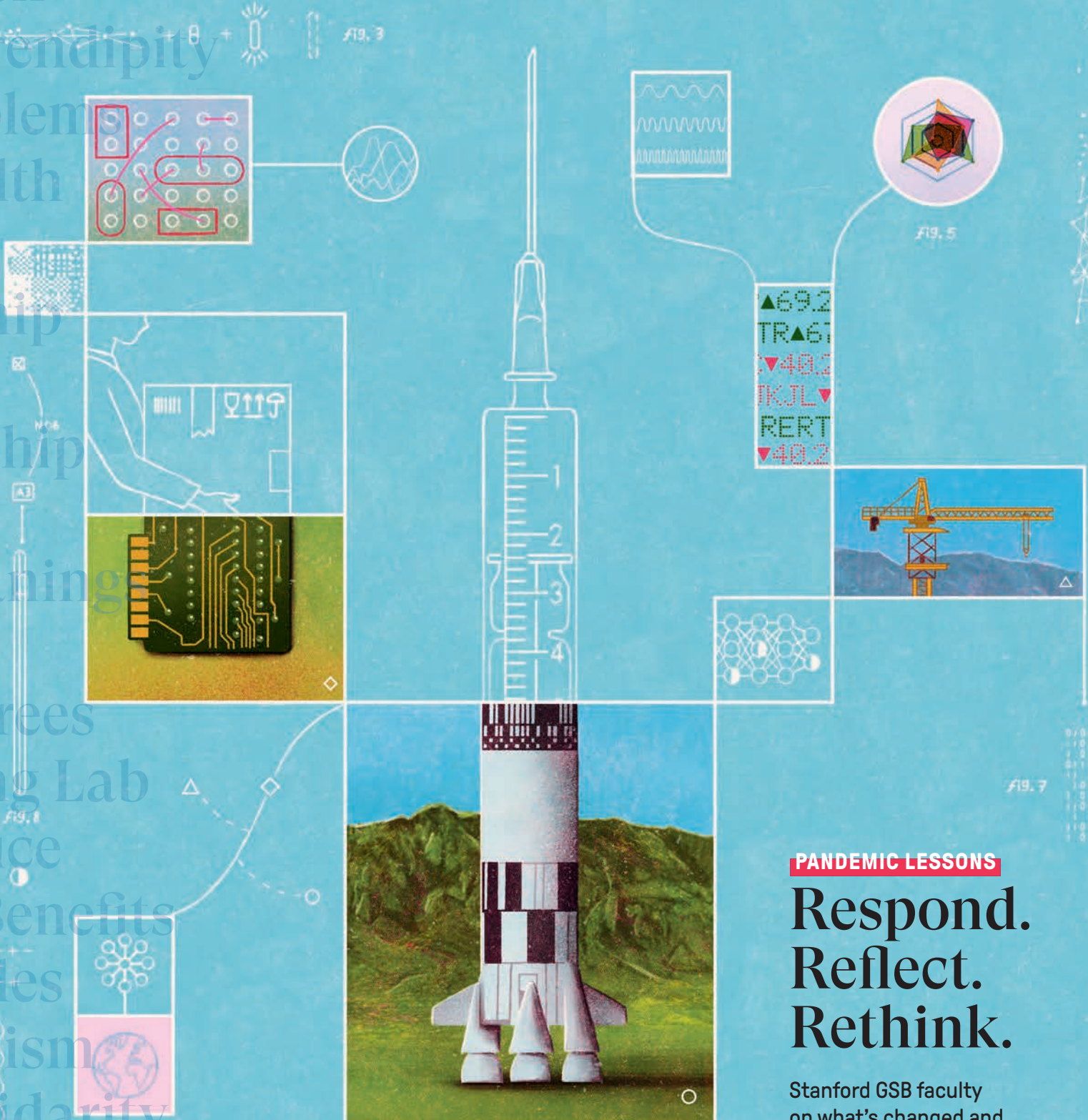


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FALL 2021

Stanford Business



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Robert Redfield, MD

Former Director, CDC

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Lloyd Minor, MD

Dean, Stanford School of Medicine



Jonathan Levin

Dean, Stanford Graduate School of Business



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A LETTER FROM DEAN JONATHAN LEVIN

Leading in a New Era of Business

This August, I hiked up Mount Whitney with my 14-year-old son. We started at 2 a.m. to avoid afternoon thunderstorms, climbing some 6,000 feet up the eastern side of the mountain. Shortly after sunrise we emerged on the ridge, dusty and tired, and were met with a breathtaking, expansive view of the western Sierra Nevada. While each climb has its rewards, few things compare to the feeling of emerging to an open vista.

I was reminded of that feeling a few weeks later when the Knight Management Center returned to life and we welcomed students back into classrooms after 18 months of mostly virtual education. The new academic year coincided with the beginning of my second term as dean of the GSB. That milestone and the energizing and optimistic start to the year make this a natural time to reflect on the state of the school and look out at its future.

The GSB strives to be the world's best academic business school. We are distinguished by the two-way interaction between scholarship and practice that occurs in our classrooms and in the diffusion of faculty ideas across academia, business, and policy. The depth of our faculty's impact was exemplified in October, when Guido Imbens shared the Nobel Memorial Prize in Economic Sciences for his groundbreaking studies of causal relationships — the second Nobel awarded to GSB professors in so many years, following Paul Milgrom and Bob Wilson in 2020.

As we look ahead, the school is positioned to lead in a new era for business. We have transformed our research infrastructure in response to the explosion of data that is reshaping social science. Our faculty are blending theory with data, computation, and experimentation to answer new questions about organizations and markets. We have committed to expanding faculty diversity through hiring and career development and are in the exciting position of having the largest cohort of recently tenured professors in school history.

Our MBA program is thriving at a time of significant change in management education. The MBA degree arguably is becoming less important for advancement along particular career tracks, yet even more valuable as a means to gain wider perspective, insight, and durable skills — exactly our educational goals. Education at the GSB is further distinguished by our emphasis on the craft of leadership — the combination of reason, evidence, intuition, and judgment. Consistent with this



Jonathan Levin is the dean of Stanford GSB and the Philip H. Knight Professor

The GSB has both an opportunity and responsibility to lead on issues at the intersection of business and society.

philosophy, we have expanded co-taught classes that blend the science and art of management by pairing academic faculty with practitioners.

Today, organizations and leaders are challenged to address issues including climate change, inequality, advancing technology, and shifts in global economic power. These challenges are raising fundamental questions about the purpose of business and its responsibility to different stakeholders. The GSB has both an opportunity and responsibility to lead on issues at the intersection of business and society: to inform debate and thinking through our research, and to educate students who appreciate the power of markets to foster innovation, while recognizing the inherent trade-offs in business decision-making. Our focus on principled leadership has led us to redesign our core ethics curriculum, introduce the Leadership for Society program and the Corporations and Society Initiative, and work to ensure that GSB students are prepared to lead diverse teams and organizations.

Emerging from the pandemic, we also can expand the set of rising talents and established leaders who learn from GSB faculty. The world needs a larger, stronger cohort of global business leaders. We can contribute by providing greater access and educational opportunity to flexible, technology-enabled programs that complement and add luster to our MBA, MSx, and PhD programs. Closer to home, it is important for us to welcome into the GSB more students from across Stanford, especially given the university's priorities around sustainability, digital transformation, biomedicine, and social impact that dovetail with some of the most important areas for business and business leadership.

The last five years at Stanford have been a dynamic and rewarding time. I see an expansive future for the GSB and I look forward to continuing the journey with all of you. **GSB**


RECOGNITION

GUIDO IMBENS RECEIVES NOBEL IN ECONOMIC SCIENCES

Just as this issue was headed to press, we learned that Guido Imbens, the Applied Econometrics Professor and Professor of Economics at the GSB, had been awarded the Nobel Prize for his study of causal relationships, sharing the award with Joshua Angrist of MIT and David Card of the University of California, Berkeley. Dean Jonathan Levin

noted Imbens' important contributions to the field: "The tools for causal inference he and his colleagues have developed have helped to ignite an empirical revolution in the social sciences, fueled by the vast amounts of data that are now available." Imbens is the fifth Stanford GSB faculty member to receive the Nobel Prize.



An illustration by Sirin Thada showing a person with long dark hair, wearing a red and white striped sweater and blue pants, sitting on a yellow chair at a round grey table. They are working on a laptop. The background is a vibrant blue sky with a purple ground. A dark railing is visible in the top left corner.

“Wealth is more than just a dollar amount. It encompasses skill building, productivity, and sharing. Learning and teaching skills, being productive for yourself and others.”

– Jennifer Fate Velaise, MBA '88, talking about the lessons she learned from her grandmother, a Koyukan Athabaskan elder.
Page 56

“I lifted the glass ceiling as high as I could. Then, **Stanford** helped me break it.”

— SUSAN HARMAN, MBA '79



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 Susan Le Corre, Senior Director of Development, at slecorre@stanford.edu or 650.862.5210. Or visit us online at gsb.stanford.edu/giving/legacy-partners.

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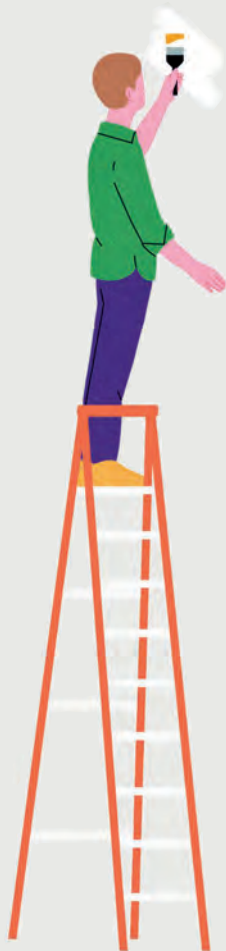
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Jeffrey Pfeffer transmits power.
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 Counting trees at the GSB.
 Christian Wheeler's bronze enigma.
 Helping first-gen students break barriers.
 It's really hard to make razors.



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Illustration by Daniel Liévano

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Marketing, Math, and
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PRIVACY

A New Way to Crack Genetic
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ORGANIZATIONAL BEHAVIOR

Workplace Equality for All!
 (Unless They're Old)

ECONOMICS

Why a Plan to Encourage Search-
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ACCOUNTING

The Trickle-Down Tragedy of
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VOICES ⁵⁶

Jennifer Fate Velaise, MBA '88
 George Jedenoff, MBA '42
 Sarah A. Soule, SENIOR ASSOCIATE DEAN
 Marty Chen, MS '21

WHAT MATTERS TO ME NOW AND WHY ¹¹⁶

Peter Georgescu, MBA '63

CLASS NOTES ⁶⁵



FEATURES

Respond. Reflect. Rethink. ³⁰

Nearly two years into the global pandemic, Stanford GSB faculty are helping us understand what's changed and what's ahead.

Dave Gilson

“What’s a Nice Girl Like You Doing in a Place Like This?” ⁴⁰

A half century later, the five women of the Class of '72 reflect on their groundbreaking experience.

Julia M. Klein

A Beautiful Application ⁴⁶

What is it about kidney exchange markets that piques the interest of economists and operations experts? The answer is simple: Even modest improvements to the system can save many lives.

Dylan Walsh

Leveling Up ⁵²

Stanford GSB's predoctoral fellowship is helping the next generation of academics jumpstart their careers — and bringing needed diversity to the professorship pipeline.

Lisa Wong Macabasco



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EDITOR'S NOTE

Tell Me a Story

TALK TO US

Have some constructive criticism? Some praise? Some story ideas? We're eager for your input. Please email the editors at stanfordbusiness@stanford.edu.

"I'm a storyteller." It's the cliché that launched a thousand keynotes, elevator pitches, and social media bios, but there's no denying the power of stories. They're how we make sense of our experiences and express our hopes for the future. They let us explain ourselves to others and help us understand the world.

Stories are what brought me here. When I became editor of *Stanford Business* this spring, I had yet to lay eyes on the Change Wall (see the photo on page 13 if you haven't either) or meet my new colleagues outside a Zoom screen. Yet even at a distance, it was clear that Stanford GSB was going to be a great place to look for meaningful stories.

The months since then haven't disappointed. One of my first interviews was with George Jedenoff, MBA '42, a 104-year-old with an enviable sense of perspective on his life (see page 58). I'd soon learn that the optimism, curiosity, and sense of purpose he embodied are in abundance in the GSB community.

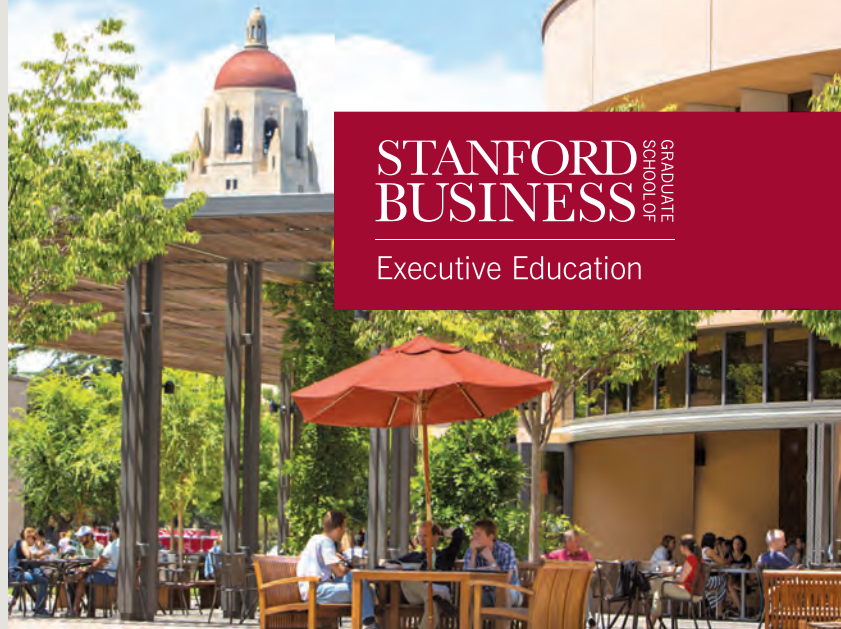
That spirit permeates this issue of *Stanford Business*. It's in the stories of professors who are engaging head-on with life-and-death issues like vaccine distribution ("Respond. Reflect. Rethink," page 30) and kidney donation ("A Beautiful Application," page 46). It's in the stories of the women of the Class of '72 ("What's a Nice Girl Like You Doing in a Place Like This?," page 40) and in those of the students, alumni, and faculty members who are working to ensure that a wider range of stories are being heard (check out "Leveling Up" on page 52 and the profiles of Senior Associate Dean Sarah Soule and Marty Chen, MS '21). Because, as Professor Jeffery Pfeffer sums it up on page 11, "Everybody is telling a story."

And that includes you. If you have an idea for a story you could imagine us telling in these pages, email us at stanfordbusiness@stanford.edu.

— Dave Gilson

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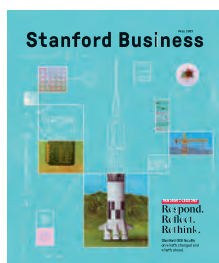
ON CAMPUS

Reopening and Reconnecting



As fall approached, the Stanford GSB campus felt almost normal for the first time in nearly a year and a half. There were fewer tents, and chairs were no longer moored to ensure social distance. Classrooms and courtyards once again filled with students and faculty. Above, artist Sirin Thada captures the energy of the Arbuckle Dining Pavilion with its doors wide open — a lively space where people can reconnect.

ANASTASIA SAPON



ABOUT THE COVER

Artist Daniel Liévano illustrates the complexities and possibilities of our mid-pandemic world — from vaccine development and supply chains to economic growth and the future of work. See more of his illustrations with our cover story on page 30.

EDITORIAL

EDITOR **Dave Gilson**
 CREATIVE DIRECTOR **Tricia Seibold**
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 OPERATIONS **Allison Felt, Elizabeth Wyleczuk-Stern**
 CLASS NOTES EDITOR **Chelsea Sun**
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ART

ART DIRECTION & DESIGN **Point Five**
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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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Back to Class¹⁰ Panelists¹¹ Anniversary¹²
 By the Numbers¹² How To¹³ Office Artifact¹⁴
 Peer-to-Peer¹⁵ Welcome¹⁵ Recognition¹⁵ Maker¹⁶

Briefings



BACK TO CLASS

Learning to Embrace the P-Word

After joining the Stanford GSB faculty as a professor of organizational behavior in 1979, Jeffrey Pfeffer wanted to offer an elective on something “important, under-researched, and under-taught.” Power was an obvious choice: “It struck me that power was something that existed in organizations and affected people’s careers,” he recalls — and yet no one was teaching business students about it.

Since then, Pfeffer has taught power — both the concept and the elective known by the same name — to thousands of GSB students. While his course, now called *The Paths to Power*, has evolved with time, its core lesson remains unchanged: Talent and skill are important, but if you overlook power, success may pass you by. Fortunately, you can learn how to get power and use it to accelerate your career, influence people, and achieve your goals.

SEEN AND HEARD

“I’d like to just take a moment right now and really appreciate this weather. Because that is all we are going to remember.”

— 2021 commencement speaker Professor Jennifer Aaker. When she surveyed GSB alumni, only 18% said they could recall the speech at the last graduation they attended; 88% could remember the weather.

COURSE NAME
OB377: The Paths to Power

INSTRUCTOR
Jeffrey Pfeffer

It’s a simple idea, if not an easy one. Even when it’s rooted in social science, the study of power carries Machiavellian undertones. “In order to teach this successfully, you have to be willing to do stuff that is different than what is going on in most business schools, where we have what I would call ‘Kumbaya’ leadership,” Pfeffer says. “One student once described it as the cod liver oil of the GSB: You know it’s good for you, but you feel a little nervous about it.” His syllabus comes with a boldfaced disclaimer: “This Class Is Not For Everyone.”

Nevertheless, *Power* is one of the GSB’s most in-demand electives. “This class has become, I think, more countercultural,” Pfeffer says. “Ironically, that has actually made it more popular.”

The case-based class often features guests who embody Pfeffer's rules of power. Students receive individual coaching from a team of facilitators, and a series of self-reflective assignments culminates in a "Doing Power" project. "I get emails from people that say, 'I took the class seriously. I took the Doing Power project seriously. And it actually works,'" Pfeffer says.

In a recent in-person class for MSx students, Pfeffer made the case that ambitious people should care less about whether they're perceived as pushy, competitive, self-promoting, or aggressive. His guests were Christina Troitino, MBA '20, a former *Power* student who's now a strategy and operations lead at YouTube; and, via Zoom, Keith Ferrazzi, a consultant and author whom Pfeffer describes as "the quintessential networker."

At first, no one seemed fazed by what they were hearing. "Are you all microdosing or something?" Ferrazzi cracked. But as the class continued, a few students began to politely sniff at the cod liver oil. At what point do you cross the line between assertive and just plain annoying, one asked. "You could be called much worse things than annoying," Pfeffer replied.

Another student noted her "visceral" reaction to some of the day's material. "That's all well and good if you're a tall, good-looking white guy," she said — won't a woman who comes in hot to a male-dominated environment get shot down? Both Troitino and Ferrazzi, who's gay, acknowledged that stereotypes and biases are very real, but said you can't let them psych you out.

As the class came to an end, Pfeffer returned to his mantra: Gaining and exercising power is a choice. "My job is not to tell you what to do but to give you the best exposure to what works and why," he said. The essence of his research, he continued, can be explained in 90 minutes. Yet getting past your inhibitions to internalize those lessons takes practice. "This is why this class is 10 weeks long," he said. "We need a 10-week class so you can say, 'I'm embracing the stories I'm telling.' Because everybody is telling a story." — *Dave Gilson*

PANELISTS

Founders from Underrepresented Communities Discuss Their Experiences

Voices from "Building Momentum: Diversity and Entrepreneurship," a conference sponsored by the Stanford GSB Center for Entrepreneurial Studies in April 2021



"When it comes to diversity, equity, and inclusion and trying to figure out solutions, so many [VCs] just throw their hands up in the air. Are you the same ones who helped all of these companies that were 'crazy' in the idea stage become the big behemoth unicorns that took over the world? When it comes to DEI, why does your growth mindset just go out the window? You have the skills to solve the world's hardest problems. Apply them here." — **Mandela SH Dixon, founder and CEO, Founder Gym**



"If you say, 'I'm committing to diversity,' as a VC, I would challenge you to publish your diversity stats publicly. . . . I started my fund because this is first and foremost an investable opportunity that is being overlooked. How does 99% of the population look? It's not how tech and VC looks today." — **Samara Mejia Hernandez, founding partner, Chingona Ventures**



"When I started the company from my dining room table, I did not have access to capital. The only capital I had access to was predatory capital. The miracle of my company is that I survived paying 26, 27% interest on receivables from the biggest corporations in the world. . . . Thank you for the resistance, all the nos, all the lack of access to capital. You made me better. You made it tougher, but you made me better. You made me unstoppable." — **Byron Allen, founder, chairman, and CEO, Entertainment Studios**



"I imagine a world that believes that we are all worthy enough to be restored. I know it sounds esoteric for a business conversation, but what does that look like? It means building financial infrastructure that loves Black people. It means doing an overhaul on modern financial practices with an eye toward anti-racism and nonviolence." — **Jessica Norwood, founder and CEO, RUNWAY**



LISTEN

In its new podcast *Grit & Growth*, Stanford Seed tells the stories of entrepreneurs from Africa and South Asia and presents practical business tips and proven management strategies from some of the world's leading thinkers. Hear more at stanford.io/gritgrowth.

ANNIVERSARY

Knight Management Center Celebrates 10 Years of “Structured Serendipity”

After a year of remote learning, students and faculty finally return to the state-of-the-art complex.

