

# Stanford Business

SUMMER 2018



# CATALYST

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## A LETTER FROM

DEAN JONATHAN LEVIN

## The Entrepreneurial Mindset Is a Catalyst for Diverse Careers

Entrepreneurship is one of Stanford's defining characteristics. As early as the 1930s, Stanford graduates were starting companies such as Hewlett-Packard and Varian Associates. By the 1950s, Stanford's dean of engineering and then provost Fred Terman was helping to lift Stanford's stature by recruiting and encouraging entrepreneurial students and faculty. A report completed a few years ago found that there were around 40,000 companies started by Stanford alumni around the world, and that these companies had annual revenues of over \$2.5 trillion.

The spirit of possibility and innovation continues to pervade the Stanford campus. At Stanford GSB, the rate of student entrepreneurship runs roughly double that of any other MBA program. Last year, 16% of our graduating students started a company or nonprofit venture, and in a recent study that identified the 100 most successful start-up companies founded in the last five years by MBAs, 28 were from Stanford GSB, a striking number given our small class size.

This record not only reflects Stanford's culture of innovation, it is a testament to the GSB's outstanding entrepreneurship

curriculum. This past year, our business students could choose from 60 elective courses related to entrepreneurship, with a range of approaches and viewpoints. In *Formation of New Ventures*, students focus on the skills needed to launch and effectively manage an entrepreneurial company. In Fern Mandelbaum's course *Entrepreneurship from Diverse Perspectives*, the emphasis is on exposing students to the issues facing women and underrepresented minorities in building and financing entrepreneurial companies.

Experiential project-based learning plays an important role as well. Last year, roughly 190 students from the business school and other Stanford schools took *Startup Garage*, a two-quarter course that exposes them to design thinking and entrepreneurial frameworks. Students work in small collaborative teams, mentored by practitioners, to build out and refine business plans. Stanford GSB also maintains the Stanford Venture Studio, which enables teams of graduate students from across Stanford to hone their skills in idea validation, early testing, launch, and fundraising. This year, more than 250 teams spent at least one quarter working in the Venture Studio.

One team of students, Himanshu Gupta and Max Evans, both MBA/MS '18, started ClimateAI, a for-profit, mission-driven venture that uses artificial intelligence to model the impact of climate change on businesses. Himanshu, who served as president of the Sustainable Business Club here, and Max recently raised their first round of funding. Another team, Michelle Wu, MBA '18, and engineering school student Eric Loreaux, MS '19, founded Nova Approval, which leverages machine learning and natural language processing to automate the

regulatory affairs process for medical device and pharmaceutical approval at the U.S. Food and Drug Administration.

Other students take the entrepreneurial skills they acquire at Stanford GSB to larger, more established organizations. While still a student, Rebecca Odin, MBA '17, cofounded Nimble, a company using predictive analytics to change the way school districts identify and hire teachers. Earlier this year she joined the strategy and operations team at Deloitte Consulting, where she is advising clients about how to innovate in their respective markets.

One question I am asked with some regularity is whether our strength in entrepreneurship has a downside. After all, we are a school of general management. We aspire to train leaders of many types of organizations, across many industries. It is important to recognize that the skills students acquire in our entrepreneurship courses — how to identify market gaps, develop innovative ideas, take risks, work in cross-functional teams, and lead projects — are broadly valuable. Indeed, most of our current students will graduate having taken at least one entrepreneurship course and will later work in an established organization. Many are likely to move between established and entrepreneurial firms as their careers evolve.

A similar set of observations are relevant when it comes to technology. Our location in Silicon Valley provides a rich opportunity for students to learn about technology. Of course, only a fraction will take jobs in traditionally defined technology companies. Yet the fluency they can develop will be broadly valuable in an era where virtually every industry is grappling with how technology might improve business models or enable new products and services, as well as the risks and ethical issues that can arise in deploying new technologies.

