SPRING 2023

Stanford Business

TRENDING TOPICS

The Future of Finance

VC. China. Digital currencies. Private equity. What to watch in the world of finance.

A LETTER FROM DEAN JONATHAN LEVIN

Be Curious, Not Judgmental

Some of my favorite GSB classes to attend are taught by Keith Hennessey. Keith served as director of the National Economic Council and teaches about business and economic policy. I'm admittedly biased toward the topic, but what I enjoy is the debate. Keith will pose a hard question — how to address rural-urban divides or regulate immigration — and push students to test out the politics, economics, and values of different arguments.

There has been a lot of discussion this year about campus discourse, sparked by incidents across the country, including one at Stanford Law School where students disrupted a talk by a federal appellate judge. So I want to address why being exposed to a wide range of views is essential for aspiring leaders and what we are doing to ensure that happens at the GSB.

My colleague Jenny Martinez, the dean of SLS, circulated a powerful letter after the episode at the law school. Jenny's memo explains the legal protections for speech, but her most important point is that freedom of speech, rather than being a threat to inclusion, is the foundation of an inclusive environment. It ensures that all voices can be heard.

This argument resonates because violations of First Amendment rights are not the greatest threat to speech on campuses, and legal protections are not the central reason to welcome a wide range of opinions. Today, the most chilling effect on campus speech is the fear of being called out or ostracized for voicing an unpopular opinion. And the most compelling argument for encouraging different viewpoints is to spur thinking and foster learning.

Education fundamentally is about encountering differences: different ideas, different people, different cultures. We aim to attract a diverse range of students and faculty at Stanford precisely because they bring different ideas and perspectives. Okay, I'll confess that in faculty meetings, I occasionally wish for a few less strong and disparate opinions. But to be fair to my faculty colleagues, it takes conviction to change the way people think.

Being exposed to differing views is essential in business education. When I think of celebrated GSB alumni such as Mary Barra or Rishi Sunak, a characteristic feature of their roles is the breadth of their constituencies.

AUBRIE PICK

Jonathan Levin is the Philip H. Knight Professor and Dean of Stanford Graduate School of Business.

You don't need to be CEO of General Motors or prime minister of the United Kingdom to appreciate the point. Leading a team, serving on a board, or facilitating a meeting requires getting people to speak up, disagree, and talk through problems, even when the conversation is uncomfortable. Those skills are critical to successful leadership.

In GSB orientation, I quote the noted leadership expert Ted Lasso and tell students that Stanford is a place to "be curious, not judgmental." We ask students to model that in the fall *Leading with Values* course, in *Interpersonal Dynamics*, in Keith Hennessey's classes, in fact, at every step in the program.

We don't always get it right. Pandemic Zoom interactions made it harder to keep the humanity of fellow students and faculty front and center. But I have a lot of faith in our students and faculty.

At a lunch this fall, a group of MBA2s told me about a provocative guest in Finance 321 who voiced strong opinions about climate change, COVID policy, and more. "What do you think?" they asked. "What do *you* think?" I replied. A lengthy discussion ensued. There was no consensus, but at the end, one of the students said, "Well, a lot of us didn't agree with the guest, but it's good he came because we'd better be prepared to work with people who do."

Stanford's motto is *Die Luft der Freiheit weht*: "The wind of freedom blows." When I came to campus as a student in the fall of 1990, it was exactly the sense of freedom and openness that led me to fall in love with Stanford. Stanford was, is, and always will be a place to be exposed to different ideas, to learn from different people, and to form your own views and aspirations. GSB

Leading a team, serving on a board, or facilitating a meeting requires getting people to speak up, disagree, and talk through problems, even when the conversation is uncomfortable.

“The nature of these innovations is that they arrive suddenly.... You flip a switch and everything changes.”

— Greg Buchak, assistant professor of finance, talking about the future of banking and fintech.
Page 37

Illustration by Sol Cotti

FEATURES

IBRAHIM RAYINTAKATH

ON THE COVER
Illustration by Ibrahim Rayintakath

Susan is a member of **Legacy Partners**—a visionary group who've chosen to remember the Graduate School of Business in their estate plans. Their gifts ensure that future GSB students have the kind of life-changing experiences Susan had and go on to "change lives, change organizations, and change the world."

Two time-sensitive factors make it advantageous to explore a legacy gift to the Stanford GSB right now—charitable contributions made in cash to charities like Stanford can be deducted up to 100% of AGI in 2021, and historically high federal estate tax exemption amounts may change in the next year or two.

For information on how you can leave your legacy or to request a confidential conversation, contact Sindy L. Craig, Director of Development, Legacy Giving, at slcraig@stanford.edu or 650.725.1171. Or visit us online at gsb.stanford.edu/giving/legacy-partners.

STANFORD BUSINESS GRADUATE SCHOOL OF

EDITOR'S NOTE

Forward-Looking Statements

TALK TO US
Have some constructive criticism? Praise? Story ideas? We welcome your input. Please email the editors at **stanfordbusiness@stanford.edu.**

I turn 50 this year. I guess that means I'm due for a midlife crisis, right? If that's the case, then I like the math that Cynt Marshall, the CEO of the Dallas Mavericks, shared at a recent View From The Top. After talking about being diagnosed with colon cancer when she was 51, Marshall (now 63) quipped, "That was my midlife crisis. So I plan on being here until 102."

As more people live longer, healthier lives, many deeply held beliefs about age and aging have fallen out of sync with the reality of getting older. No matter how old you are, you've undoubtedly run up against these discouraging and self-defeating assumptions. Who says a 25-year-old can't launch a new career, found a company, or take time off to care for family? What about a 45-year-old? A 65-year-old? What if, instead of worrying about what we *should* be doing at a certain age, we focused on what we *could* be doing?

That question animates this issue's look at how we might reimagine our personal and professional paths as we enjoy longer lives. "How could we use those years to improve quality of life at all ages?" asks Laura Carstensen, who co-teaches *Longevity: Business Implications and Opportunities* at the GSB (and who inspired the headline on page 40). Plenty more life lessons dot the issue, including prenuptial tips (page 17), a survey of generational attitudes toward ESG investing (page 20), and discoveries absorbed from the diaper market (page 14).

The collapse of Silicon Valley Bank in March was another reminder that life moves pretty fast, particularly in the world of finance. At the GSB, we're lucky to be surrounded by experts who can help make sense of these events. For our cover story on page 32, we spoke with several finance professors about developments in their areas of study that they're keeping an eye on. We didn't ask them for big predictions; as Professor Matteo Maggiori told me, even the pros tend not to see crises coming. Yet with enough information and preparation, we can do our best to keep our options open in the years ahead.

— Dave Gilson


STANFORD

ON CAMPUS

School of Stock

For more than a decade, GSB lecturer Kevin Mak (above) has run the Real-Time Analysis and Investment Lab (RAIL), providing students with hands-on experience making trades and reacting to market news in a classroom designed to feel like a busy Wall Street trading desk. In our opening illustration (right), Sol Cotti depicts a moment of contemplation amid the flood of information.

ABOUT THE COVER

Ibrahim Rayintakath's art evokes a future that's complex yet inviting. We'll take it. More of his conceptual images accompany our lead feature on page 32.

We also acknowledge and thank our contributors, including colleagues at Stanford GSB, writers, photographers, illustrators, and class secretaries.

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For address changes and other information, email stanfordbusiness@stanford.edu, or write to *Stanford Business* magazine, 655 Knight Way, Stanford, CA 94305-7298.

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Briefings

Professor Shoshana Vasserman (above) teaches a section of *Data and Decisions*.

ELENA ZHUKOVA

BACK TO CLASS

Model Students

Taking the mystery out of stats and big data

Fear not, Lanier Benkard told his students halfway through the winter quarter, they would learn regression analysis even if at that moment it seemed like an impenetrable black box. "You probably feel ill-equipped to do this right now, because you are," said Benkard, a professor of economics and the designer of the base MBA1 course *Data and Decisions*. "But it will start to make sense soon."

In an age in which data analysis is crucial for almost every industry, Benkard's course aims to give students a firm grasp of the tools and approaches they will need to assess performance and build predictive models to inform decision-making.

"Fifteen or 20 years ago when we tried to teach this stuff, people thought, 'I don't need to know how to do that. I will hire somebody else to do that.' I don't think anybody believes that today," he says. "You can't say that you understand a machine learning model if you have never run one yourself."

Benkard redesigned the base course five years ago as a "flipped" classroom — students absorb most of the material in online modules, including videos that describe in detail everything from how to use R software to the intricacies of hypothesis testing. Class time is devoted to answering questions and giving students plenty of practice working with data sets.

In one class midway through the quarter, Benkard used examples from *Moneyball* — the data wizardry that revolutionized baseball, popularized in the Michael Lewis book of the same name. It was not important that students

COURSE NAME
OIT 274: Data and Decisions

INSTRUCTORS
Lanier Benkard
Paulo Somaini
Shoshana Vasserman

LISTEN

A new podcast presents key takeaways from a conference series about business and the environment organized by William Barnett, a Stanford GSB professor of organizational behavior and professor at the Stanford Doerr School of Sustainability. Each episode features interviews with researchers about their cutting-edge work on this timely topic. Hear more at **stanford.io/sustainability-podcast**.

knew the game — indeed, at one point one asked what “on-base percentage” referred to — only that they understood why and how the Oakland A’s management found a clear, compelling relationship between how often batters reached base and the number of runs the team scored.

Benkard cold-called half a dozen students at various points to test their understanding of, for example, what was required to build a model with a 95% confidence level. In other class periods, students examined the relationship between CEO compensation and stock performance, how to predict house prices, and what factors affect movie ratings. Students were given 45 minutes to load the data, conduct regression analyses, and come up with answers. “Every day, they are working with a different data set and a different set of questions,” Benkard says. “By the time the class is finished, they’ve done this 30 times or so, and it’s empowering because now they know how to do this.”

“I had limited experience with regression analyses before the course,” says Walter Winslow, MBA ’24. “Relearning them in a business context has been super valuable to me.”

Fully half of the course is devoted to regression analysis. “I think of regression analysis as what we want to teach and the rest of the stuff as getting us there,” Benkard says. “There are a lot of fancy names in machine learning that sound sexy, but they’re really just different regression models.”

By the end of the course, students will have a new suitcase of skills and a richer vocabulary — coefficients and scatterplots and confidence intervals. The black box slowly sheds its opacity. “We want students to understand what’s possible with big data, but also what the limitations are, how to do it intelligently, how to recognize when somebody is doing it badly,” Benkard says. “It may look like magic, but it’s not.”

—Kevin Cool

AGATA NOWICKA

PANELISTS

Misinformation, Monopolies, and the Metaverse

Perspectives from *People & Planet in the Information Era*, a webinar series hosted by Professor Brian Lowery and sponsored by the Leadership for Society Program. Watch the discussions at *stanford.io/people-planet*.

“I am absolutely committed to free speech by adults.... The problem is that the platforms are also responsible for the spread of misinformation.... If you start thinking about it — and I thought about it a lot — all of the roads end up to something which is completely unacceptable, which is the Department of Internet Regulation.”

— Eric Schmidt, co-founder, Schmidt Futures; former CEO of Google

“In machine learning, people pretend that things are neutral.... We have to start from the assumption that there’s no such thing as neutrality. You have to make your values explicit and you have to curate your data accordingly.”

— Timnit Gebru, founder and executive director of the Distributed Artificial Intelligence Research Institute

“I actually don’t find the metaverse or digital space is too different from anything else we’ve done on the internet.... I would argue many people are already living in the metaverse and have been for many years.”

— Mercedes Bent, MBA/MA Education ’19, partner at Lightspeed Venture Partners

“We have done an 18-month investigation of Big Tech.... What I learned through the investigation and through listening to the competitors of Apple, Amazon, Facebook, and Google is that there isn’t a free market — these are monopolies.”

— Rep. Ken Buck (R-Colo.), ranking member of the House Judiciary Subcommittee on Antitrust

SEEN AND HEARD

“I think the primary blame is management and board.... Their job is to make sure they’re running a safe and sound organization.”

— Dean Emeritus Robert L. Joss, MBA ’67, PhD ’70, in a discussion about Silicon Valley Bank sponsored by the GSB Alumni Association

RECOGNITION

Anat Admati, professor of finance, was awarded the Robert K. Jaedicke Faculty Award, which is presented annually to a member of the Stanford GSB faculty for service to the school's alumni.

Rebecca Diamond, professor of economics, received the Elaine Bennett Research Prize, which honors outstanding research in economics by a woman not more than seven years beyond her PhD.

Josh Golomb, MBA '01, received the Porras Latino Leadership Award, which honors and encourages leadership in business and the greater Latino community.

John A. Gunn, MBA '72, received the Stanford Gold Spike Award, the highest annual honor for volunteer service at Stanford, recognizing decades of exceptional and significant service to the university.

Kenneth A. Hersh, MBA '89, received the Ernest C. Arbuckle Award, which recognizes excellence in the field of management leadership.

Hau Lee, professor of operations, information, and technology, received the Stanford Executive Education Teaching Excellence Award.

Steve Pamon, MBA '96, will receive the Tapestry Award, honoring a Black GSB alum for inspirational leadership, intellectual excellence, and service to others.

Danny Parker, JD/MBA '83, received the Stanford Medal, which honors volunteer leaders with decades of distinguished volunteer service to the university.

Rishi Sunak, MBA '06, was appointed prime minister of the United Kingdom.

HARD LESSON

Breaking the Silence Surrounding Mental Health

Andy Dunn, MBA '07, opens up about the moment that nearly derailed his life.

In his memoir, *Burn Rate: Launching a Startup and Losing My Mind*, Bonobos co-founder Andy Dunn writes about the time in 2016 when he "came within an inch of losing the woman who is now my wife, the company, and everything I cared for in the world" before getting treatment for bipolar disorder. He spoke about this experience in a recent View From The Top.

My mom's an Indian immigrant. My dad's family were kind of classic Scandinavian Midwesterners. I grew up in a biracial household, and I think maybe the most interesting part of that, in retrospect, is how different the cultures were around communication. One thing the cultures did have in common was an abject desire to not speak about mental health.

I was diagnosed when I was a senior in college. We just buried it. I internalized that as an unspeakable shame. I lived that way for 16 years and I lived asymptomatic for the first eight, which lulled us, collectively as a family, into a feeling that perhaps it had been an inaccurate diagnosis. Then, in the Bonobos years, depression kicked in, and ultimately, the mania came raging back.

One of the most pernicious things about mania is that it can be triggered by positive life events — having a child, getting married, selling a company. In my case, it was falling in love with Manuela and coming to the decision that I was going to ask her to marry me. It got bad that night. I was howling at the moon. I was playing Tupac really loud, and music sounded so good, and she didn't know what to do, so she called her mom. Her mom came over.

The felony charge was that I pushed her mom to the ground and I kicked her. Eight New York police officers showed up within about two minutes. They pinned me to the ground, cuffed me, and took me to the psychiatric emergency room at Bellevue, where I spent a week, unaware of what had happened.

Manuela came to visit every day, which was incredible. I noticed that she had a black eye. And I just said, "Did I hit you?" She said, "You're kind of a wuss, and it didn't hurt." It was like a noose to the sky of shame to know that that had happened.

The next six months were like a hellscape. Was Manuela going to leave me? Was I going to have to step down from my job? Was there going to be PR about it? I remember being in the Fourth Precinct in New York. The arresting officer is the one booking me. He took my mug shots, and I said, "Officer, are these mug shots going to be online?" He was like, "Yeah, but, dude, you're not the founder of Google. You sell pants."

SERGIO MEMBRILLAS

BY THE NUMBERS

Investing with Impact

328
GSB students have helped manage the Stanford GSB Impact Fund since 2015.

79
students participated during the 2022–23 academic year. Nearly 160 applied to join.

4m
lives have been positively impacted by companies in the fund's portfolio, according to its 2021–22 annual report.

LYNDON; SERGIO MEMBRILLAS

ANDY DUNN, MBA '07, is the co-founder of Bonobos, the founder and CEO of Pumpkin Pie, and the author of *Burn Rate: Launching a Startup and Losing My Mind*. Listen to his entire VFTT talk at **stanford.io/dunn**.

I was supported by the board. Manuela stayed with me, but with a condition: that I took my medication and saw a doctor. I became religious about staying healthy. Now I have a pretty robust system of medication. I still see that doctor twice a week.

And sleep is so critical. I have a sleep report that I send [to] a WhatsApp group, and it goes every morning. So everyone knew yesterday — which is a little bit annoying, because I know my mom worries about it still — that the night before last I slept 4 hours and 33 minutes.

So last night was a high-pressure sleep night. I had an 8-hour night. I sent it to my family, and my mom was like, "Good." It's humbling to be in this kind of a dynamic, but I know that transparency with my loved ones is a critical part of my health — and therefore theirs.

HOW TO

Diversify Your Board in 4 Steps

Women hold 28% of the board seats at the 3,000 largest publicly traded companies. That's a record, but there's still work to do. To support that ambitious task, the California Partners Project — a nonprofit co-founded by First Partner of California Jennifer Siebel Newsom, MBA '01 — teamed up with the Stanford VMware Women's Leadership Innovation Lab to create the *Board Diversity Playbook*. The online guide, unveiled at Stanford GSB in February, details a four-step process for bringing more people into the boardroom:

1 **Find and fill the gaps:** Construct a "board matrix" that outlines your current directors' skills, experiences, and demographics. This can be used to identify what additional qualities the board needs. By evaluating candidates in this context, diversity will naturally be prioritized.

2 **Expand your networks:** Look beyond your first-degree connections to tap into a wider pool of talent. Try to identify at least two candidates from underrepresented groups. "When you're shortlisting candidates to interview, make sure you're not just adding one woman into the mix — that's not going to set you up for success," advises Jana Rich, MBA '96, CEO of the Rich Talent Group.

3 **Create an equitable interview process:** Conducting fair interviews is crucial. Brief your interview panel on bias-blocking practices, such as asking all candidates the same questions and using a consistent rubric to evaluate their answers.

4 **Onboard intentionally:** Assigning a mentor can help a new recruit get comfortable, especially if they're an "only" — the only person of their gender or race in the room. And don't wait to tap their expertise. "Another key onboarding step is strategically assigning board projects to new members so that they can immediately step into value creation," suggests Shehnaaz Suliman, the CEO of ReCode Therapeutics and a board member of 10x Genomics.

— Audrey Kim

Read the *Board Diversity Playbook* at **inclusiveboards.stanford.edu**.

15 early-stage ventures in areas including energy, health care, and agriculture are in the fund's portfolio.

710 companies were contacted by the fund in 2021–22; 3 were added to its portfolio.

$675k has been invested by the fund as of June 2022.

$75m has been raised by companies in the portfolio since the fund invested in them.

100% of companies in the Impact Fund's portfolio have survived.

OFFICE ARTIFACT

Hau Lee's Bullwhip

Hau Lee is the Thoma Professor of Operations, Information, and Technology at Stanford GSB.

AFTER I GOT MY TENURE, I had a sabbatical. I joined Hewlett-Packard because I wanted to see how real companies operate. HP hired me full time to help solve some manufacturing problems. That year opened my eyes. That's how I started looking at supply chain.

"Supply chain" was not a well-known term at that time. Today, it seems like everyone talks about supply chain. But not in the days when I first started.

One time, I was invited to visit Procter & Gamble with my colleagues Jin Whang [now the Jagdeep and Roshni Singh Professor of Operations, Information, and Technology, Emeritus] and Paddy Padmanabhan. The vice president of supply said, "We have a major problem because the demand for our diapers fluctuates a lot. It's very unpredictable."

But babies use diapers at a very stable, steady rate — there's not much fluctuation. Yet, as we go from babies to parents, retailers, distributors, wholesalers, manufacturers, and suppliers, the order fluctuations get amplified. Why was this happening?