Spring quarter 2021 marked the 10th anniversary of the construction of Stanford GSB’s Knight Management Center, and a full-time return to the campus, which happened in August, was a much-welcomed event after months of COVID-related closure.

“There’s a lot of energy and vibrancy here for the first time in over a year, which is great,” said Dean Jonathan Levin. “This last year has been a revelation in terms of how much you can do in a virtual environment, but it’s also been a reminder of what really matters here, which are the human connections people form and how important it is to be able to bump into and talk to people — the sort of structured serendipity this physical campus provides.”

Opened in April 2011, the new center relocated Stanford GSB from an aging three-building complex to an eight-building campus set on 12.5 acres. Funding for the \$345 million facility was led by Nike founder Philip H. Knight, MBA ’62, who in 2006 contributed the \$105 million down payment for the project, the largest gift ever to a business school at that time.

Today, the campus features more than 100 flexible classrooms, breakout rooms, and study rooms, along with innumerable tucked-away spaces for spur-of-the-moment conversation. Other heavily used collaboration sites include the Anne T. and Robert M. Bass Center’s library and meeting spaces, and the NGP CoLab, a hub where interdisciplinary teams of students from across Stanford meet to develop new business ideas, and where students huddle together to design and test new business concepts.

That was where Miri Buckland and Ellie Buckingham, both MBA ’19, developed the concept for their social design platform The Landing. “The vast majority of the moments that added up to us starting our company happened there, where we spent a lot of time whiteboarding to get our ideas out,” Buckland recalls. “We actually incorporated our company from a table in Town Square.”

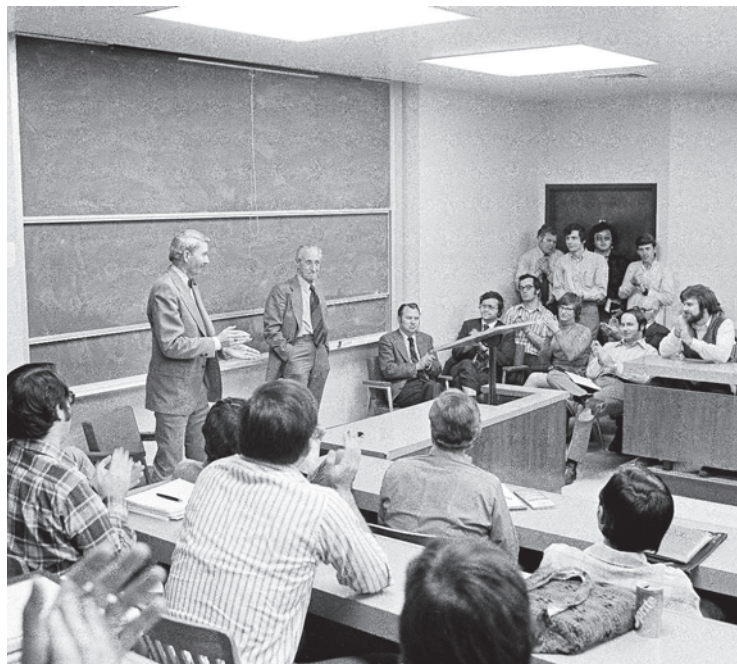
— Beth Jensen

[Read the full story at stanford.io/KMC10.](http://stanford.io/KMC10)



BACK TO THE NEW SCHOOL

Artist Peter Wegner created five pieces for the new campus, including “Monument to the Unknown Variables” (top right) and “Monument to Change as it Changes” (middle right). Unlike classrooms on the original campus (bottom left), the new ones have state-of-the-art tech and foster collaboration.



BY THE NUMBERS

The GSB Ground Game

22

acres is the size of the GSB campus

59

species of plants grow on the GSB grounds

970

trees live there now, each with its own unique ID number

36

trees were moved in 2011 to make way for the new Knight Management Center



ELENA ZHUKOVA; JOSE MERCADO/STANFORD NEWS SERVICE (PHOTOS); SERGIO MEMBRILLAS (CONS)

HOW TO

5 Steps Toward Getting on Boards

Whether you're starting your career or about to retire, serving on the board of a public company can be professionally, personally, and financially rewarding. Before you start down that road, however, you need to "take a 360-degree view of your qualifications" and think seriously about the risks, says executive coach

Margaret Chan. In a recent webinar organized by GSB Alumni Relations, Chan outlined a strategy for targeting the right board – and landing a seat at the table.

- 1 **Be agile:** Serving on the board of a company in the same market segment as your employer would be a conflict of interest. So you'll need to show your ability to grasp the nuances of a new industry with a different business model. If you've shifted roles as an executive, emphasize how quickly you came up to speed.
- 2 **Make your value proposition:** Even if you don't have P&L responsibilities under your belt, you might be able to demonstrate a skill a board lacks. Audit and CFO experience are in high demand, as are cybersecurity and social media backgrounds. Skill in building consensus – a key attribute of successful directors – is also desirable.
- 3 **Consider a nonprofit:** Winning a seat on a public company's board can be tough if you've never served on one. Joining a nonprofit's board may be a more realistic first step. The step after that: advisory boards, which often provide expertise a smaller company may not have in-house.
- 4 **Network with search firms:** As companies strive to go beyond the old boys' network, many are turning to search firms to fill board seats. A firm working with your current employer isn't likely to place you on a board, but it may be willing to counsel you and help you gain entry into corporate databases as a potential candidate.
- 5 **Know the risks:** Directors are increasingly held to account for decisions made by CEOs, even if board members weren't made aware of the risks. Most public companies carry directors and officers liability insurance, but smaller companies often do not. – *Bill Snyder*

25

of those relocated trees survived

18

palm trees are planted in the McCoy Family Courtyard (aka the [X] [Y] courtyard)

43

feet is the average height of those palm trees

2

palms have had to be removed because they endangered the building

90

total hours of labor are logged by the school's gardening crews each week

1

formal complaint was filed in 2019 about noise from a leaf blower

OFFICE ARTIFACT

Christian Wheeler's bronze desktop sculpture

Wheeler is the StrataCom Professor in Management and Professor of Marketing at Stanford GSB.

IT'S A ONE-OF-A-KIND

piece made by an Omaha artist by the name of Bill Farmer. It's a bronze sculpture with four people seated in front of walls that expand in size as you move from left to right. The fourth wall has a hole in it, a circle cut out of it. The text on the walls reads, "Enlarging one's perspective. Graduation. There's a hole in that theory."

It was given to me by Tom Rudloff, who was owner of the Antiquarium, a multi-floor bookstore-slash-art-gallery-slash-record-store. The top floor housed a large portion of Farmer's work on permanent display. I had seen that piece there, and Tom gave it to me when I graduated with my PhD from Ohio State.

Growing up, I killed many hours hanging around that bookstore. Basically, anyone who lived around Omaha and had vaguely countercultural leanings spent a ton of time there. It was a real institution for a lot of people, and for me in particular. They had coffee pots and chess tables in the back and easy chairs in the front. Downstairs was the record store. People would just mill around and browse books, talk politics. There were a lot of characters there. You got exposed to a lot of different perspectives.

For me, Tom treated it like a lending library. He just handed me books. He gave me reading lists and piles of books and sent me on my way. I kept in touch with Tom

and always returned to the bookstore whenever I was home. He passed away a number of years ago.

Historically, my research has been on attitudes and persuasion and also on the self-concept. A recent paper of mine discussed how objects can be imbued with meaning and reinforce identity. Right now I'm working on a project on how we view people who are receptive or unreceptive to ideas that are at odds with our own.

When I started out as a researcher, I was very directed – I was on a single path. But these days a lot of my work is inspired by thoughts that students have when they come to me. A nice thing about having tenure is that you

can explore different areas a little more freely. You get a larger perspective.

I never met Bill Farmer, so I don't know exactly what he intended by the sculpture. Maybe it says something about the process of learning and the role that formal education plays. I certainly learned a lot at that bookstore.

One of the things I think about when I see that sculpture is the role formal and informal educational institutions play in people's lives. That bookstore created an orientation toward learning that I've carried throughout my life. It serves as a reminder of where I came from. I think that's important to hold on to.

– Told to Dave Gilson





PEER-TO-PEER

How Candidates from Nontraditional Backgrounds Can Break Through

First-generation and low-income (FLI) students come from a range of backgrounds, but share a common experience as they break barriers at elite institutions like Stanford GSB. Yet what happens after graduation? That's the question posed by members of the FLI Club, which connects first-gen and low-income GSB students. Club cofounder Madhu Yalamarthi, MBA '19, has thought a lot about this question. A first-generation college graduate from Andhra Pradesh, India, he is now a vice president at GGV Capital, a global VC firm with \$9.2 billion in assets under management. When he was recently hiring an analyst, he helped design a process that would actively encourage nontraditional candidates. Here's his advice to first-gen students getting ready for their next step:

Know yourself: Every FLI journey is different. Pursuing an audacious goal can take a huge toll since you need to put in extra effort, particularly if you have more family responsibilities than your peers. However, your personal rather than professional background might make you a better candidate than others. So it's important to start with taking stock of your positional and capability advantages and disadvantages.

Know the industry dynamics: Most GSBers are familiar with the phrase, "garbage in, garbage out" — getting good intel

is crucial. Early in my career, I learned about different paths by reading online or following people a few years ahead of me. But these sources become obsolete as we move upward. Information is privileged and shared in trusted circles only, especially info on key people, organizations, and their culture; success factors and pitfalls; and exit opportunities.

If we don't do this right, we may end up stuck in the wrong organizations and roles, with high switching costs. The GSB alumni network comes in very handy here. Tap into it generously and pay it forward.

Know the process to beat it: Most industries and companies have arrived at certain heuristics to make speedy but effective hiring decisions. For example, VC roles are hired through recruiters and networks. There are firms, such as ours, where we consciously built our process to be fair and inclusive — which is how I got in! But the wider industry is still evolving.

As a nontraditional candidate, understanding how the process works is key to beating it. For example, an authentic cold email can do wonders: "I don't fit the typical mold of what you look for, but I've got what it takes to do this job, here are the reasons why, and I'd love to have a chance." Those are the "underdog" candidates people first respond to — who wouldn't want a humble, hungry, and hustling colleague?



HOW CAN WE HELP?

If you have a business question you'd like answered, email us at stanfordbusiness@stanford.edu.

WELCOME



Welcoming our new senior director of alumni relations

RENEE HIRSCHBERG will join Stanford GSB in November as the new senior director of alumni relations. Most recently, she spent nearly four years as the director of alumni engagement at Tuck School of Business at Dartmouth College; before that she worked in alumni relations and student affairs at MIT Sloan School of Management.

RECOGNITION

Anne Beyer, professor of accounting, was awarded the PhD Faculty Distinguished Service Award.

Rebecca Lester, associate professor of accounting, was awarded the MBA Distinguished Teaching Award.

Haim Mendelson, professor of operations, information, and technology, was honored with a teaching award in his name: the INFORMS Information Systems Society Haim Mendelson Teaching Innovation Award.



MAKER

Harry's, Inc.

Andy Katz-Mayfield, MBA '11

IT WAS OCTOBER OF 2011. I went to a drug store to buy some replacement razor blades. There was a package that had a picture of a razor blade flying over the moon. I was like, I just want a product that works that is affordable and easy to access, and I know you're just trying to sell me on this futuristic imagery so you can charge me 20 bucks for four razor blades.

My business partner Jeff had helped start Warby Parker, which was founded out of a similar frustration of overpaying for prescription eyewear. We got excited about the idea of leveraging some of that approach toward shaving. We assumed that the "make a product" piece was going to be simple. As it turns out, making razor blades is very, very difficult. You can't control the quality if you don't control manufacturing.

We stumbled upon this razor blade manufacturer in Germany that had been around for nearly 100 years. The factory is in a town called Eisfeld — "Ice Field" — in a state called Thuringia, which is part of former East Germany. In some ways what enabled it to be an undiscovered diamond in the rough for so long is that it's not near a major city.

We wound up buying the factory 10 months after we launched. It's now a much bigger operation than when we bought it back in 2014. We've increased capacity output by five times. Over 600 people work there today.

There are guys who work on these machines who have been there for 30 or 40 years. They have so much accumulated experience that even if you had unlimited capital, and the most modern machinery in the world, you could never replicate what they're doing. I find it inspiring to watch them. They're the best in the world at what they do.

— Told to Dave Gilson



Andy Katz-Mayfield, MBA '11, is the cofounder and CEO of Harry's, Inc.

JACQUI OAKLEY (ILLUSTRATION)

Photo by Dan Simmons

CUTTING EDGE

We literally make billions of razor blades a year. Making a knife is the same process — you are grinding steel to get an edge. It starts with these massive coils of very specialized steel. Ours usually comes from Sweden. The hard part starts with a heating and cooling process, which takes the steel from being very malleable and bendable to being brittle so that you can break it and grind the edge. The temperatures and conditions must be just right as the steel's going through at a very high speed.

BLADE RUNNER

Grinding is the hardest part. You're talking about microns of difference — if it's too sharp, it will dull really quickly. If it's really strong, it won't be sharp enough. You have to get what we call a "Gothic arch": It looks like a church, where it's really sharp at the tip and strong at the base. Getting that consistently is complicated. The blades are still a continuous strip at that point, and you need to break them into smaller pieces. Every time you're touching the steel, there's risk of damaging the edge and getting a nick or burr in it. If you've ever shaved with something that's not a good blade, it pulls and it tugs and it's not smooth. People can tell the difference.



HANDLED WITH CARE

The only thing we don't make in Germany exclusively is the handle. While it is less complicated to manufacture, as much – if not more – industrial design and work and energy have gone into the handle as into the cartridge. We put a lot of time and effort into designing handles that are simple yet thoughtfully designed with an elevated aesthetic. Even though it's something that usually sits in your bathroom, you want it to look nice and work well at the same time.



METAL MACHINE MUSIC

The housing on the cartridge is created through injection molding, and then blades have to be assembled into the cartridge. That's done with high-speed, custom automation equipment. It's a little machine that's taking blades and placing them into cartridges – it's mesmerizing to watch.



MAKING THE CUT

Everything has to be perfectly aligned and assembled and measured. Along with the blades, machines also add a lubricating strip to the top of the cartridge. There are cameras that take pictures of every single cartridge and have all this laser measurement. If a blade is slightly out of place, the machine kicks it out.

SMOOTH OPERATORS

We actually have shaving panels – these are people who are experts in shaving, and they are trained to effectively know what all the dimensions of quality are. We have panels of people around the world who specialize in this.

Insights

BIG DATA

Marketing, Math, and Microseconds

The director of Stanford GSB's Computational Marketing Lab talks about the “horrendously complex” yet fascinating science behind online advertising research.

BY STEVE HAWK

As an expert in the algorithmic engines that drive online advertising, Harikesh Nair loves to explore that rarefied zone where deep scholastic research and real-world business needs overlap.

Which is one reason why, in 2017, he took a leave of absence from his tenured professorship at Stanford GSB and joined the engineering team at JD.com, one of China's largest e-commerce platforms. He spent two years shuttling between Silicon Valley and Beijing, overseeing a team of engineers working in the trenches to convert dense mathematical concepts into tangible online solutions.

When he returned to Stanford GSB in 2019, Nair helped found the school's

Computational Marketing Lab, which brings together faculty, students, and practitioners to identify best practices — both in terms of profitability and societal benefit — for online marketers.

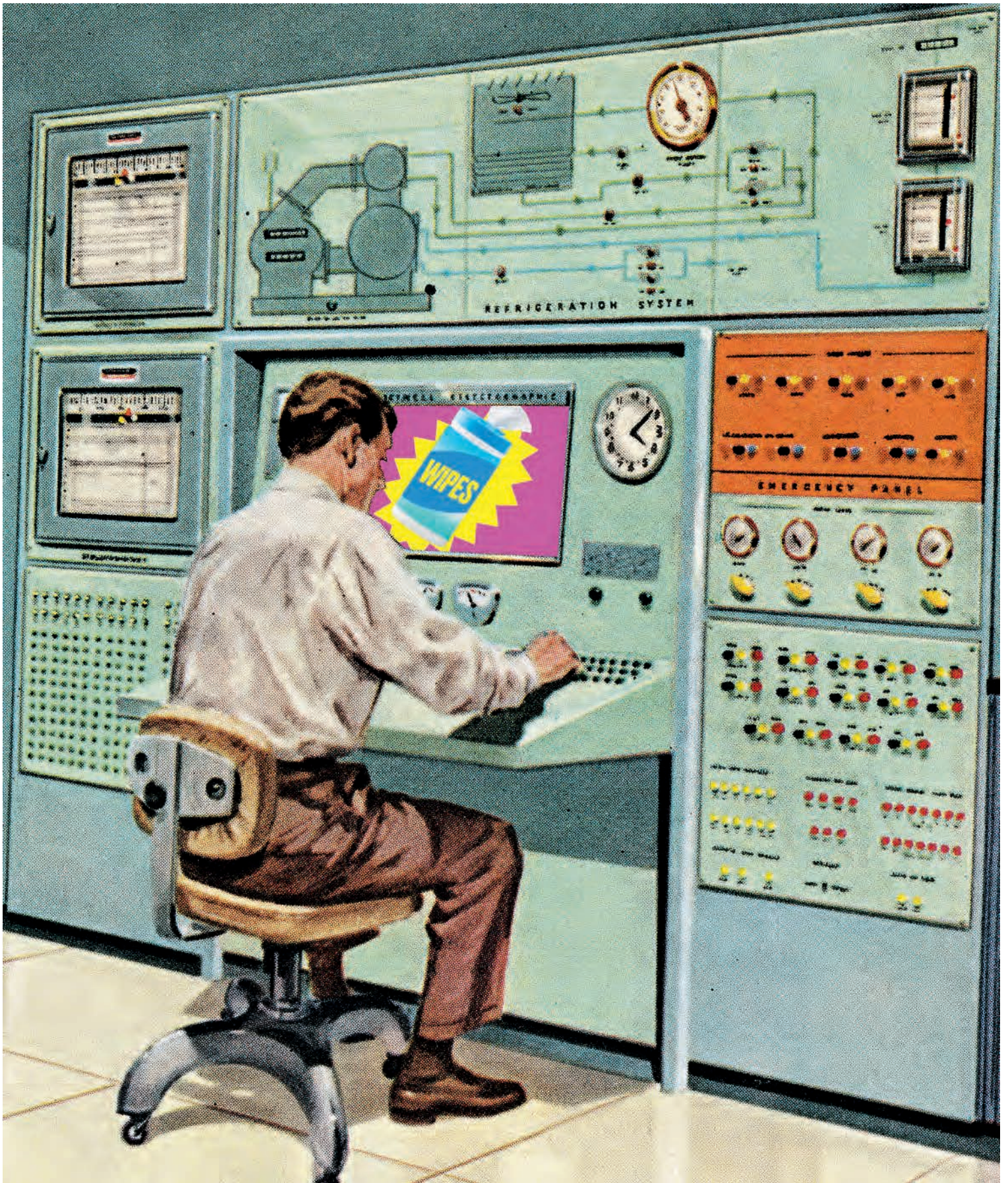
“It used to be that only scientists and academics and engineers were thinking about data science, but now it has become a C-level issue,” he says. “The CTO, the CMO, the CEO — everybody's talking about it. And if they're not, the board will ask about it.”

Stanford Business recently sat down with Nair to hear his thoughts about the current state of online advertising, the challenges of running experiments when real-time commerce is measured in millionths of a second, and what kinds of digital ads annoy him.



HARIKESH S. NAIR

is the Jonathan B. Lovelace Professor of Marketing at Stanford GSB.



Illustrations by Alvaro Dominguez

Why exactly did you take a leave of absence to work at JD.com?

Since I received my PhD in 2005, the practice of marketing in industry has become very computational. It's quickly on its way to becoming almost entirely a data-driven field. If you think about the companies where amazing marketing was originally invented — places like Clorox and other packaged brands — that's no longer the case. These days, all of the significant innovations in marketing and advertising and pricing are coming out of tech companies like Google and Facebook and Amazon. That was a trend I wanted to be part of.

Why JD.com?

I'm interested in retail and e-commerce, and in that world the gravity has shifted to Asia. Silicon Valley is still an innovation hub, but the big growth in online retail is happening in Asia. The middle class there is expanding, so people are making more choices based on the quality, or perceived quality, of goods. It's aspirational consumption. At some point I got connected to some senior folks from JD, and we talked about research and collaboration. There was an opportunity to spend some time with them and dive much deeper. So I thought, "Hey, this is a good opportunity: tech and Asia."

Aside from the different sizes of the markets — billions of potential customers in Asia vs. hundreds of millions in the U.S. — what makes online marketing in Asia different from here?

In the U.S., we're still a desktop nation. People still use Chrome or Safari on their laptops or home computers to shop at Amazon.com. In Asia, and especially in China, very few people use that stuff anymore. Everything's done through the mobile phone; 80% of shopping traffic comes through mobile apps, and a lot of consumers are in the generation that skipped laptops entirely and went directly to mobile phones. That changes how commerce works.

How so?

It's all about discoverability. With mobile apps, there's limited real estate: Nobody browses beyond the first three pages. If you have 8 listings per page, that's 24 products. So you have to surface 24 items out of 300 million possible product options, and you have to personalize the rankings by finding a good match between the user's needs and what's available. All of that has to be done really fast, within 200 microseconds [0.0002 seconds], and it has to be executed flawlessly. It's a horrendously complex science problem.

How do consumers' demographic characteristics weigh into that problem?

Actually, age and gender and things like that are not that informative. What they bought recently and what they searched for is what matters.

Beyond the overwhelming use of mobile in China, are there other major differences between Chinese and American consumers in the way they interact with e-commerce sites?