The entrepreneurial ecosystem at Stanford also continues to evolve, with new ideas, people, capital, and knowledge. We are seeing an increasing number of new ventures that seek to address social and policy concerns, in addition to traditional consumer or enterprise needs. We are also seeing increasing interest from our students in starting ventures across the United States and around the world. I am confident that the culture of innovation and risk-taking that has helped to define Stanford for the last eight decades will support even broader positive impact on people and organizations in the coming years. ▲

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



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“People still think ‘bitcoin’  
when they hear  
the word cryptocurrency,

**but that’s just  
the tip of  
the iceberg.”**

— Doug Galen  
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Linda Ampah PAGE 58

# Stanford Business

INSIGHTS AND IDEAS  
FROM STANFORD  
GRADUATE SCHOOL OF  
BUSINESS

SUMMER 2018  
VOLUME 86, NUMBER 2





SMART FARMS Tech is about to revolutionize how and where we grow our food. PAGE 8

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*Cover illustration by Eiko Ojala*

**FROM THE EDITOR**

# THE MEANING OF CATALYST

Our team had quite a bit of discussion about the theme of this issue of *Stanford Business* magazine and what catalyst really means. Is it a spark that ignites an explosion or something more nuanced that brings sustained and significant change? ▶ You get the idea. ▶ For me, the most telling part of the word's primary definition is not so much that a catalyst increases the rate of reaction of another substance but that it does so *without being consumed in the process*. ▶ I think about how that concept translates to the people, companies, and social enterprises that are catalysts to change. How do founders not get burned out as they bring startups through their early stages? How can they scale and stick with a mission and culture as they transform and grow? ▶ In this issue, we explore some relatively new startups that are bringing one of the most ubiquitous harbingers of change — technology — to the agriculture industry. Our special project about the future of food, by senior editor Shana Lynch, captures a global trend, elucidated by Stanford GSB research, in which investors are increasingly pouring money into technology to make farms “smarter.” Many of our alumni are on the forefront of this trend. We bring you the stories of three of them who've founded companies to improve the sustainability and efficiency of food production in this sector throughout the world. ▶ We also provide a surprising fact-check in this issue. Being in Silicon Valley, it can feel like there has never been a more fast-moving, head-turning period of innovation than the present. The work of Stanford GSB finance professor Amit Seru (see page 34) may make you think otherwise. ▶ We will leave it to you to decide how well we did in conveying the theme through the stories of our faculty and alumni, who, of course, serve as our favorite catalysts. ▶ Write us at [stanfordbusiness@stanford.edu](mailto:stanfordbusiness@stanford.edu). — DEBORAH PETERSEN, EDITORIAL DIRECTOR





A boy watches Martin Luther King, Jr., speak in Eutaw, Alabama, in 1966. Photo by Bob Fitch.

## ENGAGE

# Readers Share Their Thoughts on Culture

*Regarding the article “Social Pollution’ Is Killing Our Workforce” (about research by Professor Jeffrey Pfeffer, Spring 2018):*

**Yes, business culture has** become toxic and exploitative. Yet to pin the problem on culture alone would be wrong, and I suspect Professor Pfeffer knows this.

Why do we choose management teams who see it as appropriate to drive their employees to the breaking point? One factor is the nature of competition. In today’s

borderless techno-charged world, a small percentage gap in performance can mean the difference between domination and bankruptcy. The outcome is determined in months rather than decades. Even if CEOs “get” that treating employees humanely is good for long-term performance, they may not believe they have that luxury when the next quarter could bring oblivion.

Another factor, ironically, is the success of efforts to rein in monopolies. Everyone knows that monopolies (including government agencies) are good places for “balance” (sometimes referred to as “complacency”). In recent decades, it has become fashionable to despise once-dominant companies like GM, IBM, and Sears as “dinosaurs” that are filled with people who lack “urgency” or ambition and that deserve dismemberment, usually through draconian restructuring. Their demise,

in the current mythology, comes at the hands of “nimble,” “entrepreneurial” companies (disruption, creative destruction, and all that) that are the darlings of modern business schools such as Stanford GSB. The defining feature of such companies is that everyone works 24/7.

So, regarding working people to death: We can’t just say it’s about CEOs acting badly. They are reacting rationally to an environment in which more humane behavior doesn’t seem to have any near-term upside. Professor Pfeffer suggests a few lawsuits might change the calculus. Maybe. As a former libertarian and still enthusiastic participant in the entrepreneurial ecosystem, it pains me to say it, but only well-crafted regulations, demanded by us and imposed by our government, have a chance of reducing this kind of social pollution. Pleading for cultural

change is just whistling in the dark.

