It felt hopeful to learn skills to try to cope with

wildfire," says Becca Williams, one of Carlson's interns. "Thea has really thrown herself into using fire not just to help her own land but also other people's."

Carlson is also coordinating opportunities for Indigenous Californians to perform burns on their ancestral lands through the Tribal EcoRestoration Alliance. And she's nearly done with the requirements to become a state-certified prescribed burn boss. "This is needed to help keep our community safe," she says, "but it's also needed to help these ecosystems adapt in the face of climate change."

- Joseph Sarmenta, '25

THE TICKER

Master's students **Kate Bradley** and **Pranav Gurusankar**, both '23, and **Sid Suri Dhawan**, '22, will pack their smarty pants and head to Oxford this year. They've been named 2024 Rhodes Scholars and plan to study energy systems and economics, applied digital health, and clinical neurosciences, respectively.... Maybe they

can find time for tea with Stanford seniors **Jenny Shi** and **Benjamin Przybocki**, recipients of the 2024–25 Churchill Scholarship. Shi will study biological sciences and Przybocki will

pursue advanced computer science at the University of Cambridge....

On the theme of Brits sending love in a westerly direction, Boomitra, founded by **Aadith Moorthy**, MS '20, was a winner of Prince William's 2023 Earthshot Prize, which awards £1 million for innovative solutions to environmental challenges. Boomitra equips farmers to increase their soil carbon and yields as well as secure additional income through carbon credits.... Speaking of turf, former NFL and Stanford running back **Toby Gerhart**, '10, MBA '20, is the 20th Farm footballer to be inducted into the College Football Hall of Fame.

CLOCKWISE FROM TOP: IAN A. NELSON; EARTHSHOT PRIZE; ALEX OPPENHEIMER/ISI PHOTOS



Like Falling Off a Log

Masaru Oka turns a pastime into a pro pursuit.

GROWING UP NEAR HOUSTON and later as a Stanford student, Masaru Oka, '10, never so much as caught a television glimpse of logrolling. But in 2013, a couple of years after moving to Madison, Wis., he chanced upon some people setting up for the sport at a local park.

They were offering cheap lessons; he was new in town; and the sport—which requires dueling competitors to stay upright on a floating log—seemed to capitalize on the leg strength and stamina he'd built up as a runner. He signed up. Early indicators weren't auspicious. "We always say that your goal in the first class is just to be able to stay up for five seconds," he says. "By the end of my first summer, I was still struggling to do that."

But there was a pleasure, he says, in how completely the sport expelled thoughts of the outside world and put him in a kind of flow state. "You can't think about how your day at work sucked," says Oka, a technical expert in electronic medical records. "As a beginner, you can't really concentrate on anything besides how well you're moving your feet and adjusting your body."

Logrolling has roots in the 19th-century timber industry. As flotillas of cut logs floated downriver, workers were hired to keep them from jamming. To stay dry—and alive—the log drivers became deft at crisscrossing the rolling timber. By 1898, a national logrolling contest was held in Nebraska and won, aptly, by someone from Wisconsin, the epicenter of the sport today.

Not exactly your stereotypical lumberjack—he's 5'5" and about 135 pounds—Oka generally doesn't have the purchase on the logs to aggressively command the back-and-forth of the roll. Instead, that runner's stamina pays off in matches that can total 10 minutes in duration: "I can just be on a log for a long time without getting tired." Oka began competing in 2014, progressing to semipro podium finishes, such as second place at the 2021 Lumberjack World Championships and first at the 2022 Midwest Logrolling Championships.

Last year, he graduated to the professional level, which in theory makes him eligible to win prize money. In reality, he says, he'll be happy to win just one "fall" in each best-of-five contest. He's got other Nerd Nation cred, though: In 2020, when COVID-19 forced the shutdown of events, he entered an online trick contest. One minute, 29 seconds, and an uncountable number of log rotations later, he'd solved a Rubik's Cube on a windy Wisconsin lake. Roll Cardinal!

Creature Report

Where sea stars are headed.

NATURALISTS have long struggled to make heads or tails of sea stars, aka starfish. While most animals have a head-to-tail body plan, the anatomy of sea stars, with their five radiating arms, defies usual classifications. Considering that they have no brain, you might conclude they have no head at all.

Au contraire. Far from headless, starfish are mostly head, according to a study from Stanford and UC Berkeley that used genetic and molecular tools to create a 3D atlas of gene expression throughout sea stars' bodies. The researchers found genetic signatures associated with head development in other animals distributed throughout the sea star's arms and center, while discovering a small amount of genetic patterning for a tail and none for a trunk.

"It's as if the sea star is completely missing a trunk and is best described as just a head crawling along the seafloor," lead author Laurent Formery, a postdoc in the lab of Stanford biology professor Christopher Lowe, said in a news release. The fossil record shows sea stars' ancestors appeared to have torsos, which raises a new question: When in evolutionary time did sea stars lose their swim trunks?



WALK AND TALK

Palm **Pilots**

Student tour guides offer up some trivia tidbits.

Jane Stanford found the full-breasted female Sphinx statues being carved for the Stanford Mausoleum "not pleasing" and ordered their replacement. Androgynous versions were procured, while the originals were relegated to the seldom-noticed rear of the Mausoleum (and can still be seen)!

> DJ DULL-MACKENZIE, '88, **DIRECTOR OF VISITOR** INFORMATION SERVICES

In 1996, a professor on the first floor of the Varian physics building, Douglas Osheroff, won the Nobel Prize in physics. In 1997, a professor on the second floor of the same building, Steven Chu, won the prize. In 1998, a professor on the third floor of that building, Robert Laughlin, won it. Alas, the fourth floor housed only a few undergraduate labs in its "attic space," and perhaps this is why Stanford did not win the

NICOLE TONG, '24

Nobel Prize in physics in 1999.

BY KALISSA GREENE, '25, AND ANNIE C. RELLER, '24

LUE SKIES, bubbling fountains, and brazen bicyclists: all symbols of university life found at Stanford. But the list would be incomplete without the tour guide, walking backward before a mass of eager parents and prospective students, deploying well-practiced jokes and dodging questions about their SAT score.

Some 50 to 70 student tour guides work for Visitor Information Services each academic year, collectively giving more than 1,000 tours that wind from Palm Drive and the Arts District to the Main and Science and Engineering quads; White Plaza and the Row; and, finally, the Athletics District. Each guide undergoes quarter-long training, then pores over manuals and books so they can set offwithout a script—to offer visitors their own view of Stanford's campus. A few of their favorite stories might be better categorized as lore (Bill Hewlett and David Packard, both '34, Engr. '39, were not, in fact, roommates in FloMo), but here are some of their many Farm fun facts that check out:

BORATORY OF PHYSIC

The Pioneer Class of 1895, proud of their graduation, installed a '95 plaque on a giant oak tree. The next year, Jane Stanford allowed the graduating class to place a bronze plaque in the arcade of the not-yet-constructed Memorial Church. This is why the plaque centered in front of the church is '96. Members of the Class of 1895 are said to have quietly snuck their plaque in next to it (some say in the middle of the night) but had to accept an off-center position.

LUCY LOUGHRIDGE, '26



STUDENT VOICE

The King and I

Could I live up to this imagined version of my dad?

BY ALLAN LOPEZ

TANDING OUTSIDE Arrillaga Family
Dining Commons, my dad looks
toward the sky and swivels his head,
enjoying every inch of the sunset. As I try to
figure out how else to entertain my parents
during Family Weekend, he smiles and, to
no one in particular, says, "Man, I could have
gone to Stanford if I was born in the U.S."

I let out a laugh, an instinctive one. It's the kind of laugh I use to react to most things my parents say: a heavy breath out of my nose paired with a weak smile. It's a go-to response for the things I do not process immediately. When my mom or dad says something I cannot be bothered to appreciate ("Oh, this

place has cheap poke bowls on Tuesdays"), I let it out like a reflex and then keep on reading on my phone. I never ignore the information; I just don't always know how to respond.

Here, with my dad in front of me, once again I don't know what to say.

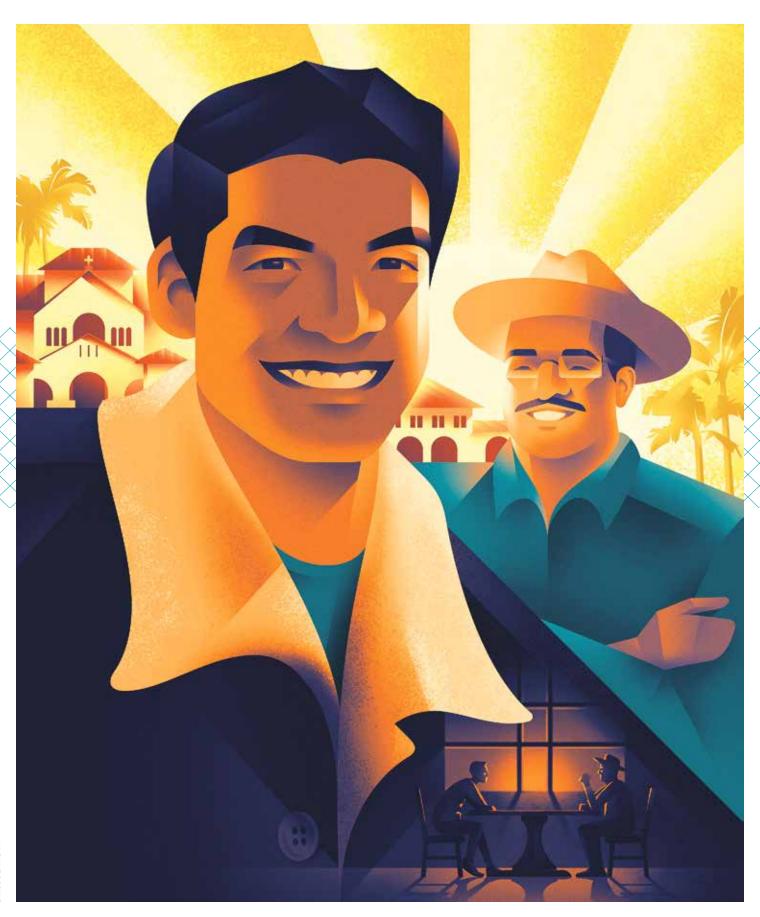
A part of me immediately thinks, "No, he can't know that. I go here, and I didn't feel confident that I'd get in."

But then another internal voice responds. "Yeah, but the difference is that he would have wanted it more than anything. When has he ever failed at that?"

When I got to Stanford, upperclassmen were constantly warning me about impostor

syndrome. How meeting all these accomplished people from around the world could force me to be overly critical of myself. I've been here for four years. I've met actors from my favorite TV shows, Olympians who went to Tokyo, and coders for NASA. I've never felt impostor syndrome.

But at that moment, smiling outside of the dining hall, I started to get it. It's one thing to compare myself with the people around me, the known. But comparing myself with a hypothetical—the imagined version of my father who could have been biking these streets and walking these halls and eating these meals—that's distinct. My impostor



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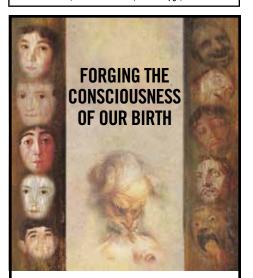
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syndrome was coming from the fact that if my dad were here, I believe he would have appreciated it more than I do and taken full advantage of it.

I never assumed I'd be someone who went to Stanford. I'd never coded before, and I didn't play any sports. My extracurriculars didn't feel like extracurriculars. I never went to church and thought, "The admissions officers are going to eat this up!" My dad was against me getting a job, because he was worried it would take away from my academics, but I once interviewed to work at Baskin-Robbins. Instead of asking me questions, though, the owner made me scoop ice cream until I mastered getting exactly 21/2 ounces into the cone. I woke up with my right arm sore the next day and decided I'd rather focus on school.

My dad is a different story. He grew up in Guatemala, taking care of his eight younger siblings and guiding them through their childhood as he navigated his own. His mother had passed away when he was 8, and his father was more than a thousand miles away in the United States, working and sending back remittances. With the money his dad sent, he could've bought all the pencils and Nike shoes he wanted, but he didn't care for flashy things all that much, since all a boy really wants is his father. He worked tirelessly to support himself and his siblings, and eventually he got a scholarship to Guatemala's preeminent engineering school. No matter how hard he tries to downplay it, I recognize the significance of his putting himself through school like that.

I'm an English major. When I first told him what I wanted to study, he responded with, "But you already speak English. I should be taking those classes." And to that I responded with a real laugh, not with a heavy breath and a weak smile. Even so, it's conversations with my dad that often get me to think about my English classes.

There's a line in Hamlet seared into my brain: "So excellent a king, that was to this/ Hyperion to a satyr," an angsty and indignant Hamlet says, ranting about his stepfather taking his dead dad's throne. His dad is on the level of Hyperion, the god of the sun, whereas his stepdad is a satyr, this half-man, half-goat creature.

Underneath that sunset. I felt like the satyr standing next to Hyperion. Even with orange rays landing on my skin, I felt like I

paled in comparison to my dad and what he could have done. But then he turned to me and said, "I'm glad you're here."

All the first-generation kids I know feel the weight of their family's past on their shoulders and recognize that they didn't end up in a position to succeed by themselves. For that split second in between his two sentences, I worried that I wasn't doing right by my dad-I wasn't doing enough. I thought to myself, "If

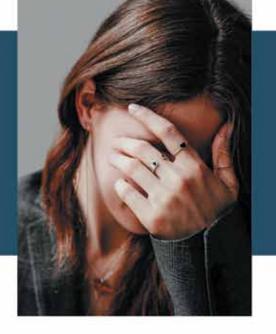


I felt like I paled in comparison to my dad and what he could have done.'

he accomplished that, then I've got to do it times two." I felt both this need to match his life, to go through the same hardships he did, and this guilt that his circumstances had prevented him from doing more.

But I realized that my being here at Stanford was that "more." My dad loves his life, and I've never heard him compare it with anyone else's. His enjoying the idea of being a student here doesn't mean I have to chase after an imaginary scenario of what he could have done. I do plenty on my own, and I've got to be as proud of all that as he is. If all a boy wants is his father, all a father wants is for his son to be happy. So excellent a king he is, my dad. I will be excellent in my own way. ■

ALLAN LOPEZ, '23, was born and raised in the San Fernando Valley. He stands on the shoulders of his teachers, friends, family members, and so many others. Email him at stanford.magazine@stanford.edu.



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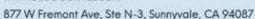






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ELEGY

Sandra Day O'Connor Was My Mom. Here's How I'll Remember Her.

BY JAY O'CONNOR

IRST IS THE TITLE OF JUSTICE SANDRA DAY O'CONNOR'S BIOGRAPHY, and perhaps the word most associated with her. But family is a close second. When former law clerk Michelle Friedland, '94, JD '00, published a 2006 tribute to her former boss in STANFORD, family represented no fewer than four of the 1,304 words she chose (others included husband, sons, and grandclerk).

O'Connor, '50, LLB '52, who died December 1, was an integral part of the Stanford family, and Stanford an integral part of hers. Her intellectual forebear was law professor Harry Rathbun, Class of 1916, Engr. '20, JD '29, whom she credited as inspiring her to seek a life of purpose, logical reasoning, and constructive change. She met the man who would become her husband, the late John Jay O'Connor III, '51, LLB '53, when they worked on a *Stanford Law Review* article together. As an alumna, she served on the Board of Trustees, on the advisory councils for Stanford in Washington and for the Bill Lane Center for the American West, and twice as a commencement speaker.

O'Connor's Stanford legacy lives on in two of her three sons, Scott, '79, and Jay, '84. Scott remembers carrying a flag in his commencement processional, which enabled him to sit near his mother, then a trustee. "That was really fun for me," he says. "She wasn't famous then." By the time Jay graduated, O'Connor had become the first woman to serve on the U.S. Supreme Court.

Both Scott and Jay gave eulogies for O'Connor in December. Jay's, delivered at the Washington National Cathedral on December 19, is excerpted below.

I WOULD LIKE TO SHARE with all of you a son's personal portrait of the human side of our mother, focusing on what she loved, what she believed, and what she was like—especially as a more

I should note that I have asked the choir to break into a lively song if my emotions get the better of me.

Her first love was the Lazy B Ranch in

Arizona where she was raised, a place where she would look out across the rugged high desert, unobstru0cted by trees, and she could see forever.

She loved books. Growing up at the Lazy B and living 30 miles from town was an isolating experience. Books transported her to another place as a young girl, and ultimately led her to Stanford University and beyond.

She loved the law and the Supreme Court.
She loved our country and our democracy.
And most of all, she loved her family.
From her father, she learned toughness.
From her mother, she learned how to handle any situation with grace.

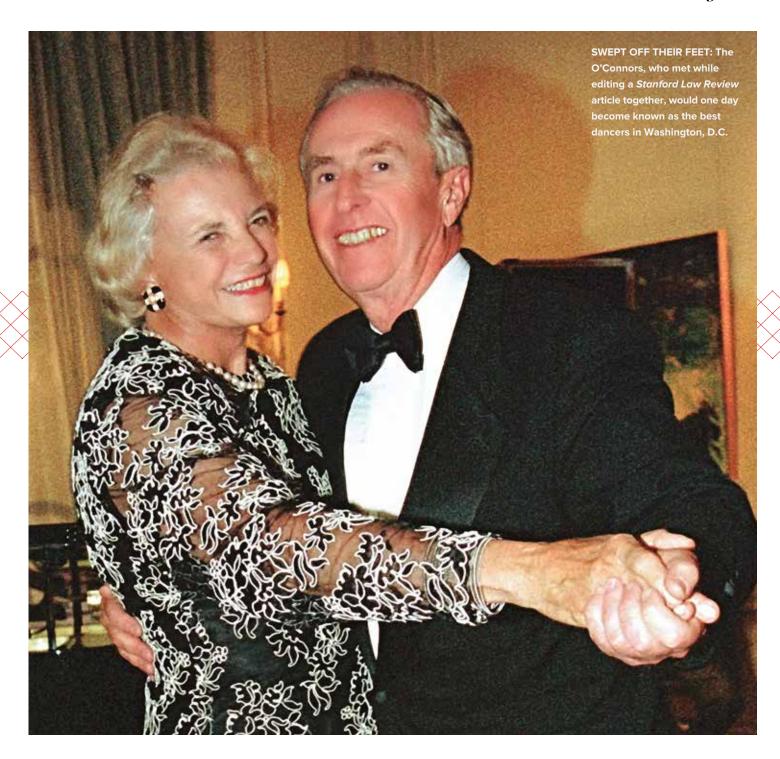
Her relationship with her husband, our dad, John O'Connor, was one for the ages. They were the ultimate supporters and fans of one another in a marriage that lasted 57 years.

Despite our colorful flaws, she loved her three sons. And she adored her daughters-inlaw and the grandchildren that followed.

In 2006, at nearly 76, she stepped down from the Supreme Court. Obviously, after her long, incredible career, it was time to kick back, play golf, and drink margaritas, right? Not for Sandra Day O'Connor. She saw a big problem looming in the country, and she decided she needed to do something about it.

She had become concerned that citizens were increasingly disengaged from their democracy. She looked to the future, and she saw so clearly—decades before anyone else—that our democracy could not be taken for granted.

So she started a nonprofit called iCivics to teach young people about how our government and our democracy work, using online, interactive, role-based games and great



content. All for free. Today, iCivics is used by half of middle and high school kids in the country, and over half the schools.

To you business types, let me put her iCivics accomplishment another way: At the age of 78, our mom founded and led a hot, tech-based, nonprofit start-up. Within 10 years, she had achieved over 85 percent market share and 50 percent market penetration.

Church is a place for confession, and I feel the need to come clean today on a family secret we've protected for decades related to this very topic. Years ago, while going through my mom's papers, I came across a box containing her report cards from middle school and high school. Of course her marks were sterling ... until I was shocked to see something: a B, a scarlet B in the first trimester of one of her

classes. And imagine which class it was in. Civics! Sandra Day O'Connor once got a B in civics. In the presence of the president, Supreme Court justices, and all of you today, I ask you this: Based on her 40-year dedication to promoting the rule of law and democracy at home and abroad, do you think she has earned enough extra credit to raise that lowly B in civics to an A?

