

Stanford Business

SPRING 2019



SHIFT

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A LETTER FROM DEAN JONATHAN LEVIN

Collaboration Brightens Our Future

Last month, I spoke to Stanford's Faculty Senate, a group of 56 elected representatives of the Academic Council, and the provost. It was the first time since 2011 that a Stanford GSB dean had presented to the senate, the body dedicated to academic governance at Stanford. I discussed Stanford GSB's history and priorities and the school's relationship to the broader university. I would like to share some thoughts on this last topic, because strengthening our ties across Stanford is an area of emphasis for those of us at the business school today.

Stanford GSB's trajectory has paralleled Stanford's in many ways. When the business school was founded in 1925, it had a regional orientation: The intention was to encourage local business talent to stay on the West Coast rather than travel East. Within a few decades, Stanford GSB became a national school. Today, we are global in our efforts to bring students, faculty, and ideas to the school and in the impact we make through our alumni, research, and educational programs. Embracing Stanford's commitment to give back to society, we have benefited from the strengths and values of the university to help us reinforce and enhance them across our community.

When Arjay Miller served as dean in the 1970s, he realized that to launch the GSB's Public Management Program, it would be important for the school to seek a degree of financial independence. Arjay convinced the university to allow Stanford GSB to become a formula school, managing its own budget and raising money for its endowment while contributing each year to Stanford's finances. This model continues to serve us well, allowing us a valuable degree of autonomy in hiring faculty, developing curriculum, and managing our business education priorities.

Becoming more independent also may have helped Stanford GSB to develop its distinctive culture, where small class sizes permit an immersive learning experience and enable close relationships between students and faculty. With this independence, Stanford GSB arguably had a less immediate need to engage with Stanford's other schools. When I joined the Stanford faculty in 2000, there was a perception that the business school had established a "force field" around it, protecting it from outside interference but also limiting collaboration. The last two decades, however, have seen a remarkable shift in this regard. Today, we actively seek to collaborate with Stanford's other schools and institutes.

In my remarks to the senate, I highlighted the growing number of students going back and forth "across the street." Last year, over 70% of our MBA and MSx students took courses throughout the university. We made more than 100 class sections available to non-GSB students and enrolled over 450 of them. We offer degree programs with each of Stanford's six other schools, and around 20% of our MBA students pursue a joint or a dual degree. The connections with the broader university also carry through to our alumni:

More than 4,700 have earned a Stanford degree apart from their GSB degree.

I also talked about the engagement of Stanford GSB faculty across the university. More than a quarter of our tenure-line faculty hold courtesy appointments or teach courses at other Stanford schools, while 21 faculty from across Stanford hold appointments at the business school. A number of our faculty teach undergraduate courses. One example is professor Darrell Duffie's seminar on financial markets. Faculty from Stanford GSB also play important roles in many of Stanford's institutes, including the Woods Institute for the Environment, the Precourt Institute for Energy, and the Hoover Institution.

We have built a small suite of collaborative executive education programs, including several new ones this year. With the Graduate School of Education, we launched the Stanford Educational Leadership Initiative, which includes an innovative program for school district supervisors. We will introduce an artificial intelligence executive program this summer, together with Stanford's new Human-Centered AI Institute. These build on our existing partnerships, such as our Innovative Health Care Leader program, directed by Stanford GSB professor Sarah Soule and School of Medicine professor Abraham Verghese.

One of our recent successes has been a close collaboration between Stanford Seed and the Stanford Institute for Economic Policy Research. Last year, we established the Stanford Center on Global Poverty and Development, which involves over 100 faculty from across Stanford, including 22 from the GSB. The center's recent initiative on conflict and polarization is led by Stanford GSB faculty Lindred Greer, Nir Halevy, and Saumitra Jha and two Stanford political science professors. Together with the center and SIEPR, we cohosted the first Stanford China Economic Forum last fall in Beijing. It was a great show of Stanford's global reach and impact and involved around 200 Stanford alumni, including 100 from the GSB.

As Stanford GSB builds relationships across the university through teaching, research, and program development, what has emerged is the recognition that we can accomplish much more working together than working alongside each other. I am confident these partnerships will enhance and accelerate our ability to change lives, change organizations, and change the world. ▲



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

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“We need to understand why firms don’t seem to find it profitable to

hire older Americans,

even at wages that are lower than they used to earn.”

— Christopher Tonetti

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Stanford Business

INSIGHTS AND IDEAS FROM STANFORD GRADUATE SCHOOL OF BUSINESS

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FROM BANKING TO GOAT CHEESE It took a good long while for David L. Brunner to find his way back to farming. PAGE 38

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Cover illustration by Chad Wys

FROM THE EDITOR

WHEN SHIFTING HITS HOME

At Stanford GSB, transformation is core to how we teach, which is why we chose “Shift” as the theme for this issue of *Stanford Business*. ▶ Sometimes shifts happen in the classroom, as with the course taught by Charles A. O’Reilly III and Amy Wilkinson (page 26) that shows managers of large firms how to pivot like nimble entrepreneurs. Sometimes they happen mid-career, as in the case of Chesca Colloredo-Mansfeld (MBA ’92, page 14), who left academia to run a nonprofit that treats children crippled by clubfoot. ▶ But more often than not, Stanford GSB students make their biggest pivots right before or after graduation. In a recent survey, the Career Management Center (page 61) found that more than half of Stanford GSB’s 2018 MBA graduates have *already* moved on to new industries. ▶ There’s another reason behind this issue’s theme: The magazine is about to make some changes of its own, although we anticipate they will be more of a course correction than a sharp turn. To that end, as you probably know, we recently sent out an online survey to all alumni asking you to tell us what you like in these pages and what you could do without, and we’re eager to analyze the responses. Our goal is to craft a magazine that continues to engage readers while making efficient use of our resources in the ever-evolving media landscape. ▶ To make sure we have time to assess your needs and tweak the magazine, we’re going to suspend publication for one issue. That means we will not be producing a Summer 2019 issue of *Stanford Business*. Please don’t take this as a sign that the magazine is about to disappear. We’re not going anywhere. We’re just shifting. — STEVE HAWK, EDITOR

ENGAGE

Shape Shifters

Editor's note: Last issue, we asked readers to share personal stories related to our Spring 2019 theme: Shift. The good news is that the response was strong. The bad news is that we have room for only a couple of your letters.

Thirteen years into a career with Chevron Oil Company, I had just moved into a job that I had asked for (on the Strategic Planning staff) when it happened. I got a persistent inner message: "You're not in your right place." I certainly *thought* I was in my right place: living in the San Francisco suburbs; a wife and two sons; a job that I had asked for in a company whose management I respected and appreciated; making a darn good salary; promising long-term prospects. But the inner message kept coming up.

I tried to ignore it for most of a year, until finally my speech began to block. It only happened at Chevron. I was fine at home, fine coaching the kids' baseball teams, and fine serving on my townhouse board. But at work, the speech block was becoming evident to others. So I stopped fighting the inner message and began to ask what could be more interesting and rewarding than strategic planning in the international oil business.

Turned out that the message was coming from what I had been learning about myself spiritually, so I left Chevron to attend ministerial school. I was ordained and became a pulpit minister for 20 years, serving congregations in Missouri, Minnesota, Virginia, and Pennsylvania. It didn't make me rich in money, but I have never regretted it. After 20 years, I got another of those persistent inner messages: "Your time as a minister is complete." This

time I did not resist the internal guidance and worked with my board of directors to make a prompt, orderly withdrawal.

For family reasons, my wife and I returned to Minnesota, where a former congregant (and my Stanford MBA credentials) secured me a position as the finance and contracts coordinator for a large cancer-research contract at the University of Minnesota School of Public Health. I was hired three months before my 60th birthday and worked for UMN for 12 years.

This "career" was not what I visualized when I applied at the business school, and it is not the makings of a great *Business Week* feature. But as I have watched Stanford GSB articulate its mission over the years, I don't think my experience is out of step with its purpose. I surely used

what I learned at Stanford every step of the way.

— JIM FISHER, MBA '64
Oakdale, Minnesota

The inspiring articles in your excellent Autumn edition encouraged me to let you know about my own shift in career some 40 years ago. Having gone to Stanford GSB after three years at Ford Motor Co. in England, my natural career was in marketing. Back in London, I joined McKinsey. But after another three years, I began a doctorate at the London School of Economics, while starting projects to reuse old buildings (influenced by what I had seen in San Francisco).

My big shift came when I realized how people's well-being was shaped by the way cities developed. I decided to apply what I had learned to advising communities and local

authorities on urban and economic development. Fortunately, I was joined in setting up URBED (www.urbed.coop) by a Stanford GSB classmate, Christopher Cadell (MBA '69). We had worked on a project together to increase food output in India, and he provided the financial skills I lacked.

Now, 50 years later, I am achieving another ambition with a project to build "eco neighborhoods" in Southern India through an initiative we call Smarter Urbanisation. Reflecting on what I learned from my two years at Stanford, I realize it was the confidence to change direction and pursue what seemed to be right, rather than following anyone else's rules. It is good to see how many graduates now set up their own businesses to tackle the real-world problems that banks and consultancies can never reach.

— NICHOLAS FALK, MBA '69
London, England



Adolph Gottlieb, *Transfiguration III*, 1958

STANFORD BUSINESS**ONLINE**

EDITED BY JENNY LUNA



WEB

“You hear all these axioms about living life to the fullest and YOLO. You know what? There’s a degree of truth to those things.”

Oscar Munoz, CEO of United Airlines, tells students to put their egos aside and be their true selves — whether they’re managing mergers or speaking publicly about personal issues.

<https://stanford.io/Munoz>

WEB

Brexit remains a top source of uncertainty for almost half of UK companies, declares Nicholas Bloom, a professor of economics by courtesy at Stanford GSB. “Brexiters promised something they hadn’t thought through. It was much like jumping out of an airplane, grabbing a rucksack, and assuming that there’s a parachute inside, only to find out that it’s only a packed lunch as you’re hurtling to the ground.”

<https://stanford.io/Brexit>

YOUTUBE

“The first thing I optimize for is who I will work with. Don’t bet on companies, bet on people,” Uber CEO Dara Khosrowshahi told students at a View From The Top event. Khosrowshahi discussed his approach to shifting company values at Uber to focus on diversity and inclusion. “An important factor in our change was setting a new culture and new norms,” he said. “We asked people, ‘What kind of company do we want to be?’”

<https://stanford.io/UberCEO>

WEB

Amir Goldberg: Words Matter

The Stanford GSB associate professor analyzed years of internal company emails and found the language we use determines whether we’ll move up — or out.

<https://stanford.io/GoldbergWords>

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Lives



“We were passionately divergent about
**how we interpreted
the same reality,**

yet the idea that we were in
different networks was just incorrect.”

— Amir Goldberg PAGE 12

TECHNOLOGY

An End to Traffic Jams? It Might Not Be a Dream

Three new technologies could eliminate your commuting nightmare.

BY EDMUND L. ANDREWS

Three emerging technologies could soon transform the way we drive and go a long way toward eliminating traffic jams.

In a new paper, Michael Ostrovsky of Stanford GSB outlines these technologies — congestion pricing, on-demand carpooling, and self-driving cars — to show that when combined, they will revolutionize our transportation system.

“The stars are now aligned,” says Ostrovsky, a professor of economics who specializes in designing more efficient markets. “The interplay between these three new technologies puts us on the cusp of fundamental changes in how people drive and makes it possible to tackle the congestion problems that have bedeviled planners all over the world for years.”

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

Photograph by Gabriela Hasbun



MICHAEL OSTROVSKY
"On the cusp of
fundamental changes."

CONGESTION PRICING

Economists have argued for years that a well-designed system of road pricing could be the most effective way to reduce congestion. The basic idea is simple: To keep traffic moving smoothly, raise the price of using particular roads when traffic is over their capacity. If the pricing is right, drivers will start making a host of changes: Some will switch to public transit, some will start carpooling, and others will find alternative routes or drive outside of rush hour.

Needless to say, blanket road pricing has never caught on. One obstacle has been political opposition — tolls are rarely popular, and opponents have argued they are particularly unfair to people with low incomes. Until recently, moreover,

any kind of ubiquitous system would have required tollbooths everywhere and been prohibitively expensive. It could also create nightmarish obstructions worse than the original problem.

But new technologies make it possible to dramatically reduce those obstacles. Congestion pricing may soon use drivers' mobile GPS and data communications to charge them tolls for trips down heavily congested roads. Gone is the need for any kind of physical tollbooth. Cars wouldn't have to stop or even slow down, and the cost of implementing the system would be a fraction of what it would have been in the past. "It would still be expensive to create the basic pricing system, but it can be scaled up at very little cost once you have it," Ostrovsky says. Meanwhile, of course, drivers wouldn't have to wait in lines like the ones that form at the Bay Bridge toll station between Oakland and San Francisco.

To be fully effective, however, congestion pricing has to cover all the major roads in a metropolitan area, according to Ostrovsky and coauthor Michael Schwarz,

chief economist at Microsoft, who earned his PhD at Stanford GSB. If only a few major thoroughfares have tolls, many drivers will find alternative routes and the traffic jams will simply shift to different streets. Ostrovsky calls this the "spillover" problem.

ON-DEMAND CARPOOLING

Carpooling has long been a way for commuters to split the costs of driving. However, it never became ubiquitous, because of various inconveniences associated with it. For instance, traditional carpooling is inflexible: Riders have to be picked up and dropped off at pre-arranged times and places. Anyone who needs to start work early, stay late, or go someplace different is out of luck. According to the U.S. Census, only 9.3% of commuters carpool — and that number includes family members traveling together.



"The stars are now aligned" for an end to traffic congestion, Ostrovsky says.

“Intelligent tolls and convenient carpooling will work as a ‘shock absorber’ for times when the demand for travel is very high.”

But carpooling is on the brink of its own revolution, Ostrovsky says. Just as Uber and Lyft made it easy to match for-hire drivers with passengers, new services like Waze Carpool and Scoop are starting to make it easy for commuters to match with each other and organize carpools. The new platforms can match passengers heading to similar places, calculate the fastest or cheapest routes, and handle the billing. In time, carpooling could be almost as cheap as riding a bus and almost as convenient as driving solo.

A crucial point, Ostrovsky says, is that flexible carpooling will also make congestion pricing much easier to tolerate. It allows people to share the cost, thus reducing the financial burden of tolls. Commuters could also choose to drive solo, but would then pay the entire cost of tolls.

Those opportunities reinforce the benefits of congestion pricing, because people can choose the way they travel based on their individual preferences about cost and convenience. If congestion pricing creates a more efficient market for traffic, carpooling can increase the efficiency even more. Carpooling gives commuters an opportunity to travel during times of high demand without being forced to pay high prices. As Ostrovsky puts it, “Intelligent tolls and convenient carpooling, deployed together, will work as a ‘shock absorber’ for times when the demand for travel is very high, leading to a higher average number of people per car instead of congested roads.”

DITCHING THE DRIVER

The third emerging technology is self-driving cars. When self-driving cars take hold, Ostrovsky says, they will magnify the benefits of the other two technologies. For one thing, a carpooling system based on robo-taxis would be more dependable and reliable than one with human carpool drivers. For instance, if a commuter carpools to work but then the system has trouble finding a convenient carpool match for her return trip home, the system can fall back to having the commuter ride solo, for a part or for all of the trip. And this “fallback” can be done seamlessly for the commuter, saving her the stress and hassle of arranging alternative transportation.

Self-driving cars can also greatly reduce various frictions involved in forming carpool matches and increase flexibility in the types of carpool matches that can be made. With a self-driving car, for example, the first person to be picked up does not have to also be the last one to be dropped off. The car can go anywhere, mapping routes based on its mix of customers. It also becomes easier to make carpool matches in real time, adjusting the route on the fly.

More broadly, says Ostrovsky, a system based on self-driving cars, carpooling, and tolls will blur the line between public transportation and solo driving, giving commuters access to convenient, reasonably priced door-to-door transit with a small number of stops in the middle.

There is another reason why the arrival of self-driving cars may make tolls and carpooling necessary. Self-driving cars will make commuting easier and more comfortable — for instance, a rider will be able to sleep in the car. This will make longer commutes tolerable. Thus, the arrival of self-driving cars will increase the number of cars on the road.

On the flip side, it is also expected that self-driving technology will lead to an increase in road throughput. The overall impact on traffic congestion is ambiguous, but there is a serious danger that traffic will get much worse. In that case, tolls will be necessary to discourage commuters from long solo drives during rush hour. And when tolls are introduced, carpooling becomes more attractive, because it allows riders to share the costs.

TAKEAWAYS FROM NEW RESEARCH

Ostrovsky and Schwarz analyzed these new dynamics to determine best principles for future policy and developed a computationally tractable methodology that could be used to set road prices. Their analysis also produced several general conclusions.