We observed that the same phenomenon was not just happening in diapers. It happened in apparel, it happened in semiconductors, in computers, in automobiles. Every industry has this kind of phenomenon. The key is that you have to understand it and don't overreact, because the danger is overreacting. Sometimes you see a big demand, and you jump and produce a lot more. It turns out that is a peak, and then it will go down.

This is the bullwhip effect. Why is it like a bullwhip? When you are a cowboy and you crack the whip, you move the handle 60 degrees and the tip will move more than 360 degrees. Sometimes, a signal can move a little bit from consumer to retailer to distributor to wholesaler to manufacturer to supplier. Everyone adds something to the signal, and it results in a big surge, up and down.

The pandemic is a great illustration of this. Even the media used the term "bullwhip": bullwhip of toilet paper, bullwhip of hand sanitizers, bullwhip of everything. We were relying on short-term data and then we produced a whole lot more. Consumers panicked, too. They didn't realize there was ample supply coming in. Some students told me they're still using the toilet paper that they bought in 2020.

Our paper describing the bullwhip effect was later voted one of the 10 most influential papers in the history of *Management Science*. Years later, I was giving a talk to executives. One was very impressed. He said, "Professor Lee, the description of the bullwhip is great, but why don't you have a real whip to demonstrate?" A month later, he sent me a gift — a very nice box with a leather whip.

I use it in teaching. Maybe 60% of the time, I can crack the whip. I invite my students to crack the whip. They love it. I have students from 20 years ago who come back and say, "Professor Lee, I still remember your bullwhip. I don't remember anything else. But I remember your bullwhip."

— Told to Dave Gilson

MICAELA GO

CATALYST

Phyllis Ferrell, MBA ’01

THE PROBLEM
Beating Alzheimer’s requires new treatments and early detection.

THE PLAN
A global effort to diagnose people sooner and develop drugs more quickly.

Phyllis Ferrell was right where she wanted to be. After earning her MBA from Stanford in 2001, she’d resisted the allure of buzzy dot-com startups in Silicon Valley and returned to her Midwestern roots, taking a job with the pharmaceutical giant Eli Lilly & Company in Indianapolis.

There, she moved swiftly through the ranks, and in 2011 she was named vice president in charge of drug development for Alzheimer’s disease. It was an awesome responsibility for a 39-year-old. Worldwide, some 50 million people suffer from Alzheimer’s, and with aging populations, that number could triple by 2050. The cost of the disease has been estimated at $1 trillion a year, and the toll on families is incalculable.

And Ferrell knew their anguish. A few months earlier, her father-in-law had been diagnosed with Alzheimer’s; six months later, her father, a business leader whom she adored and tried to emulate, was diagnosed as well. “If you believe in Godwinks, there’s one,” she says.

Her team of more than 300 people worked feverishly to bring three Alzheimer’s drugs to late-stage trials and prepare for commercialization, but it wasn’t to be. By late 2018 all three had failed. As Ferrell puts it stoically, “the molecules did not meet their primary endpoints.”

One problem, she now realizes, was that their trial subjects were too far along. “We’ve learned a lot, and we now know the disease starts in the brain 10 to 20 years before symptoms appear.” However, most doctors don’t diagnose it in patients until dementia has set in.

“These treatments might slow the progress of the disease, but they can’t reverse the damage.” The key is early detection, and some tests already exist — they’re just not being done. “Simply put,” she says, “beating Alzheimer’s is not just a science problem; it’s a *system* problem.”

Ferrell was promoted to chief commercial officer of Lilly in 2019. But when the company created a new role for a head of external engagement on Alzheimer’s the following year, she saw her opportunity to attack that systemic problem, and she jumped at it. Her brief in the new job is to forge public-private partnerships that move the whole field ahead. As part of that, she now splits her time as an executive on loan with the Davos Alzheimer’s Collaborative, a new global health initiative launched by the World Economic Forum in 2021.

Modeled on ambitious public health campaigns like Gavi, the Vaccine Alliance, DAC is raising funds and mobilizing nations around the world to accelerate the discovery, testing, and delivery of interventions for Alzheimer’s.

That last piece, delivery, often gets short shrift. But as Ferrell says, “You can come up with the greatest innovation in the world; if it doesn’t get to patients, it won’t make a bit of difference.”

Now, as director of Health System Preparedness at DAC, she says her goal is to change how healthcare systems approach Alzheimer’s. “Most doctors still think of this as a disease ‘caused’ by old age. We need to change that mindset.”

What would success look like? “It’s really pretty simple: We should be treating the brain like every other organ in the body, where it’s part of your annual checkup. Everyone over 55 should be getting cognitive assessments and biomarker tests as part of their annual checkups.”

Making that happen, however, is a colossal undertaking. It means devising protocols, training practitioners, gaining buy-in from insurers and health care systems, establishing billing codes, and so on. “Change comes very hard in health care,” she says.

All of which means Phyllis Ferrell is, once again, right where she wants to be — doing the work that needs to be done and which she feels “designed for.” And she says she’s never been more hopeful.

“Our understanding of the underlying pathology has really advanced. The only thing slowing us down now is a lack of urgency for timely and accurate diagnosis. But I truly believe we can end this disease for future generations.”

Already she has 19 pilot programs up and running in 12 countries, focused on early detection. “Once the data is in on those, it’s about sharing information and best practices, changing policy in countries around the world, and ultimately changing practice.”

In the meantime, Ferrell says she’s having a blast building something from the ground up. “It’s funny, but I finally ended up at a startup after all.”

—*Lee Simmons*

CHLOE CUSHMAN

SEEN AND HEARD

“Stick with your MBA — but then come see us.”

— Peter Olney, retired organizing director of the International Longshore and Warehouse Union, at a discussion on organized labor sponsored by the Corporations and Society Initiative (CASI). Watch at **stanford.io/casi-labor.**

CLASS TAKEAWAYS

Understanding the Human Factors Behind Decision-Making

Why is making up your mind so hard? How does emotion influence our choices? Those are some of the questions associate professor of marketing Szu-chi Huang examines in her course *Consumer Behavior*. Here are five key takeaways from the class:

1. People remember examples, not statistics: "As leaders, we tend to rely on data for our decisions, and we think that other people also will be motivated by the same data," Huang says. Yet most people are drawn to examples more than figures. Take the lottery, for instance: People who play aren't thinking about the odds; they're focused on the winners. "Brainstorm ways to make your company's message the lottery in your stakeholder's minds."

2. Decisions are difficult, so make them easier: You might find it easy to weigh the pros and cons of any given decision. "But for many other people, these pros and cons are ambiguous," Huang says. "Every time they choose, they feel that they're losing something. Decisions are hard for them, and there's always a trade-off." Make their decisions easier by leveraging default selections and creating win-win options.

3. Emotion is essential: Customers respond to messages that are infused with emotion. "Recent research has shown that while star ratings can predict the success of books, blockbuster movies, and restaurants, it is the emotionality underlying the reviews that explain these sales results. In other words, not all five-star ratings are the same," Huang says. "The more emotional people can get about your product and your company, the more likely they will be motivated to stay with you through ups and downs."

4. Humans are social animals: People don't only think about how they personally feel about a decision; they also care about what others think about it. "Successful leaders know how to leverage social forces so that people can be confident in their decisions and even become ambassadors for the brand," Huang says. "It is good to know that a decision is accurate, but it is even more important to know that others think that the decision is accurate."

5. Be mindful of context: People's physical environment, cultural surroundings, and social and temporal contexts play important roles in shaping their decisions. "My research has shown that sales teams behave very differently at the beginning of the month compared to the end of the month as they get closer to their sales goals. That is a powerful change in their temporal context," Huang says. "Successful leaders are nimble because they understand how critical context is — and how fast it can change."

Go to *stanford.io/human-factor* to watch a video of Professor Huang's Class Takeaways.

AARON FERNANDEZ; SERGIO MEMBRILLAS

BY THE NUMBERS

Inventing America

880k
people in the U.S. received patents between 1990 and 2016, according to a new study coauthored by Professor Rebecca Diamond.

16%
of those inventors were immigrants who came to the U.S. as adults.

1/4
of the economic value of all patents during that time was generated by immigrant inventors.

PEER TO PEER

Power to the Pupil

Jeffrey Pfeffer's students talk about their favorite power tools.

In his new podcast, *Pfeffer on Power*, professor of organizational behavior Jeffrey Pfeffer interviews people who've applied his teachings, including GSB alums who report back on how the "rules of power" have influenced their careers.

Benjamin Fernandes, MBA '17, founder and CEO of NALA

Competence is nice, but confidence is powerful. "I don't think anybody's qualified for anything. I think people are just making it up as they go," Fernandes says. "Impostor syndrome will always be with you no matter where you go, but controlling your mental mind, I think, is the most powerful thing you can do."

Deborah Liu, MBA '02, CEO of Ancestry

Many people cringe at the idea of singing their own praises. Liu suggests another way to think about it: "What if you called it 'sharing the impact that you're having'? Suddenly you've changed the perspective and [are] reframing it from something negative like self-promotion, which feels selfish, to something that's actually giving.… You are sharing and opening the door of communication."

Daryn Dodson, MBA '07, managing partner at Illumen Capital

Rule breakers get ahead — and some rules need to be broken. "We break the rules through our existence as a firm that is Black-owned and led," Dodson says. "We have to rethink the rules that were made in order to found the industry that we're in, and we have to make sure that we break the norms so that we can be seen and evaluated in a way that is fair and consistent."

Sarah Buchner, MBA '22, founder and CEO of Trunk Tools

Never pass up a chance to network face-to-face — even if it means hopping on a plane. "I did this like literally a few weeks after you taught us this," Buchner tells Pfeffer. "I flew to meet a very important and powerful C-level executive in the construction industry. I just flew there for, like, 12 hours just to meet them in person. And it helped me a lot. It helped our company a lot."

Laura Chau, MBA '18, general partner at Canaan Partners

"People often come to the West Coast and they decide they're going to wear the crappiest clothes they possibly can," Pfeffer notes in his conversation with Chau. She's taken the opposite tack: "When I was wearing heels and I looked nice, wasn't in a hoodie… I didn't have to worry about remembering every single person I met. Most of them remembered *me* because I was that one crazy tall Asian girl that they saw."

Vivas Kumar, MBA '21, co-founder and CEO of Mitra Chem

"One of the most transformational things that I've ever done is I joined my local Toastmasters chapter," Kumar says. The experience not only improved his public speaking, it also confirmed a Pfeffer precept: "There's a concept that you taught us in class, Jeff, which is, 'Get out of your own way.' People aren't thinking about you as much as you think they're thinking about you."

Find more episodes of *Pfeffer on Power* at *stanford.io/pfeffer-power.*

ALL HEADSHOTS BY COURTESY; SERGIO MEMBRILLAS

CAREER ADVICE

What to Ask Your Partner Before a Merger

"We're not the first to assert that the most important career decision you'll make is about whom to marry and what kind of relationship you will have," write Myra Strober and Abby Davisson. Warren Buffett and Sheryl Sandberg have offered similar advice. Yet in their new book, *Money and Love: An Intelligent Roadmap for Life's Biggest Decisions*, Strober and Davisson lay out a detailed approach to planning a long-term romantic partnership.

If you think you've found "the one," don't wait to talk honestly about your potential future together, say Davisson, MBA/MA Education '08, the former president of the Gap Foundation, and Strober, a professor emerita at Stanford Graduate School of Education who taught the popular GSB course *Work and Family*. "If a disagreement about a high-priority issue is unresolvable," they write, "it's better to know now, before your lives are even further intertwined."

A few questions to kick off the conversation:

Living Together

- If you move in together, what do you think it will lead to in the longer term?
- Where do you want to live in the near term? Is that different from the long term?
- How will you divide chores? Does income make a difference in how tasks are divided?

Career and Money

- Do you want both of your careers to be equally advantaged?
- Do you want to prioritize one partner's career while the other focuses more on home life?
- How do you want to handle finances? Pool everything, pool some, or keep everything separate?

Marriage and Family

- Do you want to get married? Why or why not? What does marriage mean to you?
- How do you feel about prenups?
- Do you want kids? If so, how many and when?
- Is it important for you to raise your children within the same religion or belief system you grew up with?

Hear more from Myra Strober and Abby Davisson about how to talk with your partner about big decisions on this recent episode of *Think Fast, Talk Smart:* **stanford.io/money-love.**

MAKER

Torani

Melanie Dulbecco, MBA '90

TORANI STARTED IN 1925 in San Francisco's North Beach. It was a mom-and-pop business — a husband and wife team who went back to Italy to visit family and returned with recipes for fruit syrups. I joined the company 32 years ago. We switched our focus from liqueurs and cordials to cafés. The vanilla latte was our killer app. We taught Starbucks how to make flavored lattes.

We've always been people-first. When I was in business school, I wanted to figure out how I could work with a company that made a product that was of social benefit. A friend knew the family at Torani and I asked for an introduction. I knew that the company was in Bayview-Hunters Point, a distressed neighborhood that needed jobs, and I thought, "What if we could take a small manufacturing company that has a product that's a little hidden gem and grow it and create good jobs? What if the family members were into that too?"

When I started, we were a tiny little company. Almost 30 years later we had outgrown our South San Francisco facility and we knew we had to move. We let everyone know two and a half years in advance and told them that our goal was 100% retention. We had a team that was exploring where we could go and they said, "If we move to this state, we could save this much on taxes. There are these incentives for manufacturers if we move here." And we said, "Hold on a minute. Here's the zip code map of our team. Here's the radius that we'll consider, and it doesn't go past the East Bay." We interviewed everybody to figure out how to design this place in a way that they would be really excited to work here.

As a B Corporation, we care a lot about creating opportunities for people economically through learning and development. I love having the tech industry nearby, but we need to show that we can have every kind of job in the Bay Area. We're out to prove that if we can get to a living wage as a manufacturer here, it can happen anywhere.

We say, "Flavor is what we make, but it's also what each of us brings." We think that's part of what makes us successful.

— Told to Dave Gilson

Melanie Dulbecco, MBA '90, is the CEO of Torani.

AGATA NOWICKA (ILLUSTRATION); ELENA ZHUKOVA (PHOTO)

SHIFTING ROLES

We run the lines about 20 hours a day, five days a week. We found when we did different shift structures, we were able to get a lot more women in manufacturing because they could make it work with their families and childcare.

WORK ETHICS

In our 98-year history, we've never had a layoff. We have low turnover, especially for a manufacturing company. In some manufacturing circles, it's "automate and eliminate." We want to grow and grow people's skills, so for us it's always "automate and elevate."

THE SWEET SPOT

When I joined Torani, we had 10,000 square feet and eight people. We now have about 300 people. Our Flavor Factory opened in 2020. It's 330,000 square feet and we leased another 100,000 square feet next door.

BOTTLE ROCKETS

We've got four high-speed manufacturing lines. I think of them like an amusement park ride for a bottle: It first goes through rinsing. Then it goes into the filling machine. It gets capped. A label goes on. A capsule goes on. It goes through a case packer. Then it comes off the line and goes into an automated palletizing machine. We do 300 cases in 15 minutes on one line.

TASTEMAKERS

We make more than 150 flavors. We have a Flavor of the Year program where we look for a breakout flavor. Last year it was salted egg yolk. This year it's toasted black sesame, which I enjoy in cold brew and milk teas.

Insights

VALUE GENERATION GAP

Millennials and Boomers Split on Their Investing Goals

Younger investors put more money behind their environmental and social views — even if it's costlier.

BY ALEXANDER GELFAND

The world's largest asset management companies have come out swinging on environmental, social, and governance (ESG) investing, declaring their intention to use their proxy-voting power to press for everything from boardroom diversity to net-zero carbon emissions.

But is that what individual investors really want? Maybe. Maybe not.

That's the mixed message from a survey released last November by Stanford GSB, the Rock Center for Corporate Governance, and the Hoover Institution. The survey, which polled 2,470 investors with savings ranging from less than $10,000 to more than $500,000, revealed sharp differences along generational lines, with younger shareholders saying they are far more eager to have fund managers pursue ESG objectives — and also far more willing to risk higher losses in the process.

Overall, 83% of all respondents said they think their personal views should be considered when mutual fund managers use their shares to vote on environmental or social issues. Their views diverged from there.

While around two-thirds of millennial and Gen Z investors said they were very concerned about environmental and social issues like carbon emissions and income inequality, roughly two-thirds of investors 58 years old and older said they were only somewhat or not at all concerned. And while the average investor in their twenties or thirties was willing to lose up to 10% of their investments to see companies improve their environmental practices, the average Baby Boomer was unwilling to lose anything.

David Larcker, a professor emeritus of accounting and a fellow at the Hoover Institution, coauthored the study with GSB professors Amit Seru and John Kepler, Stephen Haber of the Hoover Institution and the Stanford School of Humanities and Sciences, and GSB researcher Brian Tayan, MBA '03. Here, Larcker discusses their findings — and what they could mean for fund managers.

NANCY ROTHSTEIN

DAVID F. LARCKER is the James Irvin Miller Professor of Accounting, Emeritus, at Stanford GSB.

AMIT SERU is the Steven and Roberta Denning Professor of Finance at Stanford GSB

JOHN KEPLER is an assistant professor of accounting at Stanford GSB.

Illustrations by Alvaro Dominguez

Why survey individual investors in big funds about their personal attitudes toward ESG investing?
The whole ESG push has been remarkable: lots of money flowing in and lots of discussions about climate, diversity, and all those important things. But the debate about what we should do going forward is complicated, because there are a lot of hidden assumptions about what people are claiming.

One assumption is that there will be market pressure to respond to stakeholders' ESG objectives and preferences. That makes sense, but where's the evidence that it really is true, and that it has a substantive impact on companies' behavior? Also, these are societal issues, but it's not like everybody has a homogeneous point of view on ESG topics.

As ESG proposals come forward, fund managers have a fiduciary responsibility to vote up or down on them. We're backing up a step and asking, "Are you voting in a way that's consistent with the objectives of your shareholders? Do you actually even know anything about that?"

In general, investors were most willing to lose money in pursuit of environmental objectives, and least willing to suffer losses in the name of good governance.
Environmental and social issues are much more understandable and personal to people. Is your water bad? Are there way too many people in your community living below the poverty line? Those are issues people understand very well, and that they experience firsthand — as opposed to, "Is the board made up entirely of independent people?" That's a little more abstract.

Most also agreed that fund managers should take investors' views into account when voting on environmental and social issues. But whether they wanted fund managers to wield their voting power to press for progress on those issues — and whether they were willing to lose money as a result — depended on how old they were. People my age tend to say, "We want you to reflect our opinions, but our opinion is that we don't want to lose any money in our accounts to satisfy some ESG objective." Whereas younger people seem to be willing to give up a bit of their investment for things that they view as socially or environmentally good.

If these investments are not positive for shareholder value, what's the trade-off? How much are shareholders willing to give up to deal with wealth inequality, for example? That would be a useful input into the decision-making of these funds with regard to their voting behavior, or when they meet with management saying, "Hey, here are the things that are really important on our list, and here's why."

What accounts for the split between younger and older investors?
Older people have a shorter time horizon; if they lose a bunch of money because their fund moves big-time into ESG, they won't have much time to make it up. If you've got 30 to 40 years to do so, it's less painful.

But something else is going on too. Older people think that returns are going to be fairly low in the coming years. They also think that they have a pretty poor understanding of how market prices move. Younger people, meanwhile, are much more optimistic about returns, and they feel very confident in their knowledge.