In China, the social aspect of consumption is a major factor. Their society is more communal than ours, so consumption is more embedded in their social networks. Rather than go to a site and search for something and then click and buy and leave, which is typical American consumption behavior, people in China share products on each other's social feeds, and by doing so they can often get a price reduction. It is also a value-conscious society.

Another important difference is that the U.S. has three big companies — Facebook, Amazon, and Google — that don't interact. I think of them as walled gardens. Facebook is a social platform with lots of advertising but very little in the way of transactions. Amazon is where the commerce happens, but it doesn't have much of an ad business — although that's changing. And Google is where search occurs, but it doesn't have much of a transaction or social business. But in China, you have Tencent, which does all three: search and social and commerce. It's well merged. Same with Alibaba. They both have their own ecosystems. And within each ecosystem, it's all seamlessly integrated, so you flow smoothly from the social interaction to the search to the transaction to the payment. Consumers respond well to that.

Given that marketing is almost entirely data-driven these days, is there any art to it anymore?

I don't think the art has gone away, but it has shifted. A good manager needs to understand how to leverage algorithms and also understand what the data can do and cannot do. They need to know when to base a decision on the data and when to base it on their experience: What human capital is required to convert the data into something actionable?

We recently ran a video about your work in which you said, "Just because I bought something after I see an ad for it doesn't mean the ad caused me to buy it." Can you talk more about that?

That issue is a huge one and it's very, very complicated in advertising markets. The number one problem facing any brand that's spending money on ads is measurability: They want to know not just how many people saw their ad, but also whether they're getting a return in terms of sales. Proving that is very hard, because I can't just count up the people who saw an ad and then bought



WHAT REALLY CLICKS

Watch Harikesh Nair talk about his research into how brands can use social media to engage with consumers in a more meaningful, measurable way: stanford.io/nair.

the product, because maybe they were already planning to buy it. Fifteen years ago, a platform probably could have used that kind of flawed analytics, but brands aren't buying that anymore. They want proof that their ads are causing incremental increases in sales. Incrementality is the number one issue in the ad business right now — proving that properly.

How do you prove it?

Typically by running experiments at scale. The experimentation is very complex, because it's impossible to design and run a separate experiment every time an individual advertiser wants that measurement. When I was at JD, for instance, we had hundreds of thousands of advertisers. Most ads are sold by auction, so you have to encode the experiments into the auctions. In order to show somebody an ad, you've got to win the auction, and if you want to make sure certain people don't see the ad — for the sake of the experiment — you have to have cases where the advertiser purposefully loses the auction. Both circumstances have economic consequences, because losing the auction may cost you the sale and winning the auction requires you to pay a bid.

Also, the experiment cannot slow down the system; you can't have latency. So you've got to build out the infrastructure, get the statistics encoded, and then make it an external-facing, self-serve mechanism that the advertiser can turn

on and off. All of this has to be running in the background — the complexity has to be hidden. And then the results have to be communicated through a simple interface visualized into meaningful insights for people who don't really know that much about statistics.

What lessons that you've learned have blown up some of the assumptions that marketers used to have?

I think most researchers who work in this space would agree that, historically, the effect of advertising has been oversold — that the true causal effects of ads are actually much smaller than what some in the industry have claimed. Another thing we've learned is that certain kinds of ads can be very effective. For example, search advertising — the ads that appear in response to your online searches — is actually quite powerful. Data has shown that consumers actually like that. When we take that away, in properly measured experiments, we find that users stop coming to the platform. They actually prefer platforms that have those informative ads. My colleague Navdeep Sahni here at Stanford GSB has run some really beautiful experiments showing that.

One last question: How has your research changed the way that you personally respond to ads?

I'm annoyed by annoying ads now, because I know there's bad science behind them. I'm OK with data being collected and things like that, but my tolerance for lack of transparency is very low. And of course, whenever an ad appears in my feed now, I always wonder, "What's the auction system that caused this result? What's the algorithm behind it?" That's the fun stuff. [GSB](#)

“I think most researchers who work in this space would agree that, historically, the effect of advertising has been oversold.”



PRIVACY

A New Way to Crack Genetic Mysteries – While Protecting Your DNA Data

Researchers propose a method to balance the power of genomic searches with privacy concerns.

BY DAVE GILSON



KUANG XU

is an associate professor of operations, information, and technology at Stanford GSB.



MINE SU ERTURK

is a PhD student at Stanford GSB.

In just a few years, public DNA databases have emerged as powerful tools for solving genetic mysteries. They've been used to locate long-lost relatives and help adopted children find their biological parents. They're perhaps best known for helping cops solve cold cases, from IDing anonymous bodies to sniffing out criminal suspects. In the most famous example, the Golden State Killer was identified from a nearly 40-year-old DNA sample that linked him to the genetic profiles of his distant cousins, which had been posted on the website GEDmatch.

While these kinds of breakthroughs have proved the promise of investigative genetic genealogy, they've also raised serious privacy concerns — not just for people who have shared their genomic

profiles, but for millions of people who have never even taken a DNA test.

GEDmatch and MyHeritage, two of the most popular DNA sites, currently have 1.4 million and 1.3 million members, respectively. However, the number of people whose identities might be traced through these databases is much larger.

“In theory, you could detect genetic relatedness between two genomes if they share ancestors within the past five generations,” explains Mine Su Erturk, a PhD student in operations, information, and technology at Stanford GSB. In other words, your DNA links you to hundreds of distant cousins who share a small percentage of their genetic material with you but are otherwise perfect strangers. And, Erturk points out, “this also goes the other way for the next five generations: It

affects your children and grandchildren who might not even be alive yet.”

A 2018 study in *Science* found that 60% of Americans with European ancestry could be traced through data shared on MyHeritage. If just 2% of U.S. adults uploaded their DNA to a genetic database, that information could be used to reconstruct the identities of 90% of the total population.

Yet according to Erturk, genetic investigation doesn't have to unnecessarily expose people's sensitive data to find genealogical needles in the haystack. In a new preprint, Erturk and her advisor, Associate Professor Kuang Xu, detail a new model for genomic searching that's designed to minimize its privacy risks while maintaining its effectiveness.

When Erturk first became familiar with genetic databases a few years ago, “there was some discussion in the academic community about the privacy aspect of this, but no one was analyzing the problem from an operational perspective,” she says. She and Xu believe their work breaks new ground in an area whose ethical and legal dimensions are being vigorously debated.

By presenting a rigorous model for addressing genetic search's privacy flaws, they hope more discussion and policy changes will follow. “The current system does not explicitly take privacy risks into account,” Xu says. “Our first goal is to raise awareness of the importance of tracking privacy exposures. But we also want to propose concrete steps toward a solution.”

The Gene Genie

Currently, access to public DNA databases is virtually unrestricted and all but unregulated. Erturk and Xu say genetic data could be collected by pharmaceutical companies seeking to market drugs or life insurance companies screening customers for inherited conditions. (People who share their genetic code also may be vulnerable to data breaches and attacks. Last year, one million GEDmatch profiles were

hacked; some of the stolen data may have been used to target MyHeritage users in phishing attacks.)

To protect DNA database users and their family networks, Erturk and Xu propose a new way of searching for genetic matches. Currently, genetic searches are “static,” meaning that searchers can compare a DNA sample with any record in a database until they find a match. Erturk and Xu have developed a “sequential” model where searchers would not have unlimited access to a database. Instead, they would look for matches in small, selected batches of data, using publicly available genealogical records, such as birth and marriage certificates, to target and refine their search.

Erturk explains how this approach would work while looking for a DNA match on a site like GEDmatch: “I'll first look at genealogical records to identify a couple of people who might be related or who might give me some leads. Then I'll only look at their genomes instead of looking at the entire database. If I can locate my person relative to these genomes, I'm done — and I only exposed a couple of people instead of the entire database. If I don't succeed, I go back to my genealogical records, try to come up with another list of, say, 10 people, and do this process repeatedly, in a sequence.”

By limiting the searcher's access to sensitive data, this approach exposes the smallest number of people's data while expanding the search until it hits its target. Erturk and Xu say the mathematical framework detailed in their paper can be controlled precisely and “vastly outperforms” static search in optimizing the trade-off between search time and privacy.

A Royal Problem

When she was ready to test this model's effectiveness on real-world data, Erturk faced a particular challenge. She wanted to use an actual genealogical network, but did not want to infringe on anyone's privacy. Her solution: use the family

tree of more than 2,500 interconnected members of European royal families. “It's public and everyone knows it, so there wouldn't be any privacy concerns,” she says.

Erturk's work builds on the literature of search problems, which often involve scenarios where searchers are looking for hidden targets like submarines or terrorists. To their knowledge, Erturk and Xu's genetic search model is the first time a privacy dimension has been factored into this type of problem.

While their analysis is based on advanced mathematics, its basic concept will be familiar to anyone who's watched a police procedural like *The Wire*. Xu compares it to phone tapping: If the cops want to listen to a suspect's calls, it's not practical (or legal) to listen in on every phone line in town. Instead, they must target their search — and get a judge to sign a warrant — before they can collect evidence.

Xu thinks that criminal investigators looking for DNA matches in public databases should operate under similar constraints that prevent them from sifting through huge amounts of personal data. (So far, only Montana and Maryland have enacted laws regulating the use of genetic genealogy by law enforcement agencies.)

While Erturk and Xu do not make explicit policy suggestions in their paper, they see their model as a first step toward answering the many logistical and legal questions about how our most personal data is stored and accessed. And the growth of personal DNA collection may require us to adopt a different conception of privacy than we're used to.

“Because we are all related, society has to think about genetic privacy as a collective responsibility,” Xu says. “You have to protect your mother, your father, your son, your daughter, and your cousins.” **GSB**

“Because we are all related, society has to think about genetic privacy as a collective responsibility.”

ORGANIZATIONAL BEHAVIOR

Workplace Equality for All! (Unless They're Old)

Prejudice against older coworkers persists even among those who openly oppose other forms of bias.

BY MARTIN J. SMITH

Despite recent advances in workplace diversity and inclusion, a recent study finds that people who adamantly oppose racism and sexism are not so eager to eliminate ageism at work. “I wouldn’t go as far as saying they discriminate,” says Ashley Martin, an assistant professor of organizational behavior at Stanford GSB. “But even fair-minded people seem to prioritize race and gender over age.”

That counterintuitive conclusion appears in a study that Martin recently coauthored with Michael S. North of New York University.

The primary rub among what Martin calls “egalitarian” employees is the concept of succession, which apparently complicates workplace dynamics.

Opportunity Blocks

It works like this: With older workers increasingly remaining in their jobs past the once-traditional retirement age of 65 — whether because of a desire to keep

working or a need for income — ambitious younger employees trying to move up in an organization sometimes see older workers as obstacles to advancement, or “opportunity blockers.”

“Succession uniquely targets older individuals,” the researchers write, “and differs from other forms of prejudice in which these ‘natural progression’ expectations are not as clear.”

Because that can lead to resentment among younger workers, older workers can face prejudice even among those who support other disadvantaged groups. “Thus, egalitarian advocates — or those who are motivated to create equal opportunity for all groups — might actively (and counterintuitively) discriminate against older adults,” Martin and North write.

Retiring Old Biases

In one experiment, they measured attitudes about ageism by having their subjects read a series of opinionated comments about older workers. “The older generation has an unfair amount of political power compared with younger people,” read one. Another read, “Most older workers don’t know when it’s time to make way for the younger generation.” The subjects were asked to rank their response to those comments on a scale from “disagree strongly” to “agree strongly.”

The results, the researchers write, reveal “a uniquely challenging prejudice.” Ageism turned out to be a difficult bias to neutralize, they found, because even fervent anti-prejudice advocates found ways to legitimize it.

Martin cites three specific reasons why this is important now. Those reasons involve the changing nature of the workforce as well as the changing nature of jobs.

People are living longer, and therefore retiring later. “Also, with our current uncertain economic climate, older people are actually forced to work longer,” she says. “So you have the



ASHLEY MARTIN

is an assistant professor of organizational behavior at Stanford GSB.

biggest population in history staying in the workforce longer.”

Ageism differs from racism and sexism in that the latter two involve groups that are seen to be historically disadvantaged and who are finally — and rightfully — being allowed into positions of power, Martin says.

Young and Restless

But with ageism, even fair-minded younger workers can get impatient if they feel it's their time to shine and their elders seem reluctant to relinquish the spotlight.

“Younger people are trying to push older people out of positions of power before they're ready to go,” she says. “That happens quite often, and we see it embedded in the structure of society in ways that are really interesting and quite problematic.”

For example, in what other social category does the calendar dictate when a career is over? “Forced retirement is a pretty explicit form of ageism,” Martin says. “We've internalized it as natural.”

She adds, however, that younger workers tend to be more empathetic when they realize many older workers can't afford to retire.

Will the day ever come when anti-ageism activists unify in the same way Black Lives Matter and MeToo activists have done? Martin has her doubts.

“I want to be hopeful and think there will be advocacy around aging issues,” she says. “But because other forms of prejudice are considered to be more detrimental than ageism, I'm not sure they'll coalesce.” **GSB**



“Forced retirement is a pretty explicit form of ageism. We’ve internalized it as natural.”

ECONOMICS

Why a Plan to Encourage Search-Engine Competition Failed

Auctions intended to level the playing field for Google's rivals have not reduced the search giant's dominance.

BY SACHIN WAIKAR

Quick, name a search engine. Did you say Google? The internet giant's name is synonymous with looking for stuff online, but its dominance has drawn scrutiny from regulators who have accused the company of unfairly shutting out its competitors.

When the European Commission came after Google for preinstalling its search engine on devices running its popular Android operating system, the company implemented what seemed like a simple fix: Give users more choices. Now, when consumers in 31 European countries set up a new Android phone, they're asked to pick one of four search engines, including Google.

That solution may have satisfied European antitrust regulators. But, as Stanford GSB economics professor Michael Ostrovsky concludes in a recent working paper, it didn't solve the problem it was meant to fix.

Since 2020, Google has auctioned off the coveted spots on the list of search engines Android consumers may select as their default. As an expert on online auctions, Ostrovsky was intrigued to see this straightforward approach to settling an antitrust issue. But as the results of the first auctions came in, he couldn't understand why obscure search engines—ever heard of Info.com, PrivacyWall, or Givero?—were popping up on Android

screens while more popular alternatives were left off.

In his investigation, Ostrovsky found that a simple feature of the bidding process explained why unpopular search providers were winning Google's auctions—and how that helped the company maintain its foothold as the world's most popular search provider.

Bundled Up

Google's auctions are a response to a common situation in the tech industry: when the maker of a dominant technology platform also offers a product that operates on that platform. "If there's a competing product—even a superior product—and users want to access that through the platform, the platform provider often ends up prioritizing their own product, whether deliberately or unintentionally," Ostrovsky explains.

Bundling products together is usually legal, but the practice of "tying"—requiring consumers to purchase one product in order to buy another—can violate antitrust laws. In 1998, in the highest-profile case involving these issues, the Department of Justice accused Microsoft of squeezing out its "browser war" rivals like Netscape by packaging Internet Explorer with the Windows operating system. (While a federal judge ruled that Microsoft should be broken up, the

decision was overturned and the case was settled in 2004.)

For a more current example of bundling, you may not have to look further than your smartphone or tablet. Apple, for example, preinstalls dozens of apps such as Safari, iTunes, and iCloud on its iPhones and iPads. "It's everywhere," Ostrovsky says. "Apple, Android, Windows. They all bundle."

That reality leads to an important question: Are there ways to level the playing field for competing products without drastic solutions like those proposed by the judge in the browser war case?

Enter the choice screen—a menu that lets users choose between the manufacturer's app and its competitors' offerings. While negotiating with the U.S. government in the '90s, Microsoft offered to adopt choice screens as a way to make it easier for consumers to consider and install other browsers. That idea didn't take off here, but it was accepted in Europe. Between 2010 and 2014, Windows buyers in the European Union were offered a choice of browsers that included Microsoft's Internet Explorer and several alternatives.

In 2018, the European Commission fined Google a record \$5 billion for tying its search engine and its Chrome browser to the Android operating system. The company subsequently agreed to use choice screens to offer Android users more search options.

"But that raised the question of who gets to decide the search engines on the choice screen," Ostrovsky says. After all, a lot of money was riding on securing a place on that list: The more users a search engine gets, the greater its revenue from advertising. To allocate those spots (and to compensate itself for offering this prime real estate to its competitors), Google set up a system of quarterly country-by-country auctions where the three highest bidders appeared on choice screens alongside Google's own search engine.

Ostrovsky was intrigued by this approach, as he believes such auctions



MICHAEL OSTROVSKY

is the Fred H. Merrill Professor of Economics at Stanford GSB.

represent a scalpel-like alternative to the hatchet of antitrust penalties like full-on breakups. “The regulatory toolbox doesn’t have that many things in it. And the tools we do have tend to be heavy-handed, such as ‘Let’s break Facebook into three parts,’ which companies will of course fight tooth and nail,” he says. “This is a more lightweight and elegant solution than breaking a company up.”

But he soon found the choice-screen solution’s results were surprising.

Searching for Answers

“When Google announced the results of the choice-screen auctions, I found them very weird,” Ostrovsky says.

While some of the winners were well-known providers like Bing and DuckDuckGo, others were ones he — and the European acquaintances he spoke with — had never heard of, such as the aforementioned Info.com and PrivacyWall, which won the majority of the auctions.

To figure out what had happened, Ostrovsky did “a bit of forensic research” to model how the auctions function. He found that a seemingly minor feature of the bidding process has a significant effect on who wins: Rather than being asked to bid for each appearance on the Android choice screen, search engines bid on what they’ll pay Google each time someone installs their app.

That gives less popular — but better monetizing — search engines an incentive to place high bids, even though fewer users will ultimately pick them. As Ostrovsky explains, “Say search engines A and B are bidding, and search engine A monetizes users really aggressively so they’re willing to pay \$10 per install to gain those users and related revenue. Search engine B may be much more popular, but may not monetize users as well because they emphasize privacy or donate a fraction of their ad revenue to charity, for example. So B may only bid \$5 per install. And search engine A will win the auction.”



As Ostrovsky’s model predicted, many search engines that were much less likely to be installed wound up winning the Android auctions. By the third round of the auctions, popular search engines like DuckDuckGo and Ecosia were almost completely absent from the lists of winners. Meanwhile, Info.com won choice-screen spots in all 31 countries in all three rounds, despite being installed fewer than 100,000 times worldwide. (By comparison, Google has more than 5 billion installs.) The end result: The Android choice screens don’t offer much of a real choice, so the vast majority of users are likely to pick Google, making the remedy largely ineffective.

Competing Interests

The solution, Ostrovsky says, is not to throw out such auctions altogether but to tweak them so they’re more efficient.

For example, Google could simply auction off spots on its choice screens on a per-appearance basis, so that search engines pay for the right to appear on the choice screen, which would make the auctions more attractive to the popular search engines that users are more likely to install.

Alternatively, Ostrovsky proposes that the design could take a page from the auctions search engines already use to sell ads. “Originally, in ad auctions, advertisers used to bid for spots in ad rankings on a per-click basis, but search engines realized advertisers willing to pay a lot per click may get fewer clicks,

which meant lower overall revenue,” he explains. “So they moved to using both what advertisers would pay per click and some measure of the expected number of clicks to decide ad rankings.”

However, Ostrovsky notes that the Android scenario is unlike the ad sales scenario in that Google benefits when its more serious competitors fail to win places on the choice screen. “In this case, the auctioneer is OK with having obscure search engines win, because the auctioneer’s own search engine is chosen more often as a result,” he says. “That’s not to say Google is deliberately doing this — just as with ad auctions, it will take time to converge to the best design, and one shouldn’t expect it right away on the first attempt. In fact, Google and the European authorities should be commended for trying new and creative solutions. But it’s important to keep in mind that the incentives for these auctions are not fully aligned.”

In the end, Ostrovsky thinks the best solution is somewhere between the extremes of locking in one default option and overwhelming users with choice screens for every possible option. “Forcing auctions for every item would make buying a phone the most painful thing ever — a choice screen for keyboards, a choice screen for weather apps, and so on,” he says. “But if platforms are going to run such auctions for the most important choices, they should design and run effective ones that actually do what they’re intended to do.” **GSB**

“When Google announced the results of the choice-screen auctions, I found them very weird.”

ACCOUNTING

The Trickle-Down Tragedy of Corporate Fraud

When companies collapse because of C-suite scandals, workers at the bottom suffer most — especially when it comes to future earnings.

BY DYLAN WALSH

In June 2002, the telecommunications firm WorldCom confessed to a \$4 billion accounting scandal. One month later, the company declared bankruptcy. As is routine after such public implosions, the spotlight fell on top management. The CFO received a five-year prison sentence, the CEO a 25-year sentence. The scandal became a case study in executive malfeasance.