First, you do not need to impose a charge for every road at every moment of the day. You only need to impose a charge when demand is above the road’s capacity. If the traffic is flowing smoothly even without a charge, there is no benefit to charging a price that reduces the traffic even more. In fact, charging a price for an uncongested road would actually reduce incentives for people to drive at times when traffic is lower.

Second, you do not need to micromanage every detail. If you set appropriate road tolls and have a well-functioning market for carpooling, there is no need for regulators to force commuters into arrangements they don’t want. The carpooling decisions that people make in their own self-interest will end up being good for the city as a whole.

However, it is not a good idea to leave everything in the hands of market forces. If a road’s prices are set by a private company, for example, the owners would want to collect tolls all day and every day, including the times when roads are underutilized. While this would be great for the private company’s bottom line, such tolls would be detrimental to the commuters and reduce overall efficiency.

To be of maximum benefit, the researchers warn, road pricing should be set by a public authority with a city’s broadest public interest in mind.

“Traffic congestion is a major issue worldwide, imposing a serious burden on individuals and families and causing a host of other problems, such as wasted fuel and environmental damage,” Ostrovsky says. “We hope that the combination of intelligent road pricing, convenient carpooling, and eventually autonomous transportation will help solve this problem, and we view our proposed framework as a step toward the solution.” **▲**

NETWORKS

Strange Contagions: How Cultural Beliefs Spread

From anti-vaxxing to gun control, the propagation of shared opinion is influenced as much by the meanings we ascribe to them as by our social circles.

BY KATIA SAVCHUK

When Amir Goldberg had his first child a decade ago, he was bewildered to learn that some of his colleagues at Princeton University, where he was a doctoral student, weren't planning to vaccinate their offspring.

It seemed obvious to Goldberg that vaccines were crucial to protecting his daughter's health. Yet people who were similar to him — left-leaning, highly educated academics — had come to the opposite conclusion. They distrusted Big Pharma and thought that vaccines put their kids at risk of autism and other health problems. What accounted for the vast gulf between their beliefs and his?

Goldberg suspected that the explanation ran counter to a prominent theory among sociologists, called social contagion. This model holds that beliefs and behaviors spread like a virus. They infect the people with whom one has the strongest ties, and the primary obstacles to their expansion are the boundaries dividing social groups.

But social contagion didn't adequately explain the anti-vaxxers. "We were passionately divergent about how we interpreted the same reality," Goldberg says, "yet the idea that we were in different networks was just incorrect."

THE ROLE OF MEANING

Goldberg, now an associate professor of organizational behavior at Stanford GSB, came up with a new theory, which he calls *associative diffusion*, to explain cultural variation in contemporary societies. Influenced by insights from cognitive science, he and Sarah K. Stein, a PhD student he advised, describe the model in a recent paper in the *American Sociological Review*.

The idea is this: When people are exposed to certain beliefs and behaviors, they don't just automatically "catch the bug." Rather, they receive information about which ideas and actions tend to go together. Networks do play a role, but people can pick up on signals from someone they follow on Twitter as easily as they can pick up on those from their parents. The way they interpret those social cues then influences which behaviors they adopt.

"I learn appropriate social roles for particular categories of people, and I'm going to emulate people only as a function of whether I associate with their other attributes," Goldberg says.

While the social contagion theory assumes that the structure of networks is what determines varied preferences, associative diffusion argues that what

matters most is the meaning people ascribe to the world around them.

For example, someone might notice that people who prefer home births and oppose genetically modified foods are against vaccinating their children. The observer learns that anti-vaxxing is associated with those health-related choices, and if she identifies with those, she may decide to update her behavior regarding vaccinations. (This is theoretical — Goldberg hasn't empirically studied vaccine naysayers.)

Goldberg and Stein backed up their theory with a mathematical formula that shows how individuals observing others at random eventually end up in an equilibrium of cultural variation. Competing theories do not result in a similar equilibrium, unless they assume that social groups are completely segregated.

TO CHANGE MINDS, CHANGE ASSOCIATIONS

Goldberg's theory potentially explains a wide range of phenomena, from varying musical tastes to schoolyard cliques to the current polarization of American politics. For example, why do people who oppose gun control also tend to want to limit abortion rights, when those positions are not inherently linked by reason and are not often jointly subscribed to in other countries? "That's a cultural script in American politics," he says. "People learn from the environment that if you're a conservative, this is what that implies."

Understanding how preferences and behaviors spread is important, Goldberg says, because signals about social identity — such as taste in food, dress, and music — have everything to do with access to power and opportunities. "Systemic cultural variation is also the way in which systemic inequality is sustained," he says.

Associative diffusion also holds lessons for how to change beliefs and behaviors, intractable as they may appear.

"The implication is that you have to change people's perception of the associations," Goldberg says. With smoking, for example, it took decades of public awareness campaigns for people to stop seeing cigarettes as symbols of rebellion and coolness and start viewing them as gross and unhealthy. Over time, similar shifts can happen with anti-vaxxing and political stances, too. ▲

Amir Goldberg is an associate professor of organizational behavior at Stanford GSB.



STOP THE GUNS

IMPEACH

BLM

DEFEND LIFE

I STAND WITH PLANNED PARENTHOOD!

NRA

BURN WALL

IMMIGRATION

MAKE A GREAT

PHILANTHROPY

Finding a Low-Cost Treatment for Clubfoot

Chesca Colloredo-Mansfeld's journey from online retail to academia to a healthcare nonprofit has paid off in ways that can't be measured.

BY MARTIN J. SMITH

In 2004, a colleague approached **Chesca Colloredo-Mansfeld** in her office at the University of Iowa's business school with a video in hand.

"We hear you have a passion for Africa," he said, "and that you're a strategy person."

At the time, Colloredo-Mansfeld was director of the Hawkinson Institute, an investment banking program at UT's Tippie College of Business, after having spent four years at the internet startup eToys. The visitor explained that a doctor at the university, Ignacio V. Ponseti, had pioneered a comprehensive technique for treating clubfoot in the 1940s. Clubfoot is a birth defect that causes one or both feet to turn inward and upward, making it difficult to walk properly. It affects one in every 800 newborns worldwide.

Using gentle manipulation and serial casts, Ponseti's technique gently and gradually guides a child's tendons, ligaments, and bones into proper alignment without the need for major surgery.

"The colleague showed me a video of a boy standing in a doorway, and he had these twisted feet," recalls Colloredo-Mansfeld, who received her MBA from Stanford GSB in 1992. "He was about 10 years old, and you could see through the doorway all these other kids playing while he was standing there with his head hanging down."

Of the 175,000 babies born with clubfoot worldwide each year, 90% are from countries with limited access to proper treatment. Colloredo-Mansfeld learned that Ponseti, in his 90s at the time, had a dying wish to export his treatment to low-income countries, where for about \$250 it offered a highly effective but low-cost solution to what otherwise can be a lifelong affliction.

Moved, she began thinking about how to solve that problem. In 2010, Colloredo-Mansfeld left behind her academic career to launch MiracleFeet, a nonprofit that so far has helped 35,000 children in 26 countries by partnering with local healthcare professionals to create clubfoot programs. MiracleFeet, based in Chapel Hill, North Carolina, now has 19 full-time employees. An additional 20 people are based in India.

"I had been given these amazing opportunities, including a spot at Stanford GSB, but having a job and having a lovely family was not enough," says the mother of three. "People had invested a lot in me, and I thought it was important to give back."

Talk us through the early stages of developing MiracleFeet, from idea to funding to execution. By the time this colleague came to ask for my help, the Ponseti method had finally been established as the gold-standard treatment in the U.S. When I got involved, doctors were basically saying, "Now that this method is totally embraced in the U.S. and Europe, we can take it to the rest of the world where very little treatment is available." I started working with a handful of people in the orthopedic department at Iowa, but I actually got very frustrated.

Why? The University of Iowa is a big research institution. A significant portion of funds raised goes to the university; that's what universities do to cover their overhead. I argued that we needed to set up a separate nonprofit and decide if we were training doctors or treating children, because our donors would need to see the impact we were having. But none of this went down well with the orthopedic surgeons. It was frustrating.

So they needed your help to take it worldwide? That makes me sound like I've played a bigger role than I have. What I saw in this was that Dr. Ponseti had done the difficult part finding a better treatment. And I thought, how hard would it be to get something that makes so much sense out to the rest of the world? Compared to a lot of the world's problems, solving clubfoot is not that difficult, although it has certainly been more challenging than I anticipated.

And then your husband (an anthropologist) took a job at the University of North Carolina and you left Iowa behind — but not the idea of helping solve this problem. I just couldn't get the image of this child out of my head, and I kept thinking this is what I really wanted and needed to do. My husband's work often took us to Ecuador, and I'd see kids with untreated clubfoot and think, "This is nuts. There's a solution for this." I had grown up in Africa [as the daughter of a British diplomat] and always thought I would work in international development. Like many, I got caught up in a corporate career and raising our kids, but inside me was a deep desire to make a difference in the kind of places where I had grown up. Perhaps naively I thought that with the management and business skills I've been lucky enough to develop, I ought to be able to make a difference.

At some point, you connected with a group of parents who shared your interest in creating a nonprofit to tackle this issue.

Yes. Fortunately, I was put in touch with some parents who had children born with clubfoot, who wanted to make sure all kids had the treatment their children had had in the U.S. They had even come up with a name for the organization they wanted to create: MiracleFeet. After meeting them in New York, we started talking about the fact that we really needed to hire someone to focus on this full time to actually make this happen. As I was flying back on the plane, I thought, "This is my chance. If I don't do this now, when? I should just quit my job and offer to do this." This is what led to the creation of MiracleFeet in 2010.

What appealed to you about that challenge?

This seemed like an implementation issue. There are so few problems where you have an obvious, low-cost, easy solution. I thought someone with an MBA ought to be able to roll this out. It was a good match with my skills. We didn't have to solve the problem; we just had to bring the solution to the kids who needed it.

And the return on your investment?

MiracleFeet combines a simple solution with

Photograph by Lissa Gotwals

CHESCA COLLOREDO-
MANSFELD
“We didn’t have to solve
the problem; we just had
to bring the solution to
the kids who needed it.”



the opportunity to have an enormous impact on a child’s life. In many countries, there’s shame and stigma associated with having a child with a disability. Often, they’re not even allowed to go to school. They’re hidden away in the shadows of houses. They’re isolated, which means they’re at high risk of physical and sexual abuse. What’s the future for this child? It’s terrible. But if we can get in there within the first year of birth and provide a simple, safe medical intervention that costs us \$250, that child will have all the opportunities of any other person. You’re putting that child’s life on a totally different trajectory.

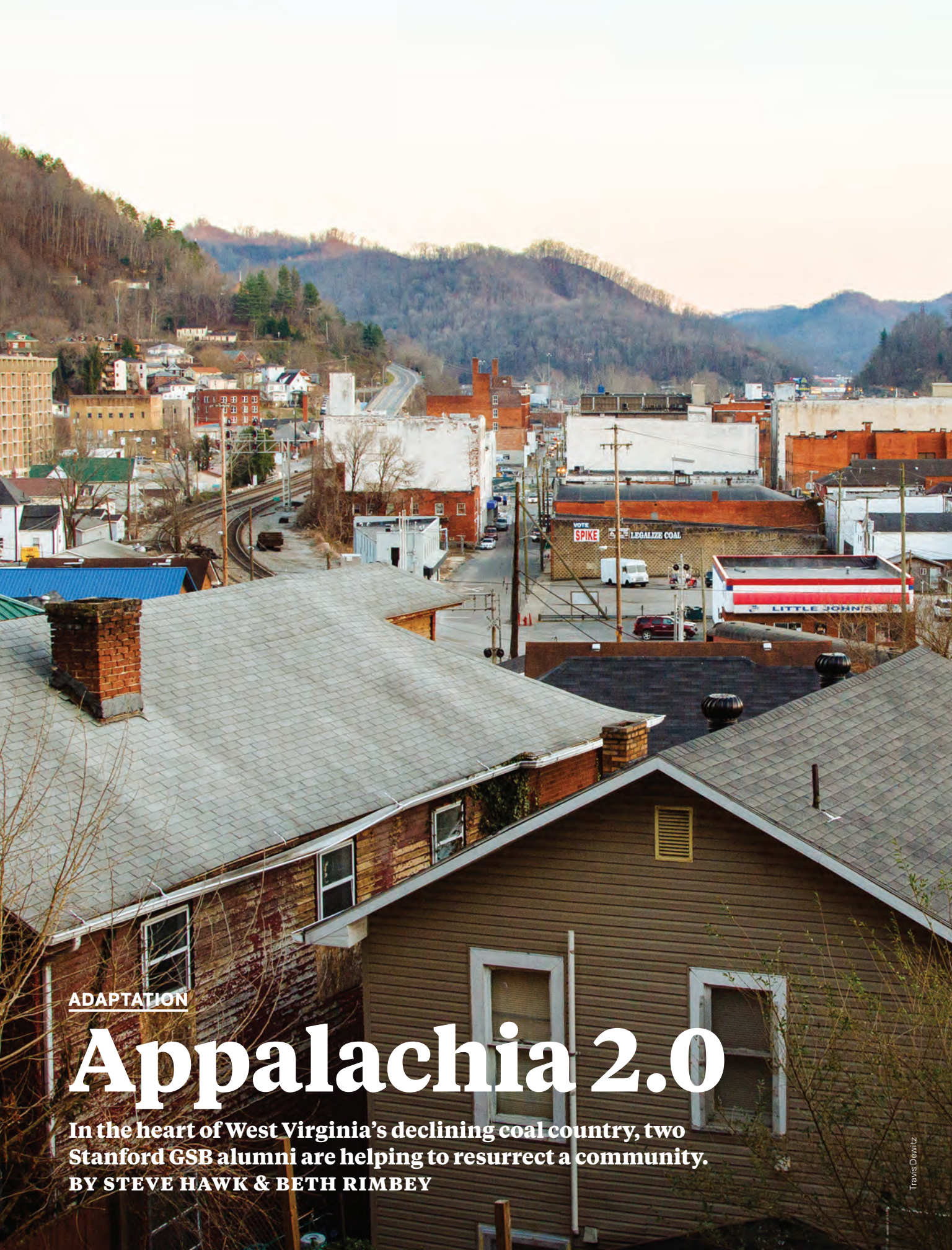
So this project ricocheted from Iowa to North Carolina, all the way back to

Stanford? In 2012, I reached out to Stanford’s *Design for Extreme Affordability* program. They put two teams of students on our project who came up with a very cool new brace design that met all the medical specifications for a fraction of the cost. The MiracleFeet brace costs us less than \$20 to produce and has all the functionality of a brace that costs \$350 to \$1,000 in the U.S. We have just launched our fifth project with the *Extreme* program, so it has been a terrific partnership. All of the faculty and staff involved in that program have been wonderfully generous and supportive of MiracleFeet’s work.

Any particular professors, books, or experiences you had as a student at Stanford GSB that helped shape your

approach at MiracleFeet? I tend to be the analytical type who loves spreadsheets, and I came in having worked for an investment bank, but I remember sitting in an organizational behavior class and thinking, “This is a whole different angle on business. I’ve never really thought about these issues.” Now I wish I’d paid more attention to that softer stuff, to HR, creating culture, and to organizational behavior and development. I was naive when I was there, but I look back and realize how important those other aspects are and how much I’m drawing on them now. ▲

Chesca Colloredo-Mansfeld earned her MBA from Stanford GSB in 1992.



ADAPTATION

Appalachia 2.0

In the heart of West Virginia's declining coal country, two Stanford GSB alumni are helping to resurrect a community.

BY STEVE HAWK & BETH RIMBEY



The sign that welcomes people to Williamson, West Virginia, sums up the region's proud rise and depressing decline in seven words: "Heart of the Billion Dollar Coal Field." With an economy tethered to a once-booming industry that's been on a decade-long downslide, the community has fallen on very hard times.

Last year, Mingo County, of which Williamson is the biggest town, made it onto the nation's top-50 list of counties with the highest unemployment rates. Residents there also have some of the worst mortality rates in the U.S., due to widespread obesity, diabetes, hypertension, and opioid abuse.

"In 2015, we lost 1,000 jobs in Mingo County alone," says Dr. Donovan Beckett, CEO and medical director of the Williamson Health and Wellness Center, which has become a locus of economic revival in the town. "This is a population of about

Daryn Dodson earned his MBA from Stanford GSB in 2007, and Jenna Nicholas earned hers in 2017.