WHAT WAS SHE LIKE?

She was a force of nature.

When she walked into a room, everything was more vivid. She willed things into action. People had a very hard time saying no to herexcept her three sons and some of her lively colleagues on the Supreme Court.

She had "unearthly energy," as one of her law clerks said of her.

- Her way of relaxing after a long workday was to play three sets of tennis or 18 holes of golf.
- She would often drag her clerks out on big outings or hikes each year, rain or
- She brainwashed us as kids to think our turbocharged level of family activities was normal. Did we really need to go to three family parties and a square danceyes, a square dance—all in one night? It was not normal!

Mom and Dad absolutely loved to dance, and they were known as the best dancers in Washington. In this city, it was not uncommon for the dance floor to clear the moment they stepped onto it, hand in hand. In the late '70s in Arizona, they actually took lessons in disco dancing.

Quick survey of the justices of the Supreme Court here with us today. Raise your hand if you have received technical training in disco dancing! That's what I thought. My mom is the first person on the Supreme Court with technical training in disco dancing.

AND WHAT WAS SHE LIKE AS A MOM?

While having a very demanding full-time professional career, she was still a mom in every sense, and she ran absolutely everything at our home: organizing the household, outstanding cooking, grocery shopping, getting the kids where we needed to be, planning our social calendars, taking care of her motherin-law, everything. All while still achieving extraordinary things at work. My brothers and I had a front-row seat, and we still wonder how she did it.

She varied her approaches with each

READ OUR PAST STORIES ON O'CONNOR



of her sons, based on our different interests and personalities.

With her hard-charging eldest son, Scott, getting him to 5:30 a.m. swim practice each morning helped him become an All-American swimmer at Stanford.

With her thrill-seeking middle son, Brian, it was a different story and a different approach. When Brian was in high school, he decided to secretly take hang gliding lessons. He knew our parents wouldn't be thrilled. When my mom discovered a receipt Brian had accidentally dropped on his bedroom floor-smooth move, Brian-there was quite a discussion that night at the dinner table.

Our parents said to Brian, "Hang gliding is literally the most dangerous sport in the world. We give you boys a lot of latitude, but we draw the line at hang gliding. For all we care, you could take up parachuting."

> 'Don't hit your brother!' was the first lesson in her own philosophy that she taught us over time to not lash out at anyone, even your opponent.

So naturally, the next weekend, Brian took up parachuting. And now, 2,500 jumps later, he's an elite-level parachutist and does 50-man formations.

As for her approach with me, one important dimension was that my mom typed all my papers in school until I took typing class in junior year in high school. Let me tell you, nothing quite focuses the mind like having Sandra Day O'Connor read and type all your English essays.

To her tremendous credit, she never took out her red editing pen on my papers. She typed them exactly as written. It must have been torture for her. I can assure you that her law clerks did not enjoy this same special treatment.

On the Court she was known for almost

always asking the first questions at oral argument—searing questions that cut to the heart of the case. Where do you think she developed those world-class interrogation skills? Once she arrived at the Supreme Court? Hardly. She finely honed those techniques from years of grilling her three sons about what time we came home on Saturday night. To the trial attorneys of America, you're welcome.

WHAT WERE OUR MOM'S MAXIMS for us as kids-the sayings she drilled into us over and over again?

- "If you don't have anything nice to say, don't say it at all."
- "Get it done."
- And her most repeated command of all: "Don't hit your brother!"

And amazingly, these very maxims were some of the exact same strategies she used to make herself so successful in life and on the Supreme Court. I'm serious.

"Don't hit your brother!" was the first lesson in her own philosophy that she taught us over time-to not lash out at anyone, even your opponent. And to treat everyone with kindness and respect. This approach allowed her to navigate every situation with grace and goodwill.

In 1987, she wrote out by longhand a letter to her three sons and sealed it, not to be opened until near the end of her life. Included were detailed instructions about what should happen when she died. This included what she wanted at her funeral, her favorite music to include, some key readings, and more. The unmistakable theme of her selections was justice on Earth. It won't surprise you to know that we are following her instructions to a T.

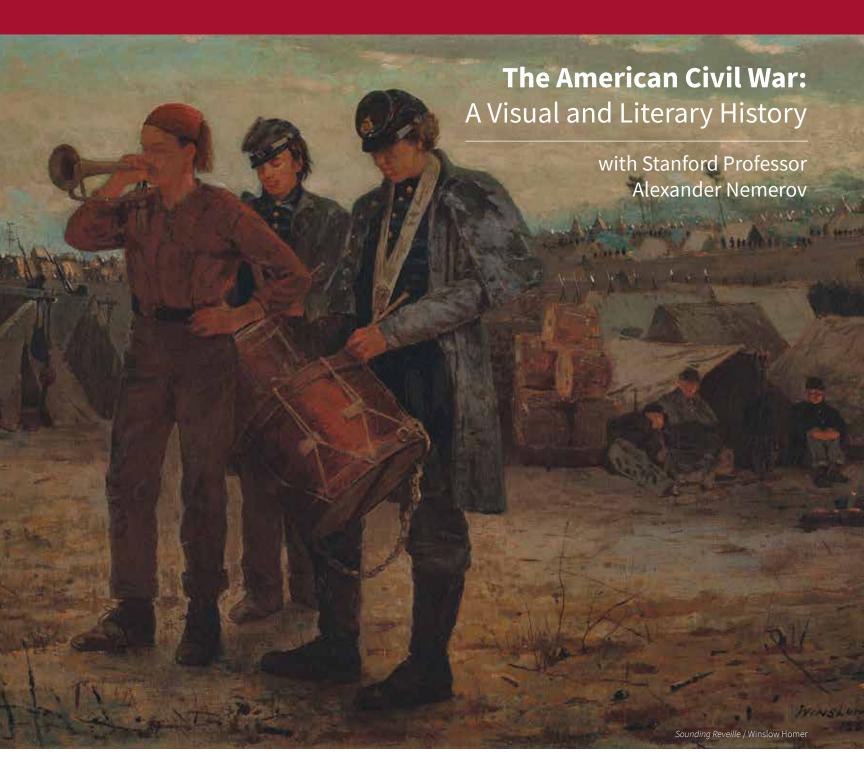
And in the letter to us, she also wrote her final message to her sons. This included the following passage:

"Our purpose in life is to help others along the way. May you each try to do the same."

What a beautiful, powerful, and totally Sandra Day O'Connor sentiment. And it is so clear to Scott. Brian, and me that she lived her own life in complete accord with this purpose.

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FAMILY SECRETS

The Lobster Clause

On a new podcast, Danny Jacobs grapples with the legacy of a narcissist father who used the law to manipulate people. Take that time at the upscale restaurant . . .

BY ROSALIND EARLY

ANNY JACOBS WAS NERVOUS.
His dad had taken him and his older brother to Bristol, a tony seafood restaurant in St. Louis, and they'd ordered 10 lobsters. The waiter had been astonished, as had Jacobs, though for his 10-year-old mind, the order didn't seem insurmountable for one man and two kids.

They'd feasted and packed up the leftovers, and when the bill came, Jacobs's father, Richard, left. That was when Jacobs, '01, got worried. His dad, he suspected, was up to something.

Richard returned carrying two trash bags, which he handed to the waiter. In the bags was not cash but corks.

Bristol was having a special: If you brought in a wine cork, you'd get a dollar off your meal. Richard had been going to wine stores across St. Louis for weeks, collecting thousands of them. The manager was called. Richard produced the ad, and, indeed, there was no stated limit to the number of corks you could redeem. An argument ensued. Jacobs sank into his chair. The roomful of St. Louisans in jackets and ties or understated jewelry and sensible pumps looked up from their crab cakes and ahi tuna to watch.

"We were being ogled,"
Jacobs recalls. "As a kid, that
was very, very difficult to get
through." Ultimately, the corks were
accepted as payment, and Richard was
banned from Bristol.

The incident was vintage Richard Jacobs. A disbarred attorney who had once prevailed in the U.S. Supreme Court in a dispute over what lawyers could say in their ads, Richard would use the law to harass people. When the Bristol manager touched his shoulder, Richard threatened to sue for assault. He worked relentlessly for months, even years, on retribution for perceived wrongs. His family was not only humiliated by his behavior-"I felt really intense shame on a daily basis," says Jacobs-but also targeted by it. Richard opened bank accounts in Jacobs's name and hacked into his email. He lied about having had a heart attack, toying with Jacobs's emotions. He sent long letters to Jacobs's future mother-in-law, claiming that his son was an abusive narcissist.

In reality, it was Richard who was the narcissist. After Richard died in 2015, Jacobs, an actor/writer/director who has appeared in *Grey's Anatomy*, *Masters of Sex*, and

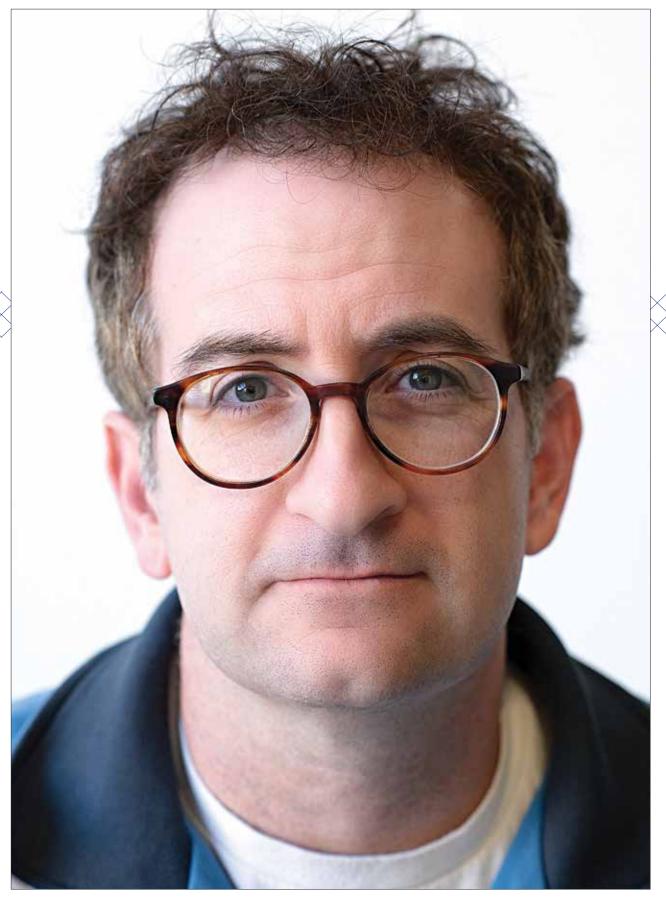
American Crime Story, began kicking around the idea of doing a TV pilot that would let him tell the story of his relationship with his father. Then he had kids, who are now 3 and 6.

"I just started revisiting everything that my father was to me," Jacobs says.

The result, he realized in talking with his childhood friend Darren Grodsky, would not be a fictional TV series but a nonfiction podcast. It would detail the bizarre events of Jacobs's childhood and why he ended his relationship with his father four years before Richard died. It would unpack why his mom even married his dad in the first place. It would look at the man Richard Jacobs was and all that he did, and it would be called *How to Destroy Everything*.

GRODSKY AND JACOBS have been close friends since first grade, but growing up, they never talked much about Richard. "Maybe I felt embarrassed for [Danny]," Grodsky says.

Jacobs's parents separated when he was 6, beginning a protracted custody battle during which Jacobs's father regularly absconded with him. "I remember being chased around



the parking lot at a grocery store, and then he put me in his car and drove me off," Jacobs says. Around age 12, Jacobs made a declaration: He would split his time evenly between his mom and dad, alternating weeks at their houses.

As part of the divorce proceedings, Richard had to undergo a mental health evaluation. The doctor diagnosed him with narcissistic personality disorder.

"It's a chronic, maladaptive interpersonal style that continues beyond adolescence into adulthood," says Anna Lembke, MD '95, a professor of psychiatry and behavioral sciences at Stanford. "It's usually characterized by a grandiose and inflated sense of self, preoccupied with fantasies of success, power, brilliance, beauty, thinking that they're special and only can be understood by other special people."

Jacobs developed a coping mechanism a big persona as the "wacky neighbor kid"-that he would use whenever he went over to the Grodskys'. "It was a way of separating myself, about not being emotional," he says on the podcast.

With all the pretending, it's no wonder that Jacobs gravitated toward acting and improv in college, appearing in Gaieties and joining the Stanford Improvisors as a frosh. He majored in political science, interned at the White House, and was junior class president, but he also starred in the drama department's production of Tom Stoppard's The Real Thing and booked Taco Bell commercials. When it came time to choose between his interests, he elected to try his hand in Hollywood. So did Grodsky. The two eventually became writing and directing



partners on such films as Humboldt County and Growing Up and Other Lies.

But when Jacobs moved to L.A. after college, Richard started writing letters to Hollywood bigwigs asking for a meeting-in his son's name. Without Jacobs's knowledge or consent.

"It's a great example of my dad's skewed nature," Jacobs says. "Like, he's trying to help my career, but he's doing it in a way that's extremely hurtful. He would do something like that, and I would get really mad, and I wouldn't talk to him for a little bit.

"But I so desperately wanted a father figure who was a normal human being. I would just grasp at any straw I could when he would behave normally, and I would convince myself this is OK."

'For good or ill, my dad's superpower was he had this innate understanding that what we think are rules of society are often merely suggestions.'

Richard was incredibly intelligent but used that intelligence to flout rules. He was fired from the Securities and Exchange Commission for trying to access a classified database. He called Child Protective Services on a neighbor who had asked him to drive more slowly because the neighbor's kids played in the street. He harassed the St. Louis County assessor's office with hundreds of letters and phone calls until he was allowed to change his address on Royal Manor Drive to The Royal Manor-no street number. At one point, there were so many people in the St. Louis area who felt victimized by Richard that they established a support group—and invited Jacobs's mother to join them.

"It sounds like he had more than narcissistic personality disorder," Lembke says. Although he's not here to diagnose, Lembke



wonders whether Richard might also have had antisocial personality disorder. The two conditions, she notes, often exist together.

People with antisocial personality disorders "take advantage of others to achieve their own ends," she says. Jacobs says other people in his family have also suspected his father had other diagnoses, though Richard never thought he had any.

"For good or ill, my dad's superpower was he had this innate understanding that what we think are rules of society are often merely suggestions," Jacobs says.

JACOBS HAS NOTICED IN HIMSELF a resistance to authority figures, especially if he feels he's being treated unfairly. But he's not sure whether that's something he learned from his father or a reaction to Richard's own capricious wielding of power.

"When I grew up with my dad, I felt helpless," Jacobs says. "I felt so trapped by this authority figure who was irrational in the way that he parented. So when I engage with an authority figure where I feel that same irrationality, I get a very deep rage."

The podcast is a chance, as Jacobs says in the first episode, to make his painful childhood have a purpose, but it's also an opportunity to uncover what parts of Richard still linger, phantom-like, in Jacobs, so he can stop himself from passing that down to his children.

"The only areas that have given me pause in terms of my own parenting are the ways in which subconsciously I may be my dad," Jacobs says. "And I do feel it."

Jacobs and Grodsky co-host the podcast, which blends multiple methods of storytelling: reenactment, interviews, and conversation. The initial episodes last fall garnered more than a million listeners; at press time, the team was in negotiations with a podcast network to host the show

and release new episodes regularly. In the meantime, the team has released teasers that hint at topics the show could unpack: the gratitude of listeners who grew up with a narcissist parent, the tumult the podcast has created for Jacobs within his family, and the trip Grodsky took to The Royal Manor after a listener-and current manor residentuncovered secret compartments there.

"I think the podcast asks whether Danny, after discovering who his dad was, can find a pathway to forgiveness. And we genuinely don't know the answer to that," Grodsky says. "It was almost a scary question, because for years that would have never even occurred to us, because he was responsible for this monstrous childhood."

The podcast begins at the end, with a dramatization of the moment Jacobs finally decides to cut his dad off. Jacobs is introducing the woman he's going to marry, Katie (played by Roxana Ortega), to his dad, and is coaching her on how to keep herself safe

during the dinner conversation. Don't tell him your birthday. Don't tell him your phone number. Don't tell him where you work or your address. With just that bit of information, he will destroy you.

But Jacobs leaves the table to go to the bathroom, and when he returns, he sees Richard with notebook and pen in hand. His father has sweet-talked Katie into divulging her phone number and birth date, and is working on the address. A scene follows-Jacobs and Richard begin tussling over the notebook-and Jacobs knows he has a choice to make.

He chooses Katie and cuts his dad out of his life. "It was extremely painful," Jacobs recalls. "I essentially had to mourn him while he was still alive."

Richard would live another four years. Jacobs gave the eulogy at his funeral.

"He loved very deeply, but he didn't know a healthy way to love," Jacobs said in the eulogy and repeats on the podcast. That's one thing Jacobs fears gets lost in the podcast as the co-hosts recount Richard's oddball stunts. "I did love my dad, and he did have my best interests at heart."

When Richard died, he left a house teeming with stuff, mostly papers that filled boxes in every room and even covered the bed. Jacobs had no interest in going through anything at the time, but he now wishes he had. Instead, he is doing a different kind of sorting to figure out who his father was and how they are similar and different, all with an eye toward his own parenting. It's a process full of ambivalence and wistfulness.

"I do wish my children had the opportunity to meet him," Jacobs says. "I would not have been comfortable with them having a relationship with him, because I know how toxic he was. But I wish they could say, 'I met my grandfather.' It's a moment that I miss." ■

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And Now for My Second Act

Finding a new career is hard. So I asked Stanford to do it for me.

BY JOEL STEIN

AM 52 YEARS OLD, have more than I ever wanted, and there's an emptiness inside of me. The emptiness is not sports car-shaped. The emptiness does not feel like a "crisis." The emptiness feels like the space between gears revving in neutral. It is a background frustration that bursts out in episodes of cranky old bastardom. It's a dull form of the pain I endured for two years after I graduated from Stanford, when I couldn't find a foothold in a writing career. Now, 30 years later, I am close to the summit of Maslow's hierarchy and I want to jump off.

When I heard about the Stanford Distinguished Careers Institute, it sounded like the solution to my simmering stew of ennui and anomie. DCI is a yearlong, nondegree program for people who feel finished with their first career and want to figure out what to do with the rest of their lives. The 41 people in this year's program take a full load of both undergraduate and graduate courses in which there are available spaces. The average age is 60. I have always been precocious.

There were, unfortunately, some reasons I couldn't apply. First, I did not have a distinguished career. Since my time at the *Stanford Daily*, I have made my living writing self-obsessed articles full of penis jokes for

magazines, a line of work that has become less meaningful for me and even less meaningful for society. After 20 years of writing a column and cover stories for *Time*, I am now writing an article for an alumni magazine that once ran a six-page profile about me. Second, I have a 14-year-old son in Los Angeles who is not interested in switching high schools for a year. Third, the cost is \$72,000 (plus \$40,000 for a spouse . . . plus housing in Silicon Valley), and I have made my living writing articles for magazines.

So I used this article as an excuse to try DCI out for a week. First off, I meet the director of the program, Katie Connor, '79, MS '80, who did the program herself in 2018–19. She used to run career development for the University of Colorado Boulder, where she told undergrads, "You're lucky you have a career office. There's no retirement office."

While she is smiley and encouraging, Katie does not think I can resolve my career

How many careers have you had?