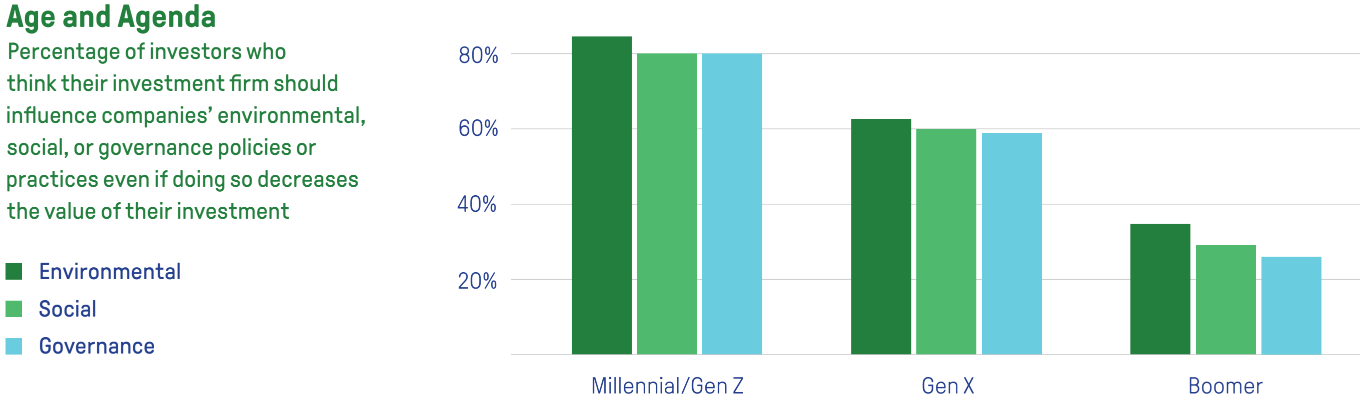
Now, if you think that prices are going to go up every year by 10% or 15%, you might be willing to give up some of your nest egg because it will still grow to become fairly big. If you think that growth will be much lower — which is how older people look at it — then your internal arithmetic is going to be different.

How should fund managers deal with these differences of opinion?
Maybe it would be a smart move to poll your investors to see what they want, particularly on issues where there's a pretty good chance that if you really tilt your investment strategy toward ESG, you're going to incur a loss. They're your customers and you have fiduciary responsibilities to them, so take their preferences into account. Let's say an ESG proposal is being voted on at the annual meeting; you poll your people, and 60% like it and 40% don't. Maybe you should split your vote. GSB

Read the survey at *stanford.io/esg-survey*.

Age and Agenda

Percentage of investors who think their investment firm should influence companies' environmental, social, or governance policies or practices even if doing so decreases the value of their investment



Source: *2022 Survey of Investors, Retirement Savings, and ESG*

BABY BUST

Does a Shrinking Population Mean the End of Economic Growth?

Economists' models assume humankind will keep expanding forever. What if they're wrong?

BY DAVE GILSON

At the stroke of midnight on November 21, 2022, a newborn somewhere in the world became the eight-billionth person. This milestone came at a demographic turning point: The planet's population is still expanding, but its growth rate is the lowest it's been in more than 70 years. If current trends continue, the United Nations predicts that by the early 22nd century, the population will stabilize — and then start to shrink.

The shift to a smaller world would have profound social, political, and ecological implications. It also would force us to rethink our ideas about economic growth, which are built on the expectation that there will always be more people to create new ideas.

"In all those models, we typically assumed there was positive population growth, or maybe zero population growth," says Charles I. Jones, a professor of economics at Stanford GSB and an expert on long-term economic growth. Until recently, many in his field hadn't thought about the potential consequences of negative population growth. "But the more you look at it," he says, "the more you realize, 'Oh, no, this could be a problem.'"

In a new paper, Jones explores two starkly divergent paths for humanity. In a scenario he calls the Expanding Cosmos, the population continues to grow and standards of living keep going up at an exponential rate, much as they

NANCY ROTHSTEIN

CHARLES I. JONES is the STANCO 25 Professor of Economics at Stanford GSB.

did throughout the past century. In the other scenario, the population declines, leaving our descendants with an Empty Planet (a phrase borrowed from a 2019 book of the same name). In this world, living standards will flatline and the number of humans will eventually dwindle to zero.

Jones says he was surprised to find that there is almost no middle ground between these two scenarios. Currently, the average woman gives birth to 2.3 children. That's down from 5 kids in the 1950s, but still enough to keep the global birth rate above the death rate. Yet if overall fertility dips below 2.1, negative population growth kicks in — and it's hard to reverse. "When you're slightly above 2.0 or 2.1 versus slightly below, that's the difference between the population growing forever and the population shrinking forever," Jones says.

The idea that a future with fewer people would be less prosperous may seem counterintuitive. Wouldn't a smaller world mean more resources to go around? Jones explains that people are the most important resource in this equation: People generate ideas, and ideas drive economic growth. Therefore, fewer new people means fewer new ideas, which means less growth and lower living standards.

"People are the key input into producing ideas," Jones says. "Suppose each person can make one idea a year. If the population's constant, you always get more ideas and things always get better and better; we get richer and richer. If population growth is negative, the inputs to creating new ideas are shrinking, and that naturally leads the stock of knowledge to stagnate."

People Who Need People

Ironically, the unprecedented economic growth of the past century is driving the shift toward a smaller population. "As people get richer as economies get more prosperous, it seems like people have fewer and fewer kids," Jones says. "From an individual family standpoint, that may be totally rational and may be the right thing to do, but the macro implications of that are really profound." Currently, two-thirds of the world's population lives in a country where fertility is below the replacement rate of 2 children per woman. (In 2020, the U.S. fertility rate was 1.6.)

Governments could try to jumpstart birth rates by offering people incentives to have more kids. But Jones says this will only work if it's implemented in time. "It turns out you have to do it soon enough. If you wait too long to do that policy, it doesn't work," he says.

If subsidizing babies doesn't work, could smarter, better-educated people mitigate the economic effects of population decline? Jones is skeptical: "Can the quality of people substitute for the quantity of people in the production of ideas? Basically, the answer's no. If the number of people is shrinking to zero, it's hard to imagine that one person with lots of education can make up for a billion people that contain Einstein and Edison and Jennifer Doudna."

Wouldn't a planet with fewer people be more environmentally sustainable? Here, too, Jones argues that the innovation that results from having more people will prevail. "The bulk of history suggests that adding more people has made things better rather than worse," he says. "There's a little bit of a race there. Historically, the race has been won by the ideas that people create outweighing the problems that people create. That's partly where the optimism of many economists about adding people comes from."

Lately, warnings about falling fertility rates have been issued by "pronatalists" such as Elon Musk, who's declared that "[p]opulation collapse due to low birth rates is a much bigger risk to civilization than global warming." However, the Empty Planet scenario isn't quite so dire. "I don't see that collapse is so much of a problem," Jones says. "In the model that I look at, we continue to get richer up to a point. It's not that living standards ever fall; it's just that they stagnate at some level."

Jones notes that many unknowns will affect when and how this could unfold, including increases in life expectancy and advances in artificial intelligence. And an economic slowdown would likely occur gradually over many decades. "At least according to my calibration, it's not right around the corner. But it's something that you do want to think about — and it could happen." **GSB**

"People are the key input into producing ideas. If population growth is negative, the inputs to creating new ideas are shrinking."

NANCY ROTHSTEIN

TALKING HEADS

When It Comes to Communication from the Top, Less Isn't More

Many managers don't convey the right amount of information, but those who undercommunicate pay a price.

BY CLAIRE ZULKEY

A boss who overloads you with information may be frustrating, but one who leaves you in the dark may come off as uncaring.

That's the key finding from a new study that examines how employees perceive managers who assume that less is more when it comes to communicating at work.

After reviewing thousands of 360-degree leadership assessments in MBA and executive education classes, Francis Flynn noted that complaints about how managers communicate were common, and often harsh. "More than just about any other leadership skill, people are fiercely criticized for poor communication," says Flynn, a professor of organizational behavior at Stanford GSB. "The higher up you get, the more brutal that criticism becomes." Noting this, he and doctoral candidate Chelsea Lide saw an opportunity to examine the quantity and

FRANCIS J. FLYNN is the Paul E. Holden Professor of Organizational Behavior at Stanford GSB.

CHELSEA LIDE is a PhD student at Stanford GSB.

quality of communication between managers and the people they supervise.

In a recent paper, Flynn and Lide examine the concept of “communication calibration.” They find that employees often see their leaders miscalibrating the amount they communicate. Indeed, they write, “leaders are often seen by their employees as undercommunicating rather than overcommunicating.”

The importance of how much leaders communicate became apparent during the pandemic, Lide says. “It brought into sharp relief just how important communication was, not only in terms of the message being communicated, but also how often people are checking in with one another and exactly how detailed leaders are being in their communication to employees.”

Flynn and Lide’s research shows that employees’ preference for too many versus too few messages stems from the perception that even if an overcommunicating leader can’t communicate the ideal amount, at least they mean well. Overcommunicators “may be given the benefit of the doubt by their employees, who might view them as trying to meet their needs, even if they are not necessarily succeeding,” Lide says. Making an effort can give the impression of empathy, whereas undercommunicators are “not really seen as trying at all. Instead, they tend to be seen as really missing the mark in terms of meeting the needs of their employees.”

Flynn says that these results contrast with prior research that found that information overload hurts employee performance. “Overcommunication may be seen as annoying and a nuisance, but it’s not seen as a damning flaw for a leader, partly because a leader’s overcommunication is seen as an attempt to benefit you, even if it is misguided, as opposed to an attempt to undermine you or simply ignore you.”

The Strong, Unsilent Type

The authors conducted four studies to test their hypotheses that employees identify undercommunication as a leadership weakness more often than overcommunication and perceive undercommunicating managers as having relatively less concern and compassion. “Communication” was limited to task-related messages — not small talk or office chatter.

Flynn and Lide examined qualitative comments from more than 2,700 leadership assessments. Less than a quarter of employees rated their manager as a well-calibrated communicator. Leaders who miscalibrated their communication were nearly 10 times more likely to be criticized for undercommunicating than overcommunicating. The assessments also showed that perceived empathy was significantly lower for undercommunicating leaders than for well-calibrated and overcommunicating leaders.

The researchers then tested their model’s robustness in a real-world setting, surveying employees on the perceived quantity of communication they had received from their managers and how much they’d prefer to receive. The results confirmed a lack of congruence between perceived and preferred communication; employees judged their undercommunicating leaders as lacking empathy and, in turn, leadership ability.

Based on their findings, Flynn and Lide offer advice for leaders: Ask employees about their personal communication preferences, and when in doubt, increase the amount of task-related communication “to send a stronger message of caring and concern.”

Flynn says that many leaders falsely believe they are communicating the correct amount. “It might be that what they need at the start of their relationship with a direct report or any kind of project management role is to suss out the preferences that others have. Figuring that out upfront is going to serve them well down the line to make sure that others’ silence isn’t misinterpreted as a sign of success, when in fact it’s a sign of struggle.”

If perfect calibration is an unrealistic goal, err on the side of overcommunicating, which relays a desire to see your employees succeed. When a leader overcommunicates, Flynn says, “you might not be very effective at helping, but at least you are not also coming across as completely unfeeling. When you’re undercommunicating, there’s no evidence of any prosocial motivation to go along with an apparent lack of helpfulness.”

These insights may seem counterintuitive to managers who believe in giving employees independence and letting them figure things out for themselves. “It seems to align with the trope of ‘You are your own startup,’” Lide says. “It’s very popular, especially in certain industries, to sell the narrative of complete autonomy. For that reason, I think managers might be biased toward leaving people to their own devices, whether that’s in the employees’ best interests or not.”

Instead, she says, leaders who want to send a strong signal of empathic concern should try to check in more frequently or add a few more bullets to an email, both to provide guidance and show support. And there may be a time and place for undercommunication, if used strategically. “You might suffer in terms of being perceived as a leader who engages in tough love, but if that ultimately helps your employees’ development, that might be a trade-off a manager has to make for the benefit of the people who work with them.” GSB

“Overcommunication may be seen as annoying and a nuisance, but it’s not seen as a damning flaw for a leader.”

GOING VIRAL

A Sense of Community Helped Spread COVID Conspiracies on Twitter

New research explores what motivated people to share increasingly bizarre theories about the pandemic.

BY DYLAN WALSH

As COVID-19 spread around the world in 2020, it was followed by a mutating mass of conspiracy theories: The virus was a bioweapon created by a globalist cabal. Or China. Or Bill Gates. It was spread through 5G cell phone towers. Perhaps it didn't exist at all, and all those reports of overwhelmed hospitals and thousands of deaths were a hoax.

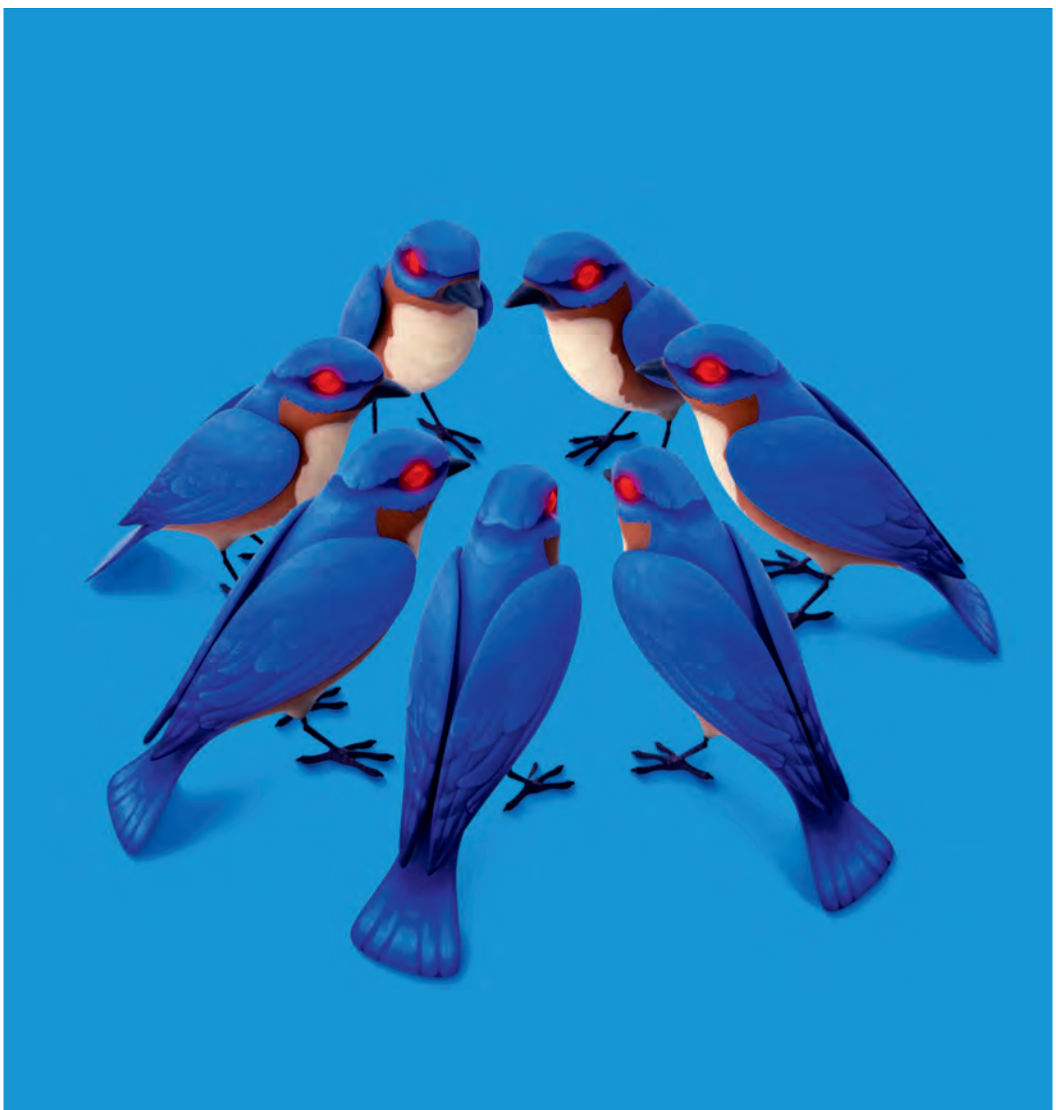
Like infectious diseases, conspiratorial ideas can be traced as they disperse through social networks. "People aren't born believing in conspiracy theories," says Paul Vicinanza, a doctoral student in organizational behavior at Stanford GSB who coauthored a recent study in the *American Sociological Review* about the emergence and trajectory of various COVID-19 conspiracy theories on Twitter.

With Hayagreeva "Huggy" Rao, a professor of organizational behavior at Stanford GSB; Henrich Greve, PhD '94, a professor of entrepreneurship at INSEAD; and Echo Yan Zhou, also a doctoral student in organizational behavior at Stanford GSB, Vicinanza found that people embrace conspiracy theories as a way to make sense of real threats and they join online communities that not only spread new theories but also provide attention and approval.

"We find that social connections are really what license this kind of thinking," Rao says. "People seek positive attention, in this case through retweets, and voicing an extreme idea is often what gets rewarded."

The pandemic offered a particularly rich opportunity to study online conspiracy theories as they took shape, evolved, and spread in real time. To understand the "cognitive architecture" of these ideas, the researchers collected around 700,000 COVID conspiracy tweets from January through July 2020. The tweets contained overlapping and often contradictory ideas. Some portrayed the virus as a bioweapon; others said it was a hoax or exaggeration. Some promoted anti-vaccination or QAnon-related messages. From this swirl of conspiracies, the researchers identified 13 specific topics with help from a machine learning model.

With this defined sample of conspiratorial tweets, the researchers could observe when and why people engaged with specific theories and how those theories gained and lost prominence over time. They found that 40% of conspiracy theorists started by exploring relatively innocuous or credible ideas, what the researchers call "gateway conspiracies."



NANCY ROTHSTEIN (2); JULIA YU

HAYAGREEVA RAO is the Atholl McBean Professor of Organizational Behavior and Human Resources at Stanford GSB.

PAUL VICINANZA is a PhD student at Stanford GSB.

ECHO YAN ZHOU is a PhD student at Stanford GSB.

"This undercuts the whole 'people who believe in conspiracies are crazy' idea," Rao says. For instance, someone might first latch on to the notion that COVID-19 deaths were being miscounted or misreported. "That's entirely plausible, and people then move from these gateway conspiracies to other more extreme ones." Users first spread theories about false-positive COVID tests 27% of the time, compared with 7% for theories about Bill Gates.

Once people began tweeting about COVID conspiracies, their movement toward more extreme ideas took two basic steps. First, individuals found related ideas and their proponents through searches or with help from Twitter's algorithm. Then, people began tweeting and retweeting new conspiracy theories to gauge the public response. "It's almost like testing the waters to see how people react to the theories they're spreading," Zhou says. And in a competitive market for attention, more extreme ideas tended to get more retweets.

Are Algorithms and Bots to Blame?

A key takeaway from these findings is that Twitter's algorithms aren't entirely to blame for the spread of conspiracy theories on the platform. A substantial body of research contends that social media companies' recommendation engines incrementally push people toward fringe or radical beliefs. This new research instead points to the importance of peer interaction: Twitter users who share conspiratorial ideas become part of a larger "conspiracy community" that reinforces and amplifies their beliefs.

"It's really important to recognize this social dynamic," Greve says. "Algorithms create the exposure and might direct people into echo chambers, but algorithms don't on their own radicalize people. That happens in these little societies."

The researchers also revealed the flexibility, and apparent illogic, with which people adopt and discard different conspiracies. When COVID case counts climbed, Twitter users who had said the virus was a hoax might quickly switch to claiming it was a bioweapon. That these assertions can't both be true, Greve says, indicates that people don't necessarily propagate conspiracy theories because they wholeheartedly believe in them. More likely, conspiracy theories serve as a tool for finding meaning in a complex world and defending against unpredictable threats. Assembling a patchwork of diverse and divergent ideas, the researchers write, functions as "a hedge against increasing uncertainty."