Resurrecting Williamson

THE PROBLEM

↓

2,000 JOBS
(Roughly 25% of Williamson's workforce)

HEALTH CRISIS

DIABETES OPIOID ADDICTION
HYPERTENSION OBESITY

THE IMPACT EXPERIENCE

90 LEADING IMPACT INVESTORS, ENTREPRENEURS, UNIVERSITIES, & INNOVATORS gathered alongside local leaders to develop a regional transition strategy

THE OUTCOMES

REENVISION Retrain laid-off mine workers for the new economy & retool reclaimed mines (300,000 acres in W.V.) for economic diversification opportunities	INITIATE Seeded creation of a Center of Excellence for integrated rural health (anchored by Williamson Health & Wellness)	COLLABORATE Connect a major national impact investor, regional redevelopment authority, & an award-winning W.V. social entrepreneur
--	---	---



Larry Gannon was born in Williamson 63 years ago and has no plans to leave, despite the fact that in 2015 he lost his coal mining job. "For 40 years that's what I did. It's hard work, but it gets in your blood. There's not a day that I don't miss it or miss the guys that I worked with. These days, our town is mostly dead. It's coming back slowly, but it'll never be what it was ever, ever. I would just like to see the streets be filled with people and see businesses come back. Have shops. We got a few, but I'd like to see some family-owned things, dress shops — anything like it used to be."

25,000 people, so when you lose 1,000 jobs, that's a huge impact." In all, the county has lost about 25% of its workforce since 2015.

In 2014, Beckett teamed up with Jenna Nicholas and Daryn Dodson, two Stanford GSB graduates and cofounders of Impact Experience, a nonprofit that deploys entrepreneurial practices to lift disadvantaged communities out of poverty. The trio soon decided to deploy the Impact Experience model in Williamson, "building off the great work that Dr. Beckett had already done," Nicholas says.

"Our goal," Nicholas says, "is to connect impact investors and social entrepreneurs to move things forward in an exponential way."

In the past five years, Nicholas, Dodson, and Beckett have organized four Impact Experiences in Williamson, during which outside investors, philanthropists, business owners, and scholars meet with local civic leaders, entrepreneurs, and artists for several days of brainstorming solutions.

These community-inspired gatherings have catalyzed more than \$15 million of investments from public and private sources. Some of these initiatives include retraining former coal miners, repurposing former coal mining land, and building out a platform to promote tourism in the area.

"It's not like a parachute approach, where these really smart people from

San Francisco parachuted in and now they're going to get out," says Brandon Dennison, founder and CEO of Coalfield Development Corporation, a social enterprise that aims to revitalize communities throughout Appalachia. "They're coming to really learn what's going on ... and then hitch wagons with what's already happening and just make it happen bigger and better."

Nicholas is increasingly optimistic about the future of Williamson and says the community has become a kind of second home for her: "Being able to engage with people who have this vision and optimism and defiance and determination, despite all of the obstacles, has been a big part of the reason that I'm inspired to continue to come back." ▲

For more about Jenna Nicholas and her work with Impact Experience in West Virginia, watch the Stanford GSB video at <https://stanford.io/ImpactWV>.



A couple of years after graduating from Stanford with a degree in international relations, Jenna Nicholas cofounded Impact Experience with a goal of helping to revitalize marginalized communities in the U.S. She came to Stanford GSB to learn the leadership and business skills that would enable her to expand the organization's impact and reach. In 2017, the year she received her MBA, she received a \$110,000 Social Innovation Fellowship from the business school to help take the Impact Experience to communities worldwide.



"I guess the biggest thing is, this is not just a clinic," Dr. Donovan Beckett says. "It's the economic cornerstone of our community." Beckett is CEO and medical director of the Williamson Health and Wellness Center, which not only offers such traditional health-clinic services as pediatrics, optometry, and dental care, but also manages a farmers market, community garden, and monthly 5K footraces. "My vision of health and wellness is very broad," he says.



The idea for a recurring farmers market — where Williamson residents could buy fresh, healthy, local produce — came out of the Williamson Health and Wellness Center. It began six years ago as a monthly event, generating sales of about \$26,000 for the year. Now it's held weekly and has annual sales of about \$75,000. "We have farmers calling our office all the time and wanting to sell to us," says Marie Arnot, the health center's director of community agriculture. "It's really exciting to me. I feel like it's at a place where it will continue forever."

RETIREMENT

Pushed Out of Work Too Soon?

New research shows that 40% of American retirees would prefer to be back on the job.

BY DYLAN WALSH

You're born, you go to school, and then for 40 or 50 years you work, until, one day, like free-falling from whatever mountain you've climbed back to the plains, you retire. It's a big change and a sudden one. Is this the way people want it?

Both theory and observational data suggest not: People prefer life to be "smoothed," in the language of economists. "We don't eat all of our meals on Sunday and then starve on weekdays," says Christopher Tonetti, an associate professor of economics at Stanford GSB. We spread out experience; we seek transitions. "And not just for food, but for all consumption."

Retirement, it turns out, is no exception to this preference. In a new study conducted with five colleagues, Tonetti found that a majority of retirees would prefer to be working if they could find a job that afforded some flexibility. Though questions remain about why they want to remain employed and what impedes the return to the workforce, the findings, says Tonetti,

"That so many people were willing to go back to work even if you give them a 10% wage cut — I found that surprising."

were unambiguous: "A lot of Americans who are sitting at home not working want to be working."

QUANTIFYING THE DESIRE TO WORK

To pin down this result, Tonetti and his colleagues gathered employment and retirement information on 1,771 older Americans and then probed their interest in going back to work with a series of strategic survey questions. The questions presented detailed hypothetical scenarios about prospective job opportunities: Would you, for instance, return to a job that was identical to your previous employment in every way? What if the hours afforded more flexibility or the wage was slightly lower? If respondents rejected the offer, then the survey asked for what's known as their reservation wage — that is, the lowest salary at which they would accept the job.

Tonetti saw striking numbers: Almost 40% of those who were surveyed would return to work if offered a job with the same hours and same wage as their last position. Perhaps more surprising, almost 30% of workers would have forgone retirement entirely and continued to work at a job identical to their old one if given the chance at the time of their retirement; in retrospect, retirement came too soon.

THE IMPORTANCE OF FLEXIBILITY

These percentages shot up dramatically when retirees were given the choice of

resuming work with flexible hours. (In the survey, "flexible" implied regular but not necessarily full-time work; it didn't mean you could simply wake up one day and decide not to work.) The researchers found that almost 60% of the people surveyed would return to work if the job offered a flexible schedule. Not only that, but 40% of them would take a 10% wage cut, and 20% would accept a 20% wage cut under these conditions. These results were relatively consistent regardless of age or level of wealth. (The survey focused on people who were, in general, wealthier, healthier, and more educated than the U.S. population on average.)

The general finding that people who have retired are willing to go back to work met Tonetti's expectations, but the importance of flexibility and the size of the numbers that he found went beyond what he predicted. "That so many people were willing to go back to work even if you give them a 10% wage cut — I found that surprising," he says.

THE COST OF TOO MUCH RETIREMENT

The obvious question, then, is why people who are willing to work aren't working. Tonetti says that answering this requires looking to the demand side of the equation; that is, the companies that employ people. "We need to understand why firms don't seem to find it profitable to hire older Americans, even at wages that are lower than they used to earn, and why they don't seem to want to offer part-time or flexible schedules," he says. "But getting managers, or HR, to truthfully and accurately discuss hiring and continued employment practices for older workers — that's a very tricky thing to do." He and his team have not yet tackled this piece of the puzzle.

Having that discussion, though, would be more than an academic exercise. The baby boomers are aging, and keeping people employed, even part time, may be one way to reduce the immense financial strain now settling on federal programs like Social Security and Medicare. Exactly how policymakers might address this gap between retirees' desire to work and the options available to them requires further study. But, says Tonetti, "this paper takes off the table the notion that older Americans don't want to work." ▲

Christopher Tonetti is an associate professor of economics at Stanford GSB.



DISSOLUTION

The Risk of Rigidity

Charles Shaw is sanguine about the best-selling wine brand that bears his name and has made millions of dollars — for someone else.

BY MARTIN J. SMITH

Charles Shaw is the Pete Best of American winemaking.

He watched from the sidelines as the “super-value” wines marketed in his name — sold through an exclusive distribution deal with Trader Joe’s — became one of winemaking’s best-selling brands.

Just as Best got ousted from the Beatles right before the band hit it big, Shaw saw the award-winning California winery he started in 1979 slip from his control in a cascade of financial trouble, agricultural calamity, and divorce.

Trader Joe’s has since sold more than a billion bottles of Two Buck Chuck, as it’s known, and Shaw — a West Point graduate — hasn’t seen a nickel from those sales. The company that bought the rights to his winery paid less than \$27,000.

The father of five, now 75, moved East after his divorce, eventually settling in Chicago, where he now runs a database company. He still peppers his conversations with names such as Mondavi, Gallo, and Beringer, and he still longs to be a vintner. But he’s sanguine about his path, candidly sharing a few lessons from a career that to some might seem as tangled as a grapevine.

Charles Shaw earned his MBA from Stanford GSB in 1971.

Photograph by Tim Klein

Shaw's

CHARLES SHAW
"I continue to learn
from my experience."



Four years in the military, then Stanford GSB. What then? I wanted to go right into the wine industry, but my wife and I decided it wasn't the right time. So in 1971, I took a job with a bank in Texas and joined its oil and gas department in Houston, with clients such as Halliburton. After a couple of years, the chairman asked me to go to the Paris branch. Steven Spurrier opened the Académie du Vin, France's first private wine school, right behind my office. I signed up for his first class.

But you'd obviously been thinking a lot about wine before that. At Stanford, I took all the small-business and venture classes. Professor Frank Shallenberger was so inspirational. He had us go out and choose companies in the neighborhood to get involved with, and I chose wineries. I did studies of Almaden, Paul Masson, and Ridge. Bank of America had done a report in 1969 that was bullish on the California wine business, so I pictured myself having my own winery.

When you finally made the leap in the mid-1970s, you gambled on gamay, a light-red wine variety that wasn't particularly popular in the U.S. What was your thinking? I didn't see gamay [a variety from the Beaujolais region of France] as a risk. At that time, it was just unknown. From my time in France, I knew it was one of the most popular wines in the world. Now this goes back to Shallenberger. He'd told us back at Stanford, "Produce for the masses and live with the masses. Produce for the masses and live with the classes." That's so Frank. So I figure these Bordeaux guys, there's a bunch of them — Beaulieu was in it, Inglenook was in it, Sterling was in it, Robert

and Peter Mondavi were in it. In those days, there were only about 18 producers, and they were all big cabernet guys. A lot of them were also making gamay, but I was the only one using Beaujolais techniques. I figured I'd let 'em go after this fancy market, and then I'd come in with a light, popular-priced wine that everybody in France drinks every day. I thought I'd have a niche. Well, I was wrong, but it took me a while to realize that.

So you were producing good wines that didn't sell particularly well. Is that how you got into financial trouble? Actually, we were doing OK there for a while. We were in business for 20 years. We grew from 35 acres to 115 acres and were producing over 50,000 cases of premium Napa Valley wines annually. We had 220 distributors, selling in all 50 states and 20 international markets. But interest rates were around 20% at the time, and I was heavily leveraged at the winery. That made our cost of funds very high and necessitated strong growth to reach and maintain positive cash flow, which was risky. And that's around the time my wife became unhappy in the marriage. She took over the winery and removed me as the general partner, but then lost her distribution deal and ended up in bankruptcy.

If you had to do it over again, what might you do differently? I would be more collaborative. My wife was not as into wine as I was. She didn't drink wine and didn't even like to talk about wine. If you have partners, it's really a good idea to have them buy in. I was collaborative with the industry people, our other partners, but neglected the most important partner of all: my business partner and partner in marriage.

Anything else? I wouldn't be as rigid in my thinking. My timing was terrific in terms of getting in there at the right time, but in the premium wine business, like in haute couture and perfume, it's all about demand. What I should have done was throw things against the wall to see what would stick rather than just defining myself as a Beaujolais producer. I gambled on that niche. I wanted to be the light-red guy. But I should have made a chardonnay, a merlot, a sauvignon blanc, for example, and put them out there in small quantities, then watched to see if there was a demand pull. And when there was, I should have turned and run in that direction. That would have been so easy to do. But look at me. I was so rigid in my thinking, so damned clever.

Does the "what if" question keep you awake at night? I continue to learn from my experience. My Stanford class had a reunion, and they asked me to speak in an entrepreneur forum. The subjects they wanted me to address were joy, surprises, and bumps on the road to retirement as they relate to resiliency. That gave me the chance to look at all the things I went through, and I really enjoyed it. I used to be upset about Fred Franzia [whose Bronco Wine Company bought the Charles Shaw name and cut the deal with Trader Joe's] and Joe Coulombe [MBA '54 and founder of Trader Joe's]. But not anymore. I got a note from Joe last Christmas, from some fancy hotel in Florence. He'd sold Trader Joe's to Aldi, the German guys, back in the '70s, and he told me how many millions of cases of Charles Shaw wine were sold last year. I look at it this way: He's out of it. I'm out of it. But Joe and Fred saved the brand, and the brand survives today.

Ever want to get back into the wine business? I'm from Michigan, so I leased a winery there to produce rieslings. I wanted to create Oerther Vineyard and turn it into a destination winery. I made two vintages to see how it would turn out. I entered the world riesling championship in Australia, and it won second and third place in the museum-quality riesling category. We got beat by a German outfit that's 700 years old. But financing is difficult, and I've been obstinate about not having partners and trying to do it on my own. So we haven't done very well.

Any advice for entrepreneurs trying to get a small business off the ground? Watch your expenses. I know I paid all my employees on the high end for businesses in Napa Valley. We had a Cadillac health plan. But in a small business, you have to examine yourself to see if you're tough enough. I know my competitors were. ▲

“I thought I'd have a niche. Well, I was wrong, but it took me a while to realize that.”

Organizations



“Sometimes it seems
that firms are just

**rushing to
accumulate
data**

and asking questions later.”
— Mohsen Bayati PAGE 40

LEADERSHIP

Helping Big Firms Learn to Shift Like Startups

Stanford GSB faculty reveal the art of engineering entrepreneurialism within existing orgs.

BY MATT VILLANO

Imagine a container ship. They're heavy — many can carry more than 10,000 intermodal containers and tip scales at upward of 150,000 tons. They're huge — most measure more than 1,200 feet long. At top speed, the ships move fast but are incredibly difficult to shift course.

Big companies are like these ships. They're heavy — often with massive overhead, multiple locations, and thousands of protocols. They're huge — with budgets in the billions or multimillions, and tens of thousands of employees. Not surprisingly, change is difficult for these behemoths, as well.

But every big company strives for these shifts, or risks obsolescence. The challenge is the subject of a popular course at Stanford Graduate School of Business dubbed *Beyond Disruption: Entrepreneurial Leadership Within Existing Organizations*.

The course is co-taught by Charles A. O'Reilly III, the Frank E. Buck Professor of

Management, and Amy Wilkinson, a lecturer in management. With firsthand anecdotes from creators within big corporations, the course seeks to help students understand which approaches to innovation work, which don't, and what it takes to help organizations nimbly stay ahead of disruptive threats and avoid problems that lead to decline.

"Whether you're in the C-suite or middle management, these skills will help you innovate and navigate inside a larger organization," says Wilkinson.

Here Wilkinson and O'Reilly share valuable insights in shifting large organizations successfully.

IMPORTANCE OF AMBIDEXTERITY

The instructors explain there are two ways to think about innovation in a big company. The first take is a bottom-up approach that essentially mirrors

traditional entrepreneurialism, in which individual employees drive change. The second strategy is top-down, focusing on what senior leaders must do to design an organization in a way that would be receptive to innovation.

As O'Reilly explains it, success comes from the contrapuntal coexistence of these perspectives.

"Our approach incorporates the individual skills view and the organizational structure view," said O'Reilly, author of *Lead and Disrupt: How to Solve the Innovator's Dilemma*. "These are two very different perspectives on how to spark change, but you have to shift them both."

For O'Reilly, in order to disrupt on the organizational level, senior leaders must become "ambidextrous," meaning they must be good at promoting exploitative efforts while managing exploratory ones.

Fundamentally, this suggests business leaders who wish to handle disruption need to manage two approaches that — at least on the surface — are paradoxical. Exploitation seeks to streamline, focusing on efficiency and short-term incremental improvements. Exploration is precisely the opposite — companies must be willing to try new things, iterate, fail, try, and try again.

"The skill sets for each of these are vastly different — oftentimes people are good at one and not the other," he says. "Some of the things we focus on with students are how to tolerate these differing perspectives, and how to align a company to create the space necessary for both leadership styles."

IN DEFENSE OF THE INDIVIDUAL

Wilkinson, the author of *The Creator's Code: The Six Essential Skills of Extraordinary Entrepreneurs*, focuses more on individual skills necessary to innovate within the corporate superstructure.