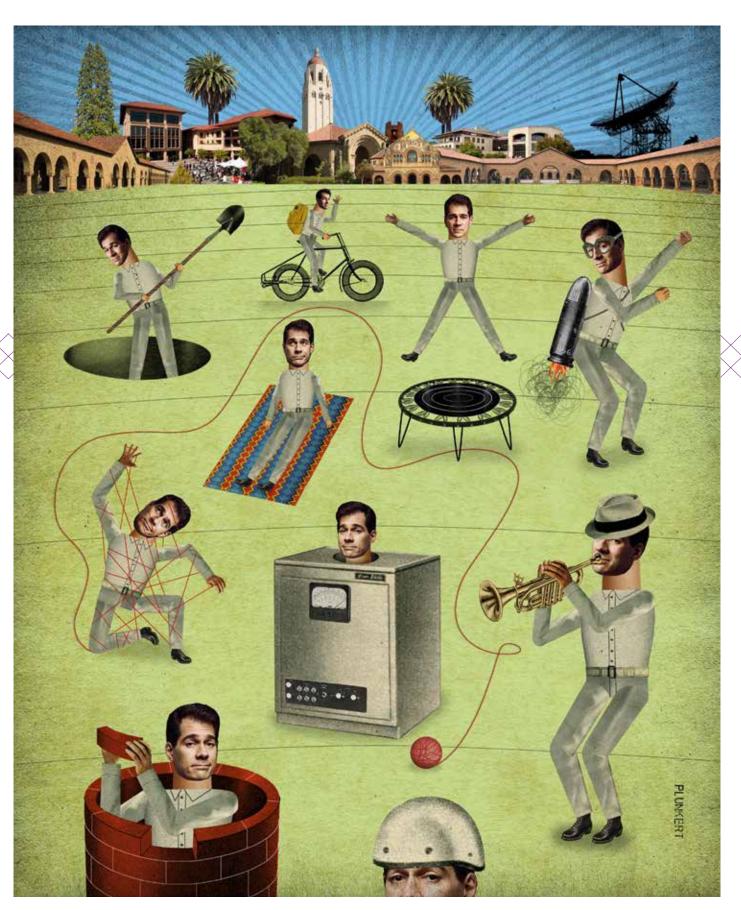
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issues in a week. Or after an entire DCI program. "It's unrealistic to think that you'll leave after one year and have the epiphany. Think about college. That was four years. And you still had to go out and try different things." That sounded reasonable, until I realize that Katie went to DCI and then took it over. It sounded less like she tried different things than that she tried no things. I want to be like Katie.

Although many DCIers arrive with a general area they want to pursue, 89 percent change their primary interest by the time they leave. And finding a new interest was going to be harder for me than most. Because the top field DCIers conclude they want to pursue, after "aging" and "spirituality," is "journalism." No one has left the program and gone into international tax law. That's because as our time horizons shrink, our feeling of meaning comes less from impressing the world than from contributing to it.

Unlike similar programs at Yale (which focuses on character) and Harvard (which focuses on global impact), DCI is built around wellness, community, and purpose. It's a journey to find yourself. Which is a phrase I made fun of when friends said it after graduation, arguing that I was way more



out of the hole."

you're like a meerkat popping your head up

This was insightful, but I was more hoping Dave would tell me to get a PhD in philosophy or work for the State Department. I was joining a long line of frustrated DCIers in search of simple answers. "I thought it was going to be a job fair," says Melissa Hollatz, '94, JD '97. "And I got here and they said, 'First, we're going to do all this work on you.' It was kind of frustrating. I just wanted someone to tell me what to do."

In Dave's class, we huddled in groups to do exercises such as drawing maps of all the words related to one of our interests. Or writing down what we think the purpose of work is. I learn that while my need for attention has shrunk, my desire for new experiences has not. Dave argues that there are many good future versions of ourselves, which we should sketch out. Then we should immediately pick one and iterate toward it. He calls this a "bias toward action"-trying new things without long-term expectations, meeting people for coffee to find out about their jobs. I have, admittedly, been unbiased toward action for seven years, waiting for a path to materialize. Dave suggests imagining what we'd do if our current line of work suddenly disappeared from the planet. This is not a challenging thought experiment for me.

If there are at least three good versions of Future Me, as Dave claims, then there are at least three good versions of Past Me. And Melissa Hollatz feels like one of them. She was a year behind me at Stanford, went to Stanford Law School as I thought I would do, and worked her entire career at Palo Alto's Wilson Sonsini Goodrich & Rosati until one day last year when, to her surprise, she answered the managing partner's question of "How are you doing?" by quitting. I ask Melissa if she'll let me be her DCI sidekick, and she enthusiastically agrees. This version

of Past Me is much nicer than Actual Me.

Melissa has a meeting with her group from her podcast storytelling course, which she took even though she'd never considered making such a thing. "Suddenly the stuff that wasn't interesting to me—it seems like I want to do it. And there are people who want to help me with it," she says. The two undergrads who signed up to make her podcast about DCI felt like they learned how to be more professional from her. And she's been vampiring their energy, making her more interested in the project than anything she's done in a while.



I learn that while my need for attention has shrunk, my desire for new experiences has not.

Part of what makes DCI work is the same reason Stanford worked on me 30 years ago. Which is the same reason it worked on so many Silicon Valley entrepreneurs. Stanford is an optimism machine, a confidence generator where people embrace your ideas no matter how insane they are. In our senior year, when my friend Pete Huyck, '93, had his ass shaved in White Plaza, hundreds of people came to watch as the Stanford Band played and people handed out sandwiches. Also, Google was created here.

Melissa has a sardonic attitude, but since she's been back on campus she has found a new earnestness. Everything feels possible. Some DCIers learn a language. "People think, 'If I were to start learning about something

this late in life, I'd be too far behind.' We give that idea a swift kick," says Becca Taylor, DCI's assistant director. Max Bosel, a quiet, thoughtful 57-year-old who used to be the Mountain View police chief, says that within a few weeks at DCI, he realized he was going to revamp his idea of teaching first responders a financial wellness class. Because the idea wasn't big enough. "I've been Stanfordized," he says.

This, even more than a career, is what I want: enthusiasm. "I want to be used up when I die," says Sonja Schoenwald, '81, an energetic former mental health research scientist who, like nearly all her cohorts, carries a black DCI backpack everywhere she goes. "You need the juice. Don't dry up." I, too, want to rage against the dying of the light at a Kappa Sig party. Or, more realistically, hear about the party at our podcast meeting when the undergrads tell me about it.

Melissa takes me to Professor Alexander Nemerov's 11:30 a.m. course How to Look at Art and Why: An Introduction to the History of Western Painting. The lecture hall is nearly 10 percent DCIers, and as I stare at a slide of a painting by Diego Velázquez, I get why they are drawn here. Nemerov is an existential poet who barely talks about art, stalking the stage and expounding on our rare opportunity to explore ideas at a university. "We're in this moment before we become middlemen. And we just quaff it down," he says. Then, he expresses the thought in my head, the one about what to do with those ideas when I go back next week to being a middleman. "How will you put that into use? You will. Just don't try," he says. It's so much more comforting than Dave Evans. But it's not the Answer. Because I've been not trying for seven years, and it hasn't worked.

On Wednesday nights, the DCIers attend their one mandatory class. Each session begins with a discussion with a Stanford professor, and then two DCIers deliver their Life Transformation Reflections, a 20-minute speech about an experience that changed their lives. Like most DCIers, Melissa cried when giving hers, which was about her father's death. It bonds the group together and leads to deeper discussions. "Either this program is amazing, or it's a cult. I don't know," Melissa says.

Tonight's talk, "International Taxation:

How Companies and Countries Compete on Taxes," is by Business School professor Rebecca Lester. I do not see how learning about international tax law is going to help my life transformation. About five minutes into Lester's presentation, I find that... I'm interested in international tax law. International corporate tax rates could be standardized to decrease wealth inequality! To raise funds for services! For a few minutes, I'm certain I should write a long article on international tax law.

After the LTR, nearly all the DCIers head to get burgers at Gott's in Town & Country Village. In addition to riding bikes and wearing backpacks, DCIers revert to horrible undergraduate eating habits. These former CEOs, law partners, and doctors who can spend \$72,000 a year on classes are eating an awful lot of pizza, takeout Chinese food, and burgers. I believe this is a huge part of why they love the program.

In addition to a customized spirituality

discussion group, most of the participants sign up for John Evans's DCI-only memoir class. I take a chair around the table and watch Melissa read her essay out loud to the group. They are more supportive than any writing class I've ever seen, impressed by her clever prose and willingness to share her frustration with always being a peacemaker. John, who has a tattoo on his left forearm that says "Love," is a gentle, encouraging adviser. When I talk to him outside of class, he tells me he uses writing to help people remember who they were before they started their career. This allows them to re-create their self after they lose their identity as, say, a print journalist dad with a kid at home.

What I have isn't a problem, John says, but an opportunity. One that few people in the world have ever had. "You know what you like and what you don't like. If you're well resourced, how cool is that?" he asks. For a second, I can see that it really is.

I work on a memoir class assignment

asking me to remember when I first became aware of mortality. It makes me realize what a conservative, nervous nerd I've always been, and how I require so much motivation to take risks. The kind of motivation, I'm guessing, that could be provided by spending a year with 41 fellow DCIers and 7,841 undergrads who think every idea is new.

But even one week at DCI was enough to put my revving engine into first gear. In a bias toward action, I started a Substack called The End of My Career to iterate toward some book ideas. I have a meeting with a guy who wants help generating funny memes for his AI company. I sent an email to some journalism school deans about what it's like to teach. And, every so often, I go online and look for opportunities to work on international corporate tax law.

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FULL SEND.

No one embodies the Stanford men's gymnastics team's unspoken mantra for going all out quite like junior Taylor Burkhart. An athlete who approaches gymnastics "like a caged animal" yet is "the nicest guy," according to assistant coach Mark Freeman, Burkhart has an energy that can change the momentum of a meet. Even so, Burkhart was surprised when head coach Thom Glielmi tapped him to lead off the 2023 NCAA championships, held in State College, Pa.,

last spring, with the first vault on the team's first rotation. Burkhart's sophomore season had been rocky: A hand injury had kept him out of all but four meets and knocked him off the U.S. Men's National Team. Moreover, his vault, a difficult round-off backward half launch into a front flip with two full twists, was hardly the conservative routine with which teams typically begin their rotation on an apparatus. But Burkhart didn't flinch. He knew what his coaches and teammates were counting on him to do. He saluted the judges, started his sprint—"and then I blacked out," he recalls with a laugh. The next thing he remembers was sticking his landing as his teammates exploded in jubilation. His vault would earn him a career-best score of 15.00 and launch a string of Stanford stuck landings on the way to a decisive fourth straight NCAA crown. Says Burkhart, "I wanted to leave no doubt which team was best."

Stories about the demise of collegiate men's gymnastics abound. Thanks to many forces, including waning grassroots support and athletic-department budget cuts and shifting priorities, especially in the wake of Title IX, an NCAA field that boasted more than 200 teams in 1969 is down to just 15 in 2024, placing it among the smallest sports the NCAA sponsors. But at Stanford, men's

STRENGTH IN NUMBERS: Previous page, from top, left to right: Hong, Arun Chhetri, '26, Nick Kuebler, '25, David Shamah, '27, Blake Sun, '21, Toma Murakawa, '27, Brandon Nguyen, '24, Reece Landsperger, '27, Jeremy Bischoff, '24, Burkhart, Kaien Orion, '26, Ian Gunther, '22, MS '23, Young, Zach Green, '27, Marcus Kushner, '26, Mark Berlaga, '25. Not pictured: Briones, J.R. Chou, '23, Ian Lasic-Ellis, '25, McFarland, Walker.

gymnastics is very much alive and dreaming big. "We don't want to be just the best team in the United States," says junior Khoi Young. "We want to be the best team in the world."

This gem of a program, which will be shooting for its fifth straight and 10th overall NCAA title in April, isn't just a departmental point of pride and one of the cumulative top point-getters for the 26 Directors' Cups Stanford has piled up. It's a crucial pipeline for the U.S. Men's National Team. At the start of the year, six of the

19 senior national team members were Cardinal athletes, while three others—Riley Loos, '23, Brody Malone, '22, and Curran Phillips, '22—were recent graduates. Personnel aside, Stanford has embraced a national team perspective that recognizes that the only way to compete with the top teams in the world is to push difficulty in routines—to go big.

The United States has historically been behind the top nations in difficulty of routines, which puts it in a hole before a competition even starts. (Scores are a combination of execution and difficulty.) Glielmi, who coached the 2020 Olympic team, is helping bridge that gap by urging his gymnasts to maximize their E-scores (out of a possible 10.0) while ratcheting up their D-scores (which don't have a cap but rarely exceed 7.0). It turns out that chasing Japan and China on the international front helps the Cardinal stay ahead of Michigan and Oklahoma on the collegiate front. "We've been able to win the NCAA title four years in a row by being far ahead of the field in taking risks," says Loos, a seven-time All-American who graduated last year but is training with the Stanford team ahead of the Olympic trials in June. "We've created a new standard in NCAA gymnastics that people are starting to catch up on." And that, says former Olympian Brett McClure, high performance director at USA Gymnastics, "is bringing up the entire national program."

Going big has produced some eye-popping results for the Cardinal. In the NCAA championships, where team scores are the sum total of five gymnasts' scored routines in each of six events—floor exercise, pommel horse, rings, vault, parallel bars, and high bar—the winning margin is often a fraction of a point. Stanford has won the last three titles by more than



2.5 points. Last year's team was so deep that it beat runner-up Michigan by 2.569 points despite missing Malone, the most decorated gymnast in Stanford history, who was injured while competing with the national team in March. The year before, Stanford won by a staggering nine points, leading NBC commentator Tim Daggett to call the Cardinal "the most dominant team gymnastics has ever seen."

A lot goes into maintaining that dominance. "Obviously you need talent," says sophomore standout Asher Hong, the nation's top recruit two years ago, who already has two World Championships to his credit. "But you also need guys who aren't afraid of putting in the work despite their talent—and have the humility to put the team's goals above individual ones."

Glielmi, who has signed a number of top recruits in his 22 years on the Farm, doesn't take those last two qualities for granted. "Gymnasts are like feral cats," he says. "They tend to be very independent. There are usually some outliers who don't buy into the program. Now all the guys embrace the program. They understand the highs and lows. They support each other, push each other, hold each other accountable. They sincerely want success for the team. The way it has come together as a real team in the past six or so years—it's very rare."

THEY'VE GOT THE MOVES

This year's tightly knit squad includes Olympic hopefuls Colt Walker, a senior All-American who won a silver in the parallel bars at the Pan American Games in October; Hong, who won the U.S. Nationals All-Around and NCAA vault titles last year; and Young, who won silver medals in the pommel horse and vault and, along with Hong, helped the United States to a team bronze at October's World Championships in Belgium, its best international performance in nearly a decade.

Then there's Burkhart, a junior who is strong in vault, floor, high bar, and parallel bars but has achieved true gymnastics immortality in the pommel horse. Burkhart is one of the very few gymnasts in the world to get his name into the Code of Points, the gymnastics bible that lays out the law on everything from equipment setup to point deductions. The COP—which details more than 700 men's gymnastics skills—includes 263 named after the gymnasts who created and first successfully executed them in an international meet. Of the 18 Americans in it, six are from

Stanford—and five of those are Glielmi recruits, including Malone, who created a parallel bars mount into a handstand followed by a three-quarter turn; Loos, whose pommel horse skill involves circling one end of the horse and then hopping to the other end into a handstand; and Burkhart, whose unusual flared-leg travel from one end of the horse to the other got the nod in 2022.

"The Stanford guys are incredibly innovative," says McClure. "They are constantly looking for new skills, new combinations, and new ways of doing routines—what they consider the smartest and most efficient way."

While the practice environment at the Ford Center is intensely competitive—Glielmi's philosophy is "practice



how you want to compete"—it is also remarkably supportive. Glielmi has created what Loos calls "a tiered culture of accountability" that starts with a yearlong training program of 12- to 14-week cycles, each of which is broken down into smaller cycles of easy, medium, and hard weeks, with their own daily assignments. Helping Glielmi track 19 gymnasts with as many as six routines each are three assistants—Freeman, Grant Breckenridge, '19, and Rubén Lopéz Martinéz—as well as two team captains and six event leaders, who spell out expectations for every apparatus.

Even Cardinal gymnasts who don't have Olympic aspirations often find themselves training like they do. Says co-captain Luke McFarland, a junior who expects his

Glielmi, Lopéz
Martinéz, Breckenridge,
and Freeman manage the
team's multipronged workouts for 19 gymnasts
across six events.

career to end with college, "Asher does the hardest vault in the world, and I get to see him do that every day. That pushes me as a gymnast. That's what I've got to be working toward if I want to be in the lineup at NCAAs." Adds fifth-year senior Brandon Briones, a five-time All-American and 2020 Olympic team alternate whose goal of making the '24 team ended when he injured an Achilles tendon in early January: "Thom's goal for you is to strive towards a routine that could be in a world championship final. That's the standard that he sets for everyone."

The gymnasts coach one another toward that standard, especially with nuances such as how a certain skill should feel or which muscles one should engage when executing, say, a cross on the rings. They also keep each other honest. If a handstand is off-kilter or a dismount sloppy, teammates will call it out and make the offender do his "number"—a routine or part of a routine—again.

If there are hard feelings, they don't linger. These guys are all best friends who eat, study, and hang out together even though they live all over campus. "We're like brothers," says Hong.

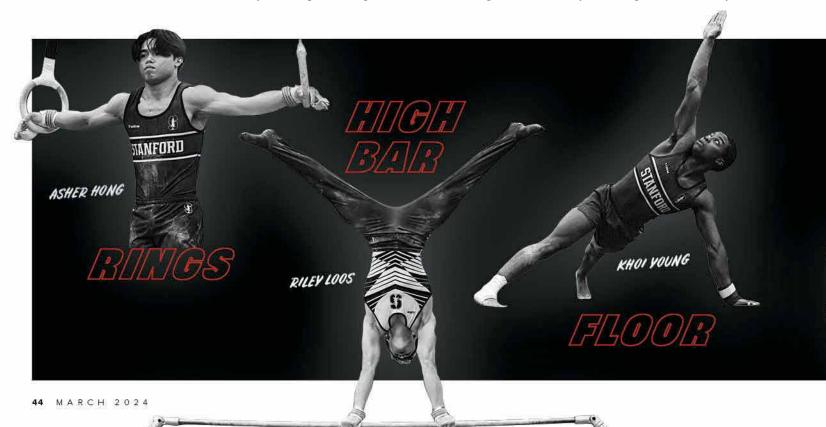
Glielmi knows as well as anyone that the grind is long and hard in gymnastics. His athletes say he is good at reading people—sussing out their needs and making athletes' health a priority. And as long as everybody does their assigned work, he keeps the mood light. "When I came here, I was shocked at how fun the training environment was on a team this successful," says Young. "A lot of that is Thom. He's always creating little competitions and

encouraging us to cheer, or cracking jokes, or doing little things to surprise us, like shutting off the music just as a guy is about to start a routine." Glielmi also likes to tell stories, which can boost team chemistry just through collective eye-rolling. "He always gives us a hard time because we have much better padding and mats now," says Burkhart. "He's like, 'Back in my day, I had to do a double back on concrete."

FOR WHOM THE GYM TOLLS

It's easy to understand how boys get into gymnastics. Often, they are the kids whose persistent couch trampolining, wall climbing, or, in the case of Hong, early obsession with Spiderman drive their parents to drop them off at a tumbling class just to drain excess energy. The bigger question is why they stay. Certainly the path to athletic glory for guys who top out under 6 feet is narrow. (The Cardinal's average male gymnast height is 5'6".) But gymnastics seems to present a raft of disincentives: The time demands are enormous, the instant gratification nil, the public acclaim scant, the professional avenues limited, and, even if one avoids the most gruesome injuries—such as French gymnast Samir Ait's leg snapping in half on his vault landing at the Rio Olympics—the physical toll steep.

But among its practitioners, gymnastics can inspire a fierce passion. "It's a very difficult sport that not many



people can do, yet it's so rewarding as to be almost addictive," says Walker, a mechanical engineering major who appreciates the sport's technical aspects. "Once you master the hardest thing that you can think of, you move on to a harder version. And there's always a harder version."

For example, Hong's vault, the Ri Se Gwang, which involves a dizzying full-twisting triple backward somersault, is already the highest difficulty vault in the world. But he does think about ways to upgrade it—after the Olympics, he says—perhaps by straightening his legs or adding an extra full twist. "It's hard to imagine, but there are ways to make that vault even more difficult," he says, laughing.

The infinite possibilities are what grabbed Glielmi. The youngest of 11 kids growing up on Chicago's South Side, he sought thrills with his friends by taking bets over whether he could "chuck" flips off fences and garages. "The neighborhood I was in, nobody had any money, so you'd get a couple bucks, that was it," he says.