This insight helped the researchers differentiate between people and bots, which also spread conspiracy theories on Twitter. Individuals deployed conspiracies defensively and adopted new theories in response to social validation or growing case counts. Bots were less responsive to the news and other Twitter users. They were also more aggressive in their attempts to generate moral outrage and more consistent in their claims that nefarious forces created COVID-19.

"Any study of online conspiracy theories must account for the integral role bots play in amplifying the discourse," Vicinanza says. "To the untrained observer, bots might appear more human-like than real human accounts: They specialize in sowing discord and distrust."

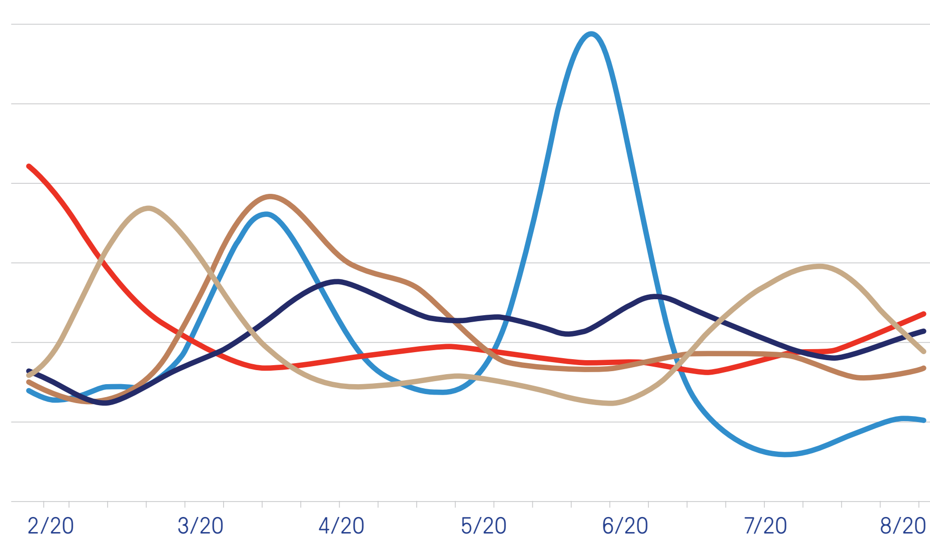
The study's results suggest the challenge of creating policies that effectively tamp down the spread of conspiracy theories on platforms like Twitter. "We often think about targeting the most extreme theories and banning people who proliferate them," Vicinanza says. "But we demonstrate that what appear to be the most benign ideas can, in fact, become the most carcinogenic, as they allow more extreme beliefs to anchor."

On top of that, the shifting nature of conspiratorial beliefs makes them difficult to eradicate: For every disputed or debunked idea, several more may evolve to take its place. "The broader issue is that the conventional ways of persuading people, which we understand so well from marketing, may not be that effective when it comes to conspiracy theories," Rao says. GSB

Waves of Misinformation

Relative number of tweets by theory, February–August 2020

- 5G towers are infecting people
- China created COVID
- Hospitals are secretly empty
- Bill Gates is behind the virus
- COVID testing stats are fake



Source: Greve, Rao, Vicinanza, and Zhou (2022)

FLIGHT PLANS

Tax Avoidance Has Become a Key Part of IPO Prep

Many soon-to-be public companies are already one step ahead of the tax collector.

BY SEB MURRAY

NANCY ROTHSTEIN

In 2021, 136 nations signed a groundbreaking pact to abolish tax havens and force large multinational companies to declare their profits in the countries where they do business. The agreement, masterminded by the Organisation for Economic Co-operation and Development (OECD), includes a 15% minimum effective corporate tax rate and would generate $150 billion annually in new taxes.

This global effort to get companies to pay their fair share of taxes has yet to be implemented. And while the deal focuses on the lengths corporations go in pursuit of lower taxes, it does not consider when companies first adopt tax avoidance strategies.

In a new paper, Rebecca Lester reveals that many U.S. companies begin complex

REBECCA LESTER
is an associate professor of accounting at Stanford GSB.

tax planning during the IPO process, suggesting that international tax policy is focused on only one part of the corporate life cycle. “The OECD is trying to police companies when they are already public, but we also need to focus on incentives that push companies into these tax structures in the first place,” says Lester, an associate professor of accounting at Stanford GSB.

Along with Christine L. Dobridge of the Federal Reserve Board and Andrew Whitten of the Department of the Treasury, Lester found that completing an initial public offering correlates with the implementation of strategies to shield income from high-tax countries. Around the time they go public, U.S. firms expand their presence in offshore tax havens, transfer intangible assets to foreign subsidiaries, and increase their cross-border payments to these overseas entities — moves that point toward income-shifting rather than routine intercompany transactions.

Lester and her coauthors found that private U.S. firms that complete an IPO are 57% more likely to own a subsidiary in a tax haven after they go public. And in the period after a stock offering, they found a doubling in the incidence of cost-sharing agreements, which enable firms to source revenues to lower-taxed jurisdictions after moving their intellectual property offshore.

IPOs trigger tax avoidance largely because they increase the scrutiny companies face from capital markets, including prospective shareholders. More disclosure, in turn, pushes soon-to-be public firms to ramp up their tax-planning strategies to align with other public corporations. “Companies are responding to capital market pressures for tax avoidance,” Lester says.

“It’s also a revelation of information about the value of assets which pushes companies to implement these tax-planning strategies,” she says. “When a company is private, it doesn’t have a sense of what their assets are worth, beyond some signals from private equity or venture capital investors.”

Assets on the Move

Lester and her coauthors’ study sheds new light on the centrality of IPOs in corporate finance. The authors obtained confidential U.S. corporate tax returns from 1994 to 2018. They controlled for other external financing events, isolating the distinct impact of going public on tax planning.

Foreign tax planning is most common among firms that spend more on research and development and therefore have more intangible assets, which can be shifted offshore more easily. Professional tax advisors also play a key role in a firm’s decision to engage in tax avoidance. Lester’s study shows that international tax planning is greatest among companies that switch to using an experienced tax advisor in the three years leading up to an IPO.

The paper uncovered little evidence of domestic tax planning among U.S. firms. Although it found large decreases in domestic effective tax rates post-IPO, this was largely attributed to increased stock option deductions, which decrease taxable income. “They also manage the earnings upward to make the firm look better to investors. They are changing financial income, not necessarily tax income,” Lester says.

The U.S. levies an “exit tax” on companies that transfer assets offshore, based on their value. That pushes firms to strategically time asset transfers before an IPO, as a public listing makes those values known to tax collectors, and may even increase them if the stock price pops.

These findings have important implications for the current debate on international tax policy, which is reaching a fever pitch. Since foreign tax planning begins relatively early in company lifecycles, policies that target profit-shifting may be most effective if they address not only the biggest multinationals but also young, growing firms with high levels of R&D spending.

Lester says that incentives to keep intangible assets in the U.S. may be particularly effective in stemming the tide of foreign asset transfers. She cites the United Kingdom, where the “patent box” scheme enables companies to pay a lower effective corporate tax rate of 10% (instead of 19%) on profits from domestic patents. The U.S. implemented a similar policy, known as the Foreign-Derived Intangible Income incentive, in 2017.

“That seems to be exactly the type of policy that would directly motivate companies to keep their intangible assets in the U.S.,” she says. GSB

“Companies are responding to capital market pressures for tax avoidance.”

Futures Options

VC. China. Digital currencies. Private equity. The federal debt. GSB finance professors talk about the topics and trends they're watching most closely.

INTERVIEWS BY
Edmund L. Andrews
Alexander Gelfand
Katie Gilbert
Dave Gilson

ILLUSTRATION BY
Ibrahim Rayintakath

VENTURE CAPITAL

Ilya Strebulaev: What's Really Driving the Innovation Economy

Ilya A. Strebulaev is the David S. Lobel Professor of Private Equity at Stanford GSB.

Most people associate venture capital with technology, but the reality is that the best companies that are venture capital-backed are changing the business model of their industry or ushering in new industries. Venture capital and, more broadly, investment in innovation, are expanding dramatically into a lot of fields. Now it's difficult to mention a field or industry where venture capital is not present — robotics, medical equipment, education, law, finance, and so on. It's pretty obvious why people should care about this, because it's going to change their lives.

Here's an example that I really like. CRISPR, the new gene editing technology, was developed less than 15 years ago. Now there are hundreds, if not thousands, of startups that are pursuing applications of CRISPR. That will dramatically change our lives and the lives of future generations. This is not only driven by large companies; in fact, it's mostly driven by biotech VCs.

If you look back, venture capital is behind most, if not all, of the largest companies in the U.S. created in the last 50 years. My research suggests that up to two-thirds of the companies that became very successful as a result of venture capital backing would not have existed otherwise. So if we're really interested in what's going to happen in 10 or 20 years down the road, venture capital is critical.

"If we're really interested in what's going to happen in 10 or 20 years down the road, venture capital is critical."

I strongly believe that decision-makers in government and corporations should pay more attention to how venture capitalists process information and how they make decisions. For example, if you go to a traditional company and say, "You'll start 100 projects, 80 of which are going to fail," that's not going to go very well in a CEO's or CFO's office. But that's exactly what's happening in the venture capital business. As there is more and more disruptive innovation, decision-makers in traditional businesses or traditional organizations will benefit from learning how they can think like venture capitalists.

It's useful to mention that right now people are talking about how venture capital is not doing well because the valuations of many high-profile VC-backed companies have declined and many of them have to lay off people. If you happened to be an investor in 2018, 2019, or 2020, you might be counting your losses right now. But if you are just about to enter the fray, that might be the best time to invest.

If you look at the history of innovation, when valuations are lower, this typically brings more innovation later on, because it's easier to invest. If anything, I expect more investments in early-stage startups over the next 12 to 24 months. And some of them are going to disrupt what your readers are doing, whatever they do.

— Told to Katie Gilbert

THE DOLLAR

Matteo Maggiori: The United States' Looming Debt Dilemma

Matteo Maggiori is the Moghadam Family Professor of Finance at Stanford GSB.

The U.S. has been at the core of the international monetary system for a very long time and there is a question about that sustainability.

The country at the core has the following problem: Can it just supply very few safe assets? So maintain the debt at the country level, relatively small compared to its GDP. But then the problem for the rest of the world is that there just aren't that many of these assets. Or, the country can expand the supply of safe assets a lot more but potentially enter a place where it can suffer a self-fulfilling crisis. This is called the Triffin Dilemma.

Which of these options will the U.S. choose? Will it always play it safe or will it actually take some risks? A few years ago, my colleague Emmanuel Farhi and I explained that there are reasons to believe that the U.S. might decide to play it risky. When we first wrote this, people thought it was a bit crazy. The U.S. had been at the core of the system for so long and its debt-to-GDP ratios weren't so high. But if we fast forward just a few years, this has now become a bit more of a mainstream topic.

While we're nowhere near a debt crisis in the immediate future, this is now something that economists have to think about going forward. What I think is more worrisome is that there isn't any particular plan for bringing the debt down. At some point, we're going

"The edifice of the international monetary system is built on reputation and confidence and these things tend to evaporate very quickly."

NANCY ROTHSTEIN (THIS AND OPPOSITE PAGE); PHOTO COURTESY OF MATTEO MAGGIORI to need to have a conversation, policy-wise, about how to avoid getting to a place where this becomes a real, immediate concern.

My own work tells me that when this crisis occurs we tend not to see it coming. If you look at historically big crises of the monetary system, like in 1971–72 with the collapse of Bretton Woods, the system seems to work until it doesn't — and when it doesn't, it goes down very fast. In some sense, the edifice of the international monetary system is built on reputation and confidence and these things tend to evaporate very quickly.

Now what happens if there's another country that might want to play this core role? China's government has stated that it would like to play a role in the future similar to the U.S. in terms of providing a reserve currency. This is clearly far into the future, but China has some of the characteristics that make it at least a potential candidate.

There have been many contenders for the role of the U.S. over the last 70 years and most of them have failed to displace the U.S. Some of my recent work looks into these attempts, in particular in the current context of China, and shows why they tend to often fail. Although that doesn't mean that on the way there, China is not going to have a large impact on global markets.

And so these two topics are connected. These are two big countries, one at the very beginning and one at the very end of the reputation cycle, and their interplay is likely to shape global markets going forward.

— Told to Dave Gilson

"It's pretty shocking how much money flew into this industry without real evidence."

PRIVATE EQUITY

Juliane Begenau: When Pensions Invest Without Checking Risks or Returns

Juliane Begenau is an associate professor of finance at Stanford GSB.

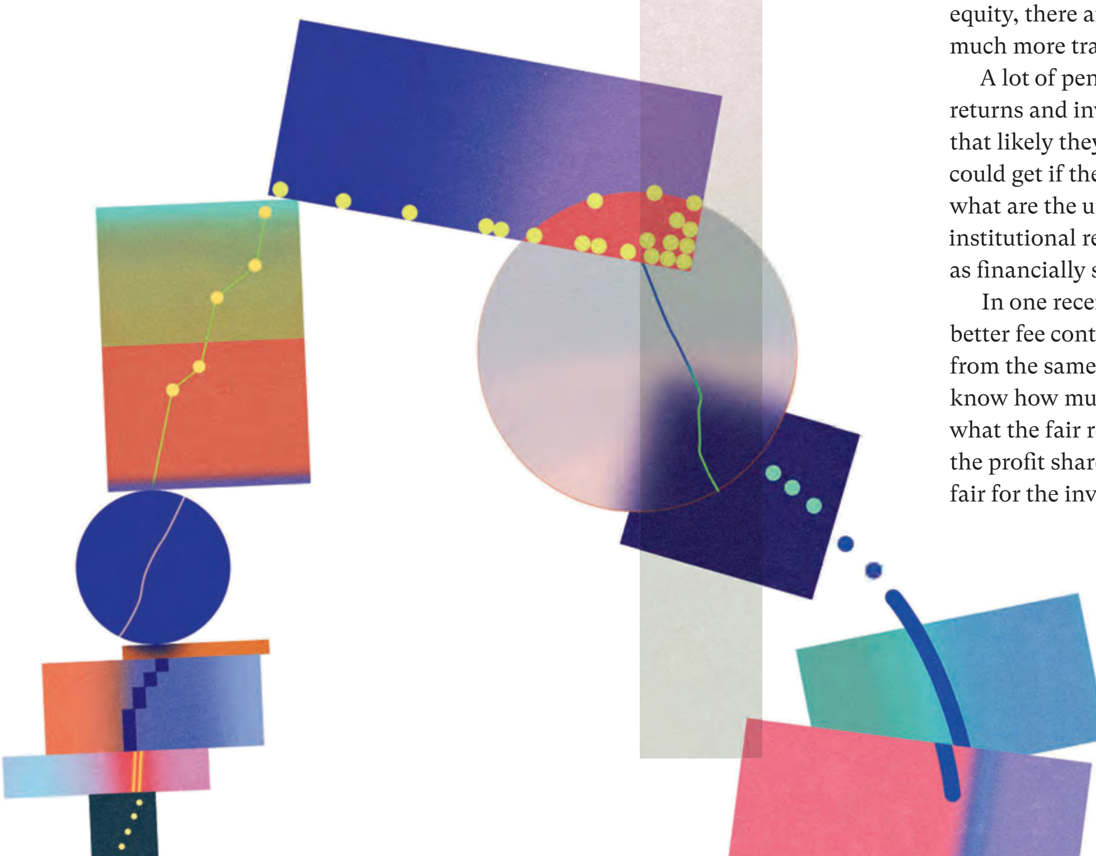
We've been in this private equity boom during the last few years. A lot of firms that wouldn't pass tighter scrutiny got funding for all sorts of projects. It's pretty shocking how much money flew into this industry without real evidence.

I'm very interested in analyzing the consequences of leveraged investors that use opacities to hide risk. Private equity promises high returns with no risk — because we don't see the risk. It's not mark to market because they're buying firms and you only know what the true value is once they sell off the firms, maybe 10 years later. It's unclear.

In private equity, the standard buyout model — buy little firms and then put on a lot of leverage and then make them public or sell them off — is way less transparent. We looked at some of these contracts and I would not know how any reasonable person could deduce what fees they were on the hook for. Yet even within private equity, there are differences: Venture capital funds have much more transparent contracts.

A lot of pension funds are desperate to get higher returns and invested in private equity. My sense is that likely they're not getting the best deal that they could get if they were better educated and knew better what are the underlying risks. I think of pensions as institutional retail investors; retail investors are often not as financially sophisticated.

In one recent paper, my coauthor and I found that better fee contracts were available to different pensions from the same private equity fund. In this case, we don't know how much risk they've taken, so we don't know what the fair return would be. Therefore we don't know the profit share that private equity is taking out and if it's fair for the investors or not.



We have a new paper that we are developing where we try to explain why certain public pensions invest in private equity. It's really hard to explain by fundamentals. It's likely related to, well, your chief investment officer just thought that private equity is awesome.

I think big changes are inevitable, especially if private equity wants to expand. I think there is a role for private equity, but there need to be certain protections in place. That's what the Securities and Exchange Commission is trying to do. SEC chair Gary Gensler even cited our paper in 2021 when he talked about the need to protect investors such as public pensions.

There is also a possible cost if you enforce transparency: Some private equity firms find it more difficult to compete and may no longer provide access to public pensions. The question is, how large is that cost? What about the benefit to public pensions that make decisions that are more financially sound?

I don't think that decisions under opacity should be the guiding principle. But somehow in this area, people are content to make decisions in opaque situations. While I can see some benefits, I think we are lying to ourselves a little bit.

— Told to Katie Gilbert

CORPORATE POWER

Anat Admati: The Rules of the Game Aren't Working

The Federalists said, "If men were angels, no government would be necessary." They went on to say that the challenge is to give the government power over the governed and then force it to control itself. That's why we have a Constitution and a First Amendment — these are constraints on government.

My variation on that, with respect to business and capitalism, is that we want to give corporations the right to exist as legal persons and give them enough rights so they can innovate, produce great products, provide employment, and serve society. But we need to make sure they don't control the law and its enforcement.

Governance is about trust; it's about accountability. Without legal institutions, markets and the economy can't work. In sports, we accept "no rules — no game" and the need for good referees to enforce the rules. There's no market without rules and enforcement, whoever makes these rules.

Anat R. Admati is the George G.C. Parker Professor of Finance and Economics at Stanford GSB.

Tariq Fancy, the former chief investment officer for sustainable investing at BlackRock who's kind of a whistleblower on ESG, recently spoke to my class and at an event entitled "CSR + ESG = BS?: Straight Talk on Business for Social Good," in which he argued that stakeholder capitalism, corporate social responsibility, ESG — these efforts to convince managers and investors to care about other stakeholders — are harmful distractions. I would say the heated debate around whether corporations should take care of society's needs is clear evidence that the rules of the game are not working for society.

The only way we can truly deal with climate change and other problems is to make sure that the government sets the rules of the game properly. Voluntary action, however virtuous, will not take us far enough. It's limited by the way the system actually works, people's incentives, and the power of the status quo.

Viewing the government as inherently evil becomes self-fulfilling because we end up destroying the government and making it so it doesn't deliver. The narratives that somehow rules are bad and that government shouldn't interfere with "economic freedom" have been harmful. The capitalist-socialist labels prevent a real discussion about how our institutions should be governed so that the people with power, in the government and in the private sector, will do a competent job and be held properly accountable if they fail society.

I believe that business schools have been somewhat complicit in promoting the false notion that "free markets" exist in nature and ignoring the tough challenge of creating better rules to balance competing interests and to have a social contract that holds society together.