She says that anyone can drive change within a larger organization, so long as they are motivated by purpose and they believe what they're building is bigger than they are. Specifically, Wilkinson

Charles A. O'Reilly III is the Frank E. Buck Professor of Management and Amy Wilkinson is a lecturer in management at Stanford GSB.

Photograph by Drew Kelly

CHARLES A. O'REILLY III
AND AMY WILKINSON
"It's something magical,
and it can happen
anywhere."



refers to these change agents as “creators” and identifies (and shares) six skills that senior leaders can learn, practice, and pass on to others:

FIND THE GAP. Creators keep their eyes open for new opportunities and unmet needs. They then meet these needs by transplanting ideas across divides, designing a new way forward, or merging disparate concepts.

DRIVE FOR DAYLIGHT. Creators focus on the future and set the pace for others inside a company.

FLY THE OODA LOOP. Creators master fast-cycle iteration by observing, orienting, deciding, and acting (hence the acronym OODA) on key issues. This enables them to gain an advantage and keep moving.

FAIL WISELY. Creators realize that small failures are necessary to avoid major mistakes. As part of this learning process, they discover

where to test hypotheses and develop resilience.

NETWORK MINDS. Creators recognize that harnessing cognitive diversity can be a boon to any organization. To do this, they design shared spaces, foster flash teams, hold prize competitions, and build work-related games.

GIFT SMALL GOODS. As simple as it might sound, creators trade in generosity by sharing information, helping with tasks, and opening opportunities to others.

“The six essential skills are not discrete, standalone practices; each feeds the next, creating synergy and momentum,” she says. “When a creator brings together all six skills, employees, customers, investors, and collaborators of all kinds take notice. Customers become evangelists. Employees turn into loyalists. Investors back the company with support that transcends financial returns. It’s something magical. And it can happen anywhere.” ▲

HOW MAJOR PLAYERS MOVED THE NEEDLE CASE STUDY 1

General Motors: The Importance of Diversifying

General Motors is the largest American automobile manufacturer and one of the largest car companies in the world. From a business perspective, however, the company historically has been glacially slow to innovate — that is, until recently. Following a bankruptcy in 2009, the company has diversified operations in a big way, moving from a car company to a mobility company.

One of the guest speakers in the *Beyond Disruption* course last fall was Mike Abelson, GM’s vice president of global strategy. Abelson came to talk more about how the company has expanded operations in a push to spark innovation. Instead of managing only internal-combustion cars, GM is pushing forward into autonomous vehicles, connectivity and connected cars, electrification, and ride sharing.

Charles O’Reilly III, the Frank E. Buck Professor of Management, says the GM strategy is to create “ambidexterity” — to stay the course with proven products and simultaneously innovate with the hopes of growing new product lines and scaling them accordingly. Already, GM is piloting autonomous cars with the help of Cruise Automation. It also just announced a new e-bike product and launched a rideshare service named Maven in 2018.

“Will they be successful? I don’t know,” O’Reilly says. “They sure have organized themselves in a successful way.”

HOW MAJOR PLAYERS MOVED THE NEEDLE CASE STUDY 2

Walmart: Follow the Customers

When Walmart wanted to experiment in the competitive world of retail, it turned to its customers for guidance, and they said they wanted more convenient access to health care. Data supported this move — demographics indicate that nearly 90% of the United States population lives within 10 miles of a Walmart.

These were the driving forces behind the chain’s push to expand and amplify in-store health and wellness options with health care providers and medical clinics.

In many ways, the move is a no-brainer. Walmart has had pharmacy, ophthalmology, and some pediatric services for years. Bringing in more doctors and health care providers means the brand simply is being consistent with the company mission: to provide access to consumers for services they need.

Lori Flees, Walmart’s senior vice president and general merchandising manager, says that by moving into health care, Walmart gets to leverage assets and capabilities to convert long-standing merchandise customers to become long-term medical customers, too.

“Companies like Walmart know they have to move faster and smarter every single day — and that means repurposing huge assets to mitigate risk and open new opportunities to serve customer needs,” says Amy Wilkinson, a lecturer in management at Stanford GSB. “The fact that they’re innovating like this is pretty exciting.”



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¹ "Stanford University's Economic Impact via Innovation and Entrepreneurship," a 2012 study by Stanford professors Charles Eesley and William F. Miller

Change lives. Change organizations. Change the world.



RIPPLE EFFECT Street demonstrations send potent signals to voters and candidates alike.

PERSUASION

Protests Can Swing Elections

A new study shows that both liberal and conservative demonstrations have a real impact on U.S. House elections.

BY EDMUND L. ANDREWS

From anti-war marches in the 1960s to the Tea Party rallies of 2010 and the almost nonstop progressive protests in 2018, marching in the streets has been a fixture of modern American life.

But do protests actually accomplish anything in terms of election results or the balance of party power?

Absolutely yes, according to a new study based on 30 years of data.

Coauthored by Sarah A. Soule at Stanford GSB and Daniel Q. Gillion at University of Pennsylvania, the study finds that spikes in both liberal and conservative protest activity can increase or decrease a candidate's vote by enough to change the final outcome.



“Protests have a profound effect on voter behavior. It happens on both sides of the ideological spectrum.”

On top of that, big protests by progressives have spurred increases in the quality of Democrats who decide to challenge incumbents. (Conservative protests haven’t had the same impact motivating Republican challengers, however.) That seems to be what has happened in 2018, when record numbers of women both marched in the streets and decided to run as Democrats for Congress, but the pattern isn’t unique to this year.

The study is based on a detailed analysis of both local protest activity and voting patterns in every congressional election from 1960 to 1990.

The data on protests came from news reports. Soule and Gillion focused only on local protests, which they scored by both their ideological leaning and their intensity or “salience.”

To rate the protests on an ideological spectrum, the researchers looked at each protest’s focal issues. Not surprisingly, given the anti-war and civil rights movements of the 1960s and 1970s, 90% of the protests during those decades were on the left side of the political spectrum. But the share of conservative protests increased gradually to 14% in the ’80s and 21% by 1990.

To rate “salience,” Soule and Gillion looked at whether the protests attracted large numbers of people; had organizational backing; attracted police presence; or resulted in damage, injuries, or death.

For example, in the 1968 election of Abner Mikva, a liberal challenger in Illinois, the district saw 40 protests that year, which were scored at a salience level of 54 — fairly high, but nowhere near as high as the protests during some other races. Mikva defeated both the Democratic incumbent in the primary and his Republican opponent in the general election.

Interestingly, conservative protests of similar intensity appear to give Republicans a proportionately bigger boost in vote share. Soule and Gillion say that probably reflects the fact that conservative street protests were rare until the 1990s, which probably made them more electrifying to Republican voters.

The researchers argue that local political protests provide important signals to voters as well as to candidates and potential challengers. For voters, they can focus attention. To incumbent lawmakers, they are signals about intensity of local content or discontent. For prospective challengers, they can signal the incumbent’s vulnerability.

Indeed, the paper finds that an increase in liberal protest activity correlates with an increase in the number of “quality” Democratic challengers, such as those who have held elected offices before. The odds of a solid challenger entering a congressional race climbed from 20% to 50% as the intensity of protest activity increased.

“It’s a form of information-gathering,” Gillion says. “When politicians run for office, they try to know every single issue in their backyard as well as the sentiments of their constituents. Protests are a way of signaling discontent, and they inform politicians about the most salient issues.”

Gillion adds that the volume and intensity of progressive protests have been higher in 2018 than at any time since the late 1960s.

Other studies, including a new one by Robb Willer of Stanford, find that violent protests can lead people to think poorly of the protesters. However, Soule and Gillion say they found little evidence that protests produce a backlash in actual voting behavior.

Was it enough to affect the 2018 midterm elections?

“Based on these findings, unequivocally, yes,” says Soule. ▲

Sarah A. Soule is the Morgridge Professor of Organizational Behavior at Stanford GSB.

“Many people are skeptical that protests matter to electoral outcomes, but our paper finds that they have a profound effect on voter behavior,” says Soule. “Liberal protests lead Democrats to vote on the issues that resonate for them, and conservative protests lead Republicans to do the same. It happens on both sides of the ideological spectrum.”

On average, a wave of liberal protesting in a congressional district can increase a Democratic candidate’s vote share by 2% and reduce a GOP candidate’s share by 6%. A wave of conservative protests, like those by the Tea Party in 2010, will on average reduce the Democratic vote share by 2% and increase the Republican share by 6%.

COMPENSATION

The Rise of the Private Stock Market

Lightly regulated exchanges for options are thriving as companies leverage a valuable recruitment tool.

BY BILL SNYDER

Multibillion-dollar IPOs are the stuff of legend in Silicon Valley, but more and more startups are opting to stay private for years. And because those companies are private, stock options, the best weapon in the battle to attract and retain high-performing employees, are no longer available to them.

But a new trend is taking root in the tech economy: Pre-IPO companies are allowing employees to sell their equity stakes on private-company marketplaces, lightly regulated exchanges that bring buyers and sellers together.

“Companies are staying private longer, but, like public companies, they want to use equity as a tool to retain employees,” says David F. Larcker, the James Irvin Miller Professor of Accounting at Stanford GSB.

And while these awards offer obvious benefits to both companies and employees, they also come with transparency risks and some longer-term questions about the health of the U.S. public market.

EARLY DAYS

Despite the outsize attention paid to companies that perform successful public offerings, the time it takes the average company to go public has lengthened dramatically. In the period between 1996 and 2000, the average age of a company completing an initial public offering was six years. But in the decade following the financial crisis of 2008, the average company has waited 10 years to go public,

a time lag that has fueled the move to pre-IPO equity awards, Larcker says.

Ten years is a long time to wait for a reward, so rather than risk having employees depart for more lucrative pastures, companies are awarding equity stakes. It’s still early days for this trend; in 2017 the four most important private-company marketplaces completed somewhat more than \$4 billion in transactions, according to research by Larcker and two colleagues, Brian Tayan, a researcher at the business school, and Edward Watts, a PhD student in accounting at the business school.

By way of comparison, the value of stocks traded on the 201-year-old New York Stock Exchange averaged more than \$32 billion per day in October of last year.

“We’re just at the front end of this trend, and it’s likely to grow,” Watts says.

RISK AND REWARD

For employees, there are obvious benefits to equity awards. They “allow employees to take a certain amount of risk off the table,” Tayan says. Although IPO money is attractive, there’s never a guarantee that a young company will go public or that its shares will rise above the price at which they’ve been awarded, he says. Selling not only puts money in employees’ bank accounts well before an IPO, it allows them to diversify their holdings and reduce the overall risk to their personal wealth.

However, the equity awards come at a price.

Illustration by Nicolas Ortega



Securities sold through private-company marketplaces are not registered with the SEC and are not required to comply with its disclosure practices. From the investor's point of view, the lack of transparency implies a level of risk that might not exist in a public market. As a result, employees are forced to sell their shares at a substantial discount to the price they might sell at after an IPO. The exchanges also charge a fee of about 5% per transaction, substantially more than the fee buyers and sellers pay on a traditional exchange.

“We’re just at the front end of this trend, and it’s likely to grow.”

From the issuing company's point of view, shares are an important mechanism to retain and recruit high-performing employees, particularly in a hot labor market, says Tayan. There may be a downside, though. “Once employees have taken money off the table, there could be an adverse effect on motivation,” says Larcker. “It’s a delicate balance.”

SEVERAL TRENDS TO WATCH

While equity awards aren't new, these private-company marketplaces are a fairly recent phenomenon. “The pre-IPO marketplace has traditionally been dominated by networks of venture capital firms, private placement agents, brokers, and banks,” the researchers note. “These markets have historically been fragmented and opaque, severely limiting access and transparency for potential investors.”

The volume of transactions completed by Nasdaq Private Market and SharesPost, two of the largest private-company markets, grew by 300% and 200% respectively in 2017, Watts says. Although these private markets are a good deal less transparent than exchanges like the New York Stock Exchange, they offer more information to investors interested in buying on a private exchange than was available in the past, he argues.

But beyond the rise of private-company marketplaces is a larger issue: Why are companies less eager to go — or stay — public than in the past? In 1996 there were 7,322 domestic companies listed on U.S. stock exchanges, while in 2017 there were only 3,671, wrote Jason Thomas, research director of The Carlyle Group, in a *Wall Street Journal* commentary last year.

Why that's occurring isn't altogether clear, Larcker says. But the availability of financing via private equity and sovereign funds allows companies to raise capital while staying private. “If you don't need access to the public markets, why go public?” he says. The costs of complying with the regulations required of public companies are burdensome, both in terms of the financial overhead and the demands on management's time and attention, many executives complain. Some major companies, including Hilton Worldwide Holdings and H.J. Heinz, have even bought out their shareholders and gone private.

Indeed, as more companies offer private stocks, it will be important to study the reasons and consequences of their popularity. Why are companies staying private? Will these new marketplaces exacerbate this trend? And what impact does this have on investor returns and distribution of wealth between private company investors and public company investors? ▲

David F. Larcker is the James Irvin Miller Professor of Accounting at Stanford GSB.

INVESTING

The Biggest Antitrust Story You've Never Heard

The rise of institutional investors threatens competition, hurts consumers, and might qualify as a new kind of monopoly.

BY JENNY LUNA

There's no question that institutional investors are on a steady, inexorable rise: Since 1970, the share of the American stock market owned by large investment firms has grown from 7% to 70%. Collectively, the three biggest private funds — BlackRock, Vanguard, and State Street — own more than any other single shareholder in 40% of the public companies in the U.S.

That means they are often the most influential shareholders of companies that are supposed to be in competition with each other: Microsoft and Apple. Citigroup and Wells Fargo. Walgreens and CVS. The list goes on.

Such “horizontal shareholding,” as it's called, may erode competition, boost consumer prices, and possibly violate long-standing antitrust laws, says Fiona Scott Morton, an economist who recently visited Stanford GSB as part of a program organized by the school's Corporations and Society Initiative.

“You could argue that these mutual funds are a parallel to the trusts of the late 1800s that Congress passed laws to prevent,” says Scott Morton, a professor at Yale. An op-ed that she coauthored in the *New York Times* describes horizontal shareholding as “the great, but mostly unknown, antitrust story of our time.”

As major shareholders, institutional investors can have a strong influence over a given corporation's business strategies, Scott Morton says. They have a say in a chief executive's compensation package, and they often discuss business strategy with top-level managers.

Scott Morton points to two studies that show how horizontal shareholding has harmed consumers. One study found that airline ticket prices were higher by 10% because of such stock ownership, and another found that bank fees rose while interest rates dropped in the banking industry for the same reason.

A LEGAL SOLUTION?

A century ago, price fixing and excessive political influence by American Tobacco, Standard Oil, and other monopolies sparked a public outcry that led to passage of the Sherman Antitrust Act of 1890 and, 24 years later, the Clayton Act. Such laws were passed to protect consumers against monopolies.

Scott Morton acknowledges that today it would be a challenge to apply antitrust statutes to horizontal shareholding because the evidence drawing a connection between shareholder activism and a softening of competition between rival companies is nascent, and understanding of the mechanism of harm is still being researched. Nonetheless, she contends, it's clear that the laws would apply.

The Clayton Act “does not insist on proof of the precise mechanism by which prices are increased,” she writes in a paper coauthored by University of Pennsylvania professor Herbert Hovenkamp. “The statute says nothing about intent or state of mind.”

In other words, antitrust enforcers would need to show only a causal correlation — rather than some kind of malign intent — linking horizontal shareholding to an increase in consumer costs. But even so, Scott Morton says, a dismantling of this type of shareholding through the legal system isn't likely to happen.

“This is not going to be solved with one-off lawsuits,” she says. “Suppose you sue Vanguard, and now Vanguard is not allowed to hold airline stocks. How does Vanguard compete with Fidelity? So then you say, ‘OK, Fidelity, you can't hold airline stocks either.’ But then, if the big mutual funds aren't allowed to hold airline stocks, what does that do to the airline industry?”

“At the end of the day, what we really need is a policy. We need to understand exactly where the harm comes from and build a policy for mutual funds that protects consumers from the lack of competition.” ▲

Fiona Scott Morton is a professor of economics at the Yale University School of Management. She visited Stanford GSB as part of the Corporations and Society Initiative.



FINANCE

Big Data Gives Big Firms a Financing Edge

The growth gap is widening between large and small companies. A new study offers a surprising explanation.

BY EDMUND L. ANDREWS

Given all the bromides about small business being the engine of job creation, it may sound jarring to hear that the big growth is increasingly coming from big companies.

Over the past 30 years, however, the broad trend in the United States has been that big companies are growing faster and becoming more dominant. Between 1980 and 2015, the overall share of jobs at firms with more than 1,000 employees increased from about one-quarter to one-third, while the share at companies with fewer than 100 workers declined modestly.