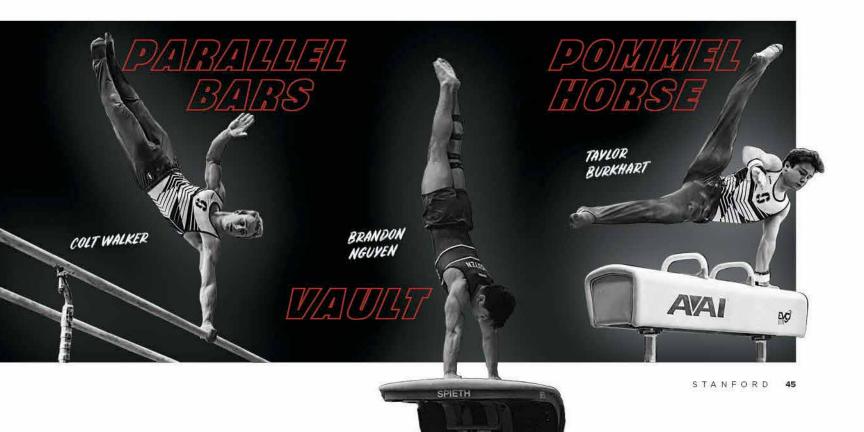
During Glielmi's freshman year in high school, his family moved to one of the city's southern suburbs. When a teacher saw Glielmi doing flips in a physical education class, he suggested he go to the school's gymnastics tryouts, which were being held an hour before baseball tryouts. Glielmi showed up for the gymnastics tryouts—with his baseball glove. "I loved baseball, and I was good at it," he says. But seeing the gymnastics equipment, he could imagine thrills that baseball would never provide. "You can always add another flip, another twist, different ways to put a routine together," he says. "I never left the gym."

Gymnastics eventually led him to Southern Illinois University, where legendary coach Bill Meade had won four NCAA titles between 1964 and 1972. Meade ran his program in a straightforward, disciplined way that would strongly influence Glielmi. "There were no surprises: These are the rules, these are the repercussions; it didn't

'GYMNASTS ARE LIKE FERAL CATS. THEY
TEND TO BE VERY INDEPENDENT. NOW ALL
THE GUYS EMBRACE THE PROGRAM. THEY
SUPPORT EACH OTHER, DUSH EACH OTHER,
HOLD EACH OTHER ACCOUNTABLE.'

matter if you were the best guy or the worst guy," says Glielmi, who was consistently in the lineup in parallel bars, floor, and vault. "I thrived under that."

Before he could launch a career with the communications degree he earned in 1988, Glielmi got offers to coach. After a few years of coaching both girls and boys, he



decided to open his own facility. Being a co-owner of the International Sports Center in Matthews, N.C., was "a ton of work," he says, but he learned lessons about running a business that would turn out to be critical when he became a head coach. In 1998, the University of Minnesota called with an assistant coaching offer. "I mistakenly thought I'd go from working 70 to 80 hours a week to a 40-hour week," he says. "But when you love what you do, it doesn't seem like work."

After earning the NCAA Assistant Coach of the Year award in 2001, Glielmi landed at Stanford as the assistant and heir apparent to Sadao Hamada, who had coached two Olympians—Steve Hug, '74, and Jair Lynch, '93—and won three NCAA titles ('92, '93, and '95) in his 30-year tenure. When Hamada retired in 2002 after a sixth-place finish in the NCAAs, six seniors graduated, leaving Glielmi with just nine gymnasts and a rebuilding project. When a few of his gymnasts made the national team, Glielmi started to gain credibility with recruits.

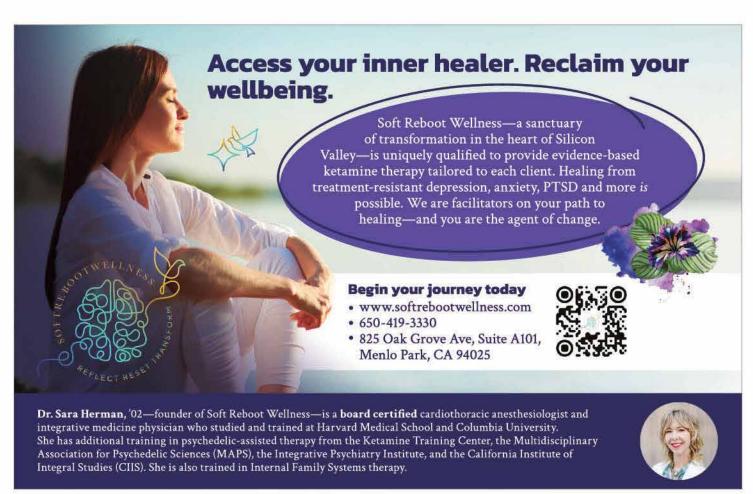
It would be four years before Stanford returned to the top six, but it hasn't left since, winning it all in 2009, '11,

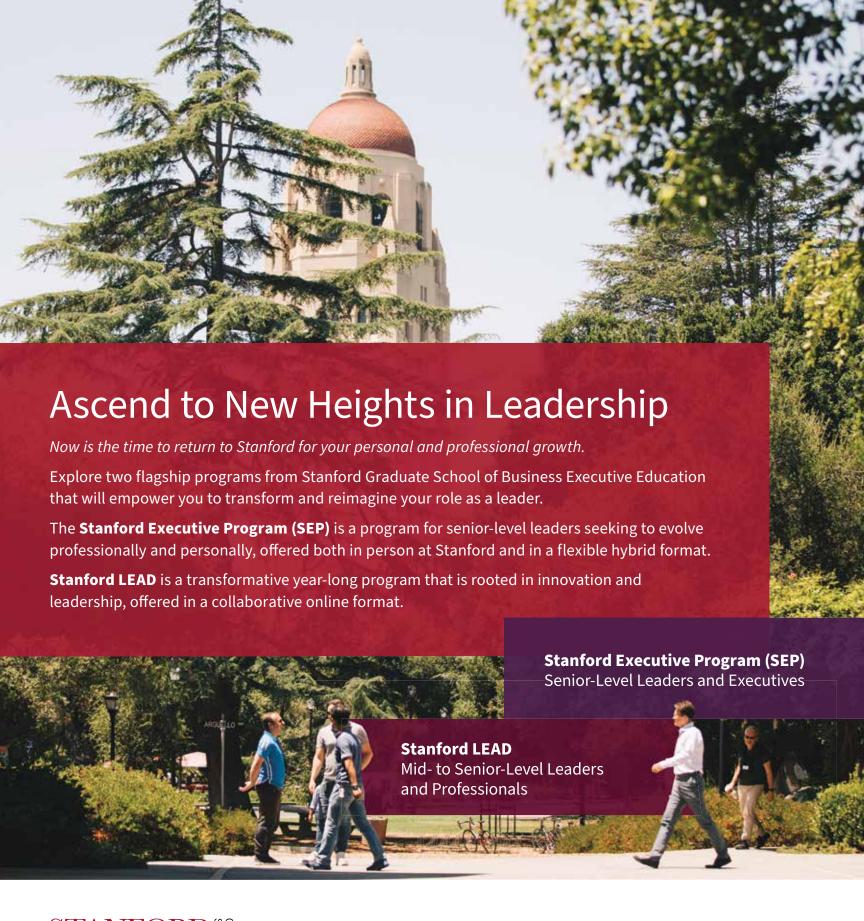
'19, '21, '22, and '23. If Stanford wins again in April, Glielmi will become the first coach of any Cardinal men's team to win five straight NCAA titles. (The 2020 event was canceled due to COVID-19.)

Pulling off such a feat won't be easy, as Oklahoma can attest. In 2019, the Sooners were heading for their fifth straight title, which would have tied Nebraska's record streak from '79 to '83, when their star gymnast fell on the high bar. That opened the door for Stanford to squeak out the narrow win that started the Cardinal's streak.

It's a message Glielmi delivers often: Stuff happens; be grateful for your opportunities and don't take anything for granted. More than that, enjoy the process, the daily achievements. "The titles are all great," he says. "But what you did to get there or how you attacked or how you managed that competition is more valuable, win or lose. The most important thing is that you come out of there being happy with what you did." If you did it full send, all the better. ■

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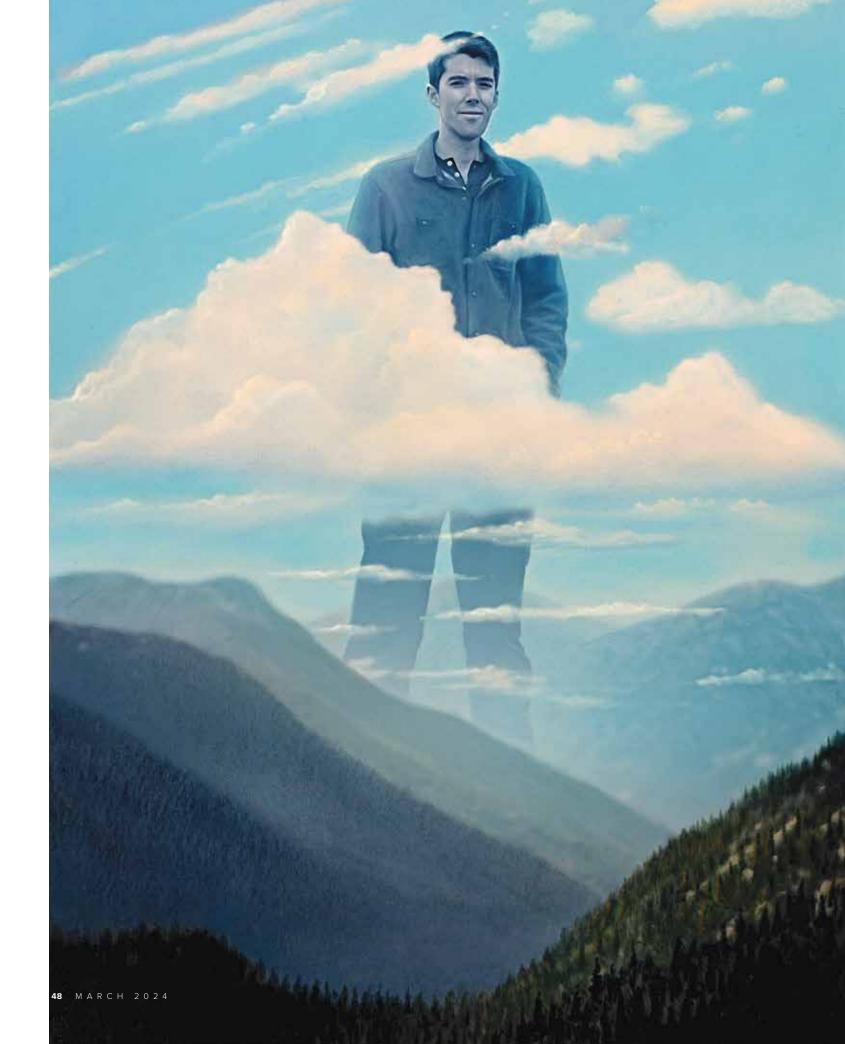












Daniel Swain studies extreme floods. And droughts. And wildfires. Then he explains them to the rest of us.

7:00 a.m., 45 degrees F

he moment Daniel Swain wakes up, he gets whipped about by hurricane-force winds. "A Category 5, literally overnight, hits Acapulco," says the 34-year-old climate scientist and self-described weather geek, who gets battered daily by the onslaught of catastrophic weather headlines: wildfires, megafloods, haboobs (an intense dust storm), atmospheric rivers, bomb cyclones. Everyone's asking: Did climate change cause these disasters? And, more and more, they want Swain to answer.

Swain, PhD '16, rolls over in bed in Boulder, Colo., and checks his cell phone for emails. Then, retainer still in his mouth, he calls back the first reporter of the day. It's October 25, and Isabella Kwai at the *New York Times* wants to know whether climate change is responsible for the record-breaking speed and ferocity of Hurricane Otis, which rapidly intensified and made landfall in Acapulco as the eastern Pacific's strongest hurricane on record. It caught everyone off guard. Swain posted on X (formerly known as Twitter) just hours before the storm hit: "A tropical cyclone undergoing explosive intensification unexpectedly on final approach to a major urban area . . . is up there on list of nightmare weather scenarios

becoming more likely in a warming #climate."

Swain is simultaneously 1,600 miles away from the tempest and at the eye of the storm. His ability to explain science to the masses-think the Carl Sagan of weatherhas made him one of the media's go-to climate experts. He's a staff research scientist at UCLA's Institute of the Environment and Sustainability who spends more than 1,100 hours each year on public-facing climate and weather communication, explaining whether (often, yes) and how climate change is raising the number and exacerbating the viciousness of weather disasters. "I'm a physical scientist, but I not only study how the physics and thermodynamics of weather evolve but how they affect people," says Swain. "I lead investigations into how extreme events like floods and droughts and wildfires are changing in a warming climate, and what we might do about it."

He translates that science to everyday people, even as the number of weather-disaster headlines grows each year. "To be quite honest, it's nerve-racking," says Swain. "There's such a demand. But there's a



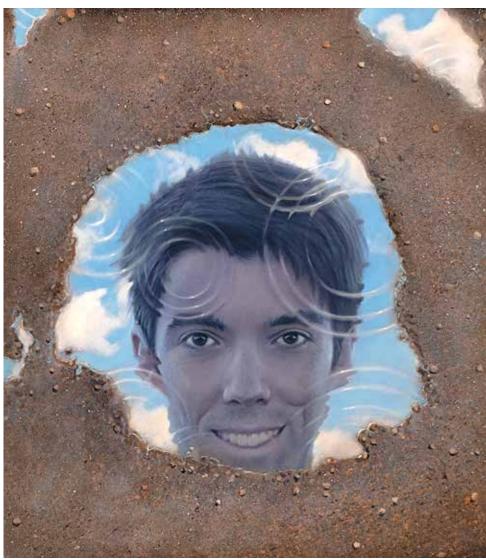
By Tracie White

Illustrations by Tim O'Brien

climate emergency, and we need climate scientists to talk to the world about it."

No bells, no whistles. No fancy clothes, makeup, or vitriolic speech. Sometimes he doesn't even shave for the camera. Just a calm, matterof-fact voice talking about science on the radio, online, on TV. In 2023, he gave nearly 300 media interviews-sometimes at midnight or in his car. The New York Times, CNN, and BBC keep him on speed dial. Social media is Swain's home base. His Weather West blog reaches millions. His weekly Weather West "office hours" on YouTube are public and interactive, doubling as de facto press conferences. His tweets reach 40 million people per year. "I don't think that he appreciates fully how influential he is of the public understanding of weather events, certainly in California but increasingly around the world," says Stanford professor of earth system science Noah Diffenbaugh, '96, MS'97, Swain's doctoral adviser and mentor. "He's such a recognizable presence in newspapers and radio and television. Daniel's the only climate scientist I know who's been able to do that."

There's no established job description for climate communicator-what Swain calls himself-and no traditional source of funding. He's not particularly a highenergy person, nor is he naturally gregarious; in fact, he has a chronic medical condition that often saps his energy. But his work is needed, he says. "Climate change is an increasingly big part of what's driving weather extremes today," Swain says. "I connect the dots between the two. There's a lot of misunderstanding about how a warming climate affects day-to-day variations in weather, but my goal is to push public perception toward what the science actually says." So when reporters call him, he does his best to call them back.





7:30 a.m., winds at 5 mph from the east northeast

Swain finishes the phone call with the Times reporter and schedules a Zoom interview with Reuters for noon. Then he brushes his teeth. He's used to a barrage of requests when there's a catastrophic weather event. Take August 2020, when, over three days, California experienced 14,000 lightning strikes from "dry" thunderstorms. More than 650 reported wildfires followed, eventually turning the skies over San Francisco a dystopian orange. "In a matter of weeks, I did more than 100 interviews with television, radio, and newspaper outlets, and walked a social media audience of millions through the disaster unfolding in their own backyards," he wrote in a recent essay for *Nature*.

Swain's desire to understand the physics of weather stretches back to his

preschool years. In 1993, his family moved from San Francisco across the Golden Gate Bridge to San Rafael, and the 4-year-old found himself wondering where all that Bay City fog had gone. Two years later, Swain spent the first big storm of his life under his parents' bed. He lay listening to screeching 100 mile-per-hour winds around his family's home, perched on a ridge east of Mount Tamalpais. But he was more excited than scared. The huge winter storm of 1995 that blew northward from San Francisco and destroyed the historic Conservatory of Flowers just got 6-year-old Swain wired.

"To this day, it's the strongest winds I've ever experienced," he says. "It sent a wind tunnel through our house." It broke windows. Shards of glass embedded in one of his little brother's stuffies, which was sitting in an empty bedroom. "I remember being fascinated," he says. So naturally, when he got a little older, he put a weather

station on top of that house. And then, in high school, he launched his Weather West blog. "It was read by about 10 people," Swain says, laughing. "I was a weather geek. It didn't exactly make me popular." Two decades, 550 posts, and 2 million readers later, well, who's popular now?

Swain graduated from UC Davis with a bachelor's degree in atmospheric science. He knew then that something big was happening on the weather front, and he wanted to understand how climate change was influencing the daily forecast. So at Stanford, he studied earth system science and set about using physics to understand the causes of changing North Pacific climate extremes. "From the beginning, Daniel had a clear sense of wanting to show how climate change was affecting the weather conditions that matter for people," says Diffenbaugh. "A lot of that is extreme weather." Swain focused on the causes of persistent patterns in the atmosphere-long periods of drought or exceptionally rainy wintersand how climate change might be exacerbating them.

The first extreme weather event he studied was the record-setting California drought that began in 2012. He caught the attention of both the media and the scientific community after he coined the term *Ridiculously Resilient Ridge*, referring to a persistent ridge of high pressure caused by unusual oceanic warmth in the western tropical Pacific Ocean. That ridge was blocking weather fronts from bringing rain into California. The term was initially tongue-in-cheek. Today the Ridiculously Resilient Ridge (aka RRR or Triple R) has a Wikipedia page.

"One day, I was sitting in my car, waiting to pick up one of my kids, reading the news on my phone," says Diffenbaugh. "And I saw this article in the *Economist* about the drought. It mentioned this Ridiculously Resilient Ridge. I thought, 'Oh, wow, that's interesting. That's quite a branding success.' I click on the page and there's a picture of Daniel Swain."

Diffenbaugh recommended that Swain write a scientific paper about the Ridiculously Resilient Ridge, and Swain did, in 2014. By then, the phrase was all over the internet. "Journalists started calling while I was still at Stanford," says Swain. "I gave into it initially, and the demand just kept growing from there."



11:45 a.m., precipitation 0 inches

Swain's long, lanky frame is seated ramrod straight in front of his computer screen, scrolling for the latest updates about Hurricane Otis. At noon, he signs in to Zoom and starts answering questions again.

Reuters: "Hurricane Otis wasn't in the forecast until about six to 10 hours before it occurred. What would you say were the factors that played into its fierce intensification?"

Swain: "Tropical cyclones, or hurricanes, require a few different ingredients. I think the most unusual one was the warmth of water temperature in the Pacific Ocean off the west coast of Mexico. It's much higher than usual. This provided a lot of extra potential intensity to this storm. We expect to see increases in intensification of storms like this in a warming climate."

Swain's dog, Luna, bored by the topic, snores softly. She's asleep just behind

or death," he says. He wrote them back: "There is a huge fire coming toward you very fast. Leave now." As they fled, they sent him progressively more horrifying images of burning homes and trees like huge, flaming matchsticks. "This makes me extremely uncomfortable—that I was their best bet for help," says Swain.