We must think collectively about the institutions of democracy and how to, essentially, give power to truth and avoid situations in which beliefs get corrupted by confusing noise and narrow, highly resourced interests. And we should definitely question the role of money in politics. I think the fact that there's a sense of crisis is rather helpful. Sometimes, out of crisis comes better understanding.

— Told to Alexander Gelfand

"Voluntary action, however virtuous, will not take us far enough."

NANCY ROTHSTEIN (THIS AND OPPOSITE PAGE)

BANKS AND FINTECH

Greg Buchak: Non-bank Banking Emerges from the Shadows

There's a hotly debated question among academics, practitioners, and regulators, which is: Are banks special? Regulators think banks are really special and give them all this nice stuff — they let them take deposits, which other entities can't do; they guarantee their deposits and give them implicit guarantees. So banks can get cheap financing through deposits and turn them into loans in a way that other companies can't. The thinking is that there's something magical about the banking system, and we need to take care of these guys.

The rise of shadow banks has allowed us to test whether that's true, at least in mortgage lending. But there's a catch. The non-bank mortgage originators, and the fintech-enabled version of those, such as Rocket Mortgage, are originating mortgages where, for a bunch of reasons, the U.S. government has taken all the risk off the table. There's no complicated underwriting to do. Thus, the value that non-bank originations and their fintech cousins bring is to avoid some of the regulatory requirements imposed on banks and to make the origination process convenient and easier for customers. It turns out that customers are willing to pay a small premium for that convenience. But they're solving a marketing and customer-acquisition problem, rather than a deeper financial underwriting problem.

Greg Buchak is an assistant professor of finance at Stanford GSB.

> **"The doomsday scenario for the legacy American financial system is if these tech companies figure out how to get deposit-like assets."**

A lot of the activity that's moved away from banks is similar. It's the easy stuff. So far, the fintech companies haven't been able to displace a lot of traditional financial intermediaries. Their business model requires them to be capital-light and that limits what they can do. In contrast, banks have that government-guaranteed deposit funding, which allows them to underwrite these assets and hold them on the balance sheet — in other words, to eat their own cooking.

The doomsday scenario for the legacy American financial system is if these tech companies figure out how to get deposit-like assets. That's what happened in China. Alibaba, the Chinese counterpart to Amazon, had an app that everyone used for making payments. It introduced a money market fund that offered significantly higher rates than banks were allowed to offer. A whole lot of deposits left the

CHECKING ACCOUNTS

Perspectives on the Collapse of Silicon Valley Bank

Paul Pfleiderer, the C.O.G. Miller Distinguished Professor of Finance: Silicon Valley Bank's failure reinforces the narrative that we've been giving from the start, which is that the banks have a lot of political power and are always pushing for less regulation. There's bad regulation, of course, but a lot of it is for the good and prevents things such as what we're seeing right now.

Silicon Valley Bank pushed very hard against having $50 billion dollars in assets be the threshold for heightened scrutiny for banks that are systemically important; it wanted the threshold to be $250 billion. And now we're seeing that – guess what? – a bank that is perhaps strategically a little bit under $250 billion turns out to be quite important. It didn't appear to be one of the real big banks, but it was big enough to cause turmoil.

I have sympathy for entrepreneurs and anyone that had their money in Silicon Valley Bank. But given that the government stepped in, that means there's going to be less of a push on the part of venture capitalists and others for reasonable and effective regulation. That's one manifestation of moral hazard here. It creates incentives for people not to be so concerned about banks because they know the government's going to step in.

Amit Seru, the Steven and Roberta Denning Professor of Finance: In our new analysis of all U.S. banks' exposure to the recent rise in interest rates, Silicon Valley Bank is not an outlier. Lots of banks have had a bad shock. Typically, a regional bank doesn't have as many uninsured depositors as Silicon Valley Bank. That was unusual. But there are lots of other banks out there where the losses are pretty high and you do have a reasonable proportion of uninsured depositors.

In the short run, it seems okay to "backstop" uninsured depositors, and I can see why the federal government tried to do it, because you can see from our analysis that given the losses are pretty widespread and many banks have uninsured depositors, contagion would have spread. But if you look into the future, the consequences of this action could come back to haunt us.

This is exactly what happened in the S&L crisis. Interest rates went up and depositors of savings and loans started asking for a higher interest rate. On the other hand, S&Ls' investments were long-term investments locked in at lower rates. As a result, many S&Ls had mark-to-market losses and their equity became underwater. This should have spooked the depositors (and made them run like at SVB) but the government stepped in and provided some support to S&Ls, much like the situation right now. What did the equity holders and managers of S&Ls do going forward? They said, "Let us take risky bets and gamble for resurrection – because heads we win and the risky bet pays off. If it's tails, we were underwater anyway and it is the government that loses."

I worry that the situation we have currently created might be similar for banks going forward. It is very difficult to monitor the risks banks take in real time. And by the time we find out, it's invariably too late.

– Told to Dave Gilson

Read more discussion of the Silicon Valley Bank failure with GSB finance professors at **stanford.io/silicon-valley-bank**.

banks — until the Chinese government intervened and made it stop, because they worried that it was destabilizing the banking system.

The nature of these innovations is that they arrive suddenly. It's the kind of thing where you flip a switch and everything changes.

Do I think it's a good thing? Yes. There are financial stability issues that we need to think through, but a system that's dominated by depository institutions with all these subsidies and guarantees from the government is not what we should want. We want a free market. We also want a system where it's OK for players to fail, and a lot of the banking system is too big to fail.

Going back to the mortgage example, shadow banks grew largely by refinancing mortgages as interest rates kept getting lower. But now, with interest rates rising, that demand has disappeared and all of these companies are no longer profitable. Many are out of business. And you know what? That's fine. If an activity is no longer profitable and we stop doing it, that's the right outcome. We can let them fail without the system collapsing.

— Told to Edmund L. Andrews

ESG INVESTING

Jonathan Berk: Don't Expect Investors to Do the Right Thing

There are many decisions that maximize shareholder value that may have social costs. But to expect shareholders to bear value-reducing strategies just for social costs is highly naive. That is not how people behave. People don't often do things that hurt themselves for the public good.

Anytime the shareholders' interests and other interests are aligned, we don't have to talk about it — it's a boring subject. If adopting environmental goals maximizes the value of the stock, the net present value of the company, we don't have to talk about it. Everybody is in favor of that. What that means is that if you claim that doing something that's going to help the ESG rating of the firm is going to increase the value of the firm, then you are also saying the current managers are not doing a good job. That is a big claim, and claims like that need justification. You can't just say "I can increase value"; you need to provide some evidence.

Jonathan B. Berk is the A.P. Giannini Professor of Finance at Stanford GSB.

So if you are not claiming that current management are incompetent, you need two things for an ESG investment strategy to work. You first need to change corporate policy, and that's going to be value-reducing. You also need the corporation to have market power. Because if it doesn't, and it's a competitive market, somebody else will just step in and do what the corporation was doing and then you don't get any advantage from it.

My feeling about ESG investing is that too much of it, as far as I can see, is investment companies taking advantage of investors. If a pension fund adopts an ESG policy, that means that they're going to reduce the return of the fund. They should have to get investors' permission to do that. In America, it's very difficult because ERISA [Employee Retirement Income Security Act] rules require pension managers to maximize returns.

Where I am really concerned is people's retirement. If people are moving their money to ESG without fully understanding the reduction in their return, I think that's an issue. If you make, say, a 1% lower return over your lifetime, that translates into a hell of a lot less money for retirement. And if people are not making that decision in an informed way, I think that's a very big concern.

I'm not a great fan of people saying, "Well, we'll leave it up to corporations to fix society's problems," because that's costly for the corporations, and costly for the shareholders. That is not to say that an oil company isn't doing stuff that hurts society. But to fix that problem, you need the government. It's government's role to put in place pollution taxes. Then you can incentivize shareholders to do the right thing. But to just expect them to do the right thing is just naive as far as I'm concerned.

— Told to Alexander Gelfand

"I'm not a great fan of people saying, 'Well, we'll leave it up to corporations to fix society's problems,' because that's costly for the corporations, and costly for the shareholders."

NANCY ROTHSTEIN (THIS AND OPPOSITE PAGE)

CRYPTO AND BEYOND

Darrell Duffie: Taking Slow Steps Toward a Digital Dollar

The events of the past year, especially the collapse of the cryptocurrency Terra and the cryptocurrency exchange FTX, have made it clear that cryptocurrencies and private stablecoins need proper regulation. Privately issued stablecoins pegged to the value of the U.S. dollar have reached maturity on crypto trading exchanges but are hardly used at all in the real economy. In the future, stablecoins might play a useful role.

Other improvements in digital payments are on the way. Later this year, the Federal Reserve will release FedNow, a system for making speedy payments from bank account to bank account that will allow people to transfer money instantly, 24/7 and 365 days a year. It remains to be seen if FedNow will become as efficient as a central bank digital currency, but it may take the U.S. a decade or more to develop and deploy a CBDC.

The Fed has said that it won't make any decision on a CBDC without direction from the White House and Congress. Many commenters fear that a CBDC will infringe on their privacy because the Fed could keep data on everyone's payments. China has done just that with its own CBDC, called eCNY. Americans would not stand for that. If the Fed does deploy a digital dollar, I am confident that it will not store private transactions data.

> **"Americans, especially those with low incomes, would benefit from a much more open, interoperable, and competitive payment system."**

Darrell Duffie is the Adams Distinguished Professor of Management and Professor of Finance at Stanford GSB.

In nations that have introduced CBDCs, however, usage has been low. For example, the People's Bank of China has piloted eCNY in 26 cities. The total amount of eCNY held in wallets at the end of 2022 was only 0.13% of China's official money.

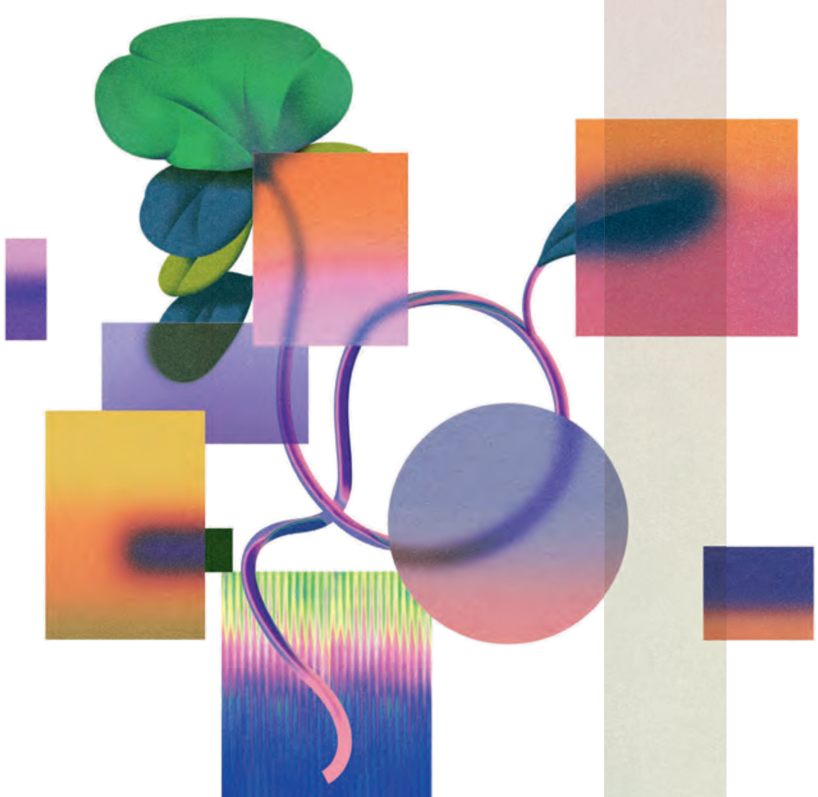
Americans, especially those with low incomes, would benefit from a much more open, interoperable, and competitive payment system. While an official digital dollar might one day allow that, the nearer-term potential lies mainly with fast bank-railed payment services like FedNow. Unfortunately, however, each bank will probably choose its own way to provide FedNow services to its customers.

A better approach is to mandate payment apps that meet a common standard of interoperability. Brazil did that with its fast-payment service Pix. Because of that, Pix has become enormously popular. Since its introduction in 2020, almost 100% of adults in Brazil are using Pix. As a result, it has significantly improved financial inclusion. About five million households got bank accounts in order to use Pix. And about five million additional households that had used their bank accounts primarily to convert their wages into paper money are now using them to make digital payments with Pix.

Politically, the U.S. has had a hard time with telling banks how to provide payment services. Moreover, regulators seem concerned that if banks are forced into greater competition by a common payment app, then bank profitability and lending would decline.

I'm not convinced. While greater competition for payments might make banks less profitable, this has not happened in Brazil. Because the current structure of the its market for deposit-taking and payments is inefficient, the U.S. should experiment with better approaches. Disruption is not necessarily bad. FedNow, and eventually a digital dollar, could offer Americans much more efficient payment services and bring many low-income Americans into the digital financial system. GSB

— Told to Edmund L. Andrews



You Have 30 Extra Years

People around the world are living, working, and learning longer. Get ready to upgrade your old ideas about aging.

BY ALEXANDER GELFAND

ILLUSTRATIONS BY DAVID PLUNKERT

As one of three co-teachers of a GSB course on the rapidly growing importance of older consumers and workers, Rob Chess likes to say that his colleague Laura Carstensen, the founding director of the Stanford Center on Longevity, is the expert on aging; his fellow lecturer in management, Susan Wilner Golden, has the entrepreneurial angle covered; and he represents the demographic in question. “I just got my Medicare card,” he says with a chuckle.

A serial entrepreneur who has founded and led several successful biotech companies, Chess is having a bit of fun at his own expense. But the growing cohort of older adults he belongs to — and the opportunity it represents — is no joke.

Thanks to advances in medicine and public health, people are living longer, healthier lives. The world's population of people 60 and older is growing five times faster than the population as a whole. Global life expectancy has doubled since 1900, and experts say that children born in developed countries now have a good chance of living to 100. A "silver tsunami" is already sweeping the U.S. labor force: The Bureau of Labor Statistics projects that 36% of people ages 65–69 will remain on the job in 2024 — up significantly from the 22% who were working in 1994.

These longer-lived, longer-working individuals generate an ever-bigger slice of global GDP and control an expanding tranche of global wealth. In her recent book *Stage (Not Age)*, Golden estimates that the "longevity economy" is worth more than $22 trillion — $8.3 trillion in the United States alone. That may be a conservative figure: AARP (the organization formerly known as the American Association of Retired Persons) estimates that people over 50 already account for half of consumer spending worldwide, or $35 trillion. (This range of figures may have to do with how "older adult" is defined: The term is variously used to refer to people over the ages of 65, 60, or — sorry, Gen Xers — 50.)

Yet the longevity market remains untapped by many businesses, which continue to ignore older consumers in favor of younger ones. "People 50 and older hold the vast majority of wealth in the country, but we're producing products and services for people who don't have nearly as much money to spend," Carstensen says.

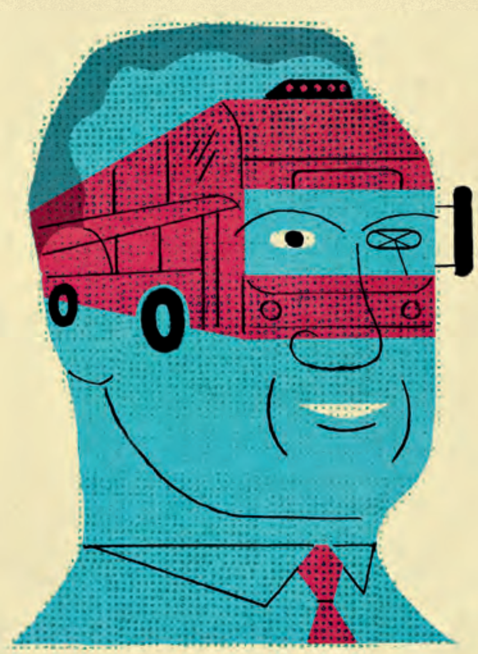
Firms that do attempt to court older adults often fail to understand them. The situation reminds Chess of the computer industry in the early 1980s. At the time, he recalls, most people were focused on hardware. As a result, those who saw the potential market for software reaped outsize rewards. "The people who recognized that early ended up being massive winners," Chess says. He sees a similar opening in the longevity market. "Most people's instincts are to focus younger, when the opportunity really is to focus older."

Of course, older people do more than just buy stuff. Carstensen contends that virtually every aspect of our lives will be affected by our increasing longevity. "The world we live in was literally built by and for young people," she says; yet for the first time in history, it now contains comparable numbers of toddlers and octogenarians.

"Most people's instincts are to focus younger, when the opportunity really is to focus older."

Still Riding High

Gerhart Reuss, MBA '57



In 2004, Gerhart "Harry" Reuss was forced to step down from his role as chairman of Allianz Mexico. He was 70, the mandatory retirement age at the giant German insurance company. When the CFO asked if he was ready to call it quits, he quipped, "Obviously not." He had different plans. "I knew I wouldn't retire," he says.

This led to a proposal to become a senior advisor to VW Truck & Bus Mexico. Until March, Reuss was still working full time at age 88. "I became the world record holder in the sale of large city buses for 300- to 600-mile routes," he reports. "I sold 1,800 buses to private companies in Mexico" — he clears his throat — "contract value of $600 million."

One tenet he credits for his success: "Explore unconventional and bold approaches to problems." Reuss helped bring double-decker buses to Mexico. He didn't flinch when one of his biggest customers wanted electric buses for its regional routes — a

As people enjoy longer, healthier lives, many will have to rethink their educational, career, and retirement paths. Organizations, meanwhile, will have to reconsider how they recruit, retain, and manage employees. That will require us to grapple with deeply ingrained ageism — a prejudice that Jeffrey Pfeffer and Ashley Martin, GSB professors of organizational behavior, describe as "the last acceptable ism."

The rewards for doing so, however, are potentially vast. "This is a unique and unprecedented opportunity," Carstensen says. "We have 30 extra years. How could we use those years to improve quality of life at all ages?"

Mature Markets

Engaging with older adults as consumers and workers can be complicated, partly because they are so diverse, ranging from people in their 60s who experience mental and physical decline to "super-agers" who are still working full-time or running marathons well into their 80s. "The population 65 and over is more heterogeneous than any other age group," says Carstensen, a professor of psychology at Stanford who has cotaught the GSB course on longevity for several years. "We can make some really good, informed guesses about what 5-year-olds are like. Try to do that for 80-year-olds; it doesn't work."

tricky ask since most e-buses can't clear bumpy rural roads. Later this year, VW Truck & Bus Mexico will unveil its prototypes of high-entry chassis e-buses. "We got that done," Reuss says.

Reuss has always been an outlier for his age. At 22, he became one of the youngest graduates of the GSB. He doesn't follow trendy diets or exercise regimens. He says staying intellectually curious is important: "You have to keep your brain cells working." He sleeps six or seven hours a night and is still married to his high school sweetheart. "I lead an absolutely normal life," he says.

Asked why he's finally stepping down, Reuss shoots back, "I'm not really retiring. I've had so many adventures that my children and wife are saying, 'You must write your memoir.' I simply want to do that." And don't count him out from selling a few more buses: He plans to keep working as a consultant.

— Diana Kapp, MBA '96

2050
Year that people 65+ will outnumber people under 15 globally for the first time

2034
Year that people 65+ will outnumber people under 18 in the U.S. for the first time

10k
Baby Boomers turn 65 every day. (The last ones will do so in 2030.)

86
Average life expectancy for Americans in 2060, up from 80 in 2017

20%
of Gen Zers expect to live to 100.