Meanwhile, some of the biggest companies have become gargantuan: Apple and Amazon both just crossed the \$1 trillion mark in market value. That is more than the GDP of all but 16 nations.

Juliane Begenau, an assistant professor of finance at Stanford GSB, has a startling theory about a key reason for this shift: big data.

In a paper coauthored with Maryam Farboodi at MIT Sloan and Laura Veldkamp at Columbia University, Begenau argues

that the quantum leaps in both data and computing power have given big companies a consistent edge in raising capital more cheaply.

It's a bold claim, but the basic idea is simple: Bigger companies produce more data for investors, which they can now analyze at ever lower cost. That reduces the uncertainty around bigger firms, which in turn lowers their cost of capital.

"A key pillar in a firm's decision to raise capital and to grow is how cheap it is to raise funds," Begenau says. "Computer speeds have increased dramatically over the past 30 years, and investment firms and hedge funds are processing a lot of data in order to reduce their uncertainty. If a firm provides more data, which investors can use to reduce the uncertainty about its prospects, that's going to reduce its financing costs."

It's long been true that big companies generally have lower capital costs, in part because they have longer track records. What's changed is the amount of data available and the cost of analyzing it.

That change, Begenau and her colleagues contend, is one of the few solid ways to explain what they show is a widening gap in the growth rates of big and small companies.

From 1980 to 1985, for example, big companies on average grew by 39.5%, while smaller companies grew by 7.3%. That was a surprisingly wide gap, but it became even wider from 2000 to 2005, when the average big company expanded by almost 60% and average small company grew at the same rate as before.

The researchers found the same widening gap when they compared growth rates before 1980 and those between 1980





INFORMATION IS MONEY Financing is easier — and cheaper — to acquire as firms collect more data.

and 2007. By a slew of different growth measures, from assets and capital stock to sales and market value, the growth gap between big and small companies widened sharply after 1980.

To be sure, Begenau says, this hardly means that big companies inevitably get bigger and that small companies are destined to fall behind. The last 30 years have seen scores of once-small startups become towering global giants before their founders reached the age of 40. Likewise, many iconic blue chip companies have shrunk — see the current woes of General Electric — or disappeared entirely.

That said, should a data-fueled trend toward bigness mean that the playing field has been permanently tipped in favor of established companies? Does it raise concerns about monopoly power?

“It’s too early to say,” Begenau says. “In many ways, our paper raises more questions than it answers.”

Their goal, she says, was to shine a new light on one of the many overlooked implications of the big data explosion.

“This seems to be an important future feature of our economy, and we need to understand the effects of all this information technology,” she says.

“We’ve barely scratched the surface. We know that it has benefited lots of consumers, that it’s super convenient, and that it allows us to work more flexibly and efficiently. But we need to understand the other consequences. This is a very small piece of that puzzle.” ▲

Juliane Begenau is the Business School Trust Faculty Scholar for 2018-19 and an assistant professor of finance at Stanford GSB.

AGRICULTURE

A Slow Journey Back to the Farm

It took three decades, but Stanford MBA David L. Brunner eventually left a high-powered banking career to rebuild a New York dairy farm.

BY MARTIN J. SMITH

Through **David L. Brunner's** early stint as an engineer, his two years at Stanford GSB, and his 34-year career as a capital markets expert at French bank BNP Paribas, one overarching impulse motivated both him and his wife, Rhonda Butler.

"We always wanted to farm in one way or another," says Brunner, "or at least have access to a rural setting."

The 1981 MBA graduate had grown up in rural Ohio. Butler, whose banking career paralleled her husband's, is from the Tennessee countryside. The couple began looking to buy a farm in upstate New York more than 30 years ago. First they looked for places an hour from New York City, then two hours, then three. Nothing was quite right or affordable. Then one day in 1988, Brunner spotted a flier for Asgaard Farm & Dairy in the small Adirondack town of Au Sable Forks — five hours by train and car from New York City. But the \$115,000 price tag was attractive.

The 145-acre property — formerly owned by artist Rockwell Kent — included farmland and woods, three silos, a barn complex, and various outbuildings. The structures were in bad shape, and the fields and dairy had been mostly out of production for decades. They bought it anyway.

Brunner and Butler continued their day jobs and raised their daughter in the city, but spent countless weekends over the next 20 years overseeing Asgaard's rebirth. They repaired buildings and rehabbed the soil and forest. They expanded the farm to 1,434 acres and built a solar energy system that now supplies 85% of the its power. In 2009, they began the transition to full-time farmers.

Today, Asgaard is a model of sustainable farming. Its goats produce cheeses that have won awards from the American Cheese Society and been featured in *Gourmet*

magazine. We spoke with Brunner about his slo-mo journey back to the farm.

You started your professional life in 1977 as a field engineer for a construction company. What drew you to Stanford GSB? My dad had always told me that engineering was a great place to start, and I was good at math and science. I got into Stanford, but they suggested that I go out and work for a couple of years before entering the program. That gave me an opportunity to work for Turner Construction, a national company. I had a great experience there, but I was still interested in business school. I entered Stanford in fall 1979.

How did you end up in banking? I did an internship with Warburg Paribas Becker that turned into a job. I saw banking as an opportunity to learn and see other parts of the world — another thing my father had encouraged me to do. I ended up with the same company for more than three decades.

What shared values led you and Rhonda to buy Asgaard Farm? Our motivation was quite simple. We both grew up in rural communities where farming was strong and were looking to return to these roots.

Why the slow approach? We always knew it would take a long time and were in a position to take that time. We needed to spread out the costs. Also, restoring soils takes years, and restoring forest property takes decades. So we put no pressure on ourselves to move quickly. We both had great careers at nice institutions and were raising our daughter in New York City. For the first 15 years we owned it, we basically just cleaned it up. As we were here longer, we thought about how to put the operation back together and make it viable.

What was your biggest challenge? When you just graze and take hay off fields, it depletes the soil over time. So we went into an organic grain rotation, a three- or four-year cycle of wheat or rye then hay, using lots of compost and organic materials. And over the years, we brought the soil back. Growing crops was something that didn't require us to be here every day.

But how do you turn a rundown farm into a viable business? No one is going to get rich on a small-scale farm. The question is: What is your objective? In financial terms, it has long been our aspiration to make it economically sustainable. If we can't make it work, it can't sustain itself. But we think it's possible.

Are you in the black now? Almost. Most of our farming activities are contributing. We're diversified beyond the dairy, offering grass-fed beef, pork, and poultry products.

Any similarities between overseeing capital markets for a large bank and running a small farm? Yes. Just as in capital markets, we focus on managing risks. Risks in farming are equally challenging — weather, equipment failure, facility downtime, animal health, predators, regulatory risks, commodity price risks. Our diversification is a hedge against commodity risks. You don't see the kind of fluctuations in prices with retail products, like cheese, as you do with commodity products.

Do you feel you were ahead of the curve in 1988 when you focused on small-scale farming? We appreciated the virtues early on and ended up being part of the resurgence in small-scale farming in recent years. We welcome it, because the support for our products from restaurants, along with interest from the general public, has all been a great help.

You've said you're in this because farming is "good food, good business, and great for the environment." Are those the core values you were pursuing when you bought the place? Those are the three essential points, yes. You can make really great food on a small-scale farm, and more chefs are appreciating how important it is to have healthy, farm-fresh products. It's also good for conservation, because farmers have been depleting soils for centuries, and small-scale farming practices can restore these soils. Third, these small farms are good for local economies. We create jobs and support local businesses. This is not to suggest that we can replace large-scale agriculture, but small farms *can* play an important role.

Photograph by Corey Hendrickson

DAVID L. BRUNNER
"Our motivation was quite simple."



Do you make money from the farm in ways other than agriculture? We have around 1,000 acres of sustainably managed forests. That's a contributor in years when we harvest logs and firewood. We also have a couple of long-term rental properties on the farm and a short-term farm-stay program that brings visitors who stay for anywhere from a weekend to several weeks. Finally, we make long-term investments in agriculture, renewable energy projects, and new regional businesses.

Does that put you in the marketing business as well? Part of our mission is to restore the connection between people and their food, and you do have to pay attention to customer development, service, and

logistics. Social media helps with getting our message out. We also host events, including five this summer that brought more than 4,000 visitors to Asgaard. That develops our customer base and fulfills our mission. It all helps. Profit margins are very thin, so you have to be the best operator you can.

Any ancillary benefits for your family? You have to be joking. Last night, Rhonda and I were deciding whether to have dinner or just graze. We stopped by the garden and got a couple of ears of corn and some lettuce, then stopped by the freezer room and picked out steaks, grabbed some cheese from the cooler, and came back and ate. Now if that's not wealth, I don't know what is.

Any regrets? I guess we don't go on as many vacations as most people. But to be honest, I like being here. I like the intellectual challenge and the daily work.

Any lessons from Stanford that have proved especially helpful? I had an organizational behavior class where a visiting professor from Brigham Young passed along the strong message that you have to rely on yourself to figure out what to do. And above all, be passionate about what you're doing. ▲

David L. Brunner earned his MBA from Stanford GSB in 1981.

OPERATIONS

The Surprising Power of Small Data

More information isn't necessarily better in health care — or business.

BY LEE SIMMONS

Chronic conditions like heart disease and diabetes have been on the rise for decades. They're the number-one cause of death and disability in the U.S. today and one reason why health care costs are out of control.

So identifying people at risk for chronic conditions before they get sick makes a lot of sense. At the very least, early intervention can often slow the pace of disease and improve patients' quality of life — and in doing so, potentially save billions of dollars in medical costs.

That's why many employers — some 50%, according to a RAND report — sponsor incentivized wellness programs for their workers. Along with gym discounts, these programs typically include a health-risk assessment in the form of lab tests used to calculate each person's risk factors for common diseases. Those at risk are then offered extra preventive care and oversight.

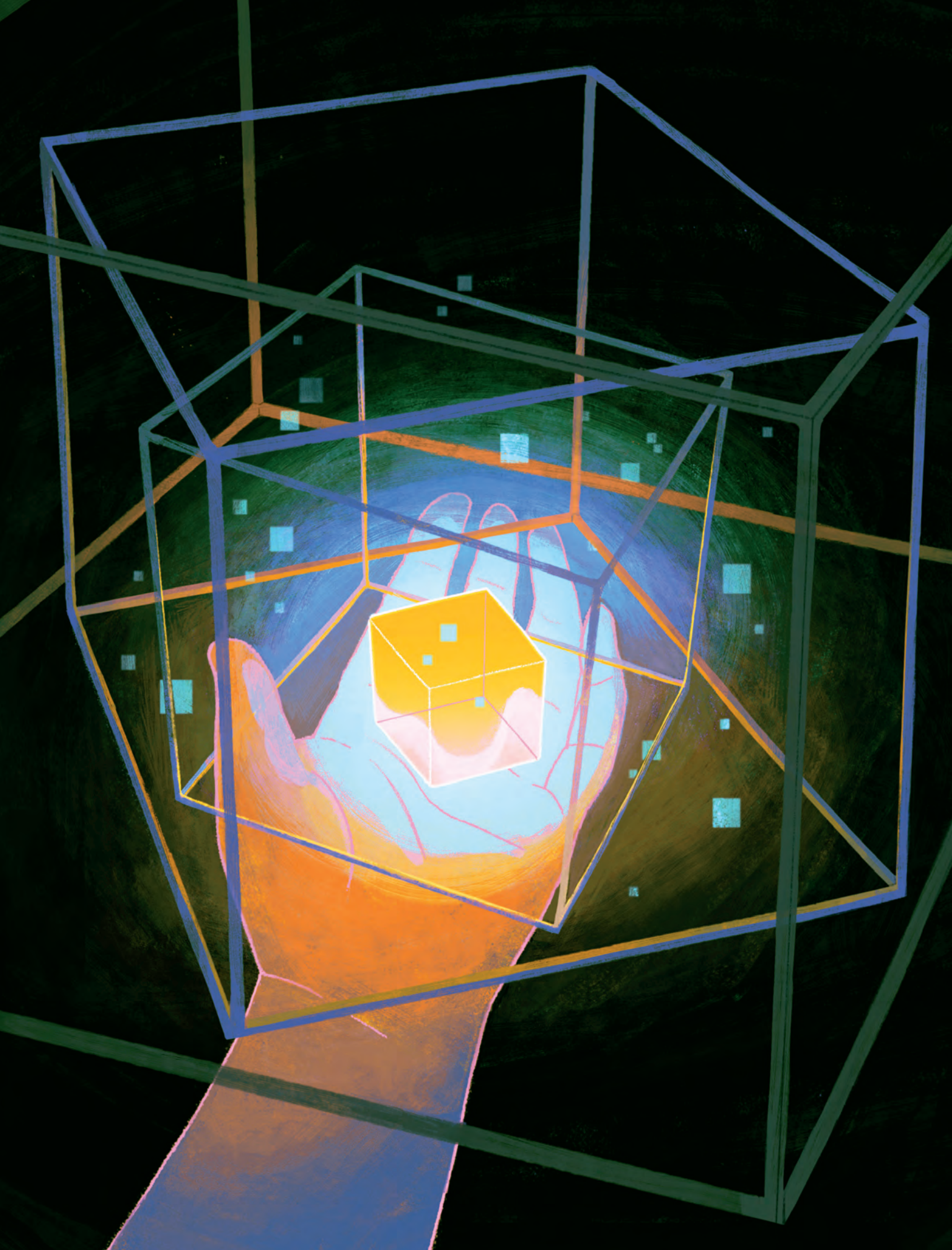
Unfortunately, the expected benefits don't always materialize, says Mohsen Bayati, an associate professor of operations, information, and technology at Stanford GSB. Several studies have found that such programs can end up costing more money than they save. One likely reason, he says, is that the risk assessments themselves aren't all that accurate.

"If you wrongly identify someone as high risk — a so-called 'false positive' — you pay for unnecessary services," Bayati says. "And if you miss someone who truly is at risk — a false negative — then you still get hit with those huge medical bills in the future."

One solution, he says, would be to run a more elaborate panel of tests. But that would also increase cost. "Lab tests are expensive. Companies are doing this for lots of employees, so they look at a fairly small set of standard biomarkers. And then the detection ability isn't very strong."

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

Illustration by Angelica Alzona



MINIMAL NUMBERS, MAXIMUM POWER

Instead, Bayati says, the key to making these preventive programs work is to improve the selection of biomarkers. But how do you do that? To put it more rigorously: How do you choose a minimal set of markers that will maximize the diagnostic power over a range of diseases?

That's the puzzle Bayati tackled in a recent paper, which he coauthored with two Stanford colleagues: Sonia Bhaskar, PhD, a former Stanford research assistant who now works as a data scientist at Netflix, and Andrea Montanari, a statistics and electrical engineering professor. Using some technical jujitsu from the field of machine learning, they developed a method that can be used for any group of target diseases or program budget level.

When they tested it on medical records for some 75,000 patients, they found that it could predict a group of nine serious diseases with unexpected accuracy. "We were surprised," Bayati says. Compared with a hypothetical Cadillac-care assessment with no limit on the number of biomarkers, theirs would cost far less, yet have almost the same level of predictive power.

And maybe there's a general lesson here, in this era of big data. "You have to wonder," Bayati muses. "In every industry, companies are investing resources to gather more and more data. We're putting sensors on everything, just because we can, and frankly it isn't all necessary or useful."

TOO MUCH INFORMATION

Traditionally, health-risk assessments have been designed by figuring out the best markers for each disease in isolation and adding them to a list. "Hospitals are getting more sophisticated in how they identify biomarkers, with advanced statistics and now AI," Bayati says. "But it's all done one disease at a time."

You could potentially build an effective test panel this way, he says, but it would require far too many biomarkers. So in practice, compromises are made and accuracy declines. Instead, Bayati and his colleagues added a second step to the analysis: "We said, let's start with that complete list and then see if we can simplify it in a better way to minimize the loss of diagnostic power."

To do that, they drew on some techniques from high-dimensional statistics that are used in machine learning. "The fundamental question is, if you have too much information, how can you narrow it down to the most useful smaller set of information? How do you reduce the dimensions of the data set?"

The math is involved, but basically, the key to solving that "TMI" problem is to *jointly* optimize the selection of biomarkers. Instead of finding the best ones for each disease separately, decide first how many biomarkers you want — the researchers settled on 30 — and then maximize the predictive power, over all possible combinations, for the whole set of diseases at once.

“More information isn’t necessarily better. What matters is knowing what to look at.”

The model works because many biomarkers signal more than one disease. High blood glucose, for instance, may be a sign of diabetes, but also kidney disease, liver disease, or heart disease. Abnormal levels of alkaline phosphatase are associated with heart disease, liver disease, and cancer. "If your selection process doesn't take these overlaps into account, you're throwing away information," Bayati says.