Swain doesn't socialize much. He doesn't have time. His world revolves around his home life, his work, and taking care of his health. He has posted online about his chronic health condition, Ehlers-Danlos syndrome, a heritable connective tissue disease that, for him, results in fatigue, gastrointestinal problems, and injuries—he can partially dislocate a wrist mopping the kitchen floor. He works to keep his health condition under control when he has down time, traveling to specialists in Utah, taking medications and supplements, and being cautious about any physical activity. When he hikes in the Colorado Rocky Mountains, he's careful and tries to keep his wobbly ankles from giving out. Doctors don't have a full understanding of EDS. So, Swain researches his illness himself, much like he does climate

Climate change is an increasingly big part of what's driving weather extremes today. I connect the dots between the two.'

him, next to a bookshelf filled with weather disaster titles: *The Terror* by Dan Simmons; *The Water Will Come* by Jeff Goodell; *Fire Weather* by John Vaillant. And the deceptively hopeful-sounding *Paradise* by Lizzie Johnson, which tells the story of the 2018 Camp Fire that burned the town of Paradise, Calif., to the ground. Swain was interviewed by Johnson for the book. The day of the fire, he found himself glued to the comment section of his blog, warning anyone who asked about evacuation to get out.

"During the Camp Fire, people were commenting, 'I'm afraid. What should we do? Do we stay or do we go?' Literally life

science, constantly looking for and sifting through new data, analyzing it, and sometimes sharing what he discovers online with the public. "If it's this difficult to parse even as a professional scientist and science communicator, I can only imagine how challenging this task is for most other folks struggling with complex/chronic illnesses," he wrote on Twitter.

It helps if he can exert some control over his own schedule to minimize fatigue. The virtual world has helped him do that. He mostly works from a small, extra bedroom in an aging rental home perched at an elevation of 5,400 feet in Boulder, where he lives with his partner,

Jilmarie Stephens, a research scientist at the University of Colorado Boulder.

When Swain was hired at UCLA in 2018, Peter Kareiva, the then director of the Institute of the Environment and Sustainability, supported a nontraditional career path that would allow Swain to split his time between research and climate communication, with the proviso that he find grants to fund much of his work. That same year, Swain was invited to join a group at the National Center for Atmospheric Research (NCAR) located in Boulder, which has two labs located at the base of the Rocky Mountains.

"Daniel had a very clear vision about how he wanted to contribute to science and the world, using social media and his website," says Kareiva, a research professor at UCLA. "We will not solve climate change without a movement, and communication and social media are key to that. Most science papers are never even read. What we do as scientists only matters if it has an impact on the world. We need at least 100 more Daniels."

And yet financial support for this type of work is never assured. In a recent essay

have you count to 10, please?"

"Yep. One, two, three, four, five, six, seven, eight, nine, 10," Swain says.

"Walk me through in a really concise way why we saw this tropical storm, literally overnight, turn into a Category 5 hurricane, when it comes to climate change," the reporter says.

"So, as the Earth warms, not only does the atmosphere warm or air temperatures increase, but the oceans are warming as well. And because warm tropical oceans are hurricane fuel, the maximum potential intensity of hurricanes is set by how warm the oceans are," Swain says.

An hour later, Swain lets Luna out and prepares for the second half of his day: He'll spend the next five hours on a paper for a science journal. It's a review of research on weather whiplash in California—the phenomenon of rapid swings between extremes, such as the 2023 floods that came on the heels of a severe drought. Using atmospheric modeling, Swain predicted in a 2018 Nature Climate Change study that there would be a 25 percent to 100 percent increase in

atmosphere acts as a kitchen sponge, he explains later. It soaks up water but also wrings it out. The more rapid the evaporation, the more intense the precipitation. When it rains, there are heavier downpours and more extreme flood events.

"It really comes down to thermodynamics," he says. The increasing temperatures caused by greenhouse gases lead to more droughts, but they also cause more intense precipitation. The atmosphere is thirstier, so it takes more water from the land and from plants. The sponge holds more water vapor. That's why California is experiencing these wild alternations, he says, from extremely dry to extremely wet. "It explains the role climate change plays in turning a tropical storm overnight into hurricane forces," he says.



October 26, expected high of 45 degrees F

In 2023, things got "ludicrously crazy" for both Swain and the world. It was the hottest year in recorded history. Summer temperatures broke records worldwide. The National Oceanic and Atmospheric Administration reported 28 confirmed weather/climate disaster events with losses exceeding \$1 billion—among them a drought, four flooding events, 19 severe storm events, two tropical cyclones, and a killer wildfire. Overall, catastrophic weather events resulted in the deaths of 492 people in the United States. "Next year may well be worse than that," Swain says. "It's mind-blowing when you think about that."

"There have always been floods and wildfires, hurricanes and storms," Swain continues. "It's just that now, climate change plays a role in most weather disasters"—pumped-up storms, more intense and longer droughts and wildfire seasons, and heavier rains and flooding. It also plays a role in our ability to manage those disasters, Swain says. In a 2023 paper he published in *Communications Earth & Environment*, for example, he provides evidence that climate change is shifting the ideal timing of prescribed burns (which help mitigate wildfire risk)

"There is a huge fire coming toward you very fast. Leave now." This makes me extremely uncomfortable—that I was their best bet for help."

in *Nature*, Swain writes about what he says is a desperate need for more institutions to fund climate communication by scientists. "Having a foot firmly planted in both research and public-engagement worlds has been crucial," he writes. "Even as I write this, it's unclear whether there will be funding to extend my present role beyond the next six months."



4:00 p.m., 67 degrees F

"Ready?" says the NBC reporter on the computer screen. "Can we just

extreme dry-to-wet precipitation events in the years ahead. Recent weather events support that hypothesis, and Swain's follow-up research analyzes the ways those events are seriously stressing California's water storage and flood control infrastructure.

"What's remarkable about this summer is that the record-shattering heat has occurred not only over land but also in the oceans," Swain explained in an interview with Katie Couric on You-Tube in August, "like the hot tub [temperature] water in certain parts of the shallow coastal regions off the Gulf of Mexico." In a warming climate, the

from spring and autumn to winter.

The day after Hurricane Otis strikes, Swain's schedule has calmed down, so he takes time to make the short drive from his home up to the NCAR Mesa Lab, situated in a majestic spot where the Rocky Mountains meet the plains. Sometimes he'll sit in his Hyundai in the parking lot, looking out his windshield at the movements of the clouds while doing media interviews on his cell phone. Today he scrolls through weather news updates on the aftermath of Hurricane Otis, keeping informed for the next interview that pops up, or his next blog post. In total, 52 people will be reported dead due to the disaster. The hurricane destroyed homes and hotels, high-rises and hospitals. Swain's name will appear in at least a dozen stories on Hurricane Otis, including one by David Wallace-Wells, an opinion writer for the New York Times, columnist for the New York Times Magazine, and bestselling author of *The Uninhabitable* Earth: Life After Warming. "It's easy to

get pulled into overly dramatic ways of looking at where the world is going," says Wallace-Wells, who routinely listens to stretch for hundreds of miles, all the way to the Mississippi River. He never tires of examining weather in real time, learning

What we do as scientists only matters if it has an impact on the world. We need at least 100 more Daniels.'



Swain's office hours and considers him a key source when he needs information on weather events. "Daniel helps people know how we can better calibrate those fears with the use of scientific rigor. He's incredibly valuable."

From the parking lot in the mountains, Swain often watches the weather that blows across the wide-open plains that from it. He studies the interplay between the weather and the clouds at this spot where storms continually roll in and roll out.

"After all these years," he says, "I'm still a weather geek." ■

TRACIE WHITE is a senior writer at STAN-FORD. Email her at traciew@stanford.edu.



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Give It Some Thought

Imagine operating a smartphone.
Or a drone.
Or a computer that speaks.
Just imagine.



communication. The so-called Utah arrays, each resembling a tiny bed of a hundred 1-millimeter nails, pierced just far enough into DeGray's motor cortex to eavesdrop on surrounding neurons and relay the information to outside computers poised to decode it.

A month after surgery, DeGray made his first attempt to use the device. By visualizing moving his hand-essentially willing it to do what it no longer could-DeGray transmitted the neural signals that allowed him to gain control of a computer cursor in 37 seconds. Shortly thereafter, he was tasked with hitting 50 targets on the monitor before him. "I got them," he says. "I got all 50 of them." He remembers silence from the scientists in the room. "They're a dry bunch," he says. But it was an auspicious meeting of man and machine. Over the past seven years,

DeGray has devoted himself to pushing the research further. In 2017, he set a mental typing record of eight words a minute by imagining himself hunt-and-pecking on a virtual keyboard. In 2020, he tried a new method-imagining writing letters out by hand, so that researchers could attempt and assess the decoding of mental handwriting. To train the algorithms, DeGray spent days visualizing holding a pen to a yellow notepad and picturing the act of writing out thousands of letters, stroke by stroke. "It was like punishment, but I did it religiously," he says. He describes the task as a combination of writing sentences in after-school detention and being walloped by a personal trainer at the gym. "It's a workout," he says. "It requires me to attempt the movements. I'm as tight as I can be and as flexed as I can be. My blood pressure goes up. I have to be reminded to breathe." The results—converted to type by computer—validated the effort. DeGray more than doubled his own record, to 18 words a minute.

The findings were proof of concept, not medical product. DeGray could tap his new powers only in the presence of researchers who calibrate and run a complex system that requires a trolley of computers that plug into pedestals attached to his skull. But they were eye-catching evidence of the potential for BCIs—brain-computer interfaces—to transcend the barrier between the interior of the brain and the external world, a leap that may one day enable people with a wide variety of neurological conditions to regain function in movement, communication, and vision, and that ultimately may provide a novel platform for treating and monitoring brain health and recovery. DeGray doesn't expect that future to come quickly enough to change his life, but he has dedicated himself to its promise. "I like to think of it like we're developing the alphabet that other people will use to write books."

Sense and Sensibility

When Henderson, the doctor who operated on DeGray, joined the Stanford faculty in 2004, he brought expertise in

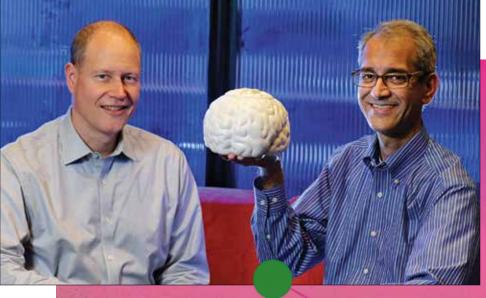
'I like to think of it like we're developing the alphabet that other people will use to write books.'

> deep brain stimulation, which delivers tiny jolts of electricity to the brain as a treatment for several conditions, including Parkinson's disease. He'd been trying in vain to find a partner

to explore the emerging world of BCI when, shortly after his arrival at Stanford, he was introduced to Krishna Shenoy, then an assistant professor of electrical engineering. Shenoy was dedicated to decoding the language of neurons, the voltaic pulses that send information throughout the nervous system. He had developed algorithms increasingly adept at deciphering the neural commands that control hand and arm movements in monkeys. His goal was to translate that work to humans—exactly what Henderson was looking for. It was the beginning of a relationship that would result in the formation of the shared Neural Prosthetic Translational Lab in 2009 and one that would last until Shenoy's death from pancreatic cancer last year at 54. "It was chemistry," Shenoy told Stanford Medicine in 2017. "Two people who just clicked."

The pair met at a crucial time for BCIs. The first in-person studies were just beginning, after decades of animal testing. In 2004, researchers from Brown University and several other institutions performed the first human implementation of a Utah array, the spiky sensor that remains the gold standard for academic research in the field. That study implanted a sensor in the brain of a 24-year-old man who had been paralyzed by a knife to the neck, giving him basic cursor control as well as the ability to open and close a prosthetic hand and move a robotic arm. It was a vivid illustration not only that the brain retains its ability to issue orders years after the body stops receiving them, but that a BCI can provide it an attentive new audience. While the performance was groundbreaking, it was also rudimentary. A New York Times piece, published the same day the study appeared in Nature, noted the cursor control was wobbly and slow-taking 2.5 seconds, on average-and that the participant could only "somewhat" control the robotic arm. The reporter, however, cited another BCI study from the same issue of the journal, this time tested in monkeys, that reportedly operated about four times as fast. The work was from the Shenoy lab.

In the years to follow, much of the excitement around BCIs centered on the potential for brain-controlled robotic limbs. In 2016, President Barack Obama fist-bumped with a robotic arm controlled by Nathan Copeland, a 30-year-old with paralysis. Copeland not only controlled the fist but also sensed the bump, thanks to electrodes implanted in a region of the brain that processes sensory information from the body. The Stanford research focused on areas that were less visually demonstrative, but graceful, intuitive, and effective. In a 2018 study led by Paul Nuyujukian, MS '11, PhD '12, MD'14, now a Stanford assistant professor of bioengineering and of neurosurgery, participants used their thoughts to peruse music, search YouTube, and compose emails. It was all done with BCIs that connected via Bluetooth with generic computer tablets fresh from Amazon. The humdrum hardware belied the fiendish complexity of the process: Nuyujukian compared the job of decoding neural commands to listening to a hundred people speaking a hundred different languages.







'PEOPLE WHO JUST CLICKED': Clockwise from top: Henderson and Shenoy; Obama and Copeland; DeGray at work hitting targets.

But in a world where there's an app for everything, researchers saw the power in creating ways to seamlessly control the consumer electronics that dominate everyday life. "We had to persevere in the early days, when people said, 'Ah, it's cooler to do a robotic arm—it makes a better movie," Shenoy told *MIT Technology Review* in 2021. But "if you can click, then you can use Gmail, surf the web, and play music."

Stanford's lead researchers understood how vital a role BCIs could play in communication. Shenoy said his work was influenced by his maternal grandfather—a World War II—era U.S. Marine—whose multiple sclerosis had affected his ability to walk, talk clearly, and move his hands effectively. Henderson was 5 when his father sustained severe and lasting injuries in a car accident, including serious brain trauma. "He would try to express himself really, really hard," Henderson says. "It was hard to understand what he said. Eventually, we would usually figure out what silly pun he was trying to make, or that he was proud of us for something." Henderson says his childhood imbued him with an awareness of the power of communication, a value mirrored in the lab's goals. "For me, that's the most important thing."

When Henderson and Shenoy started collaborating, the

idea of using BCIs to decode speech seemed distant indeed. Primates provide a model for motor studies, but no lab animal is relevant to speech, a uniquely human process controlled by a blizzard of electrical pulses to 100-some muscles in the cheeks, lips, jaw, tongue, and larynx. But in more recent years, a series of scientific strides-including a better understanding of the geography of the brain, improved surgical procedures, and, most prominently, the rise of machine learning-transformed the possibilities. In 2021, a team from the lab of Edward Chang, a neurosurgeon at UCSF, published a groundbreaking paper detailing the use of a BCI that decoded the speech of a former field worker who had had a stroke 16 years earlier. The average American knows about 42,000 English words and speaks perhaps 150 of them per minute. At 18 words a minute and limited to a 50-word vocabulary, the BCI breakthrough was front-page news in the New York Times. "Not to be able to communicate with anyone, to have a normal conversation and express yourself in any way, it's devastating, very hard to live with," the research participant said via email in the piece, later adding, "It's very much like getting a second chance to talk again."

The Stanford lab began to publish its own speech work last



LAB COLLAB: Researchers such as Shenoy, Nuyujukian, and Henderson (left, back row), and Kunz (right, far right) have long worked together across disciplines to restore speech in research participants like Bennett (right, front).



year, pushing the frontier even further. One of the key participants was Pat Bennett. A dozen years earlier, her words had begun to slur after she drank a glass of wine, prompting friends to suspect that the daily jogger and regular equestrian was hiding a drinking problem. In fact, Bennett had amyotrophic lateral sclerosis, or ALS, a progressive neurodegenerative disease that often results in death within five years. Bennett's disease moved more slowly, but it was quick to attack her power of speech.

After hearing about Stanford's BCI research from her medical team, Bennett volunteered to participate. In March 2022, Henderson implanted four sensors in two areas of her brain associated with speech. About a month later, she began working with Stanford scientists who cued her to recite thousands of sentences over the following four months. As Bennett read the prompts, machine learning algorithms began to correlate her brain signals with the sounds she intended. The results were fed into a sophisticated autocorrect system not unlike those on a smartphone. By the end of training—some 10,850 sentences later—the software was deciphering Bennett's speech into text at more than 60 words a minute using a 125,000-word vocabulary. The error rate of 23.8 percent was significant, but Bennett was delighted. "When the study advanced enough that I actually saw my garbled incomprehensible vocal noises translate to what I was saying, it was joyous," Bennett wrote in a recent email. "So many years of not being able to communicate and then suddenly the people in the room got what I said. I don't remember what I exactly said after the prescribed script finished, but it had to be along the lines of 'Holy shit, it worked, I'm so happy, and you guys did it."

"I overloaded the memory on my phone because I would take videos of it every single time," says doctoral student

Erin Kunz, MS '20, one of three lead authors of the paper, who had often decoded her father's speech for others before he died of ALS. "I don't want to delete them, because I want to remember it."

Signal Boost

The Bennett paper was published in the same issue of Nature as a paper from Chang's UCSF lab, which had used a different type of BCI in another participant unable to speak due to stroke. (It also created a digital avatar that modeled the woman's emotions.) Their decoder was able to decipher that woman's speech to text at 78 words per minute with a 1,000word vocabulary and a 25.5 percent word error rate. By themselves, the two studies were obvious milestones of how quickly speech decoding research was moving, but just six weeks later a team led by scientists at UC Davis won the 2023 BCI Award with their demonstration of a BCI that reported decoding speech with better than 90 percent accuracy with a 125,000-word vocabulary on the second day of use. (Henderson and Kunz are among six Stanford coauthors on the study, which at press time had not yet been published in a journal.)

In fact, speech BCIs may be the first type available to the public, says UC Davis assistant professor of neurological surgery Sergey Stavisky, PhD '16, a senior author on the winning study and a former student of Shenoy's. The neural decoding required for control of robotic limbs—his initial focus at Stanford—is actually simpler, Stavisky says. But effectively executing those commands incurs other challenges, including the engineering of responsive, reliable, and mobile robotics. Similar challenges face researchers working on BCIs that could enable patients with severed spinal cords to move their arms and legs. Control of an appendage isn't just

a motor command; it also requires proprioception, or the sense of one's own body in space. Think of how strange it can be to move an arm that's fallen asleep or to chew after having Novocain at the dentist. Once decoded, however, speech can be expressed relatively easily using consumer electronics. Stavisky imagines a fast-approaching future when people carry speech BCIs on their laps or belts. "I think within the next five years there will be approved medical devices for restoring communication." (Less is known about the potential of BCIs to enable speech for those who have never spoken. "We haven't taken that leap yet because we wanted to first show that our approach works well for the easier challenge of restoring lost speech," Stavisky says. "It's definitely something that's on our radar and is one of the directions we aspire to investigate in the future.")

Stavisky and Henderson are among the nine principal investigators of the BrainGate Consortium, a group of universities and academic medical centers studying BCIs. The collaboration has also enabled researchers to investigate the devices' safety. A recent study of 14 BCIs implanted by BrainGate institutions, including two at Stanford, did not find any adverse effects that resulted in deaths, increased disabilities, or infections to the nervous system, or that required removal of the device.

One of the most remarkable things about the rise of BCIs is that they do so much with so little. In a three-pound organ containing billions of neurons, the sensors in studies like those involving DeGray and Bennett may be reading signals from just dozens of neurons. "It is really fascinating this works at all," says Cindy Chestek, PhD '10, a former student in Shenoy's lab and an assistant professor of biomedical engineering at the University of Michigan. Indeed, the Bennett experiment succeeded even though two of the four arrays did not provide relevant signals. Even so, realizing the full potential of BCIs—like enabling more naturalistic speech and movement—will depend on reading out much more data from the brain than currently possible. "It's going to get a lot better when you have hundreds or even thousands of neurons," Chestek says.

That requires new hardware, a likely prospect as companies jockey to create improved BCI products that could be approved for public use. The company with an inside lane uses a minimally invasive approach. Synchron—which last year became the first company to begin human trials of an implanted BCI in the United States—feeds a stent-like sensor up the jugular vein to the motor cortex, where it lines the wall of a blood vessel.

The device's remove from neurons means it isn't nearly as powerful as an implant—the current model allows participants with ALS to scroll and click a mouse, says Tom Oxley, the company's CEO. But he thinks people will prefer the less invasive approach, and even these capabilities offer a transformative opportunity. "If you can navigate your way through an iPhone, you can do a bunch of meaningful tasks that we take

for granted: shopping, ordering food, ordering your medication, jumping on a call, sending a message," Oxley says. "That stuff gives you your independence back."