Instead of segmenting older people into age brackets, Golden suggests looking at what stage of life they're at. This may challenge many assumptions about how our lives will unfold. She argues that the linear three-stage model of "learn, earn, retire" is based on outmoded ideas about lifespan and "health span": If you're going to live to 80 or 90 in relatively good health, it makes no sense to assume that your formal education should end in your teens or twenties or that you should retire at 65.

Instead, many older people will likely cycle through a variety of nonsequential and potentially overlapping stages: working for a while, taking a break to raise kids, going back to work in a new role, taking another break to care for parents, retraining and reentering the workforce, taking another break to pursue other interests or additional education, and so on. An 80-year-old and a 40-year-old may occupy the same stage, and a 70-year-old may occupy several different stages simultaneously. Consider Golden's own trajectory thus far: She earned a master's in public health and a doctorate in health services, taught at Boston University Medical School, and had a successful career in venture capital before leaving the workforce to raise her daughter and care for her mother. She then returned to school at age 60, becoming a fellow at the Stanford Distinguished Careers Institute while her daughter was a freshman in college.

"We can make some really good, informed guesses about what 5-year-olds are like. Try to do that for 80-year-olds; it doesn't work."

23%

of the U.S. workforce is 55 or older, up from 14% in 2001.

1/2

of Baby Boomers say they expect to retire after age 70.

3.8m

Americans over 75 are expected to be working in 2031, nearly twice the number today.

62%

of consumers 50+ say they wish ads had more realistic depictions of people their age.

$35t

was spent by consumers 50+ in 2020 — half of the global total.

The New College Try

Anne Doyle, MBA '90

"It was born out of an accident, and at the time people thought this would never work," recalls Anne Doyle. "I think of Reese's Peanut Butter Cups."

The peanut butter in this concoction was Lasell University, a 172-year-old college in Newton, Massachusetts, that Doyle joined as president in 2015. The chocolate was older adults seeking community and intellectual engagement. When these two ingredients "bumped into" each other, the dynamic result was the first university-based senior living community whose residents are fully integrated into campus life. "When we combine sectors that are not typically integrated, wonderful things can happen," Doyle says.

The bold experiment began when a developer building a retirement community on campus land went belly up. The university suddenly possessed a state-of-the-art senior living facility. Today, Lasell Village houses 265 seniors receiving varying levels of care. The one requirement for residency is completing 450 hours a year of "lifelong learning," which includes peer-taught courses, volunteer projects, art, and music — and taking classes at the university right alongside the undergrads. While final exams and term papers are

Yet while older people appreciate not being crammed into a one-size-fits-all approach, openly acknowledging their age can be touchy. As Chess points out, older adults don't like to be treated as such. "People who are 70 or 80 don't want to be marketed to as 70 or 80," he says. Consequently, he advocates for "stealth design": crafting products and services with older consumers in mind, but keeping the demographic targeting on the down-low. Ideally, this appeals to older folks without alienating younger ones who might be turned off by products and services that they associate with their parents and grandparents.

Chess points to how BMW used research by MIT's AgeLab to redesign the controls of some of its high-end sedans. Though you might guess from the automaker's ads that its cars are meant for 30- or 40-somethings, the average Beemer buyer is 55 or older. Heterogeneity notwithstanding, most people experience joint stiffness and loss of visual acuity as they age. BMW's new controls, which feature bright primary colors and larger, easy-to-manipulate dials, are more user-friendly for older drivers yet still enjoyable for younger ones.

Similarly, in recent years Merrill Lynch has revamped its approach to wealth management, moving from traditional retirement planning to a stage-based approach that employs teams of advisors to serve multiple generations within the same family. The company also pioneered the use of specially trained "financial gerontologists" to assist clients with issues like cognitive decline and Alzheimer's disease. As Carstensen and Golden detailed in a 2019 article in *Harvard Business Review*, this shift in strategy improved customer acquisition, retention, and satisfaction.

Especially as careers last longer, older people can play a valuable role in designing and marketing products for their age-mates: identifying features that might attract folks in their 60s or 70s, for instance, or pointing out when a product intended for Millennials might appeal to Baby Boomers as well. "The common theme in the longevity industry is 'designed with, not for,'" Golden says.

Distribution can also be challenging. Golden says there is a dearth of marketplaces for longevity-related services like caregiving and continuous learning. Chess points out that customer acquisition costs can be high in areas like home healthcare and end-of-life care, where need is difficult to predict and repeat customers are few and far between. "You don't buy a funeral more than once," he says.

Some of these challenges can be addressed by creating new marketplaces or taking advantage of existing distribution channels. For example, the startup Wider Circle (founded by Darin Buxbaum and Moshe Pinto,

optional, "this is not auditing," Doyle emphasizes. Village residents even participate in student government.

Though the community offers a range of health and wellness services, residents are drawn to Lasell because they want to engage with people and ideas, Doyle says. "The philosophy is for residents not to be defined by their health status." Doyle first worked with this all-under-one-roof concept for seniors following her time at the GSB, when she rolled out the Program for All-Inclusive Care for the Elderly at six sites in Massachusetts, replicating a model first launched in San Francisco's Chinatown.

After stepping down from Lasell in October 2022, Doyle is now working to scale up the concept of combining housing, healthcare, and higher ed in an intergenerational setting. She says the business synergies are rock solid. "Higher education is seeing declining enrollments while senior living is serving a growth market," she says. "If we have an extra 30 years, I want that to be a story of opportunity, not of decline."

— D.K.

MBA '07), which builds social groups to reduce isolation and loneliness among seniors, sells its services through Medicare Advantage plans. Insurers that offer these supplemental plans like the groups because they produce health benefits and boost customer loyalty, thereby reducing costs and increasing revenues. Wider Circle, meanwhile, gains access to a large pool of potential users.

Gray Areas

If increasing longevity has the potential to remake the world of products and services, it has similar implications for the workplace. For example, age-diverse teams will become more common. And that is good for many reasons. Research by organizations such as AARP, the Organisation for Economic Co-operation and Development, and the World Economic Forum indicates that multigenerational teams perform better and create stronger talent pipelines.

That's not to say there won't be problems. With four or even five generations working together in close quarters, the potential for intergenerational conflict will inevitably increase. According to Carstensen, more research is needed to understand the optimal composition of mixed-age teams so that managers can create environments where age diversity improves performance rather than generating friction. "The devil is in the details," she says.

Businesses will also need to revamp their benefits, compensation, and HR policies to attract and retain employees who are more likely to take career breaks. Research by ManpowerGroup indicates that 57% of male Millennials and 74% of female Millennials already anticipate taking such a break to provide childcare or eldercare or to support a partner.

In 2008, Goldman Sachs and Sara Lee introduced corporate "returnships" — return-to-work programs for people with previous experience who have spent time outside the workforce. Since then, more companies, including heavy hitters like Amazon, Apple, and Facebook, have launched similar efforts. They remain in the minority, however. Carol Fishman Cohen, the co-founder of iRelaunch, a platform that promotes midcareer reentry programs, notes that fewer than 10% of Fortune 500 companies had one in 2021.

As that changes, however, the benefits should be felt across generations. "I always thought that having older people in the workforce was going to be the best thing to happen to young parents," says Carstensen. "They both want the same thing: flexibility" — namely, the ability to enter, exit, and reenter the workforce as they please.

"I always thought that having older people in the workforce was going to be the best thing to happen to young parents."

Age of Enlightenment

Chip Conley, MBA '84

As the founder of Joie de Vivre Hotels, Chip Conley reinvented the boutique hotel. Now he is turning the midlife crisis into an opportunity.

In 2013, Airbnb lured Conley to be its head of global hospitality and strategy. He was 52 at the time. He recalls CEO Brian Chesky telling him, "What we really want you for is your wisdom. We want you to be our modern elder." Conley brought a growth mindset to the position and came to see himself as a "mentern" — as much an intern as a mentor to his colleagues, many of whom were half his age.

The modern elder concept stuck with Conley even after he left Airbnb. Running on the beach in Mexico one day, he had a "Baja aha": "I thought, 'Why is it that we have no midlife wisdom school where people can reimagine and repurpose themselves for the second half of life?'" That flash led him to create the Modern Elder Academy, a blend of yoga retreat, Esalen seminar, tech skills touch-up, and personal growth workshop for people in their 40s, 50s, and 60s who are ready "to get comfy in our own skin — just as it starts to sag."

The core of the program is themed weeklong courses held in Baja California. (A new campus in Santa Fe is nearly complete.) Conley developed the curriculum, much of it drawn from his 2018 book *Wisdom @ Work: The Making of a Modern Elder*. Days are filled with presentations by thought leaders like Stanford professor and physician Abraham Verghese, journaling, meditation, and wrestling with questions like "How do I become a beginner again?" Back home, the academy's more than 3,000 alumni can continue their quest at one of 26 regional chapters.

Conley says the ethos of a modern elder is to never stop learning: "It's not a bestowing of wisdom, it's being a wisdom seeker — someone who is as curious as they are wise."

— D.K.

CHERISS MAY

Growing Old Together

At 43, Jean C. Accius is no senior citizen, but he has a deep understanding of the role older adults play in their families, workplaces, and society. "I continue to believe — and I've seen this in my own life — that there is this value that comes with getting older," says Accius, who completed the Stanford LEAD Online Business Program in 2020. "It's the sense of wisdom, experience, and resilience that comes with age."

Accius emigrated to the U.S. from Haiti when he was four and began connecting with older adults when he was a high school student in Florida. As a busboy at a retirement community, he made time to listen to the residents' life stories and reflections. That experience led him to the Florida Department of Elder Affairs and eventually to AARP, where he held several leadership roles over more than a decade. As its senior vice president for global thought leadership, he partnered with the World Economic Forum and the Organisation for Economic Co-operation and Development to promote age diversity in the workforce.

Accius spoke about the benefits of multigenerational workplaces and his work at AARP shortly before he became the president and CEO of CHC: Creating Healthier Communities in March.

How does the presence of older employees affect the workforce?
The companies that have been able to thrive, particularly over the last couple of years during the pandemic, are those that leverage the age diversity of their workforce. There are some commonalities between the generations. For example, [the desire for] greater flexibility and the need to feel valued and to do work that provides purpose and meaning.

We did a survey of nearly 6,000 executives, and we found that nearly 83% said they valued a multigenerational workforce, but 53% did not [have] DEI policies [that included age]. So we need to close that gap between what leaders say they want to see in the workplace relative to how they're executing that from a DEI perspective.

Are aging stereotypes and discrimination fading as people live longer?
According to the World Health Organization, more than 50% of people around the world hold ageist attitudes. So it's a cultural shift we need to address and also understand there's significant value that comes with age and wisdom and longevity. We've been doing surveys every year for the last 20-plus years, and we find, particularly now, that age discrimination — whether actual or the perception of age discrimination — has increased significantly over the last two to three years.

How can employers help their elder workers thrive?
Companies should look to what extent they are offering benefits that are "ageless." One is around caregiving. We know that there are more than 48 million family caregivers in the United States, and the vast majority — over 60% — of these caregivers are working. They are making very tough decisions, either having to leave work early, come in late, call in sick, or in some cases leaving their job altogether because of their caregiver responsibilities.

Another example is around student loans. One might think that having a student loan repayment plan for entry-level workers who are just out of college might be the way to go. But we know there are millions of older adults who took out loans either for themselves or for a grandchild or a child, and they're still paying on those loans. Thinking about ways to create benefits that cut across generations is another strategy that helps retain talent.

Actor and comedian Adam Sandler, who is 56, appears on the cover of a recent issue of the AARP magazine. What does that say about attitudes on aging?
I think getting older is hip. The way people are aging today is different. The aging population is not a homogeneous or monolithic group. There's great diversity, great range, great perspective.

— June D. Bell

Read the full interview with Jean Accius at **stanford.io/accius***.*

83%

of global executives say they value a multigenerational workforce.

1/2

of companies in an international survey don't include age in their DEI policies.

4 in 10

of Americans 40+ say they have experienced ageism at work in the past three years.

Retiring Stereotypes

Fully embracing older adults in the workplace will also require confronting an old bias: age discrimination.

Jeffrey Pfeffer, who is widely credited with inventing the field of organizational demography, wrote a prescient 1979 paper about the impact that an aging workforce could have on organizations. While acknowledging that a "general prejudice against age" was evident in many aspects of American culture at the time, he speculated that the situation might improve as the average age of the workforce increased.

Four decades later, unfortunately, that prejudice shows little sign of abating. "I think there's actually more ageism," says Pfeffer, who has written about the age discrimination he began experiencing in his professional life when he entered his 60s. (He's now 76.) "It's perfectly acceptable to make comments about age that you would never make about any other social category," Pfeffer says.

The federal Age Discrimination in Employment Act of 1967 protects people who are 40 or older, yet it remains difficult to enforce. A survey by AARP found that 61% of adults over age 45 had either seen or experienced age discrimination in the workplace. Nearly one-fifth of the more than 61,000 charges filed before the Equal Employment Opportunity Commission in 2021

"It's perfectly acceptable to make comments about age that you would never make about any other social category."

Helping the Helpers

Joy Zhang, MBA '18, and Madeline Dangerfield-Cha, MBA '18

Joy Zhang and Madeline Dangerfield-Cha first developed the idea of a tech platform that could help older people fight social isolation when they received the GSB's Impact Design Immersion Fellowship. They refined it in *Startup Garage* and launched their startup Mon Ami in 2018. In its first year, it paired over 100 college students with older adults for in-person visits. Then, in April 2020, as much of the country shut down, it did too.

Then they got an unexpected email. The sender was in the San Francisco mayor's office, and she was desperate. Local were age-related, with research suggesting that many more cases go unreported.

Ashley Martin has found that even people who strongly advocate for gender and racial equality in the workplace still engage in "succession-based ageism," the belief that older workers should step aside to make room for others. Otherwise fervent egalitarians legitimize this bias by arguing that older workers prevent younger people, women, and members of marginalized groups from moving up — even though older workers are a disadvantaged group.

Because it is more widely tolerated than other forms of prejudice, ageism may prove particularly difficult to root out. Age is rarely addressed in diversity trainings or mentioned in corporate diversity, equity, and inclusion policies. According to Martin, fewer than 20% of diversity statements recognize age. "The fact that we're not talking about [ageism] enough makes it such that we're not going to find productive ways in which to solve it," she says.

Yet the tools to combat ageism may already exist. Martin's research indicates that age-related bias tends to abate when people come to understand that older adults aren't necessarily staying on the job simply because they enjoy working but also because many cannot afford to retire. This, in turn, suggests that ageism may be amenable to targeted interventions — though Martin is quick to point out that all-purpose DEI initiatives are unlikely to solve the problem. Rather, organizations need to understand the specific attitudes their employees hold about older adults, and how (or even if) those attitudes affect the workplace. "In order for diversity trainings to be effective, you really need to understand people's beliefs in the first place," she says.

Pfeffer, meanwhile, argues that legal pressure should be used to persuade organizations to take ageism seriously. "I'm a huge believer in litigation," he says, adding that much of the progress made in the fight against racial and sexual discrimination was accomplished through the courts. "The point is just to raise the cost of this form of discrimination."

Carstensen thinks that the problem of ageism is best addressed by building a world where people of all ages can be fully engaged with and integrated into the workplace, the home, and the broader community. "We have so many things we could do to make life better, and not just for old people: for children, for their parents, for workers and employers," she says. Businesses can play a vital role in that process if they have the foresight to make longevity part of their overall strategy.

And given the speed at which demographic change is occurring, they had best begin doing it soon. "As important as it is now," says Chess, "it'll be vastly more important in 2030." GSB

nonprofits were fielding hundreds of calls a day from distressed seniors stuck at home in need of groceries and prescriptions. "She said, 'I know you have a platform,'" Zhang recalls. With that one message, Mon Ami "reemerged from the ashes."

Zhang and Dangerfield-Cha began donating their time and tech to five San Francisco community-based organizations trying to streamline the matching of volunteers with isolated elders. It was immediately clear that this amplified the power of Mon Ami's platform by orders of magnitude.

Many social service and caregiving organizations are still in the analog age, with most of their intake, pairing, tracking, and follow-up happening on paper. Caseworkers "just deal with it," Zhang says, but their focus is drawn away from helping people. Within six months of utilizing Mon Ami, Openhouse SF, which supports LGBTQ seniors, cut the average time to coordinate volunteer support in half. As one satisfied user organization raved, "You took us to the 21st century." Helping providers ditch their "old-school technologies," Dangerfield-Cha says, "feels like a great use of our skills and time."

Currently, Mon Ami's team of 25 is licensing their software as a service to 80 agencies in 22 states. "Now we help the helpers instead of being the helpers directly," Dangerfield-Cha says.

— D.K.

The author's husband's firm was an investor in Mon Ami.

A Mother's Moonshot

Drugmakers often don't see the business case for treating rare diseases. That didn't stop Loren Eng from mobilizing a pioneering effort that's saved tens of thousands of lives.

BY KEVIN COOL ILLUSTRATION BY HARRIET LEE-MERRION

Loren Eng was a new mom, and like all new moms, she celebrated each milestone her infant daughter reached — sitting up, standing, walking. But as her little girl, Arya, reached 18 months, Eng began to worry that something was wrong.

"When she was standing, the muscles and bones in her legs appeared to almost dissolve and she would collapse unexpectedly," says Eng, MBA '96, who was eight months pregnant with her second child at the time.

Doctors had tried to reassure her, saying it was just muscle weakness or that Arya was a late bloomer. But when a pediatrician friend at a dinner party observed Arya, Eng's growing anxiety was validated. "She got down on the floor where Arya was playing and did an impromptu neurological exam," Eng recalls. "I could see the panic on her face. She said, 'You need to get her to a specialist right away.'"

A month of testing ensued. Then, two days before Eng delivered her second child in October 2001, she got the news: Arya had inherited a rare genetic disease that could kill her. There was no treatment and no cure.

It was called spinal muscular atrophy. The condition appears in about one of every 10,000 babies, caused by a mutation in the Survival Motor Neuron 1 gene (SMN1) that supplies an essential protein for motor neurons, which control muscle movement. Without that protein, those neurons die, muscles weaken and wither, and people with SMA begin a steep decline that leads to severe disability and death.

When Arya was diagnosed, Eng had never heard of SMA. Today, she is an expert on it. Over the past two decades, defeating the disease became her life's work, a prodigious effort that involved mobilizing a community of scientists, drugmakers, and corporate partners, and resulted in medical breakthroughs that have changed the lives of tens of thousands of people with SMA, including Arya.

But on that evening 22 years ago, all Eng could think about was how to save her child and whether the baby in her belly would be healthy. Two days later, "I was sobbing hysterically as they were doing the C-section," Eng says. "Everyone was confused because they didn't know why a mother would be sobbing like that in the delivery room."

It was a boy, Kiran. Doctors took his DNA and rushed the samples through testing. "With the most severe form of SMA, the kids die right away; and those with milder forms live with tortured disability and get worse and worse every day for the rest of their lives until they die," Eng says. "So what do you pray for? A quick death or a long, miserable one?"

Kiran was okay, as was Eng's third child, Tara, born five years later. And to Eng's great relief, Arya had a milder form of the disease, which meant she would probably survive early childhood. But with no treatment in sight, her life would be a hellish series of hospitalizations and painful, relentless physical attrition. "The doctor said she might live to finish high school," Eng recalls.

Eng devoted herself to changing that outcome.

Before treatments were available, the most serious form of spinal muscular atrophy resulted in death before age two. Loren Eng's daughter Arya, who had a somewhat milder form of the disease, developed normally as an infant but began to decline at around 18 months.

COURTESY OF LOREN ENG

The R&D Race Begins

In 2003, Eng, with her family and close friends, established the SMA Foundation to identify and fund promising research that could lead to a treatment. Like other rare diseases, spinal muscular atrophy suffered from poor public awareness, and because of the relatively small number of people affected — about 10,000 in the United States — there was **little money for research** beyond basic studies conducted by the National Institutes of Health.