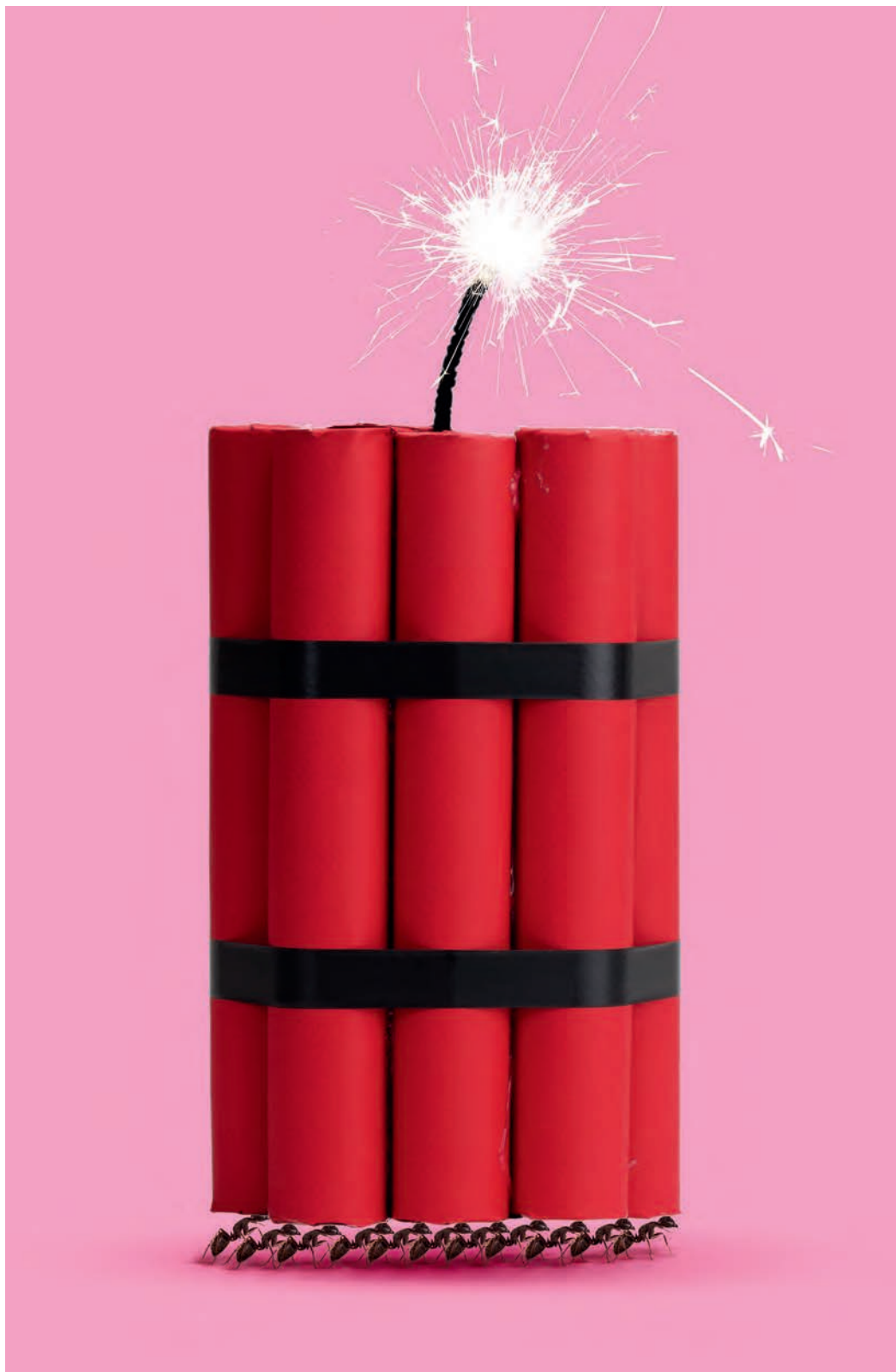
But for Jungho Choi, an assistant professor of accounting at Stanford GSB, a different narrative remained unvoiced: What about the nearly 30,000 employees who lost their jobs — including 17,000 in one day? He wondered the same thing about workers at Enron and Waste Management, Xerox and Tyco.



JUNGHO CHOI
is an assistant professor of accounting at Stanford GSB.



BRANDON GIPPER
is associate professor of accounting at Stanford GSB.



“Mid-level workers and below make up the majority of any firm, and their lives are completely upended just because they happen to work for a fraudulent company,” Choi says. “Workers usually suffer more than management, but they’re hard to trace, and this made me want to understand what happens to them.”

Using the U.S. Census Bureau’s confidential Longitudinal Employer-Household Dynamics dataset, which gathers information on where individuals are employed along with their wages and basic demographics, Choi tracked 362,000 people employed across about 150 firms involved in scandals between 1989 and 2008. In parallel to this group, he tracked the trajectory of a control group of employees who worked at corresponding companies that did not experience scandal.

Paying the Price

With his colleague Brandon Gipper, an associate professor of accounting at Stanford GSB, Choi found that employees who’d worked at firms involved in fraud lost an average of 50% of their cumulative earnings over the subsequent decade compared with their peers at similar firms.

To contextualize the scale of this gap, the researchers point out that estimated wage losses in the U.S. caused by the Clean Air Act average about 20%, while losses caused by competition with China are anywhere from 20% to 40%.

By parsing the data more carefully, the researchers found a stark story of inequity within the troubled firms themselves. When employees of fraudulent companies were divided into two groups — the top 10% and the bottom 90% of earners — workers with lower salaries shouldered the brunt of harms.

“Workers of a fraudulent firm are likely to leave their county, and even industry, when the fraud is discovered,

and those who earn more — the skilled and high-paid workers — are much more mobile,” Choi says. “So lower-paid workers seem to bear the major costs of fraud and suffer more.”

Caught by Surprise

This inequity is compounded by a novel pattern in which fraudulent firms, during the period before they’re exposed, often try to maintain a front of profitability by expanding their workforce. They do this by quietly shedding more experienced and highly paid employees and replacing them with a greater number of inexperienced and low-paid workers. Also, this process typically takes place concealed from view — which is one thing that often differentiates fraud from bankruptcy.

“If you imagine a case like JCPenney, there is a general understanding that the company is ailing, and so workers or stakeholders can, to some extent, make an employment decision based on the right information,” Choi says. “Fraud cases are completely different. Most employees have no idea of the risks until the very day they lose their jobs and are forced into a difficult labor market.”

The paper, says Choi, has two key implications for policymakers. On the enforcement side, he suggests that the Securities and Exchange Commission, which tends to have its offices in major cities, should pay more attention to companies that are in distant labor markets.

There is a two-step rationale for this.

First, prior research has demonstrated that detection rates of fraud are higher in areas that are physically close to SEC offices.

Second, when fraudulent companies that are far from SEC offices, particularly in rural markets, collapse, they leave low-wage workers stranded in an especially hostile labor market, as there are rarely companies in the same sector ready to absorb the layoffs. (WorldCom, for example, was headquartered in Clinton, Mississippi — not a telecom hotbed.) Workers who live in major cities are more likely to land on their feet.

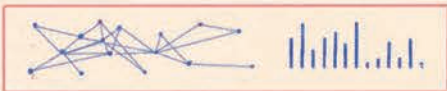
Local Impacts

More broadly, Choi says this research brings new perspective to the scope of the problem of fraud in the labor force. He returns to the fact that competition with China sheds a smaller share of affected workers’ cumulative wages, whereas fraud may cost them up to half of their potential earnings.

“Right now, there is huge debate over trade competition with China, its effects on workers in the U.S., and how we need to revamp the manufacturing industry to compete,” Choi says. In that light, a loss of half of cumulative wages among workers affected by fraudulent employers takes on new potency.

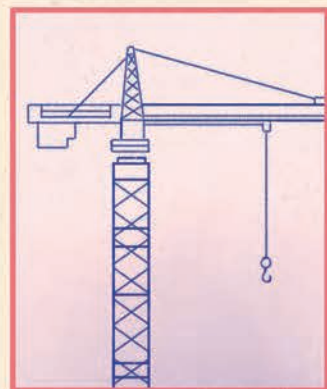
“Fraud admittedly affects a smaller number of people than competition with China, but there are good arguments that we can reduce fraud,” he says. “And this 50% figure makes it clear how important that reduction would be for workers.” **GSB**

“Most employees have no idea of the risks until the very day they lose their jobs and are forced into a difficult labor market.”

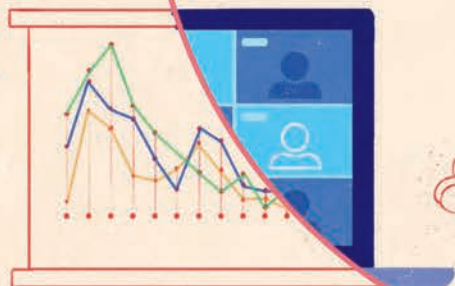


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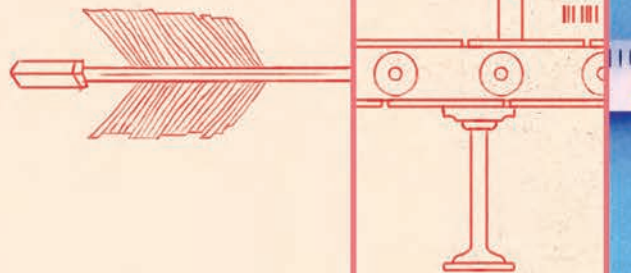
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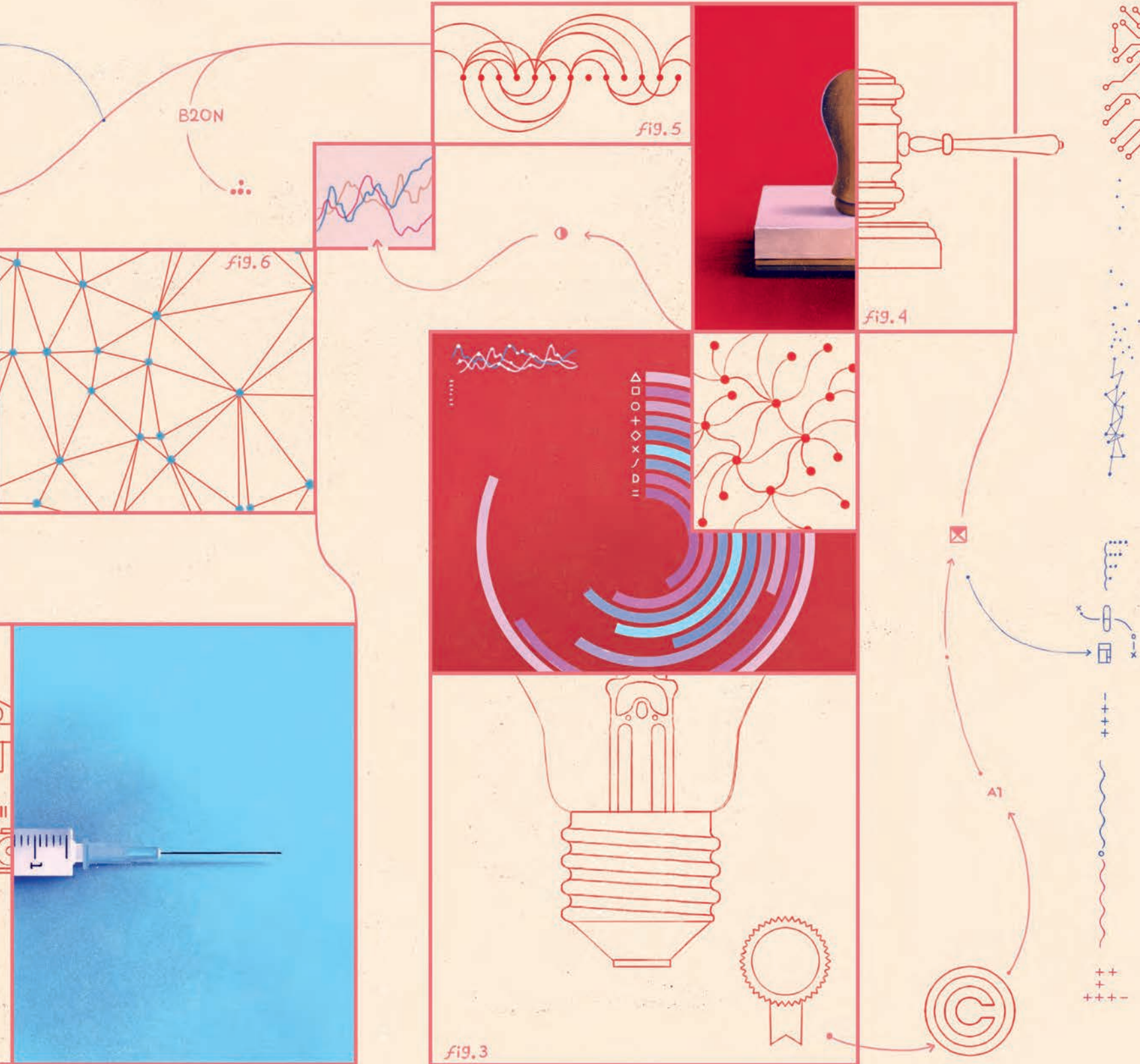
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BY DAVE GILSON

ILLUSTRATIONS BY DANIEL LIÉVANO

Nearly two years into the global pandemic, Stanford GSB faculty are helping us understand what's changed and what's ahead.

ect. Rethink.



If COVID-19 had a motto, it might borrow Stanford GSB's: In less than two years, the virus has changed our lives, our organizations, and our world. Amid the human toll, economic disruption, and ongoing uncertainty, the pandemic has created opportunities to respond, reflect, and rethink the way we do things.

As more Americans headed back to classrooms and offices and a vaccine-induced lull gave way to the Delta variant, we asked GSB faculty members to share how they've been engaging with this unique and urgent moment. From the mechanics and ethics of vaccine distribution to imagining the post-pandemic workplace and economy, here are some of the ideas they're exploring and the lessons they've learned.



RISK AND REWARD

Designing Markets for Faster, Better Vaccines

When COVID hit, it was immediately clear that vaccines would be essential not only to save lives but to fully restart the global economy. Despite the obvious humanitarian and financial benefits, it wasn't clear how governments and nongovernmental organizations should structure investments in vaccine development and procurement. To help tackle this problem, Susan Athey and a group of economists and statisticians founded Accelerating Health Technologies, which has provided guidance to stakeholders and helped quantify the costs and benefits of an unprecedented expansion of vaccine capacity.

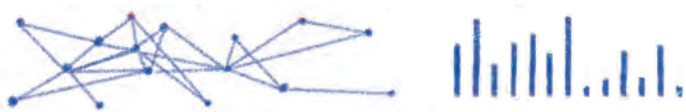
What were some of the economic challenges of getting COVID vaccines produced as quickly as possible?

A two-year time frame for getting vaccines out to the public at scale was so different than past experience that even the most knowledgeable experts in the world were faced with risks that were hard to quantify. The success probabilities for each particular vaccine candidate were relatively low. If you think about it from the perspective of a vaccine manufacturer, everything has to go right for you to recover your investment.

In the past, emergency vaccines had been developed, but government funding was pulled after the epidemics waned. So it's pretty amazing, actually, that in the face of all of those challenges that several companies succeeded on a fast time frame. We got lucky — not just that we found something that worked, but that for a couple of these companies, the first darts hit the board, and that they managed to create vaccine capacity for entirely new technologies as quickly as they did.

What kinds of incentives and models have you and your colleagues proposed to speed up vaccine production?

Vaccines are different than a lot of other products because they are primarily purchased by governments or NGOs. There was an enormous gap between the social benefit of vaccines and what you might reasonably pay to a manufacturer. That's where the government can come in and say, "OK, we'll bear the risk of upfront investment." We



\$12.5 trillion

Estimated global GDP loss in 2020–21

showed that it was more efficient to fund at-risk capacity construction directly than to try to incentivize companies by promising higher prices per dose later.

One of the most important things we showed was that even when taking into account the risk of failure, it was still worthwhile to invest in a huge amount of vaccine manufacturing capacity in advance of the resolution of uncertainty about which candidates would work and what the need would be. The expected benefits are like a thousand times bigger than the costs. We also advocated that the government think of it as a portfolio problem: You bet on 10 things, one of them pays off. The citizens will be happy as long as something works, and hopefully they won't be upset that you lost on these others. Because frankly, this is a case where you needed to get it done.

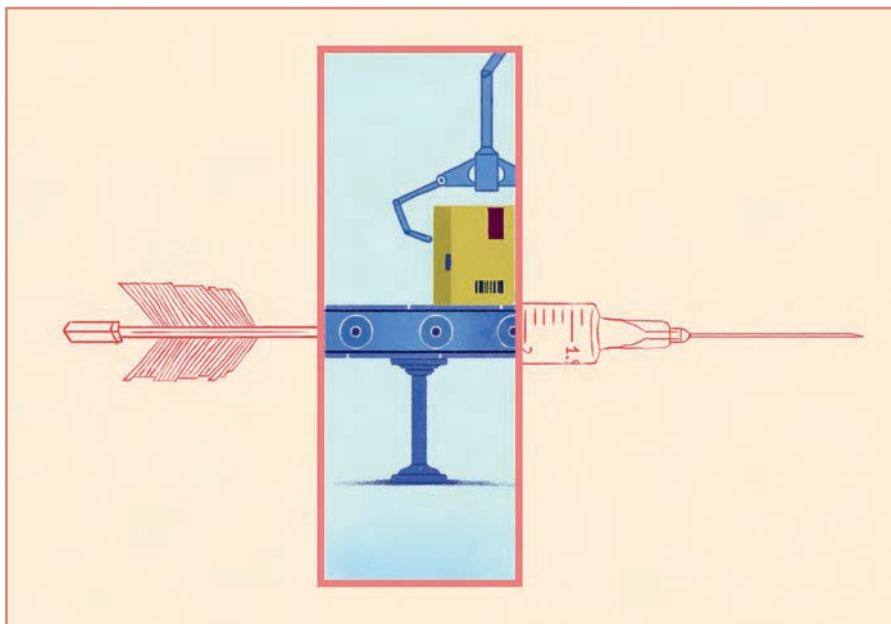
We were trying to reduce as much as possible the magnitude of the gap we faced in much of 2021, where you have things that work, but we still don't have enough to vaccinate the world, even the parts of the world that have the money to pay for it. Every day counts when people are dying, economies are operating below capacity, and new variants are potentially emerging.

To what extent was the approach advocated by Accelerating Health Technologies adopted?

We talked to everybody who would listen — dozens of governments as well as NGOs. The people we met with did get the idea, and the ones who were nimble moved quickly. I think the U.S. got this early. The impediments were not necessarily high-level understanding; they were political and bureaucratic, where key people in a country advocated the ideas but sometimes met obstacles in carrying the ideas through. The political decision-makers definitely worried too much about wasting money or only delivering after the pandemic was over, while they probably underappreciated how much their populations would benefit if they succeeded, or how difficult it would be to scale up quickly later.

In a recent paper, you wrote that with enough capacity, we could have vaccinated the whole world by this fall. What were the missed opportunities to scale up?

One thing we haven't touched on yet is the inefficiency in the science. Many vaccine trials had on the order of 30,000 people in them. Given the stakes, if you ran a trial that was much bigger and running simultaneously in multiple countries, you would learn much faster. In the



SUSAN ATHEY
is the Economics of
Technology Professor
at Stanford GSB.

time when we were vaccinating millions of people per day in the early days of the rollout, some of those people could have been in trials for spacing and dosing and so on. We could have followed more of the people closely, testing them regularly. We really missed an opportunity to learn all of those things. From the social perspective, there's a huge value to learning and continuing to optimize, and in every aspect of this pandemic, governments, especially the U.S., have underinvested in gathering information and using that to optimize our response.

Does the vaccine manufacturing capacity that's already online leave us better prepared for future pandemics?

New pandemics are going to come. Creating the overall capacity throughout the supply chain seems like a no-brainer. We should, in my view, create larger-scale capacity and keep it warm making flu vaccines or other kinds of vaccines. It's not that expensive. Then, if a pandemic comes along, you have capacity, you have supply chains, and you can repurpose them relatively quickly. We can keep them warm and serve the world, while insuring ourselves against the massive costs imposed by pandemics when they do arrive. ○

TRICIA SEIBOLD

\$17.4 trillion

Estimated global benefit of installing capacity to produce 3 billion vaccine courses annually

\$70 billion

Estimated cost of vaccinating the world's population

\$18 billion

Estimated spending on vaccine development by the U.S. government's Operation Warp Speed



HARD CHOICES

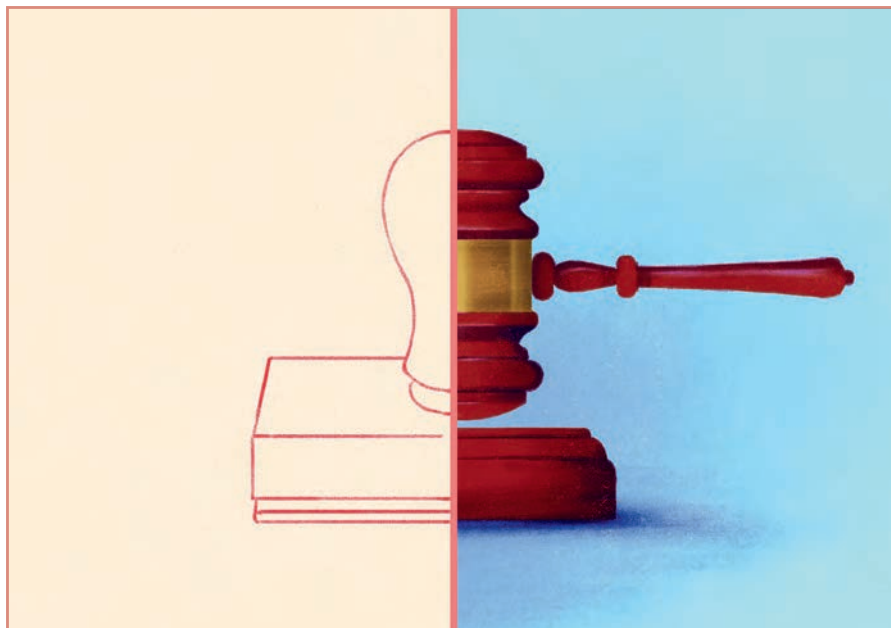
The Ethics of Global Vaccination

Vaccinating the world isn't just a practical challenge; it's an ethical one as well. How should vaccines be priced fairly? Who deserves to get shots first? Should drug makers be forced to share their intellectual property with poor countries? These are some of the questions explored in a new case study written by political economist Ken Shotts and casewriter Sheila Melvin. Shotts will teach the case to first-year GSB students this fall in *Leading with Values*, the core class he teaches along with colleagues Neil Malhotra and Greg Martin.