Other companies are refining the Utah array model—creating implantable chips with more electrodes that will read out information wirelessly and use more bio-friendly designs. Existing BCIs in participants like Bennett have tended to decline in performance over time, due to either the brain's resistance to a foreign body or the device's degradation. Paradromics, an Austin, Texas-based company, is developing wireless implants that have more than four times

'So many years of not being able to communicate and then suddenly the people in the room got what I said.'

the number of electrodes as a Utah array, says Vikash Gilja, MS '10, PhD '10, the company's chief science officer. At the same time, he says, the devices are made of more durable material with thinner, less obtrusive electrodes. "The smaller we get them, the closer they are to being invisible to the body," he says. The company expects to get FDA approval for clinical trials this year. Neuralink, a company co-founded by Elon Musk, is pursuing a similar track.

If these companies—or others like them—succeed, they could provide a platform for new approaches across a wide range of medical needs, Chestek says. "You're interfacing with the brain at a neuronal level," she says. "You can imagine a future of medicine where a lot of what you do is interacting with neurons and getting the body's own control system to do things." Conversely, BCIs could play a brain-monitoring role. Nuyujukian's lab, for example, is looking at the potential for BCIs to shed light on stroke recovery. Each year, hundreds of thousands of Americans survive a stroke, often requiring intense physical rehab that occurs without any reliable window on how well it's working. "We don't have any scientific understanding into what changes at the neural-circuit level postinjury," he says. A BCI could provide "a real-time readout of the state the brain" that guides how patients are treated. BCIs could ultimately offer similar insights for conditions such as epilepsy, depression, and Alzheimer's.

Taking Flight

From his bed in a Menlo Park nursing home, DeGray continues to help researchers demonstrate what is possible. Last summer, he cast aside his imaginary pen and took to the air.

Two miles away, a drone was taking off, flying, and landing, all under the command of DeGray's thoughts. The research was gathering data on 4-D control—up/down, forward/backward, left/right, and rotation—but it was also simply and undeniably about fun, a symbol of the freedoms that BCIs promise. "You have to get him to quit," says Henderson. "It's like 'OK, Dennis. We've been at this for hours. You're going to get tired. We have to stop for today."

The work continues without Shenoy, which weighs on Henderson's mind. "It's very tough because it grew organically and it was truly a joint venture," he says. Shenoy was both a visionary whose work transformed the field and a beloved mentor to a generation of scientists who continue to push its boundaries. Before his first cancer surgery, in 2011, he began to bank recommendation letters for his students, which he would update whenever he felt his health decline. At his memorial service, there were nearly 20 tenured or tenuretrack faculty who'd been his advisees, a remarkable output for a small lab, Stavisky says. "He was probably the best adviser I have ever even heard of," Chestek says. "We're not going to see another Krishna, but maybe all of us together can keep all of

this going." For Henderson, that means sticking to the vision he and Shenoy developed together, thanks to the collaboration of other engineering faculty.

DeGray will keep helping show the way. He's contributed to thousands of hours of research and been central to a score of academic papers. Eight years after his surgery, the signals from his implants have remained serviceable, and his commitment unflagging. He works with Stanford researchers two days a week, and says he'd add a third if he had more energy. He'll always be processing what he lost that day when he was hurrying to take out the trash, he says. "It's so big you can't really address it." But he's gained something too. "I've been given a great gift of being able to help other people," he says. "Somewhere out there, there's a guy who hasn't even fallen down yet and when he falls down, he's not going to have to go through what I've gone through. When he wakes up in the morning, his life will be substantially different than mine. And that's a good thing."

SAM SCOTT is a senior writer at STANFORD. Email him at sscott3@stanford.edu.



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Biblio File

REVIEW

Hello Again



REVIEWER RACHEL KOLB

'12, MA'13, is a junior fellow in the Society of Fellows at Harvard and a former editorial intern at STANFORD. Email her at stanford.magazine @stanford.edu.

SINCE THE PUBLIC RELEASE

of ChatGPT a year and a half ago, we've interacted more and more with chatbots and other programs that use natural language processing and generative artificial intelligence to simulate conversation. And there's a lot we want to know. How do chatbots generate their answers to our questions? How and where do they get their information? Could a chatbot ever form a genuine connection with a human? And at what point might the chatbot itself seem human?

These are the questions cartoonist and writer Amy Kurzweil brings to *Artificial: A Love Story*, a graphic memoir that takes a heartfelt look at the technological dimensions of human connection. Kurzweil's

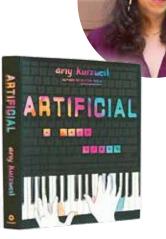
perspective and storytelling shows her close relationship with her father, computer scientist and inventor Ray Kurzweil, who has long predicted the eventual merging of human and machine.

At its core, *Artificial* is an intimate story about how we preserve the bonds of family and the meaning of heritage across physical and temporal distances. Kurzweil, '09, narrates the life of her paternal grandfather, Fritz "Fred" Kurzweil, an accomplished Austrian conductor and pianist whose talent played a pivotal role in his narrow escape from the Nazis in 1938. After leaving Vienna, Fred built a life in New York. He died when Ray was only 22.

Now Fred is coming back to life, in a way, through AI. His memories, pieced together through personal letters, documentation, and other ephemera, have become data, fed to an algorithm for Ray Kurzweil's latest invention: Fredbot, a chatbot that will write in the voice of his father. Amy Kurzweil, who was tasked with

gathering and digitizing thousands of old, often hand-written documents, brings a keen archival eye to her illustrations, contrasting the soaring idealism of her father's project and the mundanity of sifting through file after file, box after box, in a family storage unit. Throughout the narrative, she contemplates the meaning not only of these materials but also of the digital relics of our everyday lives.

Human presence is powerful, yet it is also fleeting. It can arise through the technologies we use to connect with others but is subject to the fallibilities of memory and perspective. With warmth and nuance, Kurzweil expresses a growing understanding of her family's legacy and how it has influenced her life as an artist and her relationships. The result is a rich, searching account of how we become real and present to one another in a fragmented, often virtual world.







Making Headway

Verified: How to Think Straight, Get **Duped Less, and Make Better Decisions About** What to **Believe Online** Mike Caulfield and education professor emeritus Sam Wineburg, PhD'89; U. of Chicago Press. Strong sleuthing skills help you sidestep a spiderweb of spin, scams, and propaganda.

Career Forward:
Strategies
from Women
Who've Made It
Grace Puma and
Christiana Smith
Shi, '81; Scribner.
Think of it as a
totable TED Talk,
and keep plenty of
page markers
handy.

The Worlds I See: Curiosity, **Exploration**, and Discovery at the Dawn of Al Fei-Fei Li, computer science professor; Flatiron Books. The memoir and making of a scientist, and why she is so optimistic about an AI-supported future.

An American Fight
Against Fascism
Rachel Maddow,
'94; Crown.
With World War II
looming, a few
people risked
everything to stop
a Nazi-funded
scheme to
dismantle
democracy.

Prequel:

The Dog
of the North
Elizabeth
McKenzie, MA '87;
Penguin Books.
This deeply funny,
satisfying story
of starting over
takes blind curves
at full speed—
and is a blast of
fresh air.





VIIMATI TANDAL VATE OF

Farewells

FACULTY/STAFF

Walter Michael Bortz II, of Portola Valley, Calif., August 5, at 93. He was a clinical professor of medicine and an expert on aging and longevity whose work laid the foundation for Stanford's Lifestyle Medicine Program. He regarded aging as a condition largely caused by disuse and advocated for regular exercise. He completed 45 marathons and published numerous books and 150 articles. He was predeceased by his wife, Ruth. Survivors: his partner, Jeanne Kennedy; children, Danna, Gretchen, Edward, and Walter; nine grandchildren; and two great-grandchildren. William Weis, of Palo Alto, October 13, at 64, of brain cancer. In addition to serving as chair of the structural biology department, he was also a professor of molecular and cellular physiology, and of photon science. A pioneer of molecular imaging, he refined advanced imaging techniques and described the three-dimensional structure of many cellular components. He developed imaging techniques that included advanced X-ray crystallography methods, which help scientists determine how proteins interact with surrounding molecules and which molecules are good possibilities for drugs. Survivors: his wife, Sherin Halfon; and brothers, Philip and Richard.

Norman Keith Wessells, of Jersey City, N.J., September 20, at 91, of cancer. He was a professor of biological sciences and dean of the School of Humanities and Sciences. His research included early electron microscopy on plant and animal cell cytoskeletons. He authored 11 books and 80 scientific papers. He was predeceased by his wife, Lois. Survivors: his wife, Catherine; children, 'Ohristopher, Stephen, MA '91, Philip, '85, Colin, '08, MS '12, PhD '12, and Elizabeth, '10; four grandchildren, including Quinton, '18, MS '19; two great-grandchildren; and sister.

Ferid Murad, of Menlo Park, September 4, at 86. He was an adjunct professor, pharmacologist, and Nobel Prize winner whose research into the effects of nitric oxide on the heart and blood vessels enabled widespread advancements in the treatment of cardiovascular disease, hypertension, and erectile dysfunction. His discovery that nitric oxide functions as a signaling agent in the cardiovascular system paved the way for drugs like Viagra, which facilitates erections and stimulates the lungs of premature babies. Survivors: his wife, Carol Leopold; children, Joe, Christy Kuret, Carrie Rogers, Marianne Delmissier, and Julie Birnbaum; and nine grandchildren. Robert Greenwood Walton, of Modesto, Calif., April 21, at 100. He was a professor of dermatology and directed Stanford's dermatology clinic. Born in England, he was fascinated by cowboy culture and decided to open a commercial livestock business. He served as president of the Central Valley Polled Hereford Association and formed the Modesto Polo Club. He was predeceased by his wife of 63 years, Mary; and grandson Delmar. Survivors: his children, Betsy, Rob, Bil, Susan, F.D., and Mary; four grandchildren; and three great-grandchildren.

1940s

Gloria Greenbach Kennett, '43 (economics), of Atherton, Calif., September 16, at 101. She was a

dedicated philanthropist who, together with her husband, played a pivotal role in establishing the Sequoia Hospital Foundation and raising nearly \$95 million. Later she established the Dr. Kennett Memorial Nursing Scholarship program, which has granted over \$1.5 million in scholarships. She was predeceased by her husband, William Kennett. Survivors: her children, Katharine Gallison Stevens, Daniel Tehaney, Carol Douglass, Ken Tehaney, Celia Hull, and Lauren Teel; 13 grandchildren; and 11 great-grandchildren.

Thomas Friedrich Paul Leo, '45 (biological sciences), MD '48, of Pebble Beach, Calif., December 10, 2022, at 97, of respiratory failure. He participated in student drama and was on the swim team. He retired from his cardiology and pulmonary practice in San Jose in 2002. He liked astronomy, sang with the Santa Clara Chorale, and was a Religious Society of Friends member. He was predeceased by his daughter Karin Madson and son Ivan York Shadwick. Survivors: his

wife, Emily; children, Eric, Ingrid, Paul, David, and Elisabeth; and 10 grandchildren.

Martin Anderson Jr., '46 (undergraduate law), LLB '49, of Palo Alto, October 15, at 99. He was a member of Beta Theta Pi and was on the football and track and field teams. He was a colonel in the Marine Corps and a trial attorney who retired from Goodsill, Anderson, Quinn & Stifel in 2006. He was chairman of the Hoover Institution Board of Overseers. He was predeceased by his wife of 61 years, Mary Ilma "Illie" (Costigan, '48). Survivors: his daughter, Christen Docker, '71; two grandchildren, including Heather Docker, '00; and three great-grandchildren. Shirley Ann Sneath Kelley, '47 (social science/ social thought), of Portola Valley, Calif., April 9, at 96, of cancer. She spent 20 years as a development director at Stanford Lively Arts. Later she helped grow the Santa Clara County affiliate of Planned Parenthood into one of the nation's largest. She was involved in the gay community's medical response to AIDS and volunteered with

Dedicated to Saving the Tiniest Patients

Pediatric anesthesiologist Alvin Hackel cared deeply for children—infants with heart defects, preemies the size of kittens. If his pager went off while he was out on a drive with his own kids, Hackel would stop at the next gas station and use the pay phone to guide nervous Stanford trainees through complicated anesthesia techniques before surgeries. "It felt like he was narrating the whole procedure from the car," says his son Steven, '84.

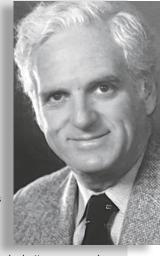
Hackel, '54, MD '57, devoted his life not only to treating critically ill children but also to building a health care system that enveloped them. In doing so, he helped define the subspecialty of pediatric anesthesiology.

Alvin Aaron Hackel, professor emeritus of anesthesiology and of pediatrics, died September 23 after a short illness. He was 91.

The son of a tailor and a seamstress, hardworking Jewish immigrants from Poland, Hackel felt a responsibility to do something meaningful in the world. He became a physician, completing residencies in cardiology, pediatrics, and anesthesiology, and joined the lab of cardiothoracic surgeon Norman Shumway, where he assisted with early heart transplant surgeries.

Hackel's interest in pediatric anesthesia developed during a time when no dedicated training programs for it existed. In the 1980s, ad hoc programs began cropping up, and he saw a need for standardization. "The whole specialty of pediatric anesthesia, as it exists today, can be traced back to AI," says Elliot Krane, professor emeritus of anesthesiology, perioperative and pain medicine, and the first chief of anesthesia at Lucile Packard

Children's Hospital. Hackel recruited his contemporaries to define their field, which ultimately led to certification by the American Board of Anesthesiology. And his work didn't stop there. "I remember Al saying, 'It's not just the anesthesiologist," says Krane. "'Children need to be put to sleep in a system that's designed for children."



That system included a battery-powered transport incubator co-invented by Hackel and professor emeritus of mechanical engineering Robert Moffat, MS '66, Engr. '66, PhD '67, which used a radiant heat principle adapted from the Apollo space program to keep infants warm during transport by ground or by air, even across thousands of miles. Hackel also established a dispatch center that matched babies in need with available hospital beds in about 20 minutes rather than hours, forming the foundation for the system still used in Northern California today.

"It's interesting," says Steven. "How many kids did he save? I think that's a quiet part of his legacy, an unseen part—all those lives."

Hackel's wife, Brenda, died in January.
In addition to Steven, Hackel is survived by his daughter, Jamie Hyams; son Daniel; and four grandchildren.

—Kali Shiloh

Renew, a nonprofit supporting caregiving professionals. She was predeceased by her husband, Ryland, '49. Survivors: her sons, Tom, Richard, '75, MBA '89, and Bruce; and four grandchildren. Doris Elaine Coplen Santana, '47 (social science/social thought), of Palo Alto, December 30, 2022, at 96. She had a passion for golf and tennis, and was a competitive dominoes and bridge player. She enjoyed the vibrant social circles at the Menlo Circus Club and Menlo Country Club. She and her husband explored the world, from India and Egypt to South Africa and Europe. She was predeceased by her husband of 68 years, John, '48. Survivors: her children, Mark, Jane, Sally Santana King, Annie Higgitt, and James; and 10 grandchildren.

Audrey Ellen Nixon Drawbaugh, '48 (humanities), of Greenville, S.C., May 12, at 97. Her father's work as a geologist and mining engineer took the family from the Pacific Northwest to the jungles of Venezuela. She later worked in the geology department at Kansas University, where her father taught. She was a caring homemaker and enjoyed studying French. She later became a tutor, attended continuing education classes, and developed friendships at Senior Action. She was predeceased by her husband, Donald. Survivors: her children, Laura and Max; and brother, Alan Nixon.

Joan Joaquin Wood, '48 (psychology), of San Francisco, August 9, at 95. She waitressed at Vesuvio Cafe in the city's North Beach neighborhood and crossed paths with the likes of Billie Holiday and Allen Ginsberg at local clubs and galleries. She worked for 29 years for the city and county of San Francisco, serving as a supervisor in the welfare department. She was also a civic activist who fought to protect her neighborhood from chain stores and big developers. Survivors: her daughters, Sarah Kliban and Linda Dyer; two grandsons; and great-grandson.

Georganne Salisbury Parsons Thomsen, '48 (communication), of Glendale, Calif., October 3, at 97. She contributed to the Stanford Daily. After graduation, she worked for the Los Angeles Times. In 2016 she was recognized by the California State Senate for her dedication to the city of Glendale, The League of Women Voters, the California Coalition for Fair School Finance, and the Glendale YWCA. She was predeceased by her husband of 37 years, Robert, '48. Survivors: her children, Erica, Christopher, '77, Peter, Lance, and Mark; seven grandchildren; and eight great-grandchildren. Robert Foster Sawyer, '49 (economics), MBA '50, of Palo Alto, July 14, at 97, of congestive heart failure. He was a member of Kappa Alpha. He founded Woodruff-Sawyer & Co., one of the country's largest independent insurance brokers. A philanthropist and volunteer, he was active through his church, Stanford, and health care organizations. He was predeceased by his wife of 47 years, Ellen (Aldag, MA '52). Survivors: his children, Wende Sawyer Hutton, '81, and Steve, '77; and five grandchildren, including Cameron Hutton, '14, MS '15, and Rachel Hutton McKenzie, '17.

1950s

John Leslie Darby, '50 (speech and drama), of San Francisco, July 28, at 96. He served in the Army and was an expert rifleman. He worked as a clinical audiologist at the San Francisco Hearing Center and went on to serve as executive director of the Hearing Society for the Bay Area for 36 years. He and his husband were honored in 2007 by KQED and Kaiser Permanente as "LGBT heroes" for integrated housing work. He was

predeceased by his husband, and companion of more than 50 years, Jack Bird.

Susanne Holyoke Elwood Houston, '50 (international relations), of Lawrence, Kan., July 11, at 94. She attended graduate school at Fort Hays State University in Kansas, where she developed a passion for medieval history. While raising a family in Jays, Kan., she helped found the local chapter of the League of Women Voters. She loved gardening, cooking, traveling to England, and researching family genealogy. She was predeceased by her husband, Clay, '51. Survivors: her children, Laura Weaver and Peter; five grandchildren; and two great-grandsons.