TOO OBSCURE TO CURE?
Only about 500 of the more than 7,000 rare diseases with known molecular causes have approved treatments. In 1983, Congress passed the Orphan Drug Act to provide tax and other incentives for pharmaceutical companies to develop drugs for rare diseases.

"NIH funding is fantastically important, but it can only get you so far," says Jonathan Leff, MBA '96, a partner at the venture capital firm Deerfield, where he specializes in biotechnology and pharmaceuticals. "The hundreds of millions of dollars required to actually develop a drug has got to come from investors or from industry."

Someone needed to convince drug companies and investors that financing research on SMA could lead to profitable products. As president of the foundation, Eng assembled a team of advisers drawn from academia and the pharmaceutical industry and put together a powerhouse board that collectively supplied both influence and expertise. "I had never heard of SMA before I got involved with the foundation," says Leff, who joined the board. Nevertheless, "It didn't seem to me like a disease that was so small that you couldn't build a business case around it."

The foundation had a key advantage: SMA was scientifically tractable. In what Eng describes as "a lucky break," a backup gene, SMN2, produces the same protein as SMN1, but in amounts too small to arrest the muscle degeneration that characterizes the disease. If scientists could coax this "extra" gene into producing more of the protein, it could provide a potential pathway to a treatment.

Calling on her GSB training, Eng developed what amounted to a private equity prospectus that demonstrated why pharmaceuticals should allocate research dollars to SMA. Her instinct was to lead with the science, not a mom's desperate plea. "You don't want to come in and just say, 'I'm a sad parent of a child' — what are they going to do with that? But it does resonate if you can walk them through the reasons why this is ultimately good for their shareholders."

However, science really wasn't her thing. "I took astronomy as an undergraduate to pass my science requirement," she notes with a chuckle. "It's kind of a cruel joke to have this thrown upon you."

But what she lacked in technical knowledge, Eng made up for with tenacity. She vigorously tapped into and expanded her network, "talking to anybody who would talk to me" about SMA. She made connections at the NIH who put her in touch with prominent doctors, some of whom she convinced to accompany her on her visits to pharmaceutical companies.

"Loren has been brilliant at bringing together the investment community and the pharma community with the best scientists in the field," says Leff, whose friendship with Eng began when they were classmates at the GSB. "She doesn't hide the fact that she's the mom of a child with SMA, but at the same time she comes across as a businessperson who understands that investors need to make a return, and that the science has to be there."

Even so, the answer at every major pharmaceutical company was no. It was clear that the foundation would have to find and fund its own researchers.

Eng acknowledges that she was naive in the beginning, anticipating that with enough money injected into the research, Arya might have a better life in three to five years. "It doesn't work that way," she says now, her perspective seasoned by years of disappointment. **"Drug discovery is hard** and there are many more failures than successes."

FAILURE IS AN OPTION
Tens of thousands of human clinical trials are conducted annually in the United States; 90% fail.

Waiting for a Breakthrough

By the time she was five, Arya was in a wheelchair. Each succeeding year brought new challenges as her physical capacity diminished, and the effects of her condition led to serious, sometimes life-threatening problems. As the muscles in her chest weakened, Arya lost the ability to cough, which is critical for clearing the airway during a respiratory illness. As a result, common colds could turn into pneumonia, a leading cause of death among people with SMA. "I missed tons of school because every time I got a cold, it would turn into two weeks of respiratory therapy," Arya says.

Gradually, her muscles weakened so much that they could no longer hold bones in place. Her hips dislocated. Scoliosis twisted her spine; orthopedic deformities developed throughout her body, requiring multiple corrective surgeries. Pain shadowed her constantly.

"Drug discovery is hard and there are many more failures than successes."

The physical trauma takes a terrible toll, but young people with SMA also endure heartbreaking emotional pain as they watch children around them thrive. "They see that other kids are doing things that they can't do," Eng says. "That is the worst part."

For nearly a decade, Eng watched Arya suffer as experiment after experiment funded by the foundation failed. She did her best to soften the arduous litany of medical procedures Arya faced. "Once, when we were heading into the hospital for another operation, we ran into a man selling goldfish on the street. I bought every goldfish he had, and we named them for all the doctors," Eng recalls. "I did whatever I could to keep her spirits up and stay positive."

During this time, a lot of Eng's work involved meeting researchers, making introductions, and promoting dialogue and collaboration within the scientific community. At one such meeting, she met Adrian Krainer, a researcher at Cold Spring Harbor Laboratory in New York, who had been conducting basic studies on SMA. The SMA Foundation made a grant to Krainer's lab, which helped spur a dedicated effort to repair the genes associated with the disease.

A breakthrough came in 2007. The Krainer lab found a way to fix the SMN2 gene by introducing chemically modified pieces of RNA. Using mouse models of the disease, this therapeutic approach showed promise.

Frank Bennett, the chief scientific officer at Ionis Pharmaceuticals, had read a paper describing Krainer's method, which led to a partnership that expanded on the research and developed protocols that would ultimately be used in human clinical trials. The first trial began in November 2011. The second participant was Arya.

The drug, later named Spinraza, was administered by injection into the spinal fluid, a procedure that had to be repeated periodically. But it worked. Very early on, Bennett says, "we were getting whispers from the physical therapists who were working with patients that they were getting stronger." It would take years to get conclusive results and the data to back them up, but for Arya, Spinraza was transformative. Her condition stabilized, and the disease progression stopped.

Occasionally, the grueling regimen of operating-room visits and spinal injections tested Arya's resolve. She was a little girl, and this was not how little girls were supposed to live. When she was scheduled to receive a dose on her 12th birthday, Arya broke down in tears and declared to her mother, "This is the worst birthday ever!" Eng tried to console her. "This is the best birthday present you will ever get," she told Arya. Recalling the moment, Arya acknowledges that her mom was right. "I didn't agree with her then, but I do now."

In December 2016, Spinraza became the first FDA-approved drug to treat SMA, and the pharmaceutical giant Biogen reached an agreement with Ionis to take it to market.

That same year, Arya participated in a clinical trial for risdiplam, an oral medication that enables the protein from the SMN2 gene to reach nerve cells. That drug was developed by PTC Therapeutics, which then collaborated with Roche to perfect it and move it through clinical trials. Stuart Peltz, the CEO of PTC, says the SMA Foundation was a crucial partner, supplying both money and momentum. "Next to putting someone on the moon, **getting a drug into a person** is about the hardest thing you can do," Peltz says. "The foundation pushed us, and in the end we did something that was truly pioneering."

TAKE YOUR BEST SHOT
Typically, it takes 10 to 15 years and more than $1 billion to research, develop, test, and commercialize a new drug.

The ability to repair a splicing defect in a gene and correct the core biological process for which it is responsible cracks open a door that could lead to other drug discoveries, says Paulo Fontoura, the global head and senior vice president of neuroscience, immunology, ophthalmology, infectious and rare diseases at Roche. "This is a real landmark in science."

In 2020, the FDA approved risdiplam (marketed under the brand name Evrysdi) as the first oral medication available for SMA treatment. For Arya, the daily dose of liquid medicine has been life changing. Not only has it continued to arrest the progression of SMA, but the drug also unshackles her from the multiple hospital procedures required with Spinraza.

Leff was involved in the development of a third treatment, which delivers a healthy SMN1 gene intravenously into children under age 2 using a virus as a vector. The virus transmits this new gene to motor neurons,

"These treatments will benefit not just SMA patients but other neuromuscular disorders and diseases of aging."

THE PRICE OF PROGRESS
New treatments for rare diseases are extremely costly to produce and to acquire. When Zolgensma was approved in 2019 it was the most expensive drug ever, at $2.1 million for a one-time dose. Both Spinraza and risdiplam cost hundreds of thousands of dollars for a yearly course of treatment. Although these prices have been criticized, an analysis by an NIH researcher said the cost "seems reasonable" given the massive investment required to develop the drugs and the small number of patients.

effectively replacing what children born with SMA lack. Known as Zolgensma, it was developed by AveXis (later acquired by Novartis), a drug company that Deerfield invested in and where Leff was a board member. (John Harkey, MBA '87, was a co-founder of AveXis.)

Zolgensma arrived too late to help Arya and other patients too old for the gene therapy, but its availability means that SMA will have a much less profound impact on children born with the disease, especially those with its most severe form. Although there is insufficient data to draw firm conclusions, kids with type 1 SMA are now reaching developmental milestones that weren't possible before Zolgensma.

The role of the SMA Foundation, and Eng in particular, was crucial to the success of the treatments **that found their way to market**, says Bennett. Whether it was finding and funding mouse models in Taiwan or making connections between organizations, Eng and her team built a scaffold upon which pharmaceutical companies could stand and advance their work. "It was critical to the field."

Stanford President Marc Tessier-Lavigne, a neuroscientist, is chair of the SMA Foundation's science advisory board. The foundation's success, he says, "is due in large part to Loren's vision, leadership, and persistence over decades. She continually deployed her passion, powers of persuasion, and organizational skills to coax diverse stakeholders to work together in unison… to develop therapies at breakneck speed."

Eng is now focused on finding ways to restore the loss of function that many people with SMA endure. "We're trying to rebuild the key parts of the bodies that are broken, such as neural circuits and muscles, and give those kids who didn't make big gains a way to further improve," she says. "These treatments will benefit not just SMA patients but other neuromuscular disorders and diseases of aging."

A Moment to Celebrate

On May 22, 2022, hundreds of students, faculty, and staff gathered for Yale's traditional Class Day exercises. The students had chosen Arya Singh as their speaker.

She had arrived at the university, Arya said, full of anxiety that her disability would define her, that she would be shamed and shunned as she had been earlier in her life. At a pre-college summer program, she recalled, her fellow students had asked that she be removed from a group photo "because my wheelchair ruined it." They asked a bus driver to leave without her because the wheelchair lift took too long. "The experience jaded me," she said, and she prepared herself for four more years of "perpetual exclusion."

But at Yale, Arya said, she found a tribe that embraced her and gave her the courage to lead with empathy and vulnerability, rather than fear of rejection. The school had "restored the hope that I had lost."

When she finished, the audience stood for a long, loud ovation.

As the moment washed over her, Loren Eng felt a jumble of emotions: pride, joy, but also fear. "Arya has been blessed to be part of a community that supported her. What happens when she leaves Yale and doesn't have that mosh pit that elevates her?"

In May, the young woman who wasn't supposed to live past high school will graduate with her second degree from Yale, a master's in public health. She hopes to work in drug development. "I want to make a difference in kids' lives," Arya says, "especially kids with rare diseases and disabilities."

And whereas she once resisted an identity as "the kid in the wheelchair," she now embraces the fact that SMA has shaped who she is. And that understanding empowers her to help others. "I don't want a different life," she says. "I know how to do this one." **GSB**

COURTESY OF LOREN ENG

Arya's symptoms were worsening until she began new treatments as a preteen. "I always loved school," she says, "because it was something I was good at." She is now completing a master's in public health.

Anna Fang[56] Jeff Butler[58]
Wandia Gichuru[60] Rebecca Diamond[62]

Voices

Anna Fang, MBA ’10

IN HER TWENTIES, ANNA FANG spent a couple of high-stress years as an investment banker for J.P. Morgan, helped start a school in rural China, and organized a Chinese cultural festival. Those experiences left her disliking finance but uncommitted to the nonprofit sector. Fang credits Stanford GSB with awakening her to new career options — and teaching her to trust her own instincts. “It was two years of accelerated personal growth” that made her “more confident and better at believing in myself and my decisions,” she says. “GSB was my angel investor.”

Today Fang, founding partner and CEO of ZhenFund, is considered one of the world’s leading early-stage venture capitalists, earning the top rank on *Forbes*’ 2022 Midas Seed list. She also is number 12 (and the highest-ranked woman) on the magazine’s Midas List of top VCs.

Among her finds was RED (Xiaohongshu), a social media and e-commerce site often compared to Instagram and now worth an estimated $20 billion. Its founder and CEO is Charlwin Mao, MBA ’13, whom Fang met on a trip back to the GSB. “He was the one in the front row always raising his hand and asking questions,” she recalls. Other ZhenFund investments have included Huobi, China’s first cryptocurrency exchange, and the beauty products company Yatsen (Perfect Diary). “No one was doing consumer companies then in China,” she says. “I felt there was a real opportunity.”

Fang says she finds the process of sensing potential in a startup and then watching it grow thrilling. “When I’m investing in it,” she says, “it’s just an idea and a team, there’s nothing to show. As the product goes online, as the idea is validated, after millions of people start using the products, there’s an immense sense of pride. Every step along the way is a little goalpost that is really exciting.”

LOCATION
Beijing, China

EDUCATION
MBA, Stanford GSB, ’10
BA, Columbia University

PROFESSIONAL EXPERIENCE
Partner and CEO, ZhenFund
Corporate business development, GE China
China representative, China Now

CHLOE JACKMAN

“I couldn’t believe someone was paying me to do this thing that I love.”

You received much of your early education in the United States. How did that happen?
My mother did her master's in environmental science in the U.S. in the 1980s, and she lived in Delaware after receiving her degree. When I was six, I flew by myself from Beijing to New York to see my mom, someone I hadn't seen for two years. I didn't know any English. My name was Ai, but when I got into the car in New York, my mother said, "Your name is now Anna."

I used to watch *The Sound of Music* on repeat — that was the only movie we had — and I learned English that way. I came back to China for middle school because my dad never lived in the States and wanted us to go back to China.

Your father, Fang Fenglei, is a prominent Chinese financier. Did you think that would be your career as well?
My dad said, "Your first job is going to be investment banking." And I always said no. I didn't want to do it because my dad did it. During college summers I tried working in law, accounting, and investment banking, at the recommendation of my father. I didn't want to do finance, but ultimately ended up there because it was considered the best job an economics major could have at the time.

Yet after Columbia you ended up in investment banking for J.P. Morgan. What drew you back to China?
All the news was about China. And I used to think, "Why I am reading about China? I could be in China." I wanted to find meaning in my career, and it wasn't manifesting through investment banking. My father always thought pretty big in wanting to change China. I think I was influenced by him in that way, in wanting to be part of change.

What were your key takeaways from Stanford?
It sounds simple, but learning to speak up and formulate my own thoughts was a big change for me. I wasn't used to talking in class. I never felt like I was smart enough. In the beginning, I pushed myself to raise my hand once per class. And then we had that class "Touchy Feely" [*Interpersonal Dynamics*]. You learn to engage with your feelings and express your point of view with a group. I worked through a lot of my personal insecurities in that class. By the end of the GSB, I was easily raising my hand five times per class.

And you landed at ZhenFund through a Stanford connection?
At the GSB, I was the head of the Greater China Business Club, and Dan Hu [MBA '11] was the president the year after me. He got a job at Sequoia Capital China, and he worked on a deal with China's leading angel investor, Bob Xu. Sequoia China helped Bob institutionalize personal angel investing into a fund, which became ZhenFund. Dan said, "Would you be interested in doing this incubator with Bob?" And I said, "I don't even know what an incubator is." But then I thought, Bob Xu is kind of famous. He's a visionary, full of ideas. I met him, and he really liked me. I took the job at the age of 29, which is now the final job I'll ever have.

What made you know it was the right fit for you?
My first day on the job, we met with a backpack travel company startup, and I just loved it — it was just so interesting: Do we invest? Do we not invest? For the first few years on the job, I couldn't believe someone was paying me to do this thing that I love, which is talking to all these startups about their ideas. It connected with what I was looking for because I always wanted to help people. There's a certain altruistic part of investing in startups that I liked. People need help to get their startup off the ground, and you're really the first person to believe in them.

Any distinct challenges to being a woman VC?
I'm really lucky. China actually has a lot of female role models in investing, especially in venture capital. Some of the best are women, like Annabelle Long [MBA '05]. I sought them out early in my career as informal mentors. When I was starting a family, I looked to other female role models who managed an intense work life while being mothers.

Were there advantages to working in China as opposed to the United States?
I would never have had this opportunity if I was in the U.S. If Sequoia U.S. was trying to start an angel fund, would they pick 29-year-old Anna Fang to run their partnership? Of course not. Back then angel investing in China was still pretty new.

What do you think lies around the bend?
A lot of low-hanging fruit ideas have happened over the last decade of fast-paced tech growth in China. But what's next? Is there going to be a paradigm shift that creates the next generation of consumer tech companies? It could be in AI-generated content, virtual reality, augmented reality, anything that's next-level experience.

I think we'll see a lot of deep tech-driven changes in the next decade. But I don't predict the future — I just follow what the entrepreneurs do. When you find them, you're usually one to three years ahead of when something becomes popular. If something becomes popular and I don't have something in that space, then I'm too late.

—Julia A. Klein

Dance Like No One's Watching

Fang is hooked on a dance workout class. "I burn 400 calories and always discover a new song to add to my list," she says. "I stand in the corner and hope that no one recognizes a middle-aged woman dancing away."

Jeff Butler, MBA ’23

THIRTEEN-YEAR-OLD FOOTBALL PLAYER Jeff Butler was napping in the back seat of his family’s SUV after a game when a car accident changed his life. The Fort Wayne, Indiana, native woke up to flashing emergency lights — and the harsh reality that a broken neck had left him paralyzed from the chest down.

“Twenty-four hours before that, the most important thing I was worried about was turning in my homework on time,” says Butler. “Then all of a sudden I have to worry about how I’m going to get around in the world, can I live independently, am I going to be able to function in society?”

That was the start of a remarkable journey that led Butler to start a telemedicine software company at 26, to Paralympic silver medals for wheelchair rugby in Rio in 2016 and Tokyo in 2020, and eventually to Stanford GSB. He hopes to use his experiences, business education, and entrepreneurial spirit to find technological solutions to solve accessibility problems.

HOMETOWN
Fort Wayne, Indiana

EDUCATION
BBA, University of Texas at Austin

PROFESSIONAL EXPERIENCE
Founder and CEO, VIPatient
Head of product development, Vantage Mobility International Alliance and operations manager, Teiko.bio

How did the car accident shape the way you approach life?
It was my single most defining moment. It started me on this journey of independence and discovery and pushing the limits of what my body will allow me to do. But it also was an interesting segue that opened up elite athletics in the adaptive world. I never would have been an Olympian, but because I broke my neck, I was able to become a Paralympian. And that clearly had a huge impact on my life.

What lessons did you learn while playing wheelchair rugby?
Being a team sport athlete is constantly a master class in interpersonal dynamics and understanding how to motivate people to do insane and incredible things. And understanding how *not* to motivate people. Those were the two biggest areas of learning for me. Also, there’s a lot to be said about the discipline and drive and persistence it takes to succeed at that level, and just becoming intimately familiar with that amount of effort and being comfortable putting that effort toward other things in your life.

What was harder: wheelchair rugby or trying to start your own software company?
If you look at it from a success metric, I’m a much better rugby player than I am a startup founder. They both are humbling experiences. They both require an insane amount of dedication and persistence, and with both you are equally uncertain of success when you start. There’s an element of luck involved in each. You must get seen as an athlete and make sure you’re in the best programs. You must put yourself in situations to be able to succeed. Then the element of luck needs to take over. The same can be said of the

ELENA ZHUKOVA

“You must put yourself in situations to be able to succeed. Then the element of luck needs to take over.”

startup world, where you're looking at timing being important and being in the right place at the right time.

You decided to use yourself and your story to make an impact on the wider community of people with spinal cord injuries. How'd that come about?
First, anytime there was a newly injured quadriplegic or paraplegic, people in my network would call me and say, "Hey, Jeff, we have a new quad. He broke his neck. He's 19. Will you come in and talk to him?" I try to help them work through that "Oh my god my life is over" stage.