KEN SHOTTS: There's an analog to this in the AIDS drugs, which was a huge thing that blew up in pharma's face when they were pricing them at like \$10,000 a year and not sharing their intellectual property. They've handled it better this time around. They have a sense that if they claim to be mission-driven health care organizations, they can't do something that is too dissonant with that. And the companies are not making it up when they say these vaccines are really hard to produce. But I think the really interesting question is, Do you have an ethical responsibility to go help others produce them?

From a public policy perspective, once you've got the IP, you want it to be shared with everyone instantly. But the right solution can't be that people make no money off of this. From a consequentialist or utilitarian perspective, finding the right balance is a really hard problem.

One of the things we hammer home in our class is that everyone's perception is always driven by self-serving biases. So when the pharma companies say it is crucial that we have strong patent protection so that we get more life-saving drugs and vaccines going forward, I think they mean it. But the critics say, "You've got to share this IP with us now — because if not now, then when?" The pandemic has emphasized that there are real trade-offs and a lot of really difficult choices. ○



KEN SHOTTS is the David S. and Ann M. Barlow Professor of Political Economy at Stanford GSB.

FINDINGS

Swaying the Unvaccinated with a Dose of Partisanship

Earlier this year, Robb Willer conducted an experiment to see how vaccine-hesitant Americans would respond to pro-vaccination messages from partisan sources. Willer and his coauthors found that Republicans were amenable to persuasion by prominent GOP politicians — but that pro-vax messages from President Joe Biden and other Democrats failed to move them. "If you are segmenting the population to target people with persuasive messages that fit their concerns and identities — which you should do whenever you can — present Democrats with Democrats, and Republicans with Republicans," Willer says. — *Alexander Gelfand*

ROBB WILLER is professor of organizational behavior (by courtesy) at Stanford GSB.

NANCY ROTHSTEIN



\$3.5 billion

Pfizer's revenue from its COVID vaccine in Q1 2021

1 billion

Doses of vaccine pledged by G7 countries to low-income countries by end of 2022

2.2%

Percentage of people in low-income countries who had received one vaccine dose by October 2021

NEW TOOLS

Drinking from the Firehose of Innovation

C OVID-19, says Steve Davis, has provided “a petri dish for the real-time study of social innovation.” As the co-chair of the World Health Organization’s Digital Health Technical Advisory Group, he’s witnessed a surge of digital tools for testing and tracing, an experience he likens to “drinking from a firehose of innovation.” Metaphors aside, the challenge, he says, is to build a better system for making sure great ideas really work, scale, and reach the people who need them.



STEVE DAVIS is a lecturer in management at Stanford GSB.

You seem to be coming through the pandemic with your sense of optimism intact.

There are a lot of challenges for sure, and I don’t mean to be Pollyannaish or naïve. But three things give me a lot of hope. One is the way the innovation community has shown up over the past 18 months. That gives me hope because I think so much of the history of the world has been created out of necessity, with turbulence forcing innovation, invention, and adjustment. COVID-19 appears to be following this path.

The second is collaboration. Multisector partnerships are so critical. We’ve got to bring the private, public, and social sectors together more frequently and more effectively in order to battle climate change, address inequity, and create better health conditions. We saw a lot of that happen in the last year and a half. Now the question will be what sticks, and how we leverage those opportunities.

And then the final thing — it sounds so trite as a professor to say this — is the talent and optimism in many of the young people that I work with. There are so many next-generation leaders that look a lot different than leaders in my generation: much more diverse, much more global, much more reflective of the world we live in. I feel like there’s a lot of opportunity and I don’t think we’re going to go backward.

Do you think the innovation kickstarted by the pandemic is more than a blip?

Yeah, I do. It’s been an extraordinary experience to be on the receiving end of so many incredibly great ideas. A bunch of interesting tools around testing and treatment

“A pandemic can be a horrible time to be piloting and testing brand new ideas. In such a crisis, you’ve got to go in and get the thing that works quickly, even if it’s not perfect.”

were quite successful and will be built into the health systems of the future. People were forced to do telehealth for a year and now they’re saying, “Why do I need to go into my doctor’s office?” The world of online education — we just accelerated its uptake by a decade. We had all these new data visualization, aggregation, and analysis capabilities — everybody in the world pretty much knew what it meant to flatten the curve. I think that these innovations are changing our collective mindsets about what’s possible in our lives beyond the pandemic.

With such an urgent need for solutions, how do you make sure the good ones help as many people as possible?

A pandemic can be a horrible time to be piloting and testing brand new ideas. In such a crisis, you’ve got to go in and get the thing that works quickly, even if it’s not perfect. The perfect was frequently the enemy of the good in a lot of these areas. A real problem was that there was all this innovation and there were all these communities in need, but there wasn’t a very good mechanism to match them. We’ve got some hard work to do now to respond to that, to build a better global health architecture, financing, and policy framework ahead of the next pandemic.

One of the complicated conversations we are having is how do we manage this really dynamic world of digital health — remote technologies, AI, self-reporting tools, and telemedicine. We don’t have a regulatory mechanism to decide which tools are good and which aren’t. And I don’t think we really want digital tools to be overly regulated because they’re so dynamic. Maybe it’s better to create a more distributed mechanism with the corporate and innovation community driving it. But we have to be careful that the inmates aren’t in control of the asylum.

Is the importance of multisector collaboration compatible with the need for better regulation?

The lack of good regulation has actually hindered innovation in this instance, because so many people had great ideas, but there wasn’t the proper policy framework for equitable access, so they often didn’t get deployed. They didn’t know who to go to, and they didn’t know if it was going to be approved. That’s why sometimes the typical Silicon Valley view is that regulation is a hindrance to innovation. But in this case, I would argue the opposite: The lack of regulation and proper public sector engagement actually hindered innovation. ○

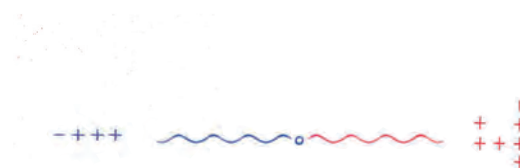
COURTESY OF STEVE DAVIS

\$10.6 billion

Corporate funding for digital health in 2019

\$19 billion

Corporate funding for digital health in first half of 2021





FINDINGS

Raising the Bar

A study of more than 350 of America’s biggest employers during the first three months of the pandemic, coauthored by Rebecca Lester, found that hard-hit companies with strong cash reserves were only half as likely as their financially weaker counterparts to impose layoffs – and 25% announced pay raises. “There’s been a big movement toward stakeholder values, and what we see playing out here is that it truly matters for some companies,” Lester says. “Some firms have made real commitments to treat their workers well.” – *Edmund L. Andrews*

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

JOB TALK

Work: In Progress

More than 9 million Americans lost their jobs in 2020, the biggest shock to the labor market since the Great Depression. Even though employment numbers have bounced back, COVID is still shaping how we do our jobs, from the rise of hybrid work to shifts in the gig economy. While these changes may seem profound in the short term, labor economist Paul Oyer says it remains to be seen how enduring they will prove to be.

Which recent labor trends have you been following most closely?

Obviously in the professional labor market, the big question is, Will we be returning to the office? There’s a conventional wisdom that says the pandemic caused some sort of disruption in the labor market and we will never go back to the old days where people commute

ENGAGE

Reimagining Work Post-COVID

In a series of live webinars this fall and winter, Senior Associate Dean Brian Lowery and guest speakers will explore the future of work and the opportunities presented by this moment of critical change. Sponsored by the Stanford GSB Leadership for Society program.



To register, go to stanford.io/PostCOVID



to the office five days a week. I think the jury's still out on that.

As we know, a lot of people like working from home. Not everybody does; a lot of people feel lonely and isolated. It seems easy to say, "I'm going to be just as effective from home," but I'm not sure that's right. I think people who want to stay home will end up missing out on opportunities, will end up not having their careers take off. But for many, that's probably a trade-off they're willing to make.

Another thing is innovation. Before the pandemic, there was a trend over thousands of years toward cities becoming more condensed and bigger. Even as the internet became more relevant, cities consolidated more and more because that's where ideas are generated by interactions between people; that's where innovation comes from. It's hard for me to believe that the pandemic is going to completely reverse that.

One of your areas of study is the gig economy. What have been some of the impacts there?

I have referred to the gig economy as an "alternative safety net": When you lose your job, when the economy goes wrong, people can still make some money — not a lot — as drivers or delivery people. You can take issue with some of the business models and business practices of those companies, but that's been a valuable thing for a lot of workers to be able to fall back on when times are tough.

The pandemic was a little different, because the demand for Uber drivers went from a hundred to zero overnight. The demand for delivery people went up from zero. So overall, there were still plenty of gig jobs out there. What happened to Uber and Lyft is super interesting, because they didn't have good, sustainable long-term profitable business models even before COVID. We'll see what happens after. And now we also have this interesting question of whether DoorDash and Uber Eats and Postmates can turn demand into profit.

How well do you think the stimulus and other safety net programs worked to keep unemployed people afloat?

The fact that poverty has not gone up dramatically in the last year and a half suggests that throwing so much money into unemployment benefits and other safety net programs was pretty crucial. It didn't make people



PAUL OYER is the Mary and Rankine Van Ande Entrepreneurial Professor and Professor of Economics and senior associate dean for academic affairs at Stanford GSB.

rich, but it helped them survive; that, and the eviction moratoriums. Labor economists in general don't like to disincentivize work, but I think most of us would feel that being very generous with benefits was appropriate because you're talking about hunger and life and death.

Thinking ahead, do you think there's more that could be done to prepare for this kind of economic shock?

We will have negative shocks to the labor market again, but let's hope they're not shut-the-whole-economy-down shocks. The question of what we should do really gets down to some of the questions we've been wrestling with for a long time before the pandemic as we've seen the increase in economic inequality. Do we as a country want to put forth a much greater safety net? Our ability to figure out a way to compromise on that looks pretty tenuous. The pandemic pushed people even further into their political lanes because they got into disagreements that had nothing to do with politics about things like masks and vaccines. ○

"I think people who want to stay home will end up missing out on opportunities. But for many, that's probably a trade-off they're willing to make."

FINDINGS

More Home Work, Please

Surveys of more than 30,000 Americans conducted by Nicholas Bloom and his colleagues show that working from home has transformed the white-collar workplace. As of early August, 65% of WFH employees said it had exceeded expectations and 78% said they hoped it would continue past 2022. As more businesses try hybrid work models, Bloom suggests they do it carefully: "My advice to firms is to decide this centrally. A mixed mode can be pretty terrible if some people are working from home and others are in the office." — Edmund L. Andrews

NICHOLAS A. BLOOM is a professor of economics (by courtesy) at Stanford GSB.

NANCY ROTHSTEIN

54%

Percentage of people making \$100,000 or more who worked remotely at least one day a week in June

12%

Percentage of U.S. workers who say they started doing freelance or gig work after March 2020



HOME MADE

Shore Up, Don't Reshore, Supply Chains

From shoppers hoarding toilet paper to carmakers scrambling to find computer chips, the pandemic has exposed the surprisingly fragile networks of trade that make modern life possible. Hau Lee, co-director of the Value Chain Innovation Initiative at Stanford GSB, has been designing more resilient supply chains that won't break during crises. Bringing manufacturing back to the U.S., he says, may not be the best approach.

HAU LEE: Since the beginning of the pandemic, consultants, the popular press, and politicians have been saying that we should reshore. President Joe Biden has been encouraging the return of semiconductors to the U.S. He talks about reshoring and originalizing the supply chain, bringing everything back. That kind of solution can easily be an overreaction. Not all kinds of products can be brought onshore. And if you force yourself to bring all of these products onshore, you may ultimately bring harm to your own country.

What happens when there is an internal disruption? What happens if the next pandemic hits the U.S. and the whole country is locked down, but everything we depend on is manufactured at home? Then we're locked out and in massive trouble.

A better approach is to look into reshoring for some strategic items, goods related to the military or national security, for instance. Bring some goods back, but not all of them. I tend to believe that the best solution is often a mixed model: Don't just leave China; you have China, but you have a second source in Mexico or in Budapest. And use these different sites in an intelligent way. When you have a factory in China and a factory in Budapest, use these two factories in different ways that complement and supplement each other. And in times of disruption one can support the other. — *Told to Dylan Walsh* ○



HAU LEE is the Thoma Professor of Operations, Information, and Technology at Stanford GSB.

“What happens if the next pandemic hits the U.S., but everything we depend on is manufactured at home?”

GROWING PAINS

The Promise of the Post-pandemic Economy

Even as it slowed down the global economy in early 2020, the pandemic accelerated technological and organizational trends that have the potential to spur a robust recovery. In an article he cowrote in *Foreign Affairs* in July, Nobel laureate Michael Spence asserted, “Surprising as it may seem, out of the deepest economic crisis since World War II could come a new era of productivity gains and prosperity.” Toward the end of summer, Spence remained cautiously optimistic about the prospects for long-term growth — though he cautioned that factors like the Delta variant, slow global vaccine rollout, and extreme climate events are creating significant headwinds.

How's the outlook for economic growth right now?

Three months ago, I would have said we have a recovery well underway. Now, I would say the Delta variant is a major setback in multiple dimensions. We're going to have to revert to some sort of restrictive measures. And when I say “we,” I mean everywhere. And that puts the countries that are further down in the vaccine queue further back.

It's very difficult to see a fully functioning global economy where a significant part of it is defective, in the sense of not being able to function normally. When you add to that the astonishing collection of extreme climate events — I don't think you can prove yet that they are a big headwind to immediate economic growth, but I think it's getting close — the bottom line is that it's a much weaker picture right now.

What's been driving the recent gains in productivity?

The entrepreneurial activity and the supportive entrepreneurial ecosystems were once mostly in Silicon Valley or a small number of centers in the U.S. Now they're global. That's a very big change; it's occurred at astonishing speed in the last 10 to 15 years. If you combine the accelerated adoption of technology and willingness to experiment and try new modes of dealing with things

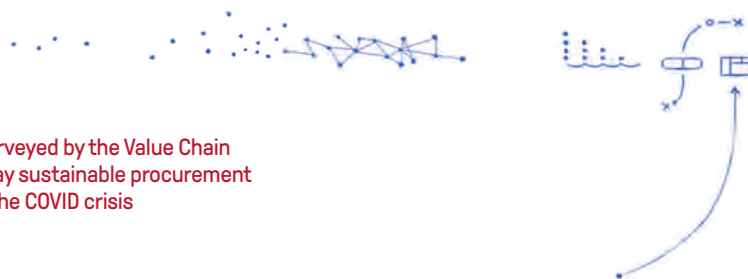
NANCY ROTHSTEIN

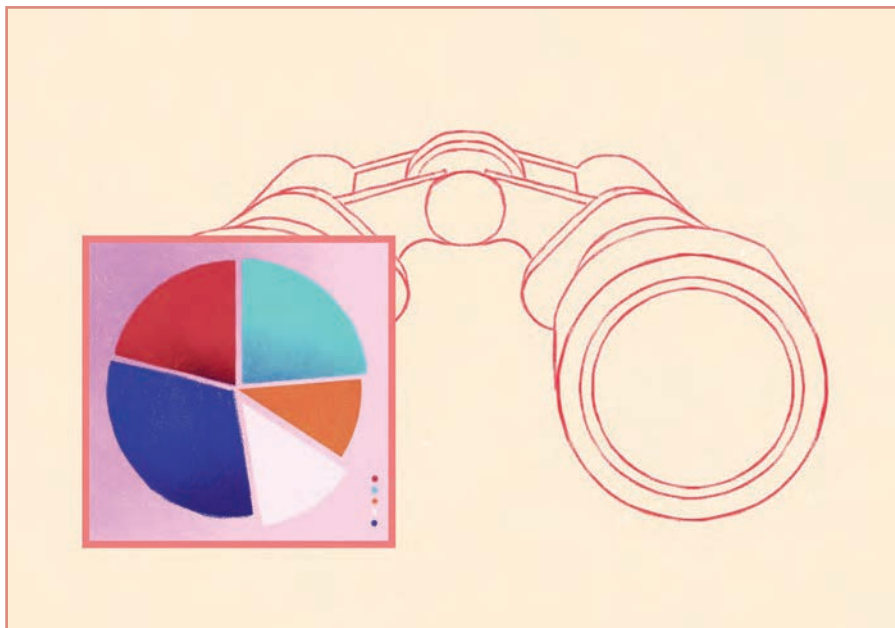
19%

Percentage of supply chain professionals who say their operations “barely survived” 2020

71%

Percentage of suppliers surveyed by the Value Chain Innovation Initiative who say sustainable procurement has helped them through the COVID crisis





during the pandemic — working remotely, distributed operations, telehealth — you’ve got a big change.

Productivity and economic performance are a function of a lot of different things. We tend to call it technology, but it’s really institutions and how well they work and how much human capital you have. There are some pretty powerful forces loose — only partly related to the pandemic — that create the possibility that you could have significant positive change in the dynamics.

Productivity can be the result of increased output or the result of fewer hours worked. Could you talk more about these two sides of the picture?

This is mainly a question about digital technologies. A digital transformation is coming; in fact, it is already underway. That’s pretty clear. A lot of jobs are going to change, and that will require different skill sets. At a deeper level, digital technologies can be thought of in two ways: They augment human beings and they replace them, and you can see both at the same time. There’s a set of uncertainties about how precisely that’s going to happen and what its impact on the distribution of income and wealth will be. The pandemic certainly made existing inequalities worse, and it accelerated the digital transformation.

Given the current uncertainty, what can businesses and government do to ensure that they don’t squander the positive changes that have taken place in the last 18 months?

It’s still possible to paint a fairly realistically positive scenario. I think businesses will see the rates of return on various kinds of investment rise as government creates assets, whether it’s physical or digital infrastructure, logistics, high-speed trains, human capital. The natural thing for the business sector will be to seize those opportunities. If governments borrow too much and spend too much, they can crowd out business investment. But I think that this kind of investment, starting from a low base, crowds *in* private sector investment. That is a virtuous cycle and is part of the optimistic story. It’s very hard to tell the optimistic story if the government is missing in action. It’s just too important a player on the economic playing field as an investor. **GSB**

FINDINGS

Investors’ Surprising Reactions to the COVID Crash

An ongoing large-scale survey conducted by Matteo Maggiori and his coauthors showed that even as Vanguard investors expressed intense pessimism as the pandemic hit in early 2020, few responded aggressively in their portfolios, contradicting economic models suggesting that dire expectations spur rapid selloffs. “In fact, the strength of this relationship, as we observed it, is about 10 times smaller than our benchmark models would predict,” Maggiori says. “Now that doesn’t mean that the models are completely wrong, but they do need to be enriched.” — *Dylan Walsh*

MATTEO MAGGIORI is a professor of finance at Stanford GSB.



A. MICHAEL SPENCE is the Philip H. Knight Professor and dean, emeritus, at Stanford GSB.

SAUL BROMBERGER

1%

Change in annual rate of U.S. labor productivity between 2010 and 2019

3.8%

Change in annual rate of U.S. labor productivity between Q2 2020 and Q2 2021

“What’s a Nice Girl

A half century later, the five women of the Class of '72 reflect on their groundbreaking experience.

BY JULIA M. KLEIN

Rising through the ranks of an educational publishing company in Palo Alto in the 1960s, Barbara West decided she would prefer to be in charge. Maybe, she thought, an MBA would help.

But her first interview with an admissions dean at Stanford GSB did not go well.



Doing in a Place Li

Like You



ke This?”

“He picked up on the fact that my father worked for Kodak, and he said, ‘Oh, are you a member of the Eastman family?’” She was not.

“Do you have a family fortune or a family business that will be yours to run?” No again.

As West recalls that long-ago conversation, the dean then told her, “We might as well save our time: We only admit women who have either a family fortune or business to run, and since you don’t, why, there’s no place for you here.”

That was 1967. Three years later, with the women’s movement cresting, West tried again — and her reception could not have been more different. Gary Williams, Stanford GSB’s new dean of admissions and financial aid, was open to female, minority, and other nontraditional applicants. “I was focused on admitting the very best people I could — and that was all,” Williams says.

West would become one of five women among 308 students in the Class of 1972. Tiny as it was, it was the largest female cohort the school had ever welcomed — an inflection point for both the school and the women themselves.

The summer after their first year, West and two of her classmates, Anne Thornton and Susan Phillips, collaborated on a multimedia presentation about their experiences at Stanford GSB, titled “What’s a Nice Girl Like You Doing in a Place Like This?” It described their emotional struggles in the face of skepticism from classmates and the faculty, which was all male until 1972. Scored with music of the era, including the Beatles’ “It’s Getting Better All the Time” and Aretha Franklin’s “Respect,” the show also expressed their hope for broader acceptance of women’s changing roles and aspirations.

Toward the end of the presentation, West said, “If another woman were to say, ‘Should I come to business school?’ my answer would be, ‘If that is the area you want to go into, hell yes, it’s well worth it.’”

SIGN OF THE TIMES

Among the 308 students in the Class of 1972 were five women, the largest female cohort the business school had yet welcomed.

LEONADE JONES, another path-breaking member of the Class of 1972, attributes her passion for education to her parents. Her father ran the information window at the main post office in Washington, DC, while her mother was a clerk in the city's public health department. "They felt they wanted better for their kids," Jones says. "They believed that education would make a difference — not only for income potential, but for the quality of your life."