Gordon Joseph Vosti, '50 (basic medical sciences), MD '54, of San Jose, September 4, at 93, of heart failure. He served in the Army before returning to California to finish his internal medicine residency. He spent his entire career at the San Jose Medical Group, where he was loved by patients and staff and respected by colleagues. He was an avid tennis player, backpacker, painter, master gardener, musician, and singer. Survivors: his wife of 68 years, Marcia; children, Ann, '80, David, and Hugh; and two grandchildren. Shirley Jean Smith Kellogg, '51 (nursing), of Stanton, Calif., August 15, at 95, after a fall. She gave up a career in hospital nursing to raise her family, becoming socially active on issues like housing and health solutions for Orange County's homeless population. She loved Stanford Nursing School and Medical School reunions, her husband's Navy ship reunions, and visiting family. She was predeceased by her husband of 65 years, Frank, '47, MD '51. Survivors: her children, Richard, Karen Parotti, and Cheryl Petretti; eight grandchildren; 11 great-grandchildren; and sister Gerry. Lawrence William Brown, '52, MBA '58, of Moraga, Calif., August 28, at 93. After freshman year he transferred to San Jose State to study business administration. He was a captain in the Navy. He specialized at the Bank of America in international banking, a subject he taught on the side at Vista College, now Berkeley City College. He volunteered for Big Brothers of San Francisco. He was predeceased by his wife of 35 years,

Dan, '48, MBA '50, and Allan, '50. Gerald Walker Smith, '52 (political science), MBA '55, of Atherton, Calif., July 21, at 92. He was a member of Delta Tau Delta and the water polo team. With a doctorate in psychology, he maintained a counseling practice in San Mateo County for more than 60 years. He wrote two books, led Esalen Institute workshops, and had a television talk show. Survivors: his wife of nearly 40 years, Joyce (Adams, '56, MA '58); sons, Andy and Martin; stepdaughters, Kristine Hanna and Katie Dickson, '84; six grandchildren; and sister. Betty Ann Cain Bruno, '53 (political science), of Sonoma, Calif., July 30, at 91, She was cast as a munchkin in The Wizard of Oz, the 1939 film that inspired the title of her autobiography, The Munchkin Diary: My Personal Yellow Brick Road. She was later a political talk show producer and an Emmywinning on-air investigative reporter for San Francisco-based KTVU. She was a native Hawaiian and taught both modern and ancient hula dancing. Survivors: her husband, Craig Scheiner; one grandchild; two great-grandchildren; and brother. Joan Lewis Danforth, '53 (sociology), of San Francisco, June 12, at 90. She worked as a portfolio manager at Dean Witter & Company and later as an investment officer at Citicorp-Citibank. She

Neda. Survivors include his brothers, Donal, '60,

volunteered for numerous organizations, including the San Francisco Asian Art Museum, Oberlin College, San Francisco Performances, and Big Sisters Inc. She loved to hike, ski, golf, and travel the world. She was predeceased by her husband, Robert, and stepdaughters Patricia and Sally. Survivors: her stepchildren, Jill, Betsy, and William; three stepgrandchildren; and two step-great-grandchildren. C. Bradford Jeffries, '53 (undergraduate law), JD '55, of San Francisco, June 30, at 92. He was a member of Delta Tau Delta, the Band, and the crew team. After Stanford, he served in the Air Force, He was a venture capitalist and venture capital attorney who helped build Silicon Valley's venture capital industry. He was president of the National Kidney Foundation of Northern California. He was predeceased by his second wife, Dorothy. Survivors: his children, Steven, '82, and Lynn; two grandchildren, including Michael, '25; first wife, Ann; and sister. Francis McKinely Kirk Jr., '53 (philosophy), of Boise, Idaho, September 19, 2022, at 90. He was student body president. He earned a master of divinity from Princeton Theological Seminary and served as a pastor in western states for 20 years. After earning a master's in education and a PhD in clinical psychology and counseling, he worked as a practicing psychologist for the Idaho Department of Health and Welfare for 26 years. Survivors: his wife of 62 years, Nancy; children, Katherine, Andrew, and David; and four granddaughters. Norman Vartkes Manoogian, '53, MA '57 (education), of Palo Alto, November 20, 2022, at 91, He was a member of Sigma Chi, played in the 1952 Rose Bowl, and was inducted into the Stanford Athletic Hall of Fame in 2008. He coached the defensive line at the Marine Corps Academy in Quantico. Va. He taught at Ravenswood High School and Foothill Community College, and he pioneered community college fitness classes. Survivors: his wife of 65 years, Jone, '55, MA '56; children, Shannan Johnson and Brian; and five grandchildren. Don Lee Nickerson, '54 (philosophy), MA '60 (education), of Vancouver, Wash., April 13, at 96, of dementia. He was a minister in the UCC church and later became the director of counseling at Lewis and Clark College in Portland, Ore., where he taught Gestalt therapy for over 20 years. He then developed an interdisciplinary counseling program in Milwaukee, Ore. He loved his Tanqueray martinis, playing tennis, and writing poetry. Survivors include his wife of 41 years, Linda Larsen. Beatrice Diana "Yana" Moya Coda-Nunziante, '55 (psychology), of Siena, Italy, September 6, at 89. In the 1970s, she and her husband moved to the Montalto Castle in Tuscany and made the peasant houses within its walls available as vacation rentals. They worked hard to provide an idyllic setting for guests. She applied her talent as a painter to restore some of the castle frescoes. She was predeceased by her husband, Giovanni. Survivors: her children, Paola, '85, Carlo, Anna, and Elena; five grandchildren; and sister, Clementina Moya Kun, '57. Carter Grant Elliott. '55 (social science/social thought), of San Jose, March 28, 2023, at 92. He was a member of Sigma Nu/Beta Chi. He served in the Air Force. He owned and operated Carter/ Elliott Advertising and Public Relations, an agency serving primarily television equipment-related clients. He was one of the original members of the management team at International Video Corporation. Survivors: his wife, Linda; children, Elizabeth O'Leary, Eric, and Grant; stepchildren, Kristin Lamson and Karl Odquist; three grandchildren; four

stepgrandchildren; and step-great-granddaughter.

William Clayton McDade, '55 (basic medical sciences), MD '58, of San Diego, February 13, 2023, at 89. He was a member of Sigma Nu/Beta Chi and was on the crew team. He served in the Navy as a flight surgeon. He became a practicing partner of the San Diego Orthopedic Associates, spent many years as a clinical professor of orthopedic surgery at UCSD, and was a traveling surgeon in Malawi. Survivors: his wife of 62 years, Carol; children, Steve, Patti Guyer, and Karen Adams; and five grandsons.

Ellen Skillen Bogen Alkon, '56 (history), of Rolling Hills Estates, Calif., December 30, 2020, at 84, of kidney failure. She was the commissioner of health at Minneapolis Health Department. At the Los Angeles County Department of Public Health, she was the medical director for public health and director of public health education for physicians. She was also an adjunct professor at the UCLA Fielding School of Public Health. She was predeceased by her husband, Paul, and daughter Kathy. Survivors: her daughters Cynthia and Margaret and brother David. James Cameron Bageman, '56 (industrial engineering), of Las Vegas, March 13, 2023, at 88. He was a member of Sigma Nu/Beta Chi. He was in the Army ROTC while he was pre-law and studying engineering at Stanford. He later graduated from law school at the University of Southern California. He was predeceased by his spouse, Karen (Wyman, '57). Survivors: his children, Janet Medlin and Paul. Kenneth Grover Berry, '56 (history), MBA '61, of San Francisco, October 22, at 88. He was a member of Beta Theta Pi. He served in the Navy. During his 43-year career as an investment counselor, he was a partner in investment firms and a founding partner of Berry, Hartell, Evers, and Osborne. He became chairman and CEO of Pillar Point Capital Management Inc. He was predeceased by his wife of 62 years, Gail. Survivors: his children, Bliss Talbott, Jeffrey, and Brooke Dunton; eight grandchildren; and nine great-grandchildren.

Mark Clay Davis, '56 (history), of Atherton, Calif., July 7, at 90. He founded the Stanford Real Estate Club, was a member of Beta Theta Pi, and played football. He co-founded the commercial division of the Cornish & Carey real estate company in 1971 and continued as an executive managing director for over 43 years. He was a partner in Golden Gate Investments. He mentored many young people interested in real estate. Survivors: his wife of 64 years, Patricia; children, Kimberley and Todd; and three grandchildren.

James C. Kelso, '56 (mechanical engineering), of San Jose, October 4, 2020, at 86. He worked on the Atlas and Saturn V rocket engines used in the early space program leading to the Apollo moon landings. He spent most of his career with the San Jose GE nuclear program, retiring to write a training guide for the turbine to which he devoted so many years of his working life. Survivors: his wife of 63 years, Helen; sons, Timothy, Michael, Patrick, Christopher, and Matthew; seven grandchildren; and four great-grandsons.

Richard Alden Lewis, '56, MS '58 (civil engineering), of San Diego, August 13, at 89. He was a member of Phi Sigma Kappa and was in ROTC. He worked as a civil engineer and consultant for 55 years. He enjoyed investing and personal finance, skiing, sailing, golfing, and playing tennis. He was predeceased by his wife of 40 years, Bobbi. Survivors: his son, Rick, and two granddaughters. Robert M. McGrouther Jr., '56 (history), LLB '61, of Oakland, June 23, at 88, while recovering from surgery. He was a member of Phi Gamma Delta.

He served in the Navy. He spent his entire legal career at Lillick, McHose & Charles (now Nixon Peabody) and was the national coordinating counsel for a major insurance company. He was universally respected by his law partners for his fairness and sound judgment. Survivors: his wife, Lila; children, Robert, David, Stephen, William, and Caroline; 12 grandsons; and sister, Martha Eddleman, '65.

George Schafer Roberts, '56 (geography), of Woodside, Calif., September 26, at 89. He was a member of Phi Kappa Psi. He served in the Army. He worked for the family grocery business before buying a small store on a dirt road in Woodside, growing it into Roberts Market, an institution for over 60 years. He went on to create a town center, Canada Corners, where neighbors would gather. Survivors: his wife of 35 years, Kathie; children, Christine, Suzanne Vandenberg, and Brian; stepson, Braxton Zink; and six grandchildren.

Bernice Yoshiye Kamei Tashima, '56 (social sci-

Bernice Yoshiye Kamei Tashima, '56 (social science/social thought), of Keauhou Kona, Hawaii, August 24, 2020, at 86. She received a master's degree from Columbia University and spent most of her career as a first-grade teacher at Kealakehe Elementary School in Kona. She was predeceased by her husband, Sadaharu. Survivors: her children, Karen and Wendell.

Barbara Patricia "Patsy" Landis Hulting, '57 (history), of San Francisco, July 26, at 87. She was a fourth-generation Californian who lived most of her life in San Francisco. She enjoyed a 20-year career in banking and was an enthusiastic bridge player and an active member of the Junior League, Town & Country Club, National Society of Colonial Dames, and the Auxiliary of the Fine Arts Museums. Survivors include her sons, Frederick and William, and two grandchildren.

Carl Edward Isaacs, '57 (social science/social thought), MBA '59, of Stockton, Calif., February 21, 2023, at 87, of heart failure. He was a member of Kappa Alpha and lettered in three sports as a freshman. He played for the Cleveland Browns before earning his MBA. He was a real estate broker in Stockton for over 50 years. He was enshrined in the Stockton Athletic Hall of Fame in 1984. Survivors: his wife of 33 years, Jan; children, Allison, Stacey Isaacs-Wolf, and John; two grandsons; and sister. Mary Kathryn Bronson Paterson, '57 (history), of Reno and Sparks, Nev., July 6, at 88, of lung cancer. She loved reading, playing bridge, traveling the world, and Stanford, but none more than being a grandmother. Survivors: her daughters,

Virginia Lee Clinch Palmer Everding, '58 (education), of Denver, October 6, at 86, after a fall. She taught second grade, then attended the University of Denver's Graduate School of Social Work, becoming a counselor. She served as CEO of a newly formed radio station until it was sold to her son. She was predeceased by her husbands, Richard Kylberg, '56, Ken Palmer, and Ed Everding; and stepson, Henry Everding. Survivors: her sons, Richard Kylberg, '84, and Robert Kylberg, '86; stepdaughters, Linda, Lisa, and Kelly Everding; and two grandsons.

Mary Carroll Davis, Lori Paterson, and Diane

Jones: two grandchildren: and a brother.

Jacqueline H. Greene Leney, '58 (education), of Danville, Calif., September 7, at 87. She was a devoted wife and mother who loved to travel. While living in Belgium with her husband and sons, she enjoyed many weekend car excursions to other countries and went on an East African safari in the early 1970s. She also loved music, reading, playing bridge, cooking, and attending

Stanford sporting events. Survivors: her husband of 65 years, William, '57, MBA '63; sons, James, '85, and Thomas; six grandchildren; seven great-grandchildren; and brother.

Sherrill Lee Hossom Muller, '58 (art), MA '63 (education), of Bow, Wash., February 28, 2022. She was in the choir and on the sailing team. She was a graphic and technical illustrator for Stanford Research Institute, the Stanford Linear Accelerator Program, and other tech companies before moving to a ranch in Oregon and raising cattle, horses, and llamas. She had a private pilot's license and raced in Porsche rallies. Survivors: her husband, Eric; his three children, Cheri Mason, Ken, and Rich; eight grandchildren; four great-grandchildren; and sister. Jane Livingston Ostrander Baron, '59 (undeclared), MS '81 (civil engineering), of Tehachapi, Calif., November 11, at 86. She founded an environmental company and then worked as a consultant for the rest of her professional career. Survivors: her second husband, Larry Gilligan; sons, Ronald and Jonathon; and four grandchildren.

Jerrald Roger Goldman, '59 (political science), of Lafayette, Calif., June 22, at 85. He was a member of Phi Kappa Sigma. He was a medical corps major in the Air Force. A sports medicine specialist, he was among the first orthopedic surgeons to perform arthroscopic procedures in the East Bay. He served as team orthopedist for the Golden State Warriors and the Oakland Athletics, co-founded The Doctors Company, and helped lay the groundwork to found Summit Bank. Survivors include his son, Bert, and sister, Valerie Alexander.

Robert Cameron Kahn, '59 (art), of Belvedere, Calif., October 16, at 86. He was a member of Phi Gamma Delta and was on the swimming team. He co-founded Kahn and Nippert Insurance Brokers. He was a rancher, farmer, skier, windsurfer, and member of the San Francisco Yacht Club. He was predeceased by his first wife, Karen (Jacobsen, '60). Survivors: his second wife, Sharon Huntley; four children, including Abigail, '87, and Cameron, '88; seven grandchildren, including Kelsey Urban, '20, and Cole Urban, '22; great-granddaughter; and brother.

Nancy Louise Page Ostrom, '59 (history), of Chico, Calif., August 30, 2023, at 85. She was on the tennis team. She taught math, physical education, and social studies at Chico Junior High School and was the director of student activities at Chico High School. At Stanford's RISE program, she provided cultural and international studies education resources. She was predeceased by her son Erik. Survivors: her husband, Rick, '59; son Rennolds; five grandchildren; and sisters, Marilyn Page South, '57, Kathleen Page Clark, '63, and Martha Page Greene, '66.

1960s

Elsiedale "Dale" Clyde Peterson, '60 (history), of Cupertino, Calif., July 4, 2022, at 83, of esophageal cancer. She was a guidance assistant at Los Altos High School and volunteered with school PTAs, Planned Parenthood, and El Camino Hospital. An accomplished amateur photographer, she founded and ran a pet photography business. She was an avid walker, jogger, and golfer, and she and her husband shared a love of adventure travel. Survivors: her husband of 62 years, Kent, '61, MBA '63; daughters, Kim Peterson Ambach and Carol; and five grandchildren.

Richard D. Biggar, '61 (economics), of Pasadena, Calif., January 11, 2023, at 83. He was a member of Phi Kappa Sigma. He was a lieutenant in the Navy.

William Charles Hanson, '61, MS '63, (industrial engineering), of Mansfield, Mass., July 15, 2020, at 80, of Alzheimer's disease. He was a member of Phi Delta Theta. He worked at the Digital Equipment Corporation, opening plants internationally and ultimately leading global manufacturing. He later founded the Leaders for Manufacturing program (now Leaders for Global Operations) at MIT, mentoring hundreds of its alumni. His wife of 59 years, Bette, survived him but passed away in 2021. Survivors: his children, Susan Wall, MS '87, Richard, and Carolyn Zolla; 11 grandchildren; and areat-aranddauahter.

Allen Lawrence "Lawry" Chickering III, '62 (political science), of Saint Helena, Calif., August 13, at 82. He was a member of Zeta Psi and was on the tennis team. He worked at California's State Organization of Economic Opportunity, established the International Center for Economic Growth, and founded the nonprofit Educate Girls Globally. He was a research fellow at the Hoover Institution and started The Transpartisan Review. Survivors: his wife, Serena Mondavi Ventura; children, Christopher and Carter: stepchildren, Sabrina Buell, '99, and Justin Buell; and two siblings, including Nicholas, '64. Millett F. Keller, '62, MS '63, (geophysics), of Seattle, October 8, at 83. He was a member of Delta Upsilon and played baseball. He co-founded Scientific Computer Systems in Alaska and contracted with British Petroleum, developing the first oil field reservoir model of Alaska's North Slope, which played a pivotal role in the boom of the Alaskan oil industry. He was later the VP of information technology at Starbucks. Survivors: his wife of 60 years,

Pat; children, Lisa and Jeff, '87; four grandchildren; two great-grandsons; and four siblings.

Ann Haller Chamberlain Emanuels, '63 (history), of Inverness, Calif., July 7, at 81, of multiple myeloma. After graduation, she spent seven years in the Peace Corps in Colombia and Guatemala. She earned a master's degree in educational leadership from the University of San Francisco and worked as a school principal, spending eight years at the helm of Carmichael Elementary School. She loved spending time in her kitchen and garden. Survivors: her husband, Kenneth, '63; daughters, Karen Tully, Kristina Phipps, '91, JD '98, and Kyra Ross: nine grandchildren: and two siblings. James Michael Epstein, '63 (economics), of Encino, Calif., August 27, at 83, of pancreatic cancer. He was a member of Zeta Psi and played football and rugby. He worked as a juvenile probation officer for Los Angeles County and, after graduating from UCLA's law school, joined the county's public defender's office. His talents as a criminal defense attorney led to his being assigned to serious felony cases. He later entered private practice and successfully tried several federal civil rights cases. Survivors include his wife, Jeannine, and sister, Elizabeth Schwartz.

Denis Michael McGinty, '65 (history), of Sacramento, Calif., September 3, at 80, of pancreatic cancer. He graduated from UCSF's medical school and felt most at home in Sacramento, where he was a physician, coach, mentor, neighbor, and ardent Sac Republic fan. He enjoyed continuing his medical education by attending grand rounds even after retirement. He was an avid walker and a devoted grandfather. Survivors: his wife of 55 years, Susan; sons. Michael and Patrick: five grandchildren: and four siblings, including Ellen McGinty King, JD '76. David Vokes Mitchell, '65 (English), MA '67 (communication), of Point Reyes Station, Calif., October 26, at 79, of Parkinson's disease. For 27 years, he edited and published The Point Reyes Light, a community newspaper that won a Pulitzer

Prize in 1979 for an exposé of the quasi-religious corporate cult Synanon. His defense in a retaliatory libel suit filed by Synanon advanced the rights of investigative reporters. Survivors: his wife, Lynn; stepchildren, Anika Zappa-Pinelo, Kristeli Zappa Monterroso, and Shaili Zappa Monterroso: and two stepgrandchildren. Marvin Charles Shelby, '65 (mathematics), of Woodburn, Ore., November 2022, at 79, of pancreatic cancer. He worked in the food processing industry throughout his career, spending many years at the Birds Eye frozen vegetable plant in Oregon and later moving to Small Planet Foods in Washington state, where he remained until his

retirement. He was active in the Woodburn United

Methodist Church. He was predeceased by his

wife of 54 years, Carol. Survivors: his sons, Jeff,

and brother.

'94, and Greg, '97, MA '00; two granddaughters;

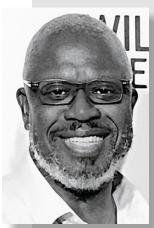
James Robert Fuller, '67 (physics), MBA '75, of Los Altos Hills, December 9, 2022, at 77, of bladder cancer. He was a member of Sigma Alpha Epsilon. He flew a helicopter as a Marine Corps lieutenant. During his 27-year career in the aerospace industry at Lockheed Martin, he had top secret clearance and worked with lasers and cable television. He later earned a master's in marine biology and volunteered in a biogeochemistry research lab. He was predeceased by his wife, Patricia (Ireland, '67). Survivors: his daughters, Kimberly Byers and Caroline; three grandsons; and brother.

Timothy Richard Brown, '68 (economics), of Houston, November 10, at 77. He was a member of Beta Theta Pi. He practiced law for more than 50 years in Houston, starting at Andrews, Kurth, Campbell and Jones before branching out to form his own firm, which was ultimately called Brown, Parker and Leahy and acquired by Thomson Knight LLC. He was recognized as one of the best lawyers in America by numerous publications. Survivors: his wife of 54 years, Suzanne; daughters, Tiffani, Allyson, and Laura; and three grandsons.

From a Stanford Stage to the Silver Screen

Emmy-winning actor Andre Braugher was a serious entertainer. He shone as an erudite corporal alongside Denzel Washington and Morgan Freeman in the Oscar-winning Civil War drama Glory and as an abrasive detective on the television series Homicide: Life on

the Street.



But his Stanford friends remember the exuberant actor behind the heavy roles. "He was a total goof," says Lindsay Chag, '84. In Alondra House, he could be found pirouetting down the halls, shouting lines from Shakespeare, and singing opera fresh out of the shower, clad in just a towel. He was not out for attention. Chag says. He simply loved to perform.

Braugher's lighter side stole the spotlight later in his career, most notably from 2013 to 2021 in his role as Capt. Raymond Holt on the police procedural sitcom Brooklyn Nine-Nine.

Andre Keith Braugher, '84, died on December 11 of lung cancer. He was 61.