NO LIMIT TO OBJECTIVES

The power of the method Bayati and his colleagues outline is that it can be used to pursue multiple goals at once. What's more important in health-risk assessments: accuracy or cost? Both, of course. Do we want to predict Alzheimer's or arterial disease? Yes.

"There's no limit to the number of goals," Bayati says. "You could list 20, 30, 100 objectives that you want to optimize over. And then you can narrow down the information you need to collect — because at some point, adding objectives doesn't require additional data."

If it helps to fulfill the promise of corporate wellness programs, that's a big deal for health care. But this approach can also be used to improve a range of business and public policy operations. What's crucial, Bayati says, is to be clear on the objectives. Computers can do the analysis, but humans have to tell them what to optimize.

And that's a step, he thinks, companies too often gloss over. "Sometimes it seems that firms are just rushing to accumulate data and asking questions later. But more information isn't necessarily better. What matters is knowing what to look at. Our paper is a step in that direction." ▲

World

“There’s a lot of
**unconscious
racial bias** —

not intended, if you will,
but a product of our socialization.”

— Jerry Porras PAGE 44

A photograph of a man in a blue shirt and cap working on a car in a garage. A woman in a black blazer and blue skirt stands nearby, smiling. The man is bent over, working on the car. The woman is standing with her arms crossed, looking towards the camera. The background shows a wooden wall with various tools and equipment.

ENTREPRENEURSHIP

A Different Kind of Funding Bias

Latino-owned businesses struggle with discrimination when it comes to securing financing. A Stanford GSB initiative is trying to help.

BY BETH JENSEN



In the struggle to secure financing and credit for their companies, Latino business owners face the same staggering challenges encountered by every entrepreneur.

And then some.

Most Latino CEOs have a story — or several — of roadblocks that smack of bias rather than bad luck. The incidents can be subtle. A bank inexplicably denies a small loan to a known client. A mortgage broker becomes less receptive after discovering a loan applicant's race. A potential investor assumes a Latino CEO is the company intern.

The Stanford Latino Entrepreneurship Initiative, housed at Stanford GSB, is working to uncover such practices by collecting extensive and detailed data on the Latino business experience. Its 2018 State of Latino Entrepreneurship research report takes the closest look yet at national trends underlying Latino business growth. Access to financing — or the lack of it — is of prime concern, says Jerry I. Porras, the Lane Professor of Organizational Behavior and Change, Emeritus, who spearheaded the initiative.

"It's easy to slip into the notion that everyone is a racist, and that's wrong," Porras says. "But there's a lot of unconscious racial bias — not intended, if you will, but a product of our socialization. Over time, if you're able to recognize how this bias is creeping into our culture, you can consciously make the decision to eliminate it."

The new report is extensive, compiling data from SLEI's survey of 5,000 entrepreneurs, its research panel of over 1,100 participants, and other national sources, including the U.S. Census Bureau. The numbers tell a story of thwarted potential: While Latinos launch more businesses than any other group, their companies often start small and stay small, making up 12% of all U.S. firms, but only 6% of all employer businesses and only 3% of employer businesses with over \$1 million in annual revenue. If the current number of Latino-owned businesses grew to match the size of their non-Latino counterparts, it would add 5.3 million new jobs and \$1.5 trillion to the U.S. economy.

Among the report's findings:

- **Latino business owners apply for financing at comparable rates to white business owners but are more likely to experience a funding shortfall. The majority of Latino-owned businesses did not apply for financing in the past 12 months, but among those who did, over 25% did not obtain any amount of the financing requested.**
- **Successful Latino-owned businesses are more likely to be tech companies with diversified funding streams, but Latino tech companies report access to capital as a major factor impacting their profitability.**
- **About half of employer Latino firms are owned by immigrants.**
- **Government contracts provide a path to scalability for Latino-owned businesses, but among employer firms, Latinos have government clients at a lower volume when compared with white business owners.**

Among the most significant findings: When applying for financing, 28% of Latino business owners receive full funding, compared with 48% of white business owners.

"If you're able to recognize how this bias is creeping into our culture, you can consciously make the decision to eliminate it."

"That statistic stuck in my head," Porras says. "That's a huge gap. The question is why? There are a lot of successful Latino businesses out there, many of them good investments, but how do the funders get convinced of that and see the same level of risk you take when you fund a white owner? That's a real challenge."

The insights being generated by SLEI's data are designed to inform research, policymakers, and capital providers. Through its new and growing research panel, SLEI aims to become a national connection portal and source of mentorship for business leaders looking to secure financing and scale their companies.

"Our research panel is unique," says SLEI's lead research analyst Marlene Orozco. "There's no other panel of Latino entrepreneurs like it. We're going to be building a forum of owners who can engage with each other all across the country — businesses of all sizes, in all industries — with the goal of growing a sense of community and learning from each other."

In collaboration with the Latino Business Action Network, SLEI offers a six-week online course, called the Stanford Latino Entrepreneurship Initiative - Education Scaling program (SLEI-Ed), for promising Latino business leaders interested in growing their companies. Two cohorts of 70 to 80 CEOs from around the U.S. attend the program annually. In addition to attending weekly webinars, the students spend three days at Stanford GSB, have access to personal mentors, and are introduced to SLEI's growing network of capital providers.

We asked four participants of the SLEI-Ed program to discuss the challenges they've faced in raising the capital necessary to grow their companies. Their stories follow.

Jerry I. Porras is the Lane Professor of Organizational Behavior and Change, Emeritus, at Stanford GSB.



MARIA UREÑA "Unfortunately, we don't always have the opportunities."

"I See Others Who Scale and Wonder What They're Doing Differently" In the 18 years Maria Ureña has run King Automotive Services, all company financing has been personal.

Maria Ureña, owner of King Automotive Services in Moreno Valley, California, has learned the road to scaling can be blocked by uncertainty, conflicting financial priorities, and bias — even when you think you've done everything right.

A family nurse practitioner with two masters' degrees, Ureña had no background in the automotive industry when she opened her business in 2001. Her husband had become disabled, and the couple were looking for a new business opportunity where he could be safely employed. They subleased a space in an uncle's tire repair shop for a few hundred dollars a month,

brought on her brother-in-law as their first employee, and opened a full-service auto repair company.

Now in a larger leased space, the company has six employees and had a revenue of \$580,000 last year, Ureña says. For 18 years, all financing for the company has been personal investment; Ureña has never taken out a bank loan for the business.

"As we grew and needed to expand, we were able to save a little through the business and reinvest it," she says. "Unfortunately, you don't always have the opportunities of bank loans, small business financing, or small investors."

In an effort to secure financing, Ureña developed a business plan, outsourced bookkeeping, changed from a tax preparer to a CPA, and incorporated the business.

"This all required hard financial costs that are difficult for a small business to absorb," she says. "It's hard to see the return on investment when there is only money going out and not coming in."

Her attempt to secure a Small Business Administration loan through their long-term bank also failed.

"We were conditionally approved, but we were asked to come in with 15% of the purchase price, and we didn't have it," she

says. "The seller offered to assist with the down payment, but the bank wouldn't approve that. We had to go back to the drawing board."

Although the business has several certifications, they have not yet produced contract work.

"Trying to get a government contract is very competitive," Ureña says. "We've not had one opportunity to bid. We haven't even been in the competition."

Throughout her funding journey, Ureña has struggled with ongoing doubt — over both possible bias directed at her and her response to it. The local Bureau of Automotive Repair questioned her "role" with the company. A mortgage lender recently became argumentative immediately after discovering her ethnicity. She says she's been denied the opportunity of local awards and participation in area programs over concerns her involvement in community business organizations will create "poor optics."

Her options have always seemed limited, Ureña says.

"We are a small business, and trying to save 15% without a major contract that secures a monthly stream of funding is nearly impossible," she says. "So we need to reduce our overhead. To do that we have attempted to relocate our shop for the last four years and have worked with local municipalities for support and assistance, but an auto repair shop is not very attractive to most cities. We could absolutely go with hard money lenders, but that would not be a smart decision due to the high interest rates."

Ureña continues to network actively, serving as the chair for the Greater Riverside Hispanic Chamber of Commerce and as board chair for the California Hispanic Chambers of Commerce, Inland Empire Region. She's gone back to work in nursing to avoid laying off employees, still hopes to purchase a building — possibly with an equity line of credit on her home — and has a dream of one day opening a vocational training program at King Automotive Services.

"I've learned about scaling, but it's different when it comes to financing; it's really not there," she says. "I see others who scale and wonder what they're doing differently than I am, and I don't see anything different."

"I still have that dream," she adds. "I have to take a leap of faith and hope I don't lose my house in the process."

“We’re Stuck in the Middle of the River Because of Financing”

Mario Jauregui of Spindle Cooling and Warehousing has had to piece together funding for his international logistics company.

It’s tough to say what’s been more challenging for **Mario Jauregui**: importing and exporting perishable goods over one of the world’s most turbulent borders or finding the financing to grow his business.

As managing partner of Spindle Cooling and Warehousing, based in San Luis, Arizona, Jauregui has used financing from home equity funds, loans from small and large banks, and money from “loan shark-type” lenders. Now, 13 years in, he faces yet another challenge.

“As we speak, we’re in the middle of terrific growth in the company, but we’re stuck in the middle of the river because of financing,” he says.

Born in the tiny town of Ostotán in Jalisco, Mexico, Jauregui immigrated to the U.S. as a child and graduated from Arizona State University with a bachelor’s degree in business administration. In 2006, while working as a licensed customs broker, he was asked by one of his clients, Spindle’s previous owner, if he’d consider a joint venture to purchase the company out of bankruptcy. His cost would be \$100,000.

“For us it was a lot of money, but luckily our home had appreciated that much, and we were able to get a line of credit from the bank,” he says. “We bought it for \$650,000. The financing was difficult, but it was worth \$2 million to \$3 million at that time and a very good deal.”

Today, Spindle is an international logistics, freight, and warehousing company specializing in produce. It has about three dozen employees and is valued between \$6.7 million and \$7 million, Jauregui says. With much of its shipments traveling between the U.S. and Mexico, the company must ensure that each load complies with the demands of a wide array of governmental agencies, including U.S. Customs and



MARIO JAUREGUI “We’ll find a way to make it happen.”

Border Protection, the Food and Drug Administration, and the Department of Agriculture, as well as their Mexican counterparts. Jauregui and his team meet regularly with clients in both countries.

“We live in a small community,” Jauregui says. “If we didn’t do all this, we wouldn’t make it. But now because we are very specialized, it’s very difficult to compete with us.”

The company has never lost money, but financing hasn’t always been easy, Jauregui says. When his partner’s second produce business failed in 2010, Jauregui was forced to work with banks to consolidate the companies, giving him an extra building he was able to use for additional warehouse space and increasing his mortgage from \$400,000 to \$2.6 million. He ran into another challenge later, when he needed to purchase a \$150,000 racking system. With few choices, he borrowed money through a company he found in an advertisement.

“We’ve worked with Wells Fargo, with Chase,” he says. “Sometimes they come through and sometimes they just don’t. In this case, we had to go after the expensive money to purchase equipment, paying more than 17%.”

Jauregui is now trying to finance a 25,000-square-foot freezer, projected to increase the company’s client base and revenue, but hasn’t been able to secure financing despite collateral and the company’s ongoing profitability.

“This is where a lot of businesses fail — they just give up,” he says. “We’ll find a way to make it happen. We need the capital investment from someplace where people understand our business, who can see that we’re solid, that we’re moving forward, growing the business, employing more people. Hopefully, these big lending companies will consider partnering with us. I think this is lacking, maybe because they haven’t taken the time to understand us and what we do here.”

It never occurred to **Dee Ann Espinoza** that she'd be turned down for such a small loan.

The year was 2011, and Espinoza, founder and CEO of Espinoza Consulting Services, was seeking a short-term loan for her 1-year-old company from the community bank that her husband, Julian, had used for 22 years — one that predominantly served the area's white community.

"They refused to lend to us, and I was flabbergasted," she recalls. "They wanted us to put up our car and have our parents cosign. We had assets and zero debt, and they still wouldn't write us a signature loan for \$1,100. It can't be proved, but we're fairly certain the decision to not lend to us was based on our ethnicity. That kind of discrimination is easy for lenders to hide, since most borrowers would be embarrassed to admit that a bank won't loan them such a small amount."

Espinoza, a past participant in the SLEI-Ed program with a master's in anthropology from Arizona State University, had launched her environmental consulting firm in 2010 out of her home in the San Luis Valley, in rural southern Colorado. She had limited financing options. The mortgage lending crisis of 2006 had hit her

hard, sweeping away her previous real estate investment business, her home, and her credit. Declining bankruptcy, she and Julian settled their debts.

"In the beginning, one project would pay, and I'd use it to fund the next one," she recalls. "That's how I operated for the first three to four years, funding any way I could — using credit cards, saving profits, 'hiring' and borrowing from family and Julian's business, deferring draws, and not being able to access traditional credit."

By 2014, the situation was looking up. Her company received a certification from the Small Business Administration that enabled it to access sole source contracts from the federal government. She also took on a business partner, who allowed her to borrow from their traditional line of credit. In need of a building for staff, Espinoza obtained a mortgage from a local economic development planning agency with a carryback from the seller and used her family home as additional collateral.

A year later, she bought the building next door after first securing a \$30,000 Colorado economic development grant for rehabilitation and outfitting. She took that to First Southwest Bank, a traditional bank and certified Community Development Financial Institution, which consolidated the mortgages and provided a stopgap working-capital loan that enabled Espinoza to buy out her partner. It also provided a line of credit for \$150,000, backed by the SBA.

Today, Espinoza Consulting Services has 30 employees in six states with headquarters in La Jara, Colorado. Espinoza hopes to open another office and is working with her bank to double the company's line of credit. Thanks to receiving SBA certifications that target women-owned businesses and businesses in economically disadvantaged communities, Espinoza's company now receives nearly 90% of its revenue through federal contracts.

"Last year we were at \$1.6 million and, given current awards, this year we'll easily double to about \$3 million," Espinoza says.

Financing is no longer a concern.

"First Southwest Bank is ready to lend to us personally on other projects and really sees us as partners in economic development — our bank actually gets excited when we bring them a new project," Espinoza says. "It's taken us eight years to go from cobbling together alternative funding sources to being able to get a sizable signature loan or an unsecured business loan in a few days. It's taken tenacity, creativeness, family, and finding the right lending partner."

“Discrimination Is Easy for Lenders to Hide”

Dee Ann Espinoza used credit cards, personal funds, and other alternative funding to build her 30-person environmental consulting business.

DEE ANN ESPINOZA “They refused to lend to us, and I was flabbergasted.”





TONY AGUILAR “There can be extreme bias going into these conversations.”

“VCs Have Preconceived Notions Regarding How You Look or Dress”

Startup founder Tony Aguilar learned to spot and combat natural bias to raise money for his mobile app.

When **Tony Aguilar** left Pecos, Texas, to attend college about 15 years ago, he headed to Indiana University, opting against Ivy League schools in favor of keeping a low profile. Despite having a father who constantly instilled confidence, Aguilar had doubts about where he belonged.

“I was a first-generation high school graduate, and I looked and dressed very different from most of my peers,” he recalls. “I decided to go where I thought I’d fit in.”

Today, Aguilar should fit in just about everywhere. He’s the 33-year-old founder of Austin-based Chipper, a thriving mobile app startup that allows student loan recipients to manage, pay, and refinance their school debt in one place. But even though his company manages \$150 million in student loans, Aguilar still feels that he’s sometimes perceived negatively by investors.

“Raising financing has always been very challenging,” he says. “A lot of VCs have preconceived notions regarding how you look or dress. They’re natural biases. And it’s frustrating to experience that.”

The founder and former CEO of Student Loan Genius (the first student loan benefit to allow companies to help employees pay down their student debt), Aguilar launched Chipper in August 2018, after the company was

chosen by the venture capital firm 500 Startups as one of 16 companies — out of 2,500 startups worldwide — to participate in the firm’s “Batch 23” accelerator event.

“We raised \$1 million in the pre-seed round,” Aguilar says. One of the round’s early investors was Dan Macklin, MS ’11, a Stanford MSx alumnus and a cofounder of SoFi, one of the biggest student loan refinancing companies. He was followed by Fabrice Grinda, *Forbes* magazine’s no. 1-ranked angel investor in the world.

Despite such endorsements, Aguilar believes some VCs approach a meeting with a minority CEO differently than they might otherwise. He came to that conclusion after reading a study in *Harvard Business Review* about the different types of questions male and female entrepreneurs are asked by VCs — and how it affects the amount of funding each receives. Women tend to be asked questions about the potential for losses in their business, while non-minority men tend to be asked about the potential for gains. The research resonated with Aguilar.

“It opened my eyes,” he recalls. “I’ve experienced the same thing as a minority, and it’s something I’ve discussed extensively with other minority founders.”