Jones attended Catholic schools on scholarships, riding three buses to get to high school. After two years at the University of Pittsburgh, she transferred to Simmons College for a business degree. Margaret Hennig, a founding dean of the Simmons Graduate School of Management who'd later write a "survival manual" for women in business, encouraged her to consider an MBA. A veteran of summer jobs that included waitressing and being "a terrible secretary," Jones needed little persuasion.

"I felt that to make my way in the world, I needed really stellar credentials," Jones says, "and at that time I hadn't really decided what the path might be." Keeping her options open, she enrolled in a joint program in law and business at Stanford. She would become the first Black woman to earn that double degree from the university, and one of the first three to receive a Stanford MBA, in 1973.

Like Jones, the four other women in the class shared a sense of purpose and possibility. Anne Thornton was the daughter of a "frustrated housewife" and a lawyer who entered the ministry and advocated the ordination of women. She attended Radcliffe College and then, briefly, Harvard Law. After her then-husband received a Harvard MBA, they decided to relocate to San Francisco. Like Jones, she entered Stanford's JD/MBA program. "I wanted to know how the world works," she says.

Anne Wyser-Pratte got an early start in the work world when her father, a chemical engineer, became severely ill. To help support her family, she took a full-time position as a laboratory assistant when she was still in high school. She kept the job while earning a joint degree in biology and chemistry at the University of Florida. She was subsequently recruited as a research assistant in the Harvard biology lab of James Watson, who had shared a Nobel Prize in 1962 for describing the structure of DNA. Married at 21, Wyser-Pratte followed her husband to the Netherlands and then to Nicaragua, where she helped to start a health care clinic for poor patients. Her role was "mostly delivering babies," despite her lack of medical training. "Who else was going to do it?"

After graduating from Reed College with a degree in experimental psychology, Barbara West found a job as a typist for an educational publishing company. "It took them about three days to figure out it was a mistake," she says. But during an exit interview, the president asked if she knew anything about number theory. Thanks to a college math class, she did. After she rewrote a mathematics textbook for the company, she moved on to write, edit, copyedit, design, and even serve as corporate secretary and treasurer. Then she realized: "What I was interested in was running the place."

Susan Phillips grew up in California. Her father, an engineer and an MBA, was especially supportive: "He would say, 'You can be whatever you want to be. You could be a female president of the United States.'" But when she tried to enroll in a doctoral program in organizational behavior at Stanford GSB, she remembers a dean telling her: "We don't admit women." She turned to the MBA program instead.

IN THEIR FIRST YEAR, four of the five women were placed in a special, more diverse section that also included many of the class's minority students. Wyser-Pratte remembers being asked if she would mind being the lone female in another section. "Most of my background was in all-male environments," she says, "so it didn't faze me in the least."

Unsurprisingly, the five women encountered resistance to their presence on campus. "There were faculty and fellow classmates who thought we didn't belong," Phillips says. "They wondered, were we normal? Does this mean we don't want the things they thought good women would want, like marriage and family?"

It helped that they had one another's backs.

During their first week, when Phillips walked into an economics class, the professor scoffed, "You're an MBA?"

"She sure is," Thornton called out from a back row, cementing a lifelong friendship.

"I'll just never forget that gesture of feminist solidarity," says Phillips, who would become vice president of the Class of 1972. "Anne was two years ahead of me in age and schooling, and she was much more aware of these gender dynamics in the world. And she had already become a strong feminist."

"I was very outspoken," Thornton says. "And I wasn't scared."

When Phillips walked into an economics class, the professor scoffed, "You're an MBA?" Thornton called out, "She sure is," cementing their friendship.



REEL TALK

In their multimedia presentation, Susan Phillips (far left and in foreground, above), Barbara West (left), and Anne Thornton (above) offered an unvarnished account of their GSB experiences.

Thornton remembers the time she trolled a recruiter from the Los Angeles office of a prestigious consulting firm. She showed up for a campus interview in jeans and said, “I’ve heard that you’ll talk to us, but you don’t really hire women as consultants.”

“We don’t,” he told her. “It’s good that we can be honest about it.”

Thornton believed that was illegal. She reported the recruiter to the campus placement office.

The women frequently compared notes about remarks that seemed sexist, West says, wondering if they were being “unduly sensitive.” When one professor made a wisecrack denigrating women, West approached him afterwards. “You told a really great joke in class today. I really thought it was hilarious,”

she said. “But you used a woman. Could you tell the story again using a Black person?” It took him a moment, but he got the point.

For Jones, the joint JD/MBA schedule was onerous, and the pressure to succeed especially intense. She feared classmates or professors might attribute any failure “to the fact that I was either female or African American.” She told herself: “Don’t screw it up, because people are looking at you, and if you don’t do well, then it’ll be harder for the people who come behind you.”

Wyser-Pratte faced challenges at home. Her husband drove their car to his consulting job, obliging her to bike daily from Los Altos to Palo Alto “rain or shine, light or dark.” Nevertheless, she excelled academically, helped create a public-management program, and won the Ernest C. Arbuckle Award for her contributions to the school. But her domestic situation deteriorated. “My husband and I subsequently divorced because he was furious that I got an MBA,” she says. (In her second-year classes, she met both her second husband and her third, Chris Wyser-Pratte, a retired investment

1930

Year the first two women graduated from Stanford GSB

9%

Percentage of 1970s alumni who are women

22%

Percentage of all MBA alumni who are women

44%

Students in the MBA Class of 2023 who are women

banker to whom she has been married for more than three decades.)

The curriculum was another issue. The case studies used in class were devoid of female role models. On the rare occasions women were mentioned, they were “depicted in very disparaging ways,” in low-level jobs or bickering with each other, Phillips says. “To have no women represented in decision-making or leadership roles was part of the message that you’re not like the people whom we’re training.”

FOR A MARKETING CLASS ASSIGNMENT, Phillips, Thornton, and West collaborated on a multimedia presentation based on a case study about the influence of the counterculture. That well-received project strengthened their bond and helped inspire them to create the “Nice Girls” show.

With slides, narration, and music, the nearly half-hour-long piece argued that, as a woman, “You were not expected to perform. You were not rewarded for performance,” West recalls. In the presentation, she recounted how, when she began business school, she ended each week in tears, “miserably depressed.” In contrast, Thornton said that because of her year in law school, she was “already on the defensive” and “a little bit tough.” Still, the women were under a harsh spotlight. “We really weren’t allowed to be anonymous,” she said.

But the show also described – and embodied – the women’s growing confidence and touted their special skills — including flexibility, a sense of playfulness, and nonlinear thinking. “I would certainly like to see more women in the business school simply because I see very beneficial effects on the school,” Phillips said. One male classmate even suggested to her that the presence of women had “not so much a feminizing effect but a humanizing one.”

The presentation also urged the admissions office to recruit more women. “I was very excited by what I saw,” Williams recalls. “I didn’t realize how difficult it was for them. I don’t think I’d really put myself in their shoes. They educated me as much as anybody.”

“Gary Williams was very forward-thinking,” Phillips says. “He is a hero to those of us who were not like the traditional Stanford MBA students.”

West says that Williams wanted their project to be shown to executives in a Stanford summer program. Unable to get it on the tight schedule, the women presented it to the men’s wives instead. The reviews

were positive enough, West says, that a showing was arranged for the executives — in the evening, attendance optional.

In an August 1971 letter to West, Stanford GSB Dean Arjay Miller applauded the project, expressing “intense interest” in increasing the number of women students and “the opportunities available to them when they graduate.” The creators of “Nice Girls” would go on to present it to a variety of audiences: classmates, faculty members, deans at other business schools, and executives with close ties to Stanford GSB. With Jones and Williams, they took the show on the road to recruit female applicants.

But not everyone was receptive to the women’s message. Williams recalls the dean of students at one “very exclusive” Northeastern women’s college telling him, “Oh my, no, none of our young ladies would ever want to go to business school.” On the other hand, he says, “when we took it to the annual meeting of the Graduate Management Admission Council, representing the country’s top business schools, that was a very big deal.” Describing the presentation’s reach to the Class of ’72 at its 45th reunion in 2017, Williams said, “If we had the technology that we had today, it would have gone viral.”

AFTER GRADUATION, the five women of the Class of 1972 entered a business world still adjusting to the notion that they could be more than secretaries or stenographers.

Despite her impressive education, Jones confronted racism and sexism. “First of all,” she says, “people think that you’re probably not capable because of affirmative action. So people are always questioning your abilities, your intelligence.” At a conference reception, a man approached her and said, “I’d like a drink.” Jones responded, “I’d like a drink, too.” The assumption was “that because I was Black, I was part of the wait staff.”

Though she was admitted to the bar in both California and the District of Columbia, Jones chose a career in investment management. During more than two decades at the Washington Post Company, she served as corporate treasurer and held top management jobs in the television division. A member of numerous boards, she has directed her philanthropic efforts to education, arts and culture, and the empowerment of women and girls, especially in the Black community.

Wyser-Pratte got her first post-GSB job by chance. “I met four guys in an elevator in Palo Alto,” she recalls, “and they were forming a company called Dataquest,” a research firm for financial institutions. She became a vice

Minding Their Business

Excerpts from the 1971 multimedia presentation put together by Susan Phillips, Anne Thornton, and Barbara West

PHILLIPS: I’d certainly like to see more women in the business school simply because I see a very beneficial effect on the school itself of having women students. One of our classmates told me just recently that

he thought the real impact of having women in the school was not so much a feminizing effect but a humanizing one. I would guess from our experiences this year that this is really true.



president and a partner. From 1988 until her retirement in 2006, she worked for the executive search firm Heidrick & Struggles International, spearheading diversity efforts, managing the company's New York, Philadelphia, and Greenwich, Connecticut, offices and head-hunting C-suite and board candidates.

Thornton's career arc was perhaps the most unconventional. After a stint in the fashion business, she opened her own home and gifts store in California's wine country. She chaired the board of the California Pacific Medical Center for a decade and served on the board of the San Francisco Museum of Modern Art. She also raised four children, an "important and fun part of my life." Thornton now divides her time between San Francisco, Sonoma County, and Guatemala. "It wasn't a straight focus, just climbing-the-corporate-ladder kind of life," she says.

West worked at the California Institute of Technology, the National Academy of Sciences, and the Lawrence Berkeley National Laboratory, where she was business manager of the energy and environment division. "I loved working with the scientists," she says. After several years as executive director of a law firm, she retired

SQUAD GOALS

The women, including Thornton, West, and Phillips (left to right), took the "Nice Girls" presentation on the road to recruit more female applicants.

early. But her adventures continued. She volunteered at the Charles Darwin Research Center on the Galapagos Islands and for environmental groups. Now living in a retirement community near Portland, Oregon, she remains close to both Phillips and Thornton.

An active alum, Phillips won Stanford GSB's volunteer leadership award in 2017. She describes her career as a management consultant as "heaven." After her MBA, she earned a doctorate in clinical psychology at the University of Oregon. At a time when companies "were trying to figure out how to better utilize the human resource," she says, "I landed in the right place with the right credentials and personal skills. I was unafraid to work with all-male environments, and I had the expertise they were desperately needing. I had the degree and the personality to overcome any gender bias they might have. That just gave me a wonderful escalator up to the top decision-making level of these companies."

WHAT WERE THE LESSONS and legacy of the women's Stanford GSB education?

"I think it's the best degree you could have," Thornton says. "You learn a little bit about everything: accounting, finance, human relations. And you need those for every venture you go into."

Wyser-Pratte says she discovered how to look beyond numbers and models and "ask what the business does, why the business does it, who are their customers, what is the general context of their business globally — a more contextual vision."

At Stanford GSB, Phillips says, "I learned functional components of running a business from some of the experts in the world." In addition, "having the status of this prestigious degree from an admired school opened so many doors."

Because of her prior business background, West says she acquired little technical knowledge. Nevertheless, she says, "it was a good investment because of meeting Susie and Anne and doing the multimedia show."

Jones, too, prizes her Stanford relationships, especially the mentorship of John G. "Jack" McDonald, a beloved finance professor who died in 2018. As a mentor herself, Jones says she encourages women to take on new roles, even if they feel unready. "If you don't do it now, this door may not be open later on," she tells them. "We women can do this. We Black women can do this. And we need to strive because people have opened up these doors for us." **GSB**



To watch video interviews, go to stanford.io/NiceGirls

WEST: If another woman were to say, "Should I come to the business school?" my answer would be, "If that is the area you want to go into, hell yes, it's well worth it."

THORNTON: I think we've all learned that institutional change can be very aggravating and very slow. But I also think that things seem to be loosening up around here.

A Beautiful Application

What is it about kidney exchange markets that piques the interest of economists and operations experts? The answer is simple: Even modest improvements to the system can save many lives.

BY DYLAN WALSH

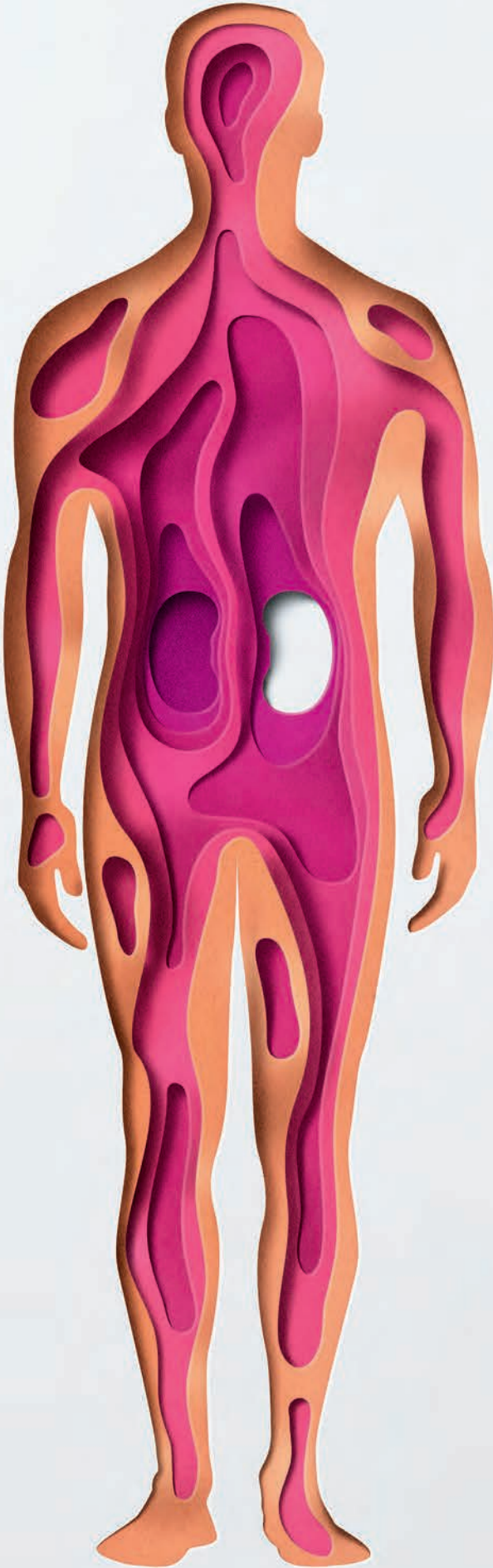
ILLUSTRATION BY EIKO OJALA

Mohammad Akbarpour knew the mathematics well. He had worked in network theory. He'd spent time on maximum matching problems.

The year was 2012. Akbarpour was a doctoral student taking a class with Alvin Roth, the legendary Stanford economics professor, and the question before him was how to get the most kidneys to the most people in need of a transplant and, that way, give them the best chance at a longer, healthier life.

BODIES OF WORK

Some economists spend much of their careers creating models designed to maximize the number of kidney transplants performed worldwide.



“We were using these tools that I was very familiar with to solve this important social problem,” recalls Akbarpour, now an associate professor of economics at Stanford GSB. “I had never seen such a beautiful application of the math.”

In the U.S. alone, nearly 100,000 people are on a waiting list to receive a kidney. Roughly 8,000 of them are removed every year because they become too sick to undergo major surgery or die before an organ becomes available. Many others are on dialysis, surviving the slow decline of kidney function with dramatically reduced quality of life.

For those without private insurance, Medicare’s end-stage renal disease program pays for dialysis and transplantation — at a cost that amounts to 1% of the annual federal budget (a stunning \$49.2 billion in 2018). Given the moral and economic significance of the problem, the natural question is how to optimize the system of allocation — how to get the most bang for the buck.

This is a question that Akbarpour has spent a good deal of time contemplating. It is also a question that two of his colleagues at Stanford GSB, Paulo Somaini and Stefanos Zenios, have studied from various angles. Roth himself shared the 2012 Nobel Memorial Prize in Economic Sciences in part for his work on kidney exchanges.

For Jonathan Levin, the Philip H. Knight Professor and Dean of Stanford GSB, this work exemplifies the two-way exchange between research and practice that is so foundational at the school: Research informs practice; practice, in turn, raises new questions for researchers to answer. And though the challenges remain technically daunting and ethically fraught, behind the equations and models and theories lies the simple, rewarding fact that improvements to the system, however marginal, save lives.

Winners and Losers

Ever since the 1960s, when a combination of surgical technique and pharmaceutical innovation made kidney transplants viable, demand has exceeded supply. In 1995, roughly 42,000 people were waiting for a kidney; in 2004, the figure was 77,000. Today it’s about 100,000, with 40,000 people joining the waiting list every year and roughly 20,000 transplants taking place.

“There is a great level of awareness among doctors that they are working with a limited resource,” Somaini says. “This is part of the reason they started talking to economists: Economics is about, and has always been about, how best to use scarce resources.”

A handful of operations specialists and economists, Roth among them, got involved with kidneys in the late

1990s and early 2000s. They realized that insights from game theory and queuing theory could be used to maximize the number of available kidneys and allocate them more efficiently.

“Efficiency, though, is a difficult concept in this case,” Somaini says. Striving to simply improve the combined years of life gained through kidney transplantation favors the healthy over the sick, the young over the old, as these recipients tend to live longer once they get a new kidney. Other changes to increase efficiency, while productive on their face, may end up discriminating against people by race, say, or blood type.

“When you adjust some distributional mechanism, then, generally, one group of people wins and another loses,” Somaini says. “You need to find a way to balance the demands of efficiency against the demands of equity.”

On top of this complication, transplants take place through two channels: living and deceased donation. Living donation occurs when someone who is alive decides to donate a kidney to another person who needs one — often a family member or friend, sometimes a stranger. (This is possible because most people are born with two healthy kidneys but can survive perfectly well with one.) Deceased donation, which made up about 70% of the kidneys transplanted in 2020, occurs when somebody who has previously decided to be an organ donor dies. Each of these routes operates in its own way, and each raises distinct challenges.

When Economics and Ethics Collide

The United Network for Organ Sharing is the nonprofit organization responsible for both managing the waiting list nationwide and formulating a ranking policy that governs how deceased-donor kidneys are distributed. The current matching algorithm works by creating scores based on a few dimensions, such as how long a patient has been on the waiting list, or how well a donated kidney pairs with the potential recipient’s tissue and blood type. If a good match is found (a high score), then the recipient, in consultation with her doctor, is given the choice of whether or not to accept the kidney.

A 2014 tweak to the algorithm began offering the highest-quality kidneys to candidates who were estimated to have the greatest post-transplant survival time, as a way to avoid transplanting kidneys with the greatest longevity potential into people who are nearing the end of their lives.

Recent work by Somaini and two of his colleagues examined whether adjustments to this algorithm could

“Right now, the number of chains we can initiate is limited by the number of altruistic donors. Imagine if we could multiply that by a factor of 10.”



improve overall outcomes. What would happen if different sets of people were prioritized for different kinds of kidneys? In one extreme case, they looked at what would happen if you tried to simply maximize the longevity of patients among the entire transplant pool. Doing this led to an increase in median survival time of 5 years — from 9 years to 14 years — but the gain was realized through a dramatic reshuffling of who does and doesn't get kidneys; the sickest people on the waiting list were often passed over. As Somaini put it, "I was wearing my economist hat when looking at that option, not my ethicist hat."

For Levin, this tension is part of what makes the question of kidney allocation so interesting. "This issue sits at the intersection of economics and ethics — not an area that economists typically spend their time in and yet here we're forced to," he says. "We're in this world where we have to think about how to solve the problem facing those with kidney failure in a way that feels morally right."

Zenios, who has studied deceased donation for almost two decades, has discovered a number of avenues

that could improve outcomes. In a 2004 paper, for instance, he and two coauthors modeled the effect of having patients declare upfront their willingness to accept kidneys of varying quality. Some patients might opt to wait for kidneys of only the highest quality; others may be willing to accept any kidney that becomes available. By creating separate waiting lists within the main waiting list, this approach could increase by up to 15% the number of kidneys available for transplant and decrease by 30% the number of people who die while on the waiting list.

In a more recent study, Zenios and his colleagues find support for the 2014 policy shift that offers the healthiest kidneys to the healthiest patients. They suggest making the same shift at the other end of the waiting list, offering less-healthy patients priority for lower-quality kidneys. They also note that giving people priority based on how long they've been on the waiting list, though an intuitive metric, negatively affects outcomes; finding a metric to replace this one could lead to substantial improvements.

EIKO OJALA

**Patient
Waiting**

100,000

people in the U.S. are on the national waiting list to receive a kidney

8,000

of them are removed every year because they become too sick or die

In the World of Living Donors

This is only one part of the equation. Akbarpour studies the other part: the world of living donors. Like his colleagues, Akbarpour has puzzled over how best to stretch this scarce resource.

About 20 years ago, Roth and two collaborators recognized and developed an innovation in the world of living kidney donation. Transplants historically involved one person giving their kidney to another person. That was it. Instead of one-to-one matching, Roth and his colleagues formalized a platform for paired exchanges. Suppose Donor A wants to give a kidney to Recipient B, but they are not a good match; and suppose Donor Y wants to give to Recipient Z, but they are not a match. If you pair them together, it's possible that Donor A can give to Recipient Z, and Donor Y to Recipient B; now you've got two transplants instead of zero.