Braugher entered Stanford as an engineering major, but when he discovered the lyrical language and complex drama of Shakespeare, he switched his major to speech and drama. "I taught for almost 30 years in the drama department, and he was certainly the brightest light in my memory," says Patricia Ryan Madson, an emerita senior lecturer in drama and former head of the undergraduate acting program. She remembers passing by Stanford's Little Theater and seeing Braugher alone on the stage, in front of 250 empty seats, practicing. "He'd be between classes, working on scenes and monologues," she says. "There was some way in which being onstage meant a great deal to him."

But after graduating from Stanford and then Juilliard, Braugher found a dearth of substantive roles for Black men. "When I came out of school in 1988, there were not a lot of role models," he said during an interview in 2015 on the SiriusXM show Sway in the Morning. "I felt as though I needed to blaze a path for myself." He rejected roles that reinforced stereotypes—"third thug from the left, Act I drug dealer," he said—and fought for ones with greater depth. "I've played bad guys and I've played good guys, but they're all human beings-complex human beings."

"He broke [characters] down as if he was an engineer," says Ty Jones, an actor and the producing artistic director of the Classical Theatre of Harlem, where Braugher was vice chairman of the board.

Madson, too, remembers his relentless commitment to the craft. "He could always find something more, or deeper, or more interesting. More human. He was so many people,"

Braugher appeared in roughly two dozen TV shows, more than 40 films, and many theater productions, and won two Primetime Emmys.

He is survived by his wife, Ami Brabson; sons, Michael, Isaiah, and John Wesley; mother; and brother. -Kali Shiloh Charles Hearn Hoke Jr., '68 (biological sciences), of Columbia, Md., September 21, at 77, of idiopathic pulmonary fibrosis. He was a member of Chi Psi and was on the crew team. He was an Army colonel. After medical school at the University of Rochester, he devoted his career to the field of infectious disease and vaccine development. He was instrumental in developing vaccines for Japanese encephalitis, hepatitis A, and adenovirus. Survivors: his wife of 49 years, Ellen Boudreau; children, Allison Thomas, Courtney Cox, Elliott, and Geoffrey; six grandchildren; and four siblings.

1970

Eric Lucien Almquist, '70 (anthropology), of Belmont, Mass., September 16, at 75, of heart disease caused by radiation treatment. He earned a PhD in anthropology at Boston University, where his research introduced him to statistical analysis. He spent 29 years as a statistician at what became Mercer Management Consulting and later became a partner and head of customer insights at Bain & Company. He loved photography, mountains, and rock and roll. Survivors: his wife, Nanny (Osborne, '70); sons, Adam, Adrian, and Nicholas; two grandsons; and brother, Adrian, '68.

Scott Campbell Davis, '70 (English), of Seattle, October 19, 2022, at 74. He was a social worker, a carpenter, a published author, and the founder of Cune Press. He was a lifelong Christian Scientist and a talented photographer. He loved rock climbing and mountaineering, tackling unclimbed routes in the Cascades and a historic first ascent up the then-new "Heart Route" of Yosemite's El Capitan. Survivors: his wife of 43 years, Mary; and siblings. Peter and Isobel.

John Reed Knight, '70 (English), MA '71 (education), of Davis, Calif., July 24, at 75. He was a member of Phi Sigma Kappa. He was an English teacher and principal at his alma mater, Dixon High School, and was the namesake of nearby John Knight Middle School. He later became the principal of the local continuation high school and the district's personnel director. He was predeceased by his wife, Sharon (Sisk, '70). Survivors: his daughters, Heather Bennett, '98, and Beth Hawkins; four grandchildren; and two siblings. Charles Spurgeon Wingo, '71 (chemistry), of Gainesville, Fla., September 25, at 73. He was an internationally renowned researcher, an exemplary physician, and an endowed professor at the University of Florida School of Medicine, where he was recruited in 1981 to help establish the division of nephrology, hypertension, and renal transplantation. His pioneering studies of renal potassium transport led to the discovery of a new family of H-K-ATPase proteins in the kidney, which changed medicine's understanding of how the organ worked. Survivors: his wife of 52 years, Barbara (Gray, '70); children, Thomas and Linnea; two grandchildren; and sister. Robert García, '74 (philosophy), JD '78, of Los Angeles, April 6, 2020, at 67, of cancer. He was a civil rights attorney who taught at UCLA Law School and worked with the NAACP Legal Defense and Education Fund before founding The City Project, a public interest law firm focused on environmental justice. He was instrumental in creating or preserving more than 1,000 acres of park space in Los Angeles County. Survivors: his wife, Susan Allison, '75; sons, Nicolas, Tomas, and Samuel, '18; mother, Ana Maria;

Abigail Anne Roeder Johnson, '77 (political science), of Redwood City, September 7, at 68, of pancreatic cancer. She contributed to the *Stanford*

Daily. She and her husband founded the Roeder-Johnson Corporation, a PR and communications firm that she led as president for over 30 years. She helped shape the messaging and public relations for over 130 high technology ventures. In the late 2000s, she shifted her focus to mentoring start-ups and their CFOs. Survivors include her husband, Steve, and sister, Penelope Roeder. Claire Ruth Kahn, '77 (art), of Santa Fe, N.M., August 15, at 67, of cancer. While working for architecture firm Skidmore, Owings and Merrill, she designed San Francisco's Davies Symphony Hall and Miami's Southeast Financial Center. She later became the executive designer at fountain design firm WET and designed fountains for the Burj Khalifa in Dubai and the Bellagio in Las Vegas. She was predeceased by her husband, Dan Tuttle. Survivors include her brother, Ira Kahn, '72. Christopher M. "Kit" Keyes, '78 (human biology),

of Nashville, Tenn., September 7, 2019, at 68.
After graduating from the McGeorge School of Law of the University of the Pacific, he worked for Ellis Law Offices Inc. before devoting 37 years to the Louisiana-Pacific Corporation, most recently as associate general counsel. He loved to cook, read books, scuba dive, go to movies, and learn new things. He was predeceased by his wife, Kathleen MacDonald. Survivors: his wife, Barbara; daughters, Casey, Stephanie, Elizabeth, Jocelyn, and Justine; and two siblings.

Sharon Elizabeth Nichols, '79 (economics), of Dallas, July 31, at 66, of surgery-related complications. She earned a graduate degree from the Cornell School of Hotel Administration. She loved her family, adventure, scuba diving, music, her dog "Little Bear," and a good laugh. She was a steadfast mother, friend, sibling, partner, daughter, and aunt who selflessly and passionately supported her loved ones. Survivors: her daughter, Brooke Grindinger; father, Alan; and two brothers, including Alan, '81.

1980s

Sarah Lynn "Sally" Alden Longyear, '83 (human biology), of Palo Alto, October, 2022, at 61, following a heart attack. She was on the crew team. She spent over 36 years at SRI, creating its ergonomics program, leading its fitness activities, and operating a staff fitness center. In 2002, she was honored with the SRI Alumni Hall of Fame Award. She was predeceased by her husband, Rick, '82, MA '83; and daughter, Sarah. Survivors: her son, CJ, '12; father, John Alden, '55, MS '56, JD '59; siblings, Suzy Alden Cordisco, '85, and Jack Alden, '87; and three stepsiblings.

Shaun Desforges Pickering, '85 (sociology), of Loughborough, England, May 11, at 61, of complications from Type 2 diabetes. He was a member of Theta Delta Chi and captain of the track and field team. In 1996 he made the shot-put team for the Atlanta Summer Games, becoming half of the first mother/son Olympian pair in British history. He worked as the sports sponsorship director for Canon Europe and later became a sports commentator and team throws coach for the London and Tokyo Olympics. Survivors include his sister, Kim. Christine Ciesielka Shiiba, '88 (electrical engineering), of Swarthmore, Pa., August 18, 2021, at 55. After college, she taught English with the JET program in Japan, where she also worked as an electrical engineer for Texas Instruments. Later she earned a master's degree in theology from St. Charles Seminary, worked in pastoral care ministries, and was active with youth groups in

several churches. Survivors: her husband of 30 years, Atsushi; children, John, Thomas, Mark, Maria, and Joseph; mother, Regina Hoffman; and two siblings.

1990s

Tanya Larisa Leise, '93 (mathematics), of Amherst, Mass., January 18, 2023, at 51. She was in the symphony orchestra. She was an applied mathematician and the first woman mathematician to receive tenure at Amherst College, where she was a professor of mathematics and computer science. Her research focused on mathematical modeling, particularly biomathematics, and her 2006 co-authored article on the linear algebra behind Google is considered a landmark expository piece. She is credited with creating Amherst's applied mathematics curriculum. Survivors: her husband, Andrew Cohen, '93; and daughter, Adira.

Arturo Hernandez Armenta, '94 (biological sciences), of Houston, February 14, at 51. He was a member of Theta Xi and played rugby. He attended Baylor College of Medicine, where he also completed his residency in plastic surgery and fellowship in microsurgery. He opened his own practice in Houston in 2008. He was passionate about fishing, hunting, traveling, the Dallas Cowboys, and helping his wife with her jewelry business. Survivors: his wife, Emily; children, Art and Ridley; parents, Ana Maria and Arturo; and sister.

Isabel Yuriko "Isa" Stenzel Byrnes, '94 (human biology), of Redwood City, July 12, at 51, of cancer. She and her twin sister were born with cystic fibrosis. Following a double lung transplant in 2004, she took up the bagpipes, swimming, cycling, running, and triathlons, winning dozens of medals in nine Transplant Games of America and a World Transplant Games. She earned master's degrees in social welfare and public health from UC Berkeley and dedicated her career to bereavement care. She was predeceased by her sister, Anabel, '94. Survivors: her husband, Andrew, '94; parents, Hatsuko and Reiner Stenzel; and brother.

2000s

Michael William "Sunshine" Passey, '06 (international relations and film and media studies), of Tempe, Ariz., September 20, at 40. He was intellectually curious and committed to excellence in all areas of his life. He had a passion for swimming, kitesurfing, cycling, skiing, music, Latin dancing, cooking, and art. His creative spirit shone through his various endeavors, and his kind personality and zest for life were infectious. Survivors: his father, Bill; mother, Kristen Magnuson; grandmother, JoAnn Lassen; and three siblings.

BUSINESS

Roy Francis Cooke Jr., MBA '54, of Midlothian, Va., September 19, at 95. He served in the Army as a lieutenant. He worked at Chase Brass and Copper Company and Corning Glass Works, and retired after 30 years with Reynolds Metals, where he was the director of promotions and incentives of the consumer products division. He loved golfing, hunting, the Boston Red Sox, and the Washington Redskins. He was predeceased by his wife of 58 years, Alice. Survivors: his sons, Scott, Steven, and Kevin; and two grandchildren. George Burley Abbott, MBA '55, of Menlo Park, February 9, 2023, at 91. He worked for W.R. Grace in San Francisco, traveling to Central America to audit the company's coffee plantations. He coowned the Abbott & Gibb Dodge-SIMCA dealership in Los Gatos. He later joined Hewlett-Packard and served as the director of corporate internal audit for 25 years. He was predeceased by his son Michael. Survivors: his wife of 39 years, Judy; sons Jim and Tom; six grandchildren; four great-grandchildren; and brother, Bill, MS '57.

Raymond Lee Pekary, MBA '71, of Mountain View, August 21, at 82, of cardiac arrest. He received a congressional appointment to the United States Naval Academy and served as a submarine officer on the USS Sea Cat and USS Tirante and as project officer at the Key West Naval Ordnance Unit. After resigning as a lieutenant, he became a division controller and corporate controller at companies including Hewlett-Packard. Survivors: his wife of 59 years, Patricia; sons, Shannon, '87, MS '88, and Christopher; 10 grandchildren; and five great-grandchildren.

ENGINEERING

Simon Min Sze, PhD '63 (electrical engineering), of Lafayette, Calif., November 6, at 87, of lung cancer. A visionary in the field of semiconductor physics and technology, he co-invented the world's first floating-gate nonvolatile memory device (a key component in consumer technology products). He authored several books, served as president at Taiwan's National Chiao Tung University, and received numerous awards for teaching and research, including the Future Science Prize in 2021. Survivors: his wife of 62 years, Therese; children, Raymond and Julia, '89, MA '90; and four grandchildren.

Robert L. Rockwell, MS '64, PhD '70, (aeronautics and astronautics), of Ridgecrest, Calif., October 29, 2019, at 83, of a blood disorder. He spent many years in research and development at the Naval Air Warfare Center at China Lake and received the Meritorious Civilian Service Award. He was a member of mountain rescue groups, climbed Mount Whitney over 160 times, and participated in a USA-USSR mountaineering exchange in the former Soviet Union during the Cold War. Survivors include: his wife, Sheila; and children, Kurt, Bruce, and Jennifer.

Thomas C. Arnoldussen, MS '69, PhD '73, (materials science and engineering), of Los Altos, November 13, at 77. He spent his career developing magnetic recording technologies for several companies in Silicon Valley, including 23 years at IBM. Survivors: his wife, Barbara; children, Mark and Aimee; and three grandsons. Thomas Howard Bredt, PhD '70 (computer science), of Menlo Park, December 9, 2022, at 82. After working for Bell Labs and earning a master's in electrical engineering, he taught at Stanford and became an engineering manager at Hewlett-Packard, a vice president of the Information Systems group at Dataguest, and a partner at Menlo Ventures. His volunteer work helped to revive the Tahoe Maritime Museum, and scholarships in his name have supported more than 150 Stanford students. Survivors: his wife, Polly; daughter, Melissa Bredt Riches; four grandchildren; greatgranddaughter; and brother.

Fred Donald Russell, PhD '70 (electrical engineering), of Santa Rosa, Calif., October 17, at 88. After graduating, he taught graduate-level engineering classes at Arizona State University. He was in the aerospace industry in Silicon Valley for 35 years, working on projects like the Apollo program. He was vice president and director of advanced research and development at Ford Aerospace and chief scientist at Loral Corporation. Survivors: his wife of 66 years, Madeline; children, Linda Sosa, Greg, and Karen Rondon; eight grandchildren; two great-grandsons; and sister.

HUMANITIES AND SCIENCES

Ernest Perez, MA '58 (biological sciences), of San Jose, June 27, at 101. He flew 23 bombing missions in Nazi-occupied Germany, and during the Cuban missile crisis his B-47 carried nuclear bombs. In the Air Force, he flew over 5,000 hours in operational and training assignments. He later worked for the Santa Clara County Administrator. He was predeceased by his wife of 67 years, Stella, and sons Steven and Paul. Survivors: his children Lynn Tippets, Michael, and Phillip; eight grandchildren; 19 great-grandchildren; and two siblings.

Phillip Andrew Tjelle, MS '61 (chemistry), of Issaquah, Wash., June 22, at 88. He retired from Boeing as a chemical engineer. A proud Norwegian, he liked pickled herring, lutefisk, and krumkake. He had a great laugh, a giving spirit, and a sly sense of humor. He loved salmon fishing and traveling the world with his wife. He was predeceased by his granddaughter Jennifer Hawkinson. Survivors: his wife of 66 years, Carole; children, Jim, Kristin Hawkinson, Karli Spear, and Katie Briggs; 10 grandchildren; three great-grandchildren; and sister. Emily Honig, MA '77 (East Asian studies), PhD '82 (history), of Santa Cruz, Calif., October 14, at 70, of cancer. A professor emerita of history at UC Santa Cruz, her research focused on modern China, with particular attention to labor and gender. Her books delved into topics like women cotton mill workers in prerevolutionary China and the experiences of youth during the cultural revolution. She was a black belt in Aikido and studied multiple languages. including Japanese, Dutch, and Russian. Survivors: her son, Jesse; and sister, Lisa.

Barbara Kathleen Norton Devin, MA '87 (music), of Redwood City, August 18, at 87. She taught and played piano throughout her life, for many years as accompanist to doctoral degree candidates in the music department at Stanford. She gave private lessons until her retirement. She loved playing Chopin, Bach, Beethoven, Brahms, and Gershwin; walking by the ocean or in the forest; and gardening in her yard. Survivors: her husband of 28 years, Stephen; children, Siobhan, '85, and Sean, '85, MS '87; and sister.

LAW

Christopher Alan Westover, LLB '68, of Oakland, October 18, at 80. He was on Law Review. He was the 19th lawyer hired at Cooley, Crowley, Gaither, Godward, Castro. He worked at the firm for 45 years, practicing business law, pioneering a sports law practice, and representing the Golden State Warriors. He served on educational boards and community organizations, including the University of San Francisco and Stanford, Survivors: his wife of 56 years, Barbara; sons, Matthew and James; and four grandchildren.

SUSTAINABILITY

Thomas Lucius Trowbridge Grose, PhD '55 (geology), of Golden, Colo., September 13, at 98. He served in the Navy during World War II. He was an exploration petroleum geologist for Texaco, a teacher at Colorado College, and a professor of geology at the Colorado School of Mines. He was honored with the Thomas Dibblee Award for excellence in field geology and mapping. He was predeceased by his wife of 54 years, Barbara, and a granddaughter. Survivors: his wife Cecilia Travis; children, Kathryn Beymer and Clark; two stepdaughters; four grandchildren; a stepgranddaughter; two great-granddaughters; and sister

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Admit One

Was I facing a crisis of conscience—or of confidence?

I HAD BEEN CONSIDERING

throwing in the towel. For the past eight years, I've met with prospective first-year students as a volunteer alumni interviewer with the Stanford OVAL program. The reports I submit after the interviews become part of their admissions file. But Stanford's acceptance rate is low—in 2023, it was less than 4 percent—and each time I see the word *deny* next to one of my interviewees' names at the end of an admissions cycle, I feel a little more heartbroken.

Don't get me wrong. I've gotten to know loads of inspiring kids, and a handful of them were offered a spot. After a cycle in which not one of my interviewees was green-lighted, though, I started to wonder: In expressing my nostalgia and enthusiasm for Stanford, was I doing them a favor or setting them up for disappointment? Was it fair of me to share an inside look into the spoils of the Farm when most won't have access to them?

Then, out of the blue, I received a text from one of "my" admits, whom I'll call Layla. She thanked me for getting her into Stanford. I was touched, but I mentally dismissed the validity of what seemed to be a misguided assumption of how the admissions process works.

Layla and I met for coffee a few months later, and she delighted me with a detailed discussion of her classes, her professors, her research, her friends. Her eyes were bright, her excitement palpable. She told me she had submitted a request to spend 20 minutes with her admissions file. Her friends were all doing it, so she thought she would too.

Layla made the request through the Family Educational Rights and Privacy Act, passed in 1974, which gives students the right to access and review their own educational records. I couldn't understand why she wanted to take the time to look. Wasn't her Common App tucked safely away in the past? Couldn't she just enjoy her time as a Stanford student without being distracted by nagging questions

of whether she belonged?

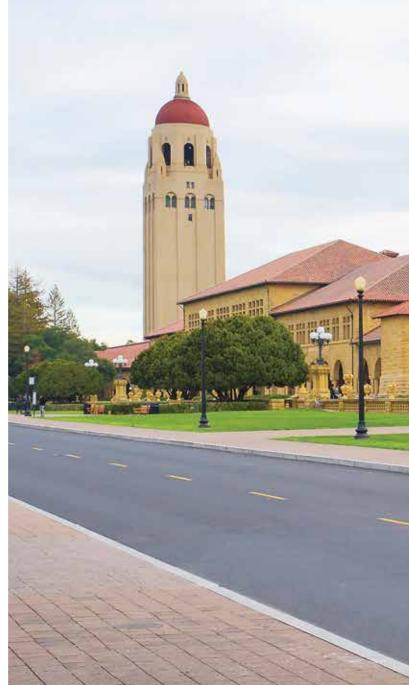
As it turns out, Layla learned that the admissions officer who first read her file was on the fence about her but then decided to put her application through for another read because of what I'd written in my interview report.

My voice had made a difference.

Layla found the reassurance she'd been looking for: Why was she here? Did she really matter to this incredible community? Seeing her put her worries to rest helped me do the same with my own. Maybe sometimes we all need to hear that we matter.

Dana Hudepohl, '96, MA '96, lives in Atlanta. Email her at stanford.magazine@stanford.edu.

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