Entrepreneurs who are asked about the potential for gains — or who are able to “flip” a question about potential losses into a discussion about potential gains — tend to raise significantly more funding than those who field and answer questions on potential losses, Aguilar notes.

“There can be extreme bias going into these conversations,” he says. “Now, when I’m asked questions in a pessimistic tone, I answer in an optimistic way. You have to learn tactics like that, because you don’t always know that it’s happening. For a lot of entrepreneurs, it’s hard not to take it personally, and it can make you second-guess whether you have what it takes.”

Aguilar cites persistence and outreach as keys to his successful financing efforts.

“The only way to do this is to ask for help, and Latino males don’t do that,” he says. “But networking is incredibly important. As Latinos, we tend to create cliques; we stick with other Latinos, and we can’t be doing that. The VC world is run by white males, and most are not bad or biased. It’s a matter of opening your network, asking for help, and getting into the same room with the people who can really change the trajectory of your company. Knowing that there will be bias at certain times, learning to adjust to it in a meeting, and taking control of it.

“If we want to make an impact, we need to get into those pockets,” he adds. “If they like you or don’t, ask them who they know who would be excited about your company. If you continue to get those doors open, opportunities will open up.” ▲

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SERVICES

Why Every Business Will Be a Subscription Business

Everything you purchase — from transportation to entertainment to groceries — will soon come with a monthly plan, says Zuora CEO Tien Tzuo.

BY JENNY LUNA

After scrolling headlines in the *New York Times*, you head into the kitchen and open today's Blue Apron box to prepare a shrimp risotto before turning on Netflix for an episode of *Comedians in Cars Getting Coffee*. You may not have noticed, but you're now fully enmeshed in the subscription model.

The subscription model is a booming field. In recent years, the market has grown by more than 100% a year, increasing from \$57 million in sales in 2011 to \$2.6 billion in 2016, according to one expert.

Tien Tzuo, who earned his MBA from Stanford GSB in 1998, says the subscription model is the way of the future. In 2008, after nearly a decade at Salesforce, Tzuo founded Zuora, a software company built to aid organizations shifting to subscriptions. In his recent book, *Subscribed: Why the Subscription Model Will Be Your Company's Future — and What to Do About It*, Tzuo aims to change how executives think about their products and organizational structure in the subscription economy.

"If you're not shifting to this business model now," Tzuo writes, "chances are that in a few years you might not have any business left to shift."

Here, Tzuo shares more about why it's no longer the era of the "unknown customer," what it means to transform a business to a subscription model, and his current views on the value of an MBA.

You write a lot about the need to change our mindset. Why is this shift difficult?

Once you get in the habit of thinking this way, it becomes easier. My colleagues and I, often over dinner and wine, would challenge each other to come up with businesses that couldn't be turned into a subscription model. We tossed out ideas like guitars, cement.

We realized it's not about the physical product, it's about what the customer is trying to do. And that inversion of thinking is at the root of everything.

Using cement as an example, you realize that flooring is the actual need. There's a whole revolution of industrial carpets now. There's a service contract, you simply pay some monthly fee plus overages, usage, etc. So you can actually subscribe to a floor.

Tien Tzuo earned his MBA from Stanford GSB in 1998.

Illustration by Derek Brahney



You call Adobe the company that provided the “textbook” to inspire others and reference how its revenue dropped drastically after the transition to subscription. How do you advise leaders to manage through that pain?

The fear is if I’m selling a guitar, instead of taking 400 bucks right now, I’m taking money over time. And so doesn’t that destroy revenue? If I just flip the switch, my revenues would plummet.

You can actually keep selling your product and sell new digital subscription services, like Fender does — its Fender Play offers access to online lessons for \$9.99 a month — or, if it’s a complete switch to subscription, you can face what Thomas Lah and J.B. Wood (authors of *Technology-as-a-Service Playbook: How to Grow a Profitable Subscription Business*) dubbed “swallowing the fish.”

Costs go up and revenue drops, but after the transformation to a subscription model is complete, costs go down and revenue comes back up (see graphic below).

We want it to be as inspiring a story as Adobe: They flipped the switch and revenues were down — it hadn’t been below a billion dollars in the first quarter in like 10 years. But Adobe didn’t cut staff commensurate to their revenue. They did some adjustments to cost and explained this to Wall Street and provided detailed metrics. Yes, the stock dropped when they had their earnings call, but 24 hours later, after they spent six to eight hours with the analysts, things were back up.

As more businesses move to a subscription-based model, should we be worried about privacy with our data? Services can monitor your behavior. Generally, that’s a good thing because [companies are] using that knowledge to create better services for you.

But once a customer leaves a service, a company should just return them the information. It’s their data. That’s pretty black and white, tends to work well, and is well-aligned to things like the General Data Protection Regulation [an EU law that regulates how companies protect citizens’ private data].

Advertising may never go away, but as subscription services become the norm, readers and publishers alike are starting to appreciate the dividends of a direct consumer relationship. The behavioral insight that comes with membership plans and paywalls helps media companies move away from empty calories like page views toward more valuable engagement metrics like time spent.

We like the paid subscription-based business model because we think it’s a healthy dynamic between the vendor and the customer. There should be rules and regulations that the data is the customer’s data, not the vendor’s. It’s the advertising model where the vendor thinks, “Well, I think this is our data, not your data.” And my response: “Why is it your data? It’s my behavior.”

In *Subscribed* you dive into industries that have done this well, namely the *New York Times* with newspapers and Uber with ride sharing and, perhaps more surprisingly, Caterpillar with construction equipment. What other industries can we expect to see in this market?

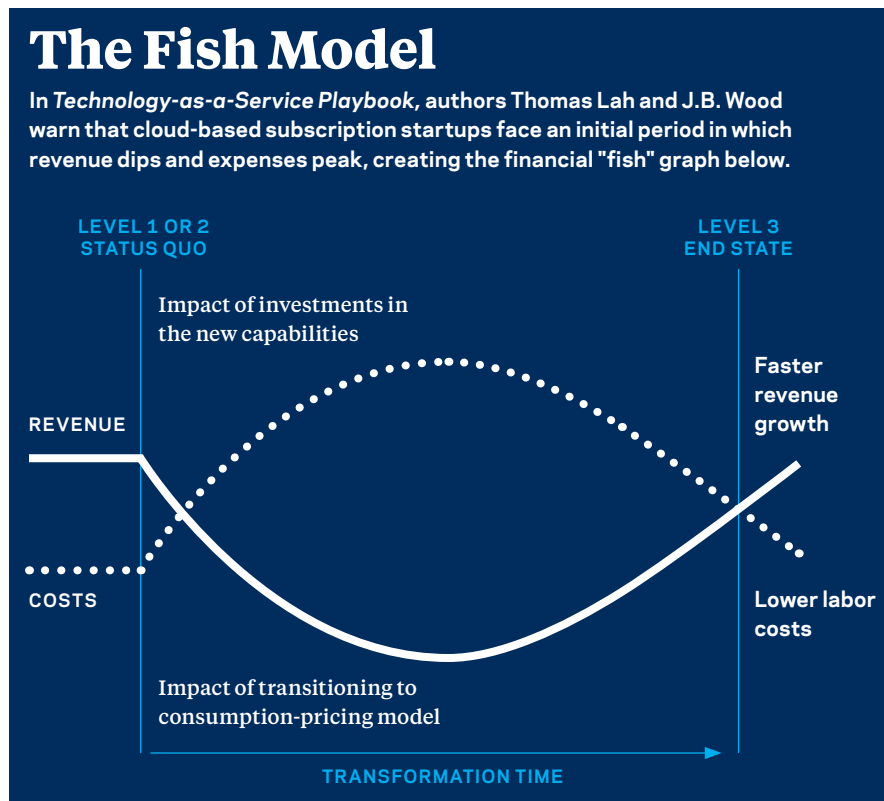
One that I am really excited about is airlines. Surf Air is called the “Netflix of Aviation,” and members get limitless access to flights for a monthly fee. It’s an example of building a business by starting with customer wants and needs, attacking pain points with a machete, and growing a loyal subscriber base. There are already subscription-based companies in real estate, education, finance, and pet care.

The reality is ownership is dead; Now it’s really about access as the new imperative.

In a 2015 piece in *Fortune*, you said a business school education was “worthless” and recommended people don’t get an MBA. Has your view changed? I’m still waiting for my alumni card to be rescinded — just kidding.

I don’t regret going to business school; there’s a lot of things that you learn. There’s an embedded assumption in business today that the goal of business is selling units of their product. It’s built into how you do marketing, it’s built into how you do finance. And this model is different.

Anybody who’s going to Stanford GSB today, I’d say it’s not that lessons in the past are not important, but try to understand there are different models. The underlying concepts are still the same — you still have to have profit and revenues — but the time dimension and the customer dimension add more nuances to the overall picture. ▲





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FINTECH

Bringing Bankless Banking to East Africa

Why Tanzania's Benjamin Fernandes took his Stanford MBA and went home.

BY MARTIN J. SMITH

Benjamin Fernandes was confident he and his business partner, Sam Castle, had developed the equivalent of a better mousetrap — in their case, a simple mobile device interface that promised to make digital banking accessible to anyone with a smartphone, even without internet access.

And he knew just the place that needed it: Tanzania.

For most of the East African country's 60 million residents, managing or transferring money via a digital device involves using the cumbersome Unstructured Supplementary Service Data system, which Fernandes says requires users to type up to 46 digits into their phone to make one peer-to-peer payment. The interface he and Castle developed can transfer money seven times faster, he says, usually within 10 seconds, after a few simple commands.

"We're a massive country," says the 26-year-old Fernandes, adding that 70 percent of his fellow Tanzanians are younger than 24.

"Tanzania's land mass is two and a half times the size of California. We're growing, and we have this huge, youthful population. What's going to happen when the country's economy relies on these people to drive it forward? How will they fund themselves and be aware of their finances?"

Fernandes, a one-time national Tanzanian TV sports broadcaster and Stanford Africa MBA Fellow, graduated in 2017, then returned to his home country to build a fintech company.

Using the \$20,000 Frances & Arjay Miller Award he received during his final year at the school (given to students trying to build a more just, sustainable, and prosperous world), he and Castle committed to intense focus and austere living in order to create their mobile app company, NALA. Since releasing the beta

version in April 2018, NALA has attracted more than 100,000 downloads without a single launch event.

You've quoted a Swahili saying that means, "If one of us makes it, we all make it. If one of us celebrates, we all celebrate." How does that apply to what you're doing?

Giving people access to financial services is fundamental to both NALA's success and to their well-being. And if one company like NALA makes it, it gives people access all around the country to make these financial transactions, to understand budgeting tools, and to make better data-driven decisions — all creating greater impact in the future.

Returning to Tanzania to develop NALA was a risky option. Why'd you choose it?

I had never experienced the feeling of privilege as much as I did at Stanford, and recognizing that privilege made me feel responsible. There are 60 million people in Tanzania, and fewer than 10,000 of them have master's degrees. All of that was given to me, and I felt responsible to pay it forward for the millions in my country who wish they could be sitting in my seat. One of my teachers, Tyra Banks, told me, "Benji, being different is better than better. Remember that." That gave me confidence to take the risk. Another thing happened the summer of 2016 when I worked at the Bill & Melinda Gates Foundation in Seattle, where I met Sam. I remember seeing Bill Gates, this guy who has everything but who is the most humble, simple man who cares so much about the world. For him it wasn't about the money. That summer changed everything for me. I realize that as a Stanford MBA, I could make all the money I want. But it's not about the money. Why not take the risk and try to make an impact on my country?

Any regrets? There are things I miss. One is being surrounded by a group of really driven people all the time. My classmates for the two years were, "Go go go! You can do it! But I'm going to give you brutal and great feedback to help you and make sure you succeed!" I miss that.

Those classmates were critical in the early stages of this business, right? They helped me conduct long-distance research with Tanzanian friends, family, and acquaintances over the course of multiple school projects. We listened to their perspectives, then built a framework to help us understand what else we needed to learn. About 140 people participated in our interviews — most times late into the night, because of the time zone differences. What we learned was key to building a product that worked for people. When I moved back to Tanzania in July 2017, we repeated the same work in person. Over the course of a few months, we conducted over 670 in-person user interviews and over 11,000 online surveys. This enabled us to pivot and adapt the product even before writing our first line of code.

How much money did you raise to launch NALA, and how did you raise it?

The Miller Award left me with about \$14,000 after taxes. So I called Sam in Seattle, where he lived, and asked him what was the minimum amount of money he needed to survive. I decided to live with my parents in my family's house. We don't pay ourselves salaries; we're just covering costs. We ran through that \$14,000 by January last year and had to call a few local friends to lend me money so we could keep our company alive. After that, the DFS (Digital Financial Services) Lab from the Gates Foundation reached out and made us a portfolio company. They gave us \$50,000, and that kept us alive for a while. Then we got \$150,000 from Y Combinator to be part of their Winter 2019 batch. We're more excited about the value of mentorship YC brings than the money itself. We're the first Tanzanian company to ever get into YC. The signaling this creates for us in our market and for potential investors was one of the core reasons why we decided to do it.

What's your ultimate goal with NALA? We want NALA to evolve into being a Pan-African digital bank. In Africa, there are more than 420 million active mobile money accounts, with few people using bank accounts. Mobile money is everything to people on the continent. In Tanzania, 47% of the GDP is transacted with mobile money. The opportunity to simplify the payments process is massive. My ambitious dream is to be the first African tech company to go public on the New York Stock Exchange.

Photograph by Drew Kelly

BENJAMIN FERNANDES
"The opportunity to
simplify the payments
process is massive."



What obstacles stand in your way? Human capital is hard to find on the continent. There are smart people, but a lot of them end up staying in the countries where they received their education (e.g., the United States). Or they work at a large local firm and think it's crazy to take a massive pay cut to join a startup. We're finding it difficult to get the right people to scale the business.

Is Tanzania's young population an advantage or disadvantage for NALA?

Overall, it's a large advantage. Tanzania is importing more smartphones than any other East African country, about 100,000 phones a month. They're going for as low as \$26, these super cheap Chinese devices. Our core users are young and tech savvy, between the ages of

23 and 26. For the volume game, it's going to be young people.

What's the most important lesson you took away from your Stanford GSB experience?

Ah, this is hard, there are so many. I think for me in particular, given the market I operate in, the importance of focus and time management. I thought I was good at time management and focus, then I got to Stanford GSB and realized the bar was at a whole other level. People were like, "I've got 20 minutes in this Uber, I'm gonna bang out a paper." And I was like, "Wait, what?"

Anything you wish you'd known at the start of your time at Stanford that you know now? Go for it. Seriously. I was so

scared and shy when I first got there. My first day on campus, I was in tears. I remember looking around at all these buildings and thinking of all the people who walked those steps and grounds, the path they paved for all of us. It took me a while to take all that in. When I started in class, I was scared of saying the wrong thing or asking a dumb question. But I learned that nobody knows everything — nobody has it all figured out. So just go for it. Be bold. Ask for help, ask your questions. That's something I'd tell myself if I was starting all over again. ▲

Benjamin Fernandes earned his MBA from Stanford GSB in 2017.



INTERVENTION

Reshaping Markets to Solve Poverty and Inequality

Academics, investors, and nonprofit leaders seek innovative solutions to the world's starkest problems.

BY LOUISE LEE

BEYOND CAPITALISM
 Without market
 intervention, many
 people would never
 receive vaccinations.

Science and technology research can make drastic improvements to health, education, and well-being, but far too few innovations are reaching the people who need them most.

Despite many advances, “we haven’t seen many large-scale applications to problems of the poor,” says Susan Athey, professor of economics at Stanford GSB.

Athey spoke at the Inaugural Market Shaping Conference on September 21–22 at Stanford GSB. The conference, organized by the school’s Initiative for Shared Prosperity and Innovation, examined how interventions by governments and private organizations could encourage innovations with massive social impact despite meager financial returns. Market shaping isn’t a new concept — consider how pharmaceutical companies offer cheaply discounted vaccines in developing worlds. But as Athey pointed out, the opportunity to identify and address problems of poverty and inequality around the world “is still wide open.”

Supported by Schmidt Futures, a philanthropy promoting emerging technology and science, the event drew about 45 academics, investors, foundation executives, and others.

**Susan Athey is the Economics of
 Technology Professor at Stanford GSB.**

Speakers discussed examples of market shaping successes as well as the many challenges in designing and implementing them. Among the highlights:

POINTING TO SUCCESSFUL MODELS

Despite demand for innovation, supply often doesn't materialize in large part because the consumers who would benefit can't afford to pay market prices for a drug, app, or educational program. That free-market failure is evident in many realms, such as in the development and manufacture of vaccinations for poor countries, speakers noted.