Even more powerful, Roth expounded a system in which non-directed donors — the small fraction of people who give a kidney to a stranger because they think it's a good thing to do — can kick off transplant “chains” that generate dozens of transplants, all falling like dominoes from the first one.

But making these chains and paired exchanges happen as effectively as possible is difficult. For starters, the pool of potential donors and recipients is dynamic, which means decisions about who gets transplanted today will affect the state of the network — and who can and cannot receive a kidney — tomorrow. (Akbarpour's PhD dissertation, under Roth, explored this problem.) Additionally, hospitals have their own incentives to match patients in-house rather than with another hospital, so they often don't place patients and donors on the network for paired exchange. “A mix of mathematical, logistical, and incentive problems make this an interesting challenge,” Akbarpour says.

Nonetheless, Akbarpour sees several changes that could squeeze more transplants from the current supply of living donors. One simple fix would be to expand the paired exchange pool.

The U.S. currently has multiple “kidney exchange platforms,” Akbarpour says. From an economic perspective, this is inefficient; the larger the pool, the greater the potential for matches. Uniting different regional exchanges would improve transplant numbers. If done carefully, the potential pool of paired exchanges could even be expanded internationally.

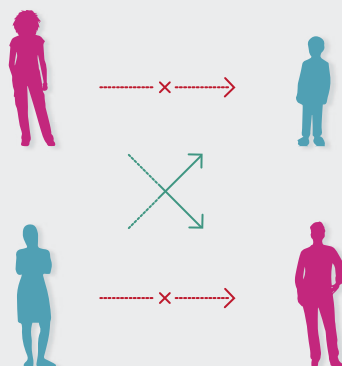
Recent work by Stanford's Itai Ashlagi, an associate professor in the School of Engineering at Stanford and a close collaborator with Roth, allowed for a three-way kidney exchange between Israel and Abu Dhabi, for instance. These transplants were made possible because the matching algorithm was able to draw candidates from a cross-border pool of patients. Akbarpour, too, has researched the potential benefits of global kidney chains.

“Another space where we could improve things is if we can convince people who are already planning to donate a kidney to join the exchange,” Akbarpour says. The main rationale for this is that donors with O-type blood can donate to anybody, but recipients with O-type blood can receive kidneys only from somebody else with O-type blood. As a result, there is a disproportionately large group of people with O-type blood waiting for kidneys. But if, for example, a mother with O-type blood who planned to give a kidney to her daughter with non-O-type blood could instead be convinced to take part in a paired exchange, then her daughter could still receive a kidney — perhaps one that is better matched — and someone with O-type blood who would otherwise have remained on the waiting list would receive a kidney from the mother.

Finally, Akbarpour suggested using kidneys from deceased donors to start transplant chains, a practice that is currently banned in the U.S. “Right now, the number of chains we can initiate is limited by the number of altruistic donors,” he says. This is a tiny portion of all kidney donors. “Imagine if we could multiply that by a factor of 10,” Akbarpour says.

Match Game

As matching algorithms for live kidney transplantations have grown in sophistication, two novel approaches have emerged: paired exchanges and donor chains.



PAIRED EXCHANGE

Suppose an aunt wants to give a kidney to her nephew, but their tissue or blood type is incompatible. The woman can offer her kidney to another donor-recipient pair that also faces the problem of incompatibility. If she matches with that recipient, and the donor of that pair matches with her nephew, then the surgeries can go ahead. Two transplants occur instead of zero.

What If Donors Were Paid?

Even with that multiplication, though, and even with refinements to the matching algorithm for deceased donors, the waiting list would continue to grow. When it comes to kidney transplants, supply — no matter how well managed — simply does not meet demand. Thus, looming behind all of this work is the question of whether more people can be convinced to donate their organs upon death, and whether more people might agree to give up a kidney while still alive.

For economists, one textbook answer to a mismatch between supply and demand relates to pricing. What would happen if living donors were compensated for giving a kidney? Although the practice is illegal in the U.S. (and every other country besides Iran) and repugnant to many, Akbarpour has researched the idea. He has found that such a system would effectively reduce wait times and increase transplants; the evidence from Iran is unambiguous. But he has not taken a position on whether these outcomes sufficiently outweigh potential drawbacks.

In the U.S., concerns about a paid market for kidneys typically fit into four big categories, he says. One, it will exacerbate economic inequality by placing kidneys on the list of items the rich can afford and the poor cannot. Two, it will create a system of the poor selling to the rich. Three, it is intrinsically immoral to sell body parts. And four, it will spur trafficking and black markets.

“If I were a policymaker considering a market, I would go after these one by one,” Akbarpour says. “I think most of them are at least debatable, if not solvable.”

Fears that the rich will be able to buy kidneys and the poor will not can be addressed by creating a monopsony: a market in which there is a single purchaser, in this case the federal government, which procures all donated kidneys at a fixed price. After that, they are allocated according to the system currently in place, which prioritizes the neediest recipients rather than the wealthiest. This would give everybody access to kidneys and save the government money, since a transplant costs far less over time than dialysis does.

Worries that the poor alone would be motivated to sell their kidneys are more difficult to address, Akbarpour says. At its core, this would be a question of establishing an acceptable price. If you consider the extreme case of donors being paid \$10 million in exchange for a kidney, “then even I’m going to subscribe,” he says. Although poorer people would likely be overrepresented no matter what, paying the right amount could mitigate the most egregious disparities.

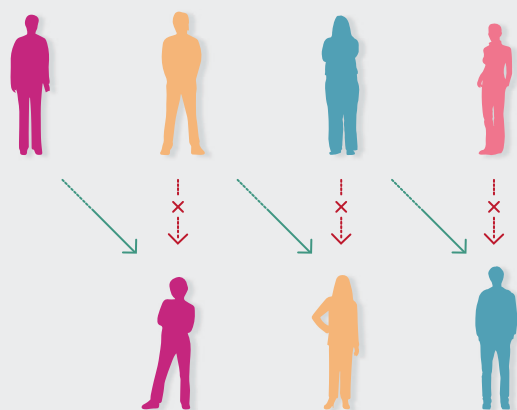
On the third issue of whether people should be allowed to sell body parts, “I don’t think there is any regulation that can solve that problem,” Akbarpour says. This represents a fundamental divide over convictions, not policy design.

Finally, there is the question of trafficking and the black market. A properly regulated legal market for kidneys would actually reduce the need for a black market, Akbarpour contends. Assuming that the waiting list in the U.S. would shrink as more donors step forward, people in need of a kidney would be less desperate and less willing to fly overseas to purchase one. In fact, it could be argued that the dysfunction of the current system feeds the existence of an overseas black market.

In the end, Akbarpour says, policymakers should at least acknowledge there is a huge cost for *not* having a paid system — the thousands of people who die each year, the billions that Medicare pays for dialysis, and the inequities that already exist around who does and does not get a kidney. “These present us with complicated trade-offs,” he says.

And it is the work of academics over the past two decades, starting with Roth, that has helped to nudge transplantation toward a position that is both more ethical and more efficient, suggests Levin: Academics present a new theoretical approach to distribution, the idea gets implemented in practice, unforeseen challenges arise, and the problem is returned to academics for refinement.

“This ongoing feedback loop from theory to practice and back to theory has proved a really nice model for the application of academic ideas,” Levin says. “And in this particular problem of kidney allocation, the payoff is saving people’s lives. That’s an inspiring challenge.” **GSB**



DONOR CHAIN

A donor chain relies on someone volunteering one of their kidneys to a stranger. This non-directed donor kickstarts the chain by giving to someone who already has a willing yet incompatible donor. Once the first transplant takes place, the remaining donor is matched with another person on the list who has a willing yet incompatible donor. And so on. The chain links together donor-recipient pairs and can lead to dozens of transplants taking place in succession.

Leveling Up

Stanford GSB's predoctoral fellowship is helping the next generation of academics jumpstart their careers – and bringing needed diversity to the professorship pipeline.

BY LISA WONG MACABASCO

ILLUSTRATION BY YIFAN WU

How do aspiring PhD students apply business principles to their own academic careers? For many, the answer, increasingly, is a predoctoral residency like Stanford GSB's Research Fellows Program.

In the two-year program, prospective PhD students acquire skills and experience by assisting Stanford GSB faculty with research and taking graduate-level coursework. The hope is that meaningful faculty mentor relationships will lead to valuable research experience and highly prized

GENERATION WHY

Helping students see themselves as PhDs speaks to the core of what teachers do. "We're helping someone project a future," says Charles Lee.



recommendation letters — which, along with a transcript showing success in Stanford’s rigorous courses, will culminate in a compelling application to PhD programs.

Such applications have to be strong because competition for PhD programs is fierce. The average top business PhD program admits only 15 to 25 students in any given year. With hundreds of students applying, admission rates can be as low as 5%.

That’s why pre-docs have become much more common over the past decade, serving as a kind of competitive advantage in cutthroat PhD admissions. “It’s a way to have another asset in your application,” as Juliette Coly puts it. A Paris native, Coly has been considering an economics PhD since before she graduated from France’s elite *École normale supérieure* in 2020; she is now in her second year of the Research Fellows Program.

For Coly and others like her, there’s no shortage of pre-doc programs; the number has ballooned in recent years, especially at top universities. But the Stanford program distinguishes itself by being one of the few to have had a clear diversity objective since its inception.

The initiative aims to make PhD programs more accessible for underrepresented groups, including women and people of color. At U.S. business schools, only 28% of students and 7.5% of faculty are underrepresented minorities (Black, Indigenous, and Latinx), according to recent data from the Association to Advance Collegiate Schools of Business. And among 89 U.S. business school doctoral programs, the share of underrepresented minority students drops to 17%. In 2019–20, women made up 35% of full-time B-school faculty and 41% of business doctoral students.

At Stanford GSB, the stats are even more dismaying: Of 84 tenured faculty, only 5 are from underrepresented minority groups (6%) and 14 are women (17%).

The Research Fellows Program was started in 2013. “We’d been thinking hard for a long time about how to diversify the pipeline to PhD programs, which effectively is the pipeline to faculty,” says Dianne Le, assistant dean of Stanford GSB’s PhD program. “Simultaneously, there was increasing need for faculty research support and growing attention to DEI needs across all our schools.”

Three fellows composed the first cohort in 2014, and 23 have followed since. This year, an unprecedented 20 fellows were selected, in an expansion to meet faculty demand for research support. Seventeen former fellows have entered PhD programs. The first alums are only

DEGREES OF PROGRESS

Former research fellow Zanele Munyikwa, now a PhD student at MIT Sloan, says she thinks a lot about “the importance of having somebody who looks like me in a faculty position.”



“This is a true mentorship program — as one of our faculty has said, the fellow should be getting more out of it than the faculty.”

now completing their doctorates, so it remains to be seen who will land a faculty position. “We continue to root for them,” Le says.

The program aims to prepare students for doctoral programs, but first it helps them determine whether that’s even the right career goal. “The decision to pursue a doctorate is a big one,” Le notes. “Learning whether you’re passionate about and enjoy research is incredibly valuable in this decision-making process.”

Zanele Munyikwa was a Duke computer science major who became drawn to the emerging field of computational social science. In 2015 she joined the second cohort of Research Fellows. The decision wasn’t easy; she had applied to computer science doctoral programs at the same time. “The PhD’s already a long journey, and a pre-doc lengthens that by two years,” she says. “And you’re taking an earnings hit compared with people who go straight into the workforce. But I felt this combination of coursework and research would help me figure out what I was interested in.”

Now she’s starting her fifth year of an information technology PhD at MIT Sloan School of Management, studying the economics of digitization and technology. “When I started the Research Fellows Program, I had only vague ideas about what topics I was interested in. The second time I applied to graduate school was much more targeted toward a specific set of research topics and career goals.”

Coly, who will finish the program in June, has explored different facets of economics at Stanford and is still contemplating pursuing a PhD. “It will depend on whether I find something I am very curious about,” she says, noting that she recently took a liking to econometrics after working with Professor Guido Imbens. “Researchers need to really love what they’re doing.”

Coly says the program is especially beneficial for international fellows (who constitute about half the cohort this year); in France, it’s much less common for undergrads to get the research experience valorized by PhD admissions committees or to receive letters of recommendation from well-known names in the field.

Yet the research itself is far from glamorous. “The research assistant is not always doing the most

exciting work,” Coly says — things like cleaning data, manual work, checking inconsistencies. “But it has to be done.” And working alone at home for the past year during the pandemic was less than ideal. But she enjoyed “seeing how researchers worked, their rigor, the ways they think.” (She also took full advantage of Stanford’s recreational facilities: “Playing tennis and going to the swimming pool was really good for my mental health.”)

Some fellows attain marketable accomplishments, such as coauthoring a published paper. “It takes time for most PhD students to get to that point, so it is pretty spectacular that fellows are authors,” says Emily Teitelbaum, associate director of the Research Fellows Program. “This is a true mentorship program — as one of our faculty has said, the fellow should be getting more out of it than the faculty.”

For accounting professor Charles M. C. Lee, it wasn’t immediately clear that the fellows would be useful to his work. He was accustomed to PhD research assistants who were similar to apprentices, gradually working up to become coauthors over several years. “I thought I’d be mostly investing in them, teaching them how to do something, but not getting any returns,” he says.

But last year he had trouble filling a specific role on a research project. He needed someone who was fluent in Mandarin Chinese, including colloquialisms and internet humor, and also familiar with business transactions. To Lee’s surprise, the program had a match. The fellow’s work contributed to a study that won the best paper award at its first conference, Lee notes proudly, adding that he would happily write the fellow a letter of recommendation.

Lee believes he could have benefited from a similar program when he was getting started. “I jumped in with two feet into a PhD program without knowing anything,” he recalls. “I didn’t have a clue, didn’t have any preparation, didn’t even know what research was.”

He praises the program for giving fellows more insight than he had. “PhD study is a big life commitment. Many people dive in without really having any taste for or understanding of it. This is definitely a good way to size up whether it’s worthwhile to invest five or six years to get a PhD.”

EXTRA CREDIT

While the work isn’t always glamorous, research fellow Juliette Coly says it’s “a way to have another asset in your application” to competitive doctoral programs.

Munyikwa says she was impressed by how much the program afforded high-touch faculty interactions, the most she’s received in her academic career: “The faculty are, of course, very busy, but I got a lot of time with them for things like conventional wisdom and understanding the lay of the land of research and academia. That ended up being a major benefit when I became a graduate student, because academia has a lot of unwritten rules and norms and a hidden curriculum.” She’s also grateful that the program provided a community of fellows, faculty, and students as a resource. “It’s a big challenge for minority students to build their network.”

On issues of diversity, Munyikwa recognizes the influence that business schools wield. “People who are leading corporations have a lot of power in shaping what the future looks like,” she says. “How business students think about the world, how diverse corporate America is — all these things are tied into our education systems. I’ve thought about it a lot, the importance of having somebody who looks like me in a faculty position and the benefit I’ve gotten from having diverse faculty.”

Helping students from diverse backgrounds envision themselves as PhDs speaks to the core of what teachers do, Lee notes. “As teachers, we’re helping someone project a future. It’s always a challenge to see the potential and not just what’s there. That may be more salient, perhaps, when we’re admitting students who have a different background.”

Whether pre-doc programs actually increase diversity in the field is still an open question; a recent online survey of nearly 260 pre-docs from selected schools found near gender parity, but more than 50% identified as white. The Research Fellows Program is redoubling efforts to attract diverse candidates, with targeted recruiting at historically Black colleges and universities and a collaboration with PREDOC.org, a consortium of universities working to expand the PhD pipeline.

But as Munyikwa notes, much more needs to be done, and distinct challenges remain for those from underrepresented groups who do become professors — and are often one of a few faculty members who are women or people of color. “Part of having a more diverse academia is not just building the pipeline but also doing a set of things to make the environments inclusive. For me, it’s weighing those two things: the importance of having more diversity and the cost that you as an individual take on when you decide to enter those spaces. It’s a very personal choice and one I’m still trying to make.” **GSB**



Jennifer Fate Velaise⁵⁶ George Jedenoff⁵⁸
 Sarah A. Soule⁶⁰ Marty Chen⁶²

Voices



Jennifer Fate Velaise, MBA '88

IN DECEMBER 1971, President Richard Nixon signed the Alaska Native Claims Settlement Act (ANCSA) into law. The sweeping legislation was the largest land settlement of its kind, providing around 44 million acres of land and \$962 million to the original inhabitants of the 49th state.

Though she was just 10 when the law was enacted, Jennifer Fate Velaise recalls it as a formative moment. Her mother, a Koyukon Athabascan elder, had energetically lobbied for it. “I remember going to meetings with Mom and being an activist in grade school,” Velaise says. “There were people against it. I remember getting in fistfights in the playground.”

Unlike the reservation system in the Lower 48, ANCSA granted Indigenous Alaskans corporate ownership of the areas restored to them. “It was a really unique and, for its time, a progressive, bipartisan piece of legislation,” Velaise says. “It gave Alaska Natives leverage to become involved in the state economy and

LOCATION

Los Angeles and Fairbanks, Alaska

EDUCATION

MBA, Stanford GSB, '88
 BA, Princeton University, '83

PROFESSIONAL EXPERIENCE

Executive committee member and board member, Doyon Limited
 President, Doyon Foundation
 Partner, Parkwood Drive Investors

politics, not just on Native lands.” It opened up new opportunities through the creation of 13 for-profit regional corporations. For 15 years, Velaise has served as an elected director for one of those corporations, Doyon Limited, which owns and oversees an area about the size of Costa Rica.

Being an elected Native leader, Velaise says, is “deeply gratifying work.” Shortly after returning from her family’s traditional summer subsistence fishing camp on the Yukon River, Velaise spoke about the deep connections between her career, her education, and her Athabascan heritage.

“Our tribe elects me to represent them and it’s deeply gratifying work.”

Your mom, Mary Jane Fate, was a key advocate of getting ANCSA passed. What was it like for her growing up in Alaska before it became a state?

My mom and grandparents lived a nomadic subsistence lifestyle. They lived off the land in a tent for much of the year, following game and fishing at their ancestral hunting and fishing camps. My Sitsoo — meaning grandma in Koyukan Athabascan — said that even though they had no money, they were rich because they were so productive living off the land. I continue our Athabascan subsistence traditions on these same ancestral lands on the Yukon River every summer. Sitsoo had a huge influence on my view of wealth creation — that wealth is more than just a dollar amount. It encompasses skill building, productivity, and sharing. Learning and teaching skills, being productive for yourself and others.

This legislation has been described as a giant experiment in which Alaska Natives were all of a sudden given this responsibility to run their own corporations. How did that affect your education?

My generation was the first ANCSA generation. We were raised to embrace education and then bring everything that we learned through college, grad school, or jobs back to our Native communities. In both my college and grad school applications, I wrote about how I wanted to get a business education and experience and bring it back to our people. And that's exactly what I've done.

Alaska Natives were thrown into the corporate capitalist system with literally zero experience or education in business. There was a group of people who had no education, no business knowledge, had lived subsistence lifestyles, and they were thrown into these corporate structures. And I think it was the partnership between us owning subsurface and surface land rights, and the fact that oil and gas companies wanted to develop,

that made us participants in the process as opposed to antagonists in the process. The legislation wasn't perfect, though. It's been a process of change.

I would say the first 20 years of ANCSA, there were some close calls with bankruptcy. Mistakes were made in the business world. Today it's 50 years later and I am just blown away by how innovative our leadership has been over the many years in responding and learning and becoming participants in this kind of capitalist economy. And it's been to the overall economic benefit of the Alaska Native people, raising a large number of our people out of poverty and unemployment.

How did your time at Stanford GSB influence your career?

I went in knowing nothing about business, so for me it was a real game changer. The great thing about Stanford business school is you can create strong relationships with your professors and with other students. I had an incredible strategy professor. I took a forensic accounting course, and I would say those were my two most impactful courses.

I tell our Native youth: Take accounting because it tells you the story of every aspect of a business — how line items change, how money moves between time periods, what's the tone of management. I would say Stanford had a huge impact on the trajectory of my life. I also met my husband there.

What are the goals of Doyon Limited, both in terms of its corporate responsibilities and cultural commitments?

Native corporations were among the first social impact companies in the U.S. We have a full-on corporate role, like any other for-profit company in America. But we also have a quasi-government role where we provide some of the Native governance functions in our communities. Our mission statement is to provide for the economic, social, and cultural

well-being of our Native shareholders, and we've enrolled every single Native born in our region. Doyon is a double bottom line company.

There's a big push for ESG across America, which is environmental, social, and governance; and DEI: diversity, equity, and inclusion. Alaska Native corporations have been focused on DEI from the very beginning. If you go to any Alaskan company, Native or non-Native, they already have DEI built into their system because that was informed by the cultural orientation of ANCSA. I think Alaska was ahead of its time.

What is your "why" in doing this work?

Sharing is part of our value system in Native communities. We were born and raised to give back to our community and we're so fortunate to be historically close to our subsistence roots. We've had the opportunity to grow up on our ancestral lands and live subsistence practices that are thousands of years old. That's deeply ingrained, not just in me, but so, so many Alaska Natives. Subsequently, as I've gotten older, I've really begun to see ANCSA and the Native corporations as a tool. I see them as a way of holding onto our ancestral lands and a vehicle for creating more opportunity streams for jobs, skill-building, and cultural revitalization. And it's also been a tool for Native political and economic leverage.

All I can say is being part of something this big, it's a beautiful and humbling experience. Our tribe elects me to represent them and it's deeply gratifying work. It's been an honor to do that for our people.