I'm also on the Paralympic advisory board for a center for independent living in Indiana, and I'm passionate about connecting people who have spinal cord injuries to sports. For a newly disabled person, sports can be an incredible place to build a community and learn how to live from people who have been doing this for a long time. I was lucky to experience that and want to make sure others have that opportunity as well.

How do you hope to extend that impulse into the business and technology worlds?
One of my long-term goals is to enter entrepreneurship at the intersection of technology and accessibility. It's really easy for me to think about all of the difficulties of living with a disability and try to come up with potential solutions to meet those needs. There's a ton of ways people with disabilities can be served, whether in transportation, or the ability to find and get products and services aimed at people with disabilities, or to find a way to reintegrate into the community, or to build community.

You created a patented feature for wheelchair-accessible vehicles. What was the origin of that?
One of the biggest impediments to driving a wheelchair-accessible vehicle is the ramp that comes out the side. When you're parked in a handicapped spot, you need eight feet of clearance for the ramp to deploy into those blue stripes. But what happens in the wild is that people park there, or park half in the stripes. That effectively eliminates your ability to get into your vehicle.

The feature I developed with the engineers at VMI was a proximity warning system with a speaker that issues an audible warning. That feature is now standard on the mid- to top-tier vehicles built by Vantage Mobility International, where I was product manager for nearly two years.

Is it polite?
Very polite. I think we've changed the message on it a few times, but it's along the lines of, "You have accidentally parked in a wheelchair space." It puts a little faith in humanity by assuming it's ignorance rather than willful disobedience that causes people to park in handicapped spots.

Have you had any failures that taught you important lessons?
I would categorize my startup VIPatient as a traditional failure. We didn't bring the right product to market at the right time. But I wouldn't categorize it as a personal failure, because my intent was to learn a lot as quickly as I could. If it went on to a lot of success in the business world, that would have been great, too. But I wanted to learn by doing. There are only so many books you can read and so much you can learn about entrepreneurship before you have to dive in and do it yourself. I can lean on that failure, and not make the same mistakes. I know a whole lot about what *not* to do now.

Any particular professors or experiences you've had at Stanford that made a strong impact on the way you approach your future?
The class that changed my outlook most so far is called *Product Launch*, taught by Jonathan Levav and Russ Siegelman, which is all about creating a product where there's a market and where you have the right product to succeed and capture the market. The class distills two giant questions: 1) Is there a market? and 2) Can you make money?

Is there a market for wheelchair-accessible vehicles? Yes! There are 5 million users in the U.S. Can you make money? Probably. But I needed $100 million to do it. That's become how I frame a lot of different business opportunities I've been exploring.

Do you feel a responsibility to be a role model and inspire others?
There aren't a lot of people with disabilities who are business leaders, and I think it's important to have people with disabilities represented in those roles. Having more people with disabilities in leadership positions will help show the glass ceiling is fake, and that there's nothing holding us back except our own fears about it. Being in a wheelchair involves healthcare expenses and a lot of other things that make this life a lot more expensive. Being a business leader with a disability will help me show people that representation matters.

— *Martin Smith*

Staying in the Game

Now that he is no longer competing athletically, Butler finds new outlets. "I try to recreate the physicality with hard workouts at the gym, and I recreate the competitive atmosphere by taking board games too seriously with classmates."

Wandia Gichuru, Seed 2018

ELEVEN YEARS AGO, WHAT WOULD BECOME a leading women's fashion brand in Kenya consisted of several boxes of clothes in Wandia Gichuru's living room. Vivo Activewear, which Gichuru co-founded with a friend, had begun as an online-only enterprise but immediately encountered a major stumbling block: its customers wanted to try on the clothes. "We didn't have a store, so they just came to my house," Gichuru recalls. "My daughters were asking, 'What happened to our living room?' I realized this wasn't going to work."

Gichuru and her business partner discovered an available space in a Nairobi mall and nervously signed a lease to open their first retail store. It was immediately a hit. Drawn by Vivo's leisurewear line at affordable prices, women suddenly had a place to go for clothing previously unavailable locally. The original Vivo store soon became two, and then four, and then seven. Today, Vivo has 21 stores, including its first in Rwanda, with plans to open 30 by the end of 2023.

That success was unlikely for several reasons, including that nobody before Gichuru had made widely accessible women's clothes in Kenya with Kenyan women in mind. Originally an import business, Vivo gradually transformed into a full-on fashion brand that designed and manufactured all of its own clothing.

LOCATION
Nairobi, Kenya

EDUCATION
MBA, Cape Town University
BA, University of Western Ontario

PROFESSIONAL EXPERIENCE
Co-founder and CEO, Vivo
Governance adviser, Department of International Development (UK)
Policy adviser, United Nations Development Programme

ELENA ZHUKOVA

Along the way, Gichuru discovered that making and selling clothing had a larger purpose, one that now animates her business thinking. "Now my focus, in addition to running Vivo, is to help other entrepreneurs, and especially women entrepreneurs, develop their own businesses," she says. "We are still struggling in so many ways, but unless people hear or see someone trying, it's very difficult for them to imagine what's possible."

Who were your influences growing up?
I ended up going into international development work and I think to some extent that was influenced by my dad. He was a civil servant, working for the part of the government that gave out business licenses, and he was interested in economic development. After I went to university in Canada and then was able to travel a bit and see other parts of the world, I wondered why things at home were so much harder, and why did we struggle to uplift the lives and experiences of people? That has always been the question in the back of my mind and led me into development work.

What motivated the change of direction that eventually landed you in the retail world?
I was in my early 40s and I wanted to try something different. I ended up training to become a life coach, got my certification, and then realized that I couldn't turn it into a business. I found it hard to speak to somebody for an hour and then say, OK, now pay me $200.

I started spending more time dancing and doing various exercise classes, and I realized there was very little available in Kenya to support those activities. You couldn't buy dance sneakers, for example; they just weren't available. So, we thought, Hey, there's a gap here in the market. The idea was to create this brand that would be purely online, bring in cool products to do dance and fitness. Within seven or eight months we realized that wasn't

"By creating opportunities and generating income and growing industries, you are transforming lives."

going to work. Everyone would call or email us to say, Can I come and try it on?

And your house became the fitting room.
Yes, we didn't even have offices. We decided to open a physical store and offer more than just the dance and fitness stuff. We wanted to stay close to the original idea, but we ended up picking clothes that everyone just loved because they were super stretchy and comfortable.

We had no idea going in that we were solving a problem, but looking back, it's kind of obvious. Most clothing sold in Kenya isn't made in Kenya, it's all imported. The bulk of that is secondhand, but even the new stuff that is available is predominantly designed for a Western, Caucasian body type. A lot of Kenyan women would buy clothes and then have to have them modified to fit.

Was that the insight that led you to begin making your own clothing?
The solution was to have stuff made to our specifications, but we couldn't find factories in Asia that would make small enough quantities. They were like, Sure, give us your design, but you have to order 10,000. We wanted to make 50. So in 2013 we made the decision that we would start making our clothes in Kenya, and that was a game changer.

What did it take to make that happen?
I don't come from a fashion background. I had to hire pattern makers, tailors, designers, you name it. We had to figure out where to source the fabrics. It was a lot of chaos, a lot of mistakes, very ad hoc in a way. Sometimes I'd hire out of pure desperation — I would literally meet someone for coffee and say, OK, when can you start?

Meanwhile, though, your stores were doing good business.
Our first store did so well that after a few months we opened a second one on the other side of town, and then another, and another. By 2015, we had seven stores and were doing revenue of $1 million a year. But there really was no plan; I didn't even have a budget. It seems crazy when I think about it now. We were just putting our revenue back into the business and expanding, but without any real direction.

So that's where Seed came in?
At a certain point I was going a little crazy, thinking, I don't know what I'm doing here, I need help. A friend of mine forwarded me a flyer about Stanford Seed coming to East Africa. I took one look at it and thought, This is exactly what I need.

They not only helped me with scaling the business and creating a plan, but they also helped me see that success isn't just about making profit, it's also about impact. I came from a development background, and I wanted to be doing more than making clothes and hiring people. Seed was able to help me see how all these things are connected, that by creating opportunities and generating income and growing industries, you are transforming lives.

And then COVID hit.
And then COVID hit, and our revenues dropped 80%. We had 200 staff at the time. Kenya has no welfare system; there is little direct government support to businesses. So our top priority was keeping our staff paid. But our revenues had disappeared, so what the hell were we going to do?

When it became obvious that masks were going to become a key part of everybody's life, we pivoted and took all our production capacity and started making masks. Most of them were bulk orders from companies that wanted branded masks. In 2020, we made a million masks. We weren't making any money, but we had revenue, and it saved us.

What is the plan post-pandemic?
Fairly recently, I pulled out the transformation plan that we had developed with Seed and dusted it off. We are back on track. We now have 21 stores; we will have 30 by the end of this year. We have a really solid board, and a small number of investors, some of whom I met through Seed. And we now have a second business, an online marketplace, which is Shop Zetu.

Your success also led to an unusual opportunity. Tell us about your experience as a judge on the Kenyan version of *Shark Tank*.
When they asked me, I said, Look, I have never invested in any business, I've only grown my own business. What do I know? But no one else would do it. Women in our culture are shy to be seen as successful, often because they don't want to show up their husbands. Finally, I said yes because a woman needed to be on that show. If I have to, I'll fake it to make it. I was on the show for two years.

You've talked about the importance of purpose and how that informs what you do. What is most meaningful to you now that you've established a level of success?
What I'm proudest of is having proven that local fashion can be a viable business and is an industry with opportunities. Unemployment in Kenya is 40%, and it's mostly young people who are looking for work. They go to university and then can't find jobs. I've always seen work as tied directly to people's dignity. If you can't earn enough income to consistently feed your family and educate your children, your life will not be simple or easy. I'm excited about the opportunity to create employment, not only in Kenya but in other parts of Africa as well.

—Kevin Cool

Listen to Wandia Gichuru on the *Grit & Growth* podcast: *stanford.io/wandia.*

Unpaved Paradise

When visitors come to Nairobi, Gichuru directs them to one of the city's "best secrets" — Karura Forest, a 2,500-acre urban retreat. "One of Kenya's heroes, the late Wangari Maathai, saved the forest from being grabbed by land developers in the 1990s," she says, "and today it is enjoyed by tens of thousands of people each month."

Rebecca Diamond, Class of 1988 Professor of Economics

ELENA ZHUKOVA

RENT-CONTROL INITIATIVES ON BALLOTS in cities and states across the country. Downtown office buildings emptied by the COVID-19 pandemic that could be turned into apartments. Heated debates between developers, local officials, and homeowners who agree about the need for more affordable housing but not how or where to build it.

"You don't have to be an urban economist to spend a lot of time thinking about housing," says Rebecca Diamond, the Class of 1988 Professor of Economics. "This is just on everyone's mind."

True. But, because Diamond is an urban economist, everything she thinks — and writes — about housing is interesting, informative, and potentially impactful, according to colleagues and collaborators. And it has been ever since she began her career. Diamond's "job market paper" — the work that academics use to market themselves to potential employers — explored the migration of college-educated workers to cities and is now considered seminal in the field. The paper set "the new standard for urban economists," according to the American Economic Association, which awarded Diamond its prestigious Elaine Bennett Research Prize in January 2023.

At Stanford GSB, Diamond directs the Cities, Housing, and Society Lab, which investigates how place, labor markets, and public policy influence people's lives and impact inequality. Her research reads almost like a playbook for policymakers and even ordinary people who worry about purchasing power in an economy in which things like attending college, keeping a job, and owning a house — once the standard stepping stones of the American dream — have become far-fetched fantasies that seem increasingly out of reach.

Want to know how far your money would go in metropolitan areas across the United States based on your level of education? Diamond answers those questions in a paper called "Where is Standard of Living the Highest? Local Prices and the Geography of Consumption." Worried about how foreclosures affect families forced to move from their homes? Diamond has covered that, too, breaking down the outcomes on homeowners, tenants, and landlords.

The questions Diamond asks in her research "matter for the real world in big ways," says Enrico Moretti, an economics professor at the University of California-Berkeley and a coauthor on the standard of living paper, which took about five years to produce. "These are fundamental topics at the core of our understanding of the U.S. economy." But Diamond does more than ask good questions, Moretti says. She provides answers that, because of the thoughtfulness of her work, are "very credible and therefore very influential."

HOMETOWN
Chicago, Illinois

EDUCATION
PhD, Economics, Harvard University
MA, Economics, Harvard University
BS, Physics and Economics & Mathematics, Yale University

ACADEMIC AREA
Economics

"It's hard to know why exactly you end up going down the rabbit holes you go down."

Although economics runs in Diamond's family — her father won the Nobel Prize last October — Diamond was first drawn to the field after taking an econ class to check off a social studies requirement in pursuit of a major in physics at Yale University. "I've always been interested in what quantitative methods can teach us about the world," she says. But economics, which she ultimately added to her major, "felt more relevant to my day-to-day life than quantum mechanics."

Diamond earned her PhD in 2013 from Harvard, where her official subfields were labor economics and industrial organization. But she soon began studying issues related to wages, inequality, and housing — the meat and potatoes of urban economics, an increasingly popular area of study that reaches across traditional fields. "It's hard to know why exactly you end up going down the rabbit holes you go down," Diamond says. "But the more I learned about housing, the more the issue seemed relatively understudied, like low-hanging fruit."

Homing in on the Data

Diamond made a name for herself in urban economics almost immediately. "In a relatively short time, Rebecca has made important contributions to our understanding of how economic forces shape cities," says Matthew Turner, a professor of economics at Brown University and president of the Urban Economics Association. "She has done this by fitting state-of-the-art econometric techniques to important problems in urban economics."

Diamond also uses data. Lots and lots of data. In one of her best-known papers, she, former Stanford GSB professor Timothy McQuade, and Franklin Qian used what they described as a "unique, rich, and previously unused dataset" from Infutor, a consumer identity company, to assess the impact of a rent control policy on actual tenants — specifically, people who lived in San Francisco between 1980 and 2016. The data gave the researchers the addresses of those people over time, which they then compared to property records, building permits, and assessor's documents.

The results of that research, published by the *American Economic Review* in 2019, have been part of the rent-control conversation ever since. Diamond and her coauthors found that, in the short term (5 to 10 years), rent control helped prevent displacement in San Francisco, with racial minorities benefitting most. But building owners did not "passively accept the burdens of the law," they wrote. Instead, rent-controlled buildings were 8% more likely to be converted to condos or so-called tenancy in common properties, leading to a 15% decline in the rental supply in the city and to a housing market that catered more to higher-income individuals.

Diamond used Infutor data again in her foreclosure piece with Boston University economist Adam Guren, which studied the impacts of foreclosure cases on nearly 200,000 people who lived in Cook County, Illinois, between 1990 and 2016. They found that, compared to people who have not been foreclosed upon, those who have experienced foreclosure are more likely to move multiple times in the future — a sign of housing instability — and 20% less likely to own their own home again. And the moves they make are generally to neighborhoods with lower incomes and lower-performing schools. People who experience foreclosure are also more likely to be behind on debt payments, to declare bankruptcy, and to get divorced.

"We really knew close to nothing about what foreclosure did to households," Diamond says. "You could read popular press accounts, but all of that was anecdotal. It's not that [such stories] are not useful, but when you're deciding policy, you need to see the full distribution."

Surprising Insights

In her lab, which she started in 2020 with funding from an anonymous donor, Diamond has continued down the path she began to blaze with her job market paper. She hopes the space will be a catalyst for the cross-pollination of ideas about urban issues and housing in particular. Funding for the lab also has allowed her to hire additional research assistants and graduate students.

Qian began his work for Diamond as a research assistant while earning his PhD in economics and later became a coauthor on the rent control paper. Now an assistant professor of finance at the University of North Carolina's Kenan-Flagler Business School, Qian says Diamond is "super insightful."

He points to the modeling Diamond came up with for the rent control paper. "There wasn't an obvious, ready-to-use model," he explains. But Diamond found an analog in an agricultural study about farmers' decisions when to plant crops. "She recognized that could be adapted to our context," Qian says. "It was really brilliant and enabled us to solve a very difficult part of that problem." Diamond is more matter-of-fact, calling the model in the other paper "clever."

Diamond's work has also explored food deserts, the gender earnings gap among Uber drivers, immigrants' contributions to innovation, insurance, and teachers' discretion in grading.

Her collaborators praise her in every context. McQuade, who was at Harvard with Diamond and was a fellow faculty member at Stanford GSB for several years, says his coauthor has a "keen eye" for research topics and "really good technical abilities." She's also a "humble and collegial" friend.

"I always learn something" from her, Moretti says. "Rebecca is one of the stars of economics, and her brightness keeps increasing over time."

— Rebecca Beyer

Family Recipe

After a busy week, Diamond enjoys making breakfast on Sunday morning with her three-year-old son and six-year-old daughter. Pancakes, eggs, and fruit are usually on the menu. Afterward, she says, "I enjoy getting in a run."

Illustration by Sol Cotti

WHAT MATTERS TO ME *NOW* AND WHY

Phil Gioia, MBA '79

I grew up in an Army family during the Cold War of the '50s and early '60s; in a unique culture with its own myths, legends, and traditions. Before I went to high school we lived in Japan, in Italy, at West Point, and in the South prior to the civil rights movement. We had no phone or television in Italy; I listened on our Grundig shortwave to Radio Budapest during the 1956 Hungarian uprising as its desperate calls for help were brutally suppressed by the Soviet Union.

In World War II, my father served as an officer in the clandestine OSS, a precursor of the CIA and the Army's Special Forces. Commissioned as an infantry officer myself, before I was 23 I had led American soldiers in action in two deployments in Vietnam. During the 1968 Tet Offensive, my 82nd Airborne paratroopers unearthed one of the first of the mass graves outside the Imperial City of Hué, where men, women, and children had been murdered by the Vietcong.

In 1977, I closed my GSB application essay with the audacious statement that "if admitted, both I and the GSB will benefit." Four days after resigning my Army commission, I was at Stanford. My classmates' backgrounds were hugely impressive, as would be their later accomplishments. The GSB faculty was terrific, the pace unrelenting.

RECONNECTING
Phil Gioia, MBA '79, is president and CEO of Duty Bound LLC, and the author of *Danger Close! A Vietnam Memoir.*

I was fortunate to count friends like GSB Dean Arjay Miller. There were memorable moments: Admiral James Bond Stockdale of the Hoover Institution, a former prisoner of war and great philosopher, took me to Milton Friedman's birthday party at the Faculty Club, introducing me to Dr. Edward Teller and others.

After Stanford, business at Morgan Stanley was challenging and fascinating. The late '70s marked a powerful symbiosis between the Street and venture capital: IPOs of Microsoft, Apple, and a host of other pioneering companies catalyzed how we lived and did business. I itched to get into the entrepreneurial space, later co-founding companies in biometric identification and secure wireless communication. After 9/11, I co-founded a partnership that scouted Silicon Valley for adaptable technologies for the U.S. intelligence community.

In my business career, I've found high value placed on the same qualities critical in the Army: leadership, teamwork, good communication, focus on the objective, concern for your charges. I learned that reliance on verbal commitment in business can be vastly different from the same assurance given in combat. The risk-reward ratio on the battlefield balances lives; in business, it balances dollars. Both fields deal with success and failure; both require immense concentration and dedication.

I have never lessened my desire to help the men and women who dedicate their lives to safeguarding us, and to mentor young MBA aspirants. Several young tigers I've introduced to the GSB have received their MBAs. I've made many friends in my business career, yet still feel much in common with the then-19-year-olds I was privileged to fight beside, long ago and far away. GSB

KIM SALT

The risk-reward ratio on the battlefield balances lives; in business, it balances dollars.

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