Still, there have been some successful programs, including a 2007 market shaping initiative to develop a vaccine to fight a strain of the pneumococcus bacteria, which causes pneumonia and meningitis, prevalent in poor countries. Five Western nations and the Bill & Melinda Gates Foundation pledged \$1.5 billion toward developing, manufacturing, and distributing a pneumococcus vaccine. In 2017, 156 million doses were distributed, and the effort is projected to save 655,000 lives.

Vaccination in particular lends itself to market shaping because of the clear metrics to gauge progress and success. Governments can easily track the number of doses produced and individuals vaccinated. Generally, market shaping is more challenging in areas where there aren't clear-cut goals or other quantitative metrics that determine success.

156M

In 2017, 156 million doses of a pneumococcus vaccine were distributed, an effort projected to save 655,000 lives.

NAVIGATING THE OBSTACLE COURSE

A successful market shaping initiative requires identifying a problem, evaluating science- or technology-based solutions, selecting a specific target population, designing and implementing an intervention, and assessing impact. Those steps sound straightforward enough, but market shaping is actually fraught with complexities, from government red tape to politics. The U.S. Department of Labor, for example, doesn't have a research-and-development budget to examine the effectiveness of workforce-development programs, says Thomas Kalil, chief innovation officer of Schmidt Futures.

Governments often lack the expertise to support a market shaping initiative with a private-sector partner, and many agencies "have little or no capacity to interact in a productive way with the research community," says Kalil. He notes also that government money for social spending is often sliced into small chunks distributed among states and local organizations, so that no single piece is big enough to support a large-scale initiative to create, for example, an app to improve adult literacy. "There's no one in the system who's empowered to say, 'If you could develop something like that, I'd buy it,'" Kalil says.

Some government bodies, including the U.S. Agency for International Development, have begun experimenting with various market shaping approaches but may need input from the private sector. "Government can just try to do this by funding the research, but it's difficult to pick winners, and there's bureaucratic incentive to keep funding what you're already funding," says Michael Kremer, professor of economics at Harvard.

Determining what and how much to spend on a market shaping effort, too, is an inexact science. The amount needs to be large enough to incentivize innovation but not so high that it appears to the public that a company is profiting excessively, says Kremer.

Furthermore, comprehensive data, essential to designing an intervention, can be difficult to find and assemble. If researchers want to study a possible intervention targeting homeless individuals, for example, they might want to connect and integrate data on homelessness with data on health care and schooling. "You'd think we'd be able to do that, but the homeless data's over

here, the health care data's over there, and the education data's over here," says Mark Duggan, professor of economics at Stanford. "I'd love it if a technology company partnered with a state or local government to integrate all their data so if we want to know how kids who have been homeless in the last two years are doing in school, you could push a button and know that."

REWARDING THE RESULTS

Prizes, whether publicly or privately funded, are another way to encourage individuals and companies to innovate for widespread social good. Since 1994, the XPrize Foundation, for instance, has launched 17 prizes totaling \$144 million in such areas as public health, the environment, transportation, and public safety. Awarded only for success and not merely effort, prizes incentivize innovation, says Shlomy Kattan, an XPrize executive director.

"Most XPrize competitions presuppose that demand is there and that the problem is supply, and we need to change the technology available for addressing that particular problem," says Kattan. Currently, his organization is offering a prize for developing the mobile app that results in the greatest increase in literacy skills among participating adult learners over a 12-month period.

Philanthropic investments are also driving current market shaping initiatives. For example, to address high rates of student-loan defaults, the philanthropic investment firm Omidyar Network has invested in the Connecticut-based for-profit Holberton School, which offers training in software engineering. Although tuition for Holberton's two-year program is \$85,000, the school offers income-share agreements in which students enroll with no upfront tuition payment and afterward give the school 17% of their income for 3.5 years once they're making \$40,000 annually.

That model of financial aid, which shares risk between Holberton and the student, gives low-income individuals a chance to avoid debt, says Vinice Davis, an Omidyar venture partner. Without this kind of income-share agreement, many students might not pursue higher education at all. So far, about 500 students are attending Holberton under an income-share agreement. ▲



HOW AND WHEN TO SHIFT CAREERS

Do it early, do it thoughtfully, and avoid the pitfalls of being “crazy reactive.”

George Hodgkin (MBA '17) has had a more exotic career path than most. Before enrolling at Stanford, he was a Navy SEAL officer, leading a team of 24 counterinsurgency and counterterrorism operators in Asia and the Middle East.

While Hodgkin loved the challenges of being a SEAL, he eventually realized that it was time for a new line of work. “I decided to go to business school,” he recalls. “I didn’t have an industry in mind, but I wanted to use the next few years to experiment and see what I liked.”

As a result of that process, he’s found a new calling that, like his old one, has an element of risk and adventure. He’s CEO of Biopharmaceutical Research Company, a two-year-old startup that’s seeking to produce high-quality, standardized marijuana for use in scientific and medical research.

“There’s a real opportunity, in a federally compliant fashion, to advance scientific research on cannabis while doing a lot of good for the country,” Hodgkin explains. “As I started to explore the idea, it invigorated me, like how I felt when I was a SEAL. And I realized that we could potentially help a ton of people. That makes it easy to go to work in the mornings.”

Jing Jing Teong

Going from covert ops to cannabis cultivation might seem like a startling shift, but in the fast-changing economy in which Stanford GSB graduates must navigate, it’s no longer uncommon to radically reinvent a career. In previous generations, workers often stayed in a particular industry for decades, ideally with the same high-prestige employer, gradually rising through the ranks as they built upon their accomplishments. But such stability seems almost as outdated as rotary telephones in an age of technological disruptions and rapid economic shifts, in which entire industries can suddenly become obsolete.

Stanford GSB experts say this new reality is creating a more dynamic career arc, in which graduates change employers while also reinventing themselves. But instead of being spontaneous, these career pivots tend to be carried out through an orderly, structured process designed to identify transformational opportunities and leverage existing skills.

CAREER PIVOTS ARE BECOMING THE NORM

Like Hodgkin, many students come to Stanford GSB with a career shift in mind. A survey of the 2018 graduates found that after graduation, 65% changed their work function, while 56% shifted to a different industry.

“The prevalence of career pivots has significantly increased over the past several decades, and we expect that pattern to continue,” explains Carly Janson, acting assistant dean and director of the school’s Career Management Center.

That’s in keeping with a national trend. “The average employee tenure is four to five years, and most people change roles several times within that,” explains Allison D. Kluger, a lecturer in management at Stanford GSB who teaches a class in personal branding and recently created a new course called *Strategic Pivoting for Your Next Chapter*. “There’s a reason for this — technology, automation, and the proliferation of startups all challenge the concept of job security and stability. But it also offers a plethora of opportunity.”

Kluger herself has plenty of experience with career pivots. She switched to academia after a 25-year career in broadcast media and entertainment, during which she was one of the original coordinating producers of ABC’s *The View*, served as a host and executive producer for the Global Shopping Network, and cofounded an e-commerce website.

“The shift is that a lot of people want to have a sense of purpose,” says Kluger. “Money is certainly a factor, but people also want to have a job that provides a sense of work-life balance. And they want to feel as if they’re adding value to the world.” She also cites the emotional benefits: “freedom, adventure, flexibility, and opportunity.”

While workers can make career pivots throughout life, Kluger notes, the realization that it’s time for a change often hits when they’re young. “With your first job, you’re dipping your toe into the pond,” she says. “You’re just glad to have a paycheck. But after a while, you realize that you need something more.” It’s not an uncommon epiphany: An August 2018 Gallup poll found that only 34% of U.S. workers feel enthusiastic about and committed to their work and workplace.

Rather than waiting for dissatisfaction to take a psychological toll, Kluger recommends being careful to look for its early signs. “Do a frank self-inventory,” she says. “What are you getting out of each day? Is it like the movie *Groundhog Day*, or are you excited by new challenges?”

But seeing that it’s time to make a change is just the start. “You don’t want to drop everything that you’re doing and just rush headfirst into a major

Allison D. Kluger is a lecturer in management at Stanford GSB. Marcela Ochoa earned her MBA at Stanford GSB in 2015, and George Hodgkin earned his in 2017.

change,” Kluger says. “That’s not a strategic pivot, that’s crazy reactive — you don’t have a financial runway, and you don’t have a plan.”

One key element of the process is analyzing one’s skill set and thinking about other roles — or other industries — in which it could be applied, Kluger explains.

“The same skills that made me successful in TV enabled me to sell myself in education,” Kluger says. “Messaging, coaching. I knew how to create compelling content, and I was comfortable in front of people. It was a giant pivot, but it was also a natural fit.”

At the Career Management Center, Janson urges both GSB students and alumni to embrace the reality that they’re likely to have multiple, divergent careers. “I do this exercise with them, where they map out three different career plans for the next five years, because you never know what’s going to happen,” she explains. “You need to learn how to become a career designer.”

The center uses a process that includes career- and life-design workshops, along with smaller peer-coaching groups in which students work together to identify opportunities.

HOW TO SPOT THE NEXT BIG THING

When former Navy SEAL Hodgkin decided to leave the military, he saw Stanford GSB as a laboratory for experimenting with new fields. “I realized that my experience was heavy on leadership and management, but light on business professionalization or industry background,” he recalls. “It’s the opposite problem that most people my age have, where they enter an industry to get expertise and then vertically try to move into management.”

While at Stanford GSB, he sought to expose himself to a diverse range of industries — from taking a class on the Hollywood movie industry to working in product management for a software firm in Thailand through the school’s Global Management Immersion Experience program. With a classmate, he also cofounded a performance management software startup, which they later sold to another entrepreneur.

Hodgin found the right opportunity after he reconnected with a fellow special operations veteran who was considering using medical cannabis to help him cope with war-related injuries. “My friend said to his doctor that he wanted to use cannabis because he was sick of opioids and asked whether it was safe, what variety he should use, and a lot of things that you would ask about any other medication. And the doctor told him, ‘We don’t know the answers to these questions.’”

Intrigued, Hodgkin — who notes he’d never been a cannabis consumer himself — started talking to scientists. He learned that for decades they’ve had to rely upon cannabis grown at a single federally funded facility, and that the chemical profile of the facility’s plants differs significantly from what is available to consumers from cannabis dispensaries, he says.

“If you want real science, you have to study what people are actually consuming,” says Hodgkin. “It’s as if people are out there drinking double IPAs, but the government is providing non-alcoholic beer [for researchers].”

Hodgin discovered a posting on the Stanford GSB job board from high-net-worth investors who wanted a basic briefing on the cannabis industry. “I pitched them on my business, and they funded it,” he says.

Biopharmaceutical Research Company’s game plan is to obtain a federal permit to grow pharmaceutical-grade cannabis at a state-of-the-art indoor hydroponic farm in Northern California, for use by government-licensed researchers.

Navigating through the regulatory process won’t be easy, but “if you’re willing to do the work and take the risk, there’s a significant

opportunity,” Hodgkin says. “I think this is a carryover from my time as a SEAL. The really big problems that are worth solving are hard and complex and take time.”

REPURPOSING A SKILL SET

It’s also possible to transition from the business world into a role at a purpose-driven organization, a route that’s attractive to those with a sense of personal mission. After interacting with several generations of Stanford GSB alumni, Bernadette Clavier, director of the school’s Center for Social Innovation, thinks it’s crucial for business school students to make such a change within five years of graduation so they can acquire the skills needed to be effective in the social sector and to understand the nuances of its culture.

“Many people believe that because they have skills in the for-profit world, they’re immediately transferrable, but that’s not necessarily the case,” she explains. “Efficient markets provide an immediate feedback that doesn’t exist in a world of donations and aid. In the absence of that feedback, a ruthless focus on the needs of the beneficiary is indispensable and requires a different attitude and toolkit.”

“If you wait too long, you might miss your chance to join an organization focused on social innovation. Your next best option will then be to join a board and do fundraising, or to become a philanthropist. You box yourself in and have to find a different way to contribute.”

Marcela Ochoa (MBA ’15) already has made multiple pivots. After getting a bachelor’s degree in industrial engineering at Tecnológico de Monterrey in Mexico, she initially worked for a consulting firm. “Everyone around me was really smart, and I learned a lot and developed skills,” she explains. “You’re looking at numbers and figuring out what story they are telling. That’s what you sell to the client.”

Ochoa eventually came to the realization that she wanted to do more than just climb the corporate ladder and earn a lucrative salary. She was attracted to the idea of working on environmental issues, which led to an internship with the Nature Conservancy. “It was the perfect balance between sitting in front of a computer working on Excel models and going out into the field, talking to farmers about how their practices could create bird habitats,” she says.

As a result of that experience, Ochoa chose to pursue a joint degree at Stanford, where she also received a master’s degree from the School of Earth, Energy & Environmental Sciences. After graduation, she returned to the Nature Conservancy, where she managed a project that involved identifying sites for low-impact renewable energy development. “We need to build a lot of solar and wind farms, but where you put them matters,” she explains. “At the end of the day, it’s building infrastructure, and it’s going to have an impact on land use and the health of communities and the animal species that live in these places.”

After two-and-a-half years there, Ochoa chose to shift once again, returning to the for-profit sector’s faster pace. “I wanted to go back to the business world, but somewhere where I’d be inspired by the mission and where the result of my work would have a positive effect,” she says.

In late 2018, she took a position as a strategy and business operations manager for Funding Circle, a lending platform that facilitates loans to small businesses in the U.S. and Europe. “I’m bringing back a lot of the expertise that I acquired while consulting, plus the project management experience that I gained from the Nature Conservancy,” she says.

Such multiple career pivots are likely to become more and more common among Stanford GSB graduates, which doesn’t surprise Allison Kluger. The trend “is appealing to young people and millennials,” she says. “They feel as if the career boundaries aren’t as constricting as they used to be.” — PATRICK J. KIGER

EXCHANGE

SOME FINAL THOUGHTS ON SHIFTING

EDITED BY JENNY LUNA

“If your dream job doesn’t exist,

create

it. I’m not sure anyone would have said there’s a job for someone who is interested in sports and real estate, but that’s what I wanted to do, and I figured out a way to pull it together to get there.”

— **Fran Weld**, MBA ’11, on how she carved her own niche in the world of pro sports management
<https://stanford.io/FranWeld>

“When you’re an

introvert

entrepreneur, you have to believe. You have to believe in order to overcome a certain shyness.”

— **Phil Knight**, MBA ’62, cofounder and chairman emeritus of Nike, from the View From The Top speaker series
<https://stanford.io/PhilKnight>

“People say I made the dress, but really the dress made me. Thanks to this dress, I became more confident and I shared that

confidence

with other women.”

— **Diane von Furstenberg**, founder of DVF clothing line, from the View From The Top speaker series
<https://stanford.io/DVF>

“Latinos

have been starting businesses at an incredible rate over the past decade — a million net new businesses every five years.”
— **Jerry A. Porras**, the Lane Professor of Organizational Behavior and Change, Emeritus, in an article about the Stanford Latino Entrepreneurship Initiative
<https://stanford.io/LatinoBiz>

“Technologies like this come around once every generation, and we don’t have that many shots to get them right. I believe

AR

is our chance to look each other in the eye again.”
— **David Ma**, MBA ’18, from “Augmented Reality: Glimpses into a Post-Smartphone World,” on Stanford GSB YouTube
<https://stanford.io/DavidMa>

“In the past, rural customers had to travel hundreds of miles to purchase the goods they needed; now it was just a click away.

The internet

was causing inevitable change for this region, and I wanted to be there when it happened.”
— **Phuong “Anh” Nguyen**, MS ’19, on her work leading a fashion e-commerce platform across 11 markets in Southeast Asia
<https://stanford.io/AnhNguyen>

“The way people view institutions has been fundamentally affected by the financial

crisis

and how none of the elites seem to have faced many consequences.”
— **Neil Malhotra**, the Edith M. Cornell Professor of Political Economy, on why populist messages emerged in contemporary politics
<https://stanford.io/Populism>

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The Takeaway



Latino Businesses Face Funding Bias

Only 28% receive the financing they request, compared with 48% of white-owned firms.

— **Jerry I. Porras**

The Pre-IPO Stock Market Is Thriving

Employees with options are cashing in through private-company exchanges.

— **David F. Larcker**



Protests Can Swing Elections

Both liberals and conservatives sway voting patterns when they march.

— **Sarah A. Soule**



Big Data Favors Big Companies

More information means less uncertainty, which equates to cheaper financing.

— **Juliane Begenu**

Retirees Want to Work

A majority would keep their jobs if offered flexible hours.

— **Christopher Tonetti**



THE ESSENTIALS

FIVE LESSONS FROM OUR STORIES ON SHIFT

EDITED BY
JENNY LUNA

THE RECOMMENDED LIST

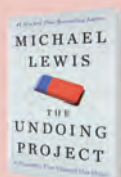
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Juliane Begenau

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