— Aliyah Chavez

Northern Exposure

Velaise recommends this true-crime podcast that explores "the history of oil money moving into Alaska and the inclusion of Alaska Natives in that industry. It was totally the new Wild West back in the late '60s and early '70s. I grew up knowing many of the players."



Missing in Alaska
iHeartRadio

George Jedenoff, MBA '42



WHEN GEORGE JEDENOFF ENROLLED at Stanford GSB more than 80 years ago, the school occupied a few classrooms on the central northeast corner of the university's Main Quad. "My entering class consisted of some 90 students with only one woman and just a handful of foreign students," he recalls. "Our training tools were simple and consisted of adding machines, calculators, slide rules, pencils, tons of paper, and the ever-trusted Underwood typewriter."

Today, Jedenoff is the oldest living graduate of Stanford GSB. Yet he's anything but a relic. At 104, he still exercises daily, drives, skis, Zooms, and wields an iPhone like a digital native.

Adaptability has been a hallmark of Jedenoff's life. Born in Petrozavodsk, Russia, in 1917, he spent the first few years of his childhood moving with his family as they stayed one step ahead of the revolution and the civil war that followed. They eventually sought refuge in Harbin, China, before immigrating to the United States in 1923. Life for the newcomers was tough and got even tougher after the stock market crashed in 1929. Jedenoff landed a spot at Stanford, but scrambled to cover the \$345 yearly tuition (about \$6,600 in current dollars).

LOCATION

Orinda, California

EDUCATION

MBA, Stanford GSB, '42
AB, General Engineering,
Stanford University, '40

PROFESSIONAL EXPERIENCE

Manager of Gary Steelworks,
vice president of steel
operations, U.S. Steel
President, Kaiser Steel Corp.
President, Association of Iron
and Steel Engineers

There he would meet his wife Barbara, start a career in the steel industry, and develop a lifelong devotion to Stanford. He remains proud of the MBA Class of '42 Fellowship he helped establish in 1982, which has supported hundreds of students who, like him, might not have realized their ambitions without financial assistance. "I get these thank-you letters from the GSB students who are being helped by our fellowship," he says. "The letters are so impressive, and the students selected are so outstanding." As his year's first and only alumni secretary, he penned his final class note in the Spring 2021 issue of *Stanford Business* after the death of his friend and last remaining classmate.

Throughout it all, Jedenoff has remained engaged with a changing world, a feat he chalks up to an attribute that's only fitting for a former steel man: There is strength in flexibility.

You came to the U.S. from Russia at a really young age. What was it like growing up as an immigrant?

The revolution in Russia was really horrible. A lot of my relatives who stayed were treated very badly. My grandfather died in prison. He was a retired admiral, and they just let him rot in jail. So we escaped all that and went through the experience of living in Harbin, China, which was pretty much a wild city at that point — lots of graft, lots of crime. But then from there, we immigrated to Seattle first, and then I went to high school in San Francisco.

We went through more trauma than most people who were just recovering from the Depression, because of language difficulties and also my parents separating. We got hard hit by the Depression. We were about one inch away from being homeless.

After you graduated from high school in 1935, you came to Stanford as an undergrad.

Fortunately, I had very good grades and I was lucky to get to Stanford. Because of a scholarship and various jobs I had at Stanford, I was able to go through all six years.

“That’s why I’m still here at 104 — because I’ve been adaptable and optimistic.”

When you started at Stanford GSB in 1940, did you have a sense of what you wanted to do with your career?

Well, not at first. I thought I would like a technical assignment because I was pretty good in math and mechanics and such. The turning point was a summer job that I had working with Columbia Steel Company, a subsidiary of U.S. Steel. I liked that work better than anything that I had done before, because it enabled me to work with people and still retain a need for my technical knowledge. That was the basis of my accepting a permanent job with U.S. Steel after I graduated.

Of the things you learned at Stanford GSB, was there one thing that really set you on your path?

The GSB really taught me about management, a discipline with which I had no experience. It gave me a broader picture of what it took to run a corporation. And being the optimist that I am, I decided I wanted to work for a big corporation so that when I got to the top, I'd have a big organization. At the time, U.S. Steel was one of the biggest corporations in the country, and that gave me plenty of room.

If a current Stanford GSB student were to go back and see the school in the early 1940s, what do you think they would be most surprised by?

The narrow scope of interests and curriculum provided by the school in preparing students for their future careers. The emphasis was more on acquiring personal skills in managing corporations, without much consideration of the social consequence or needs of society in general. I think what the business school is doing now in enlarging its scope and its objective to make the world better, rather than just for more personal improvement in one's performance, is providing real leadership. It seems to me that applying knowledge just for self-gratification and to accumulate personal wealth is a shallow objective compared to using our skills

to help improve the various institutions on which our livelihood depends and solving problems with which our society is confronted. Issues such as poverty, hunger, lack of opportunity, crime, social unrest, racial violence, climate control, and war desperately need attention.

You worked in the steel industry for more than 30 years. What's the biggest change in how business was done then and now?

The biggest change was that at that time we were struggling to bring America's competitive influence up and to strengthen our various industrial organizations. There was no real big concern about the world per se; it was about America and about our own future within this country. As time went by, I began to realize that we are living in one world, not just America, and that there are problems all over. And if these problems are not solved, then Americans and everyone else would suffer as we are doing now. So I began to get a broader viewpoint of how we incorporate all Americans, and all the world's people, into improving their standard of living, rather than just a few at the expense of others.

How do you stay active and engaged these days?

I believe firmly in the principle that education is a lifelong activity, not just something that you go to college and then forget about. I enjoy learning things. I use Google quite a bit to answer my questions, like, "What was the score of the Stanford game yesterday?"

Stanford, the GSB, and the Hoover Institution have several programs I follow — they put out regular reports on special developments and current problems which are very informative and I can "attend" on Zoom. Condoleezza Rice is one of my favorite speakers. Among many other accomplishments, she can speak Russian well. My Russian now is about 95 years old, so I've forgotten a lot of it, but when I see her once in a while, I'll talk to her a little bit in Russian. I get a kick out of that.

I don't read books much because my eyesight's gotten kind of bad and it takes me longer. Everything I do takes twice as long as it used to. But I am thankful that I can still do them. At the end of this month, I have to get my driver's license renewed, and I'm a little worried about my eye test. [Editor's note: His license was renewed.]

Do you still ski?

I've been able to ski consistently for 61 years, including a few runs this year at Sugar Bowl, but I can no longer ski at my favorite resorts in Utah because I can't handle the altitude. I still do my 45 minutes of exercise every morning to keep limber, and that helps my mind, too.

You've adapted to so many changes in technology, politics, and society over your lifetime. How do you manage to change and remain true to yourself?

Well, I became adaptable when I didn't have a choice. Fortunately, my mother was very positive and optimistic and really gave me a great deal of confidence and reassurance, even when we didn't have anything. That philosophy stayed with me. Adaptability is a habit, and you've got to discipline yourself, and I feel I'm very, very disciplined. If I don't like something, I find out why, and then try to adjust to it and then try to listen to the other viewpoint. And you may not change your mind, but at least I try to find out a reason for why a person is doing what they're doing or why it affects me. And a lot of it is because of your ego, and you've got to consider that.

That's who I am, and that's why I'm still here at 104, worrying about these things — because I've been adaptable and optimistic. That's what makes life fun for me. And hopefully, for as long as I live, I can still be a contributor, and that's what I'm trying to be.

— Dave Gilson

Paths to Powder

Jedenoff has appeared in several videos promoting Ski Utah. "All this is rather amazing since I'm not that great a skier," he writes in his autobiography, *My Centenarian Odyssey*. "Perhaps it means that you don't have to be especially good but just able to keep doing it longer than anyone else!"

Sarah A. Soule, senior associate dean

ONE OF THE FIRST COURSES Sarah Soule taught when she arrived at Stanford GSB as a professor of organizational behavior in 2008 was an elective called *Women in Management*. This title was inherited from a colleague, she recalls, and didn't do justice to the material, because the course actually explored broader issues of diversity, equity, and inclusion. But perhaps because of the name, only a handful of students enrolled.

"The class was competing with other classes on topics that students perceived to be more important to their careers," Soule says.

As a scholar of social movements, Soule understood that "cultural change is slow." Yet she had arrived at Stanford GSB on the cusp of a historic shift in Americans' understanding of institutional biases that perpetuate gender and racial inequities. Recent high-profile events have only hastened the reckoning: the killing of George Floyd, the rise of movements such as Black Lives Matter, MeToo, and Stop AAPI Hate. "All of these events were accelerants," Soule says. "They brought more attention and urgency to these concerns."

Inside Stanford GSB, Soule saw how a new generation of students was changing the culture. Discussions about what's come to be known as DEI — diversity, equity, and inclusion — were no longer seen as a side issue but a core part of what it meant to be a business leader. More students wanted to take classes on issues

HOMETOWN

Barre, Vermont

EDUCATION

PhD, Sociology, Cornell

University, '95

MA, Sociology, Cornell

University, '91

BA, Sociology, University of

Vermont, '89

ACADEMIC AREA

Organizational Behavior

related to identity, bias, and fairness, and courses like *Equity by Design* and *Power of You: Women in Leadership* emerged to meet the demand. "There is now an expectation among our students that to be a leader in any capacity you have to be conversant in and aware of and passionate about diversity, equity, and inclusion," she says. "You have to understand these issues."

A Sociologist in a B-School

Raised in a politically active family, Soule has had a lifelong passion for social movements. As a young girl in her home state of Vermont, she handed out leaflets in support of U.S. Senator Pat Leahy. (She keeps a hand-signed thank-you note from Leahy in her office.) She remembers attending Bread and Puppet Theater peace rallies to protest the Vietnam War. Early on, she was imprinted with the notion that democratic governance requires participation and pressure from people both within and outside of government institutions.

She took this background to the University of Vermont, where she majored in sociology. Drawn to a career in academia, she continued to Cornell University, where she wrote her master's thesis on populism and lynching in late 19th-century Georgia and her PhD dissertation on the anti-apartheid movement on U.S. college campuses. Since then, her continued interest in the impacts of social movements and political activism has animated most of her research.

"So why did I end up at a business school?" she asks. About a decade into her career, after gaining tenure and being promoted to full professor of sociology at the University of Arizona and then returning to Cornell as a full professor, Soule began to look at the ways in which activism intersects with the private sector.



ELENA ZHUKOVA

“The walls of the university are more and more porous, and we need to make sure we’re serving local and global communities.”

“Whether protests, boycotts, or through shareholder resolution processes, I began studying the ways in which social movements influence firms,” she says. She investigated how environmental activism influences corporations, the effects of targeted activism on stock prices, and the spread of corporate divestment movements. Her curiosity bloomed into a full-blown research agenda that she continued to pursue after she came to Stanford GSB.

Turning the Lens Inward

In 2016, after eight years at the business school, Soule was asked if she would step into an administrative role as senior associate dean for academic affairs. She agreed, and with the title came three core responsibilities: overseeing the executive education program; managing two of the school’s seven academic areas (accounting and finance); and establishing the school’s DEI initiatives, which had not previously been handled by a specific individual. “The efforts had, until then, been diffused across the school,” she says. “I was the first to really own this space.” It was a good match. Soule had spent much of her career studying the friction between progressive social demands and institutional and policy responses. Heading up DEI initiatives at Stanford GSB presented an opportunity to put her scholarly expertise into practice.

“DEI is a movement, not a mandate, and Sarah’s deep understanding of how movements succeed — or fail — and the elements needed to foster success have contributed to her success,” says Lori Mackenzie, lead strategist for DEI at Stanford GSB and cofounder of the VMware Women’s Leadership Innovation Lab. “She has the ability to lead in a way that makes everyone feel that they are also leaders, with the confidence and support to do our best work in the areas where we are active.”

Soule and her faculty colleagues, alongside a dedicated group of alumni, started conversations about creating a

more inclusive classroom experience for Black students and members of under-represented minority groups. This led to the creation of a wide range of resources designed to expose and disrupt patterns of unconscious bias by building a culture of inclusion. Aided by GSB alumni, faculty and lecturers contributed to a growing catalog of case studies that center on main characters who are not white men and sought to invite a more diverse range of guest speakers to classes. New courses, too, have been created that focus on DEI issues in both the workplace and the classroom. Soule currently teaches *Diversity, Equity, and Inclusion in Academe: Confronting Bias*, a doctoral-level course that explores how academic culture may make particular groups feel more or less included.

Encoding Equity

Soule notes that one of the most stubborn challenges at the school has been, not unexpectedly, the diversification of tenure-line faculty. One of the primary benefits of being a full professor — lifetime stability — creates a roadblock to DEI efforts since there is not nearly as much job turnover in academia as there is in other sectors. She has been exploring alternative ways to bring a wider range of voices into the classroom through, for example, the appointment of visiting lecturers and workshops designed for postdocs and PhD students from under-represented minority groups.

Soule has also spent a lot of time thinking about how employees who are not directly involved in student education might engage with their work using a “DEI lens.” One encouraging example, she says, was watching the increased attention on making the school’s website fully accessible. The technical challenge of coding — often considered removed from issues of equity — suddenly became integrally linked to broader DEI goals.

“Sarah is the secret sauce of the GSB’s success and leadership in the DEI space,” says Mackenzie. “She is ensuring that

DEI is embedded everywhere, so that this ‘movement of movements’ is built to last far beyond her time as a leader of DEI.”

Beyond the Campus

Given the reputation and profile of Stanford GSB, Soule is aware that her team’s work and actions resonate far beyond the campus and those directly affiliated with it. “There was and continues to be a lot of discussion around how we, Stanford, can be better at serving the community and the world out there,” Soule says. “What role, as a leading educational institution, does Stanford have in positive transformational change? The walls of the university are more and more porous, and we need to make sure we’re serving local and global communities.”

One approach Soule has taken is publicizing the school’s research and efforts to a general audience, with a focus on business leaders. She and her colleagues have written articles for such publications as *Harvard Business Review* and *Fast Company* that highlight their successes and failures, broadening the audience of people learning from Stanford GSB’s work. Soule also helped create the *Anti-Racism and Allyship 7 Day Journey*, a free, self-paced online course designed for people “curious, courageous, and open to learning” how they can put their intentions into action. More recently, Soule and the team have created another free online learning resource, the crowd-sourced *Asian American Pacific Islander Heritage Month of Learning*.

Though seemingly easy, Soule noted these steps are novel — and necessary — moves for a 96-year-old institution that has evolved to meet the urgency of one of those transformational moments that are at the heart of her research and teaching. “I’ve been focusing on and talking about these issues of social change for a very, very long time,” she says. “I’m heartened now to see that some of that early work has caught on, that people are genuinely and deeply interested in these topics.” — *Dylan Walsh*

Building Belonging

This fall, first-year MBA students are taking a newly designed “learning journey” focused on teaching inclusive leadership. “This is fairly momentous,” Soule says. It’s the “first time there has been a sustained DEI curriculum that attempts to tie into the broader curriculum.”

Marty Chen, MS '21



WHEN MARTY CHEN THINKS ABOUT the kind of movie he'd like to produce and distribute someday, he envisions an uplifting drama about impoverished indigenous Taiwanese kids who fulfill their dream of becoming athletes and competing in the Olympics. The idea recalls his volunteer work with teenage weightlifters at a sports academy in Taiwan, where he spent much of his childhood. "I want to bring more fuel and inspiration to people who need it," he explains.

Chen, who has moved across the Pacific multiple times over the past 30-plus years, doesn't just want to see more Asian stories on the screen, he wants to get them there. Looking at a global entertainment industry in which Asians remain underrepresented, Chen thinks the problem is not just a matter of bias or erasure but one of access. Many Asian content creators, he says, aren't connected to the production and distribution networks that they need to reach not only Asian viewers but wider audiences seeking great entertainment that transcends geography and culture.

"Access to opportunities often is based upon having friends and an immediate network to provide you with referrals. I feel like

HOMETOWN

Taipei, Taiwan

EDUCATION

MS, Stanford GSB, '21
BA, Mass Communication/
Media Studies, UCLA, '09

PROFESSIONAL EXPERIENCE

Strategy and investment lead,
North America, Tencent
Greater China lead, content
partnerships, YouTube
Account manager, Google
AdSense

there should be a way to democratize it more," Chen says. "The whole idea is to build something that would enable us to surface this talent more easily."

As a student in the Stanford GSB MSx program, Chen aims to acquire more of the expertise he'll need to create a television and movie "production powerhouse" to provide platforms to a new generation of creators.

As someone who's gone back and forth between the U.S. and Asia, how has your cross-cultural experience influenced you?

I was born in the U.S., but six months afterward my family moved back to Taiwan. We later came back for a year and I went to elementary school in Boston. But other than that, I essentially grew up in Taiwan. In my senior year of high school, I came back to California. By college graduation I had attended 10 different schools, and by age 30, I had worked in three different countries. Moving so frequently was thrilling, but it also was isolating.

Media content was a constant in my life, something that gave me an outlet to express and relate. I started first grade knowing only the words "yes" and "no" in English, but ended the year reenacting full scenes from *Teenage Mutant Ninja Turtles*. When I went back to Taiwan, I struggled with the rote memorization and cram culture, so I transferred to a creative arts program where I studied Chinese literature through stage plays and learned the history of aboriginal people in Taiwan through song and dance. In high school, I explored a blend of Eastern and Western films and books. *Dead Poets Society* challenged me to pursue my interests, while Wuxia [a fantasy genre about ancient martial arts warriors] taught me to honor brotherhood.

Writing a New Script

Some of Chen's favorite GSB classes have been *Winning Writing*, taught by Glenn Kramon, and Bill Guttentag's *Leadership in the Entertainment Industry*, "a perfect opportunity to get access to top entertainment industry leaders and hear their direct perspectives."

You've had a wide range of professional experiences as well, from toy marketing at Disney and advertising to working with streaming content creators. What led you to your current aspirations?

The inspiration really came from my work at YouTube, which was business development and partnerships in China, Taiwan, and Hong Kong. I worked with all sorts of media partners, from TV broadcasters and music labels to emerging digital media companies and independent creators.

I was particularly influenced by working with the younger digital native creators who are born on YouTube. Back in 2013, they were a bunch of nobodies who were passionate about creating videos and content. Then they turned into household names. I was able to see the rise of this phenomenon, where anyone could create content and make a living.

I wanted to bring that to a larger platform, because I know that storytelling contains protections for people. There are so many different kinds of world-class talent, but there is a mismatch between supply and demand. Access to opportunities often is based upon having friends and an immediate network to provide you with referrals. I feel like there should be a way to democratize it more. The whole idea is to build something that would enable us to surface this talent more easily.

How would your platform for surfacing Asian entertainment talent work?

It wouldn't be a streaming platform — that's something for Netflix and Amazon. The holy grail would be to build a production powerhouse like A24, which distributed the 2021 Golden Globe winner *Minari*. You could drive narratives from different parts of the world with an Asian perspective and have an eye for up-and-coming directors.

Ideally, I'd like to get in early in the process, in pipeline development, where you're talking to the writers about how

you create a more global-friendly type of narrative from the get-go. Asian stories obviously would be one of the hooks, but we don't want to just do that — it would be creating an island for ourselves. We want to have a wider appeal.

We've seen a lot of successes with YouTube short skits being developed to full-scale series on Hulu or Amazon. I think it's just a matter of time for us to develop more of these stories from more parts of the world. The goal really is to create opportunities for the Asian talent pool, and increase its penetration in the entertainment industry. And not just for directors and actors and actresses. There's an even bigger gap in opportunity for other types of talent, such as production and post-production.

You've proposed an Asian version of Black Entertainment Television. Why do you think that sort of platform would be beneficial?

Why is it that in 2021, the only predominantly Asian American cast on a major American TV network is still in the kung fu genre [on the CW series *Kung Fu*]? Despite all the talk of Asian American representation from Hollywood, it's clear that we must do more to move past old tropes.

We need an Asian-owned and -operated media network to tell stories of our culture and identity consistently and authentically so America can understand who we are. Imagine a channel that showcases unique international crossovers, like the Vietnamese rapper Son Tung M-TP's 2019 hit featuring Snoop Dogg, or YouTube sensation Uncle Roger teaching world-renowned chefs to make egg fried rice.

The idea of emulating BET is that it really was the symbol of Black entertainment in the 1980s yet its content resonated beyond its core demographic. The same is happening with Asian content — animation and K-pop have won audiences around the globe, and I believe that's just the beginning. In fact, I'd argue that the world we live in today is all

hyphenated and intertwined already; we just need the media to catch up, and also push the boundary at the same time.

What led you to Stanford, and how is your experience here helping you to achieve those goals?

What attracted me to Stanford was the classes focusing on entrepreneurship, startups, and business models, which I thought would expose me to new frameworks. And I thought the solution to the problem I was hoping to solve had to come through technology. I also came to Stanford to double down on my writing, leadership thinking, and communication skills. I wanted better tools to help me to access people who can move the needle. Being Asian, our stakes are so high. If you come in with an accent or misuse a word, there's a point deduction. Another thing that appealed to me was the MSx program, which enables you to get through in one year.

In your spare time, you host *The Marty Party Podcast*, where you have conversations with an eclectic assortment of Asian entrepreneurs, such as Meng Chiang, a former attorney turned pro poker player and sommelier. Do you have further ambitions in that medium?

Definitely. My podcast has allowed me to have honest conversations with people from all over the world to talk about unspoken feelings and unfiltered stories, all from my own living room. I found that I was not only uncovering a story for myself, but I was also collecting stories that I can share with everyone. I'm using podcasting to learn stories that are inspiring and share those with other people.

— Patrick J. Kiger

“The world we live in today is all hyphenated and intertwined already; we just need the media to catch up.”



Illustration by Sirin Thada



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