— CHARLES HSU, MBA ’90  
*San Francisco, California*

**I’m writing from Italy** just to tell you that I read your magazine from cover to cover. It is a wonderful link between all of us alumni. It keeps us up-to-date and contains worthwhile subjects to be read and reread. When *Stanford Business* lands in my mailbox, I am happy just as when I meet an old friend. Thanks to all of you for such a gift.

— SERGIO GREÀ, Stanford Executive Program ’85  
*Milan, Italy*

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## STANFORD BUSINESS

## ONLINE

EDITED BY JENNY LUNA



Tawanda Michael Mahere, MBA '19

## WEB

## “When I’m 80 years old and look back at my life, what will I regret more — not going to Stanford GSB or not going to work for Google?”

Tawanda Michael Mahere, MBA '19, says enrolling in the MBA program and forgoing the job opportunity was “the hardest decision I made in my life,” but he knew education would be the best way to pivot his career as he entered his late 20s.  
[stanford.io/TawandaMahere](http://stanford.io/TawandaMahere)

## WEB

**STEM’s Recruiting Blunder**  
Research led by Shelley Correll, a professor of organizational behavior (by courtesy) at Stanford GSB, suggests that tech companies’ on-campus recruiting efforts are dissuading female candidates from applying for the jobs.  
[stanford.io/Recruit](http://stanford.io/Recruit)

## YOUTUBE

## How AI Is Transforming Manufacturing

“I would argue that we’re actually at a seminal moment in the history of enterprise software. We’re in a paradigm where it’s about automating decisions versus automating business processes.” Ganesh Bell, president of data analytics company Uptake, in conversation with Stanford GSB lecturer Robert Siegel  
[stanford.io/2JbmGNd](http://stanford.io/2JbmGNd)

## YOUTUBE

### Simple Is Not Dumb

“By using simpler words, you can connect so much more powerfully with anyone.”

Caroline Clark, MBA '19, in a LOWkeynotes presentation, explaining how she learned to talk despite being deaf  
<https://stanford.io/2twKznJ>

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# Lives



“Psychological targeting is not only possible but effective as

**a tool of digital mass persuasion.”**

Eiko Ojala

— Michal Kosinski PAGE 20





TECHNOLOGY

# The Food Revo





# lution

*Illustration by Raymond Biesinger*

**Driverless tractors.  
High-rise greenhouses.  
Cow-grazing apps.  
The future of farming  
is here, and VCs  
are taking notice.**

**BY SHANA LYNCH**

Today's technology is rushing into one of the last traditional industries: agriculture.

A field largely still unaffected by the technological revolution, farming is ripe for change as need couples with opportunity.

"We've seen a wave of technology impact our information industries," says Stanford GSB professor Haim Mendelson. "Now we see another big wave of technology reshaping our traditional industries, and certainly agriculture is one of the most basic."

Driverless tractors tilling acres of crops, produce growing in massive climate-controlled warehouses, and seeds genetically altered to require less water are among the high-tech innovations changing, or about to change, agriculture. These technologies are making farms smarter, more productive, and increasingly efficient.

And as technology reshapes the field, the benefits will compound. "This is one industry that everybody needs," Mendelson says. "Everybody eats. So changes that improve productivity for a relatively small number of farmers will scale to help everyone."

In a new paper, Mendelson and his coauthors — Stanford GSB professor Hau Lee, Centers and Initiatives for Research, Curriculum & Learning Experiences director Sonali Rammohan, and 2017 Sloan Fellow Akhil Srivastava — show what trends are pushing this food revolution and highlight the areas that are increasingly attracting startups and investors.

## CHANGING NEEDS

The world's food system is desperate for an overhaul. By 2050, studies show, the world will have 3 billion more mouths to feed than it does today, and demand for food will rise by 50%. More of those people will live in cities, much farther from the traditional source of food — rural farms, says Josef Schmidhuber, the deputy director of trade and markets at the Food and Agriculture Organization of the United Nations.

Exacerbating the problem, climate change will put more demands on how food is grown, while fewer people will work in the farming industry.

"While technology is by no means a panacea," Mendelson says, "it offers opportunities in an internet-connected world." Technology, he says, can create a more productive, efficient, sustainable, and resilient food system.

Although investments in the agriculture sector might seem like seedlings when compared with overall VC funding, venture capitalists and angels are increasingly looking toward farming as an investment opportunity. They poured \$437 million into 62 deals in 2017, according to CB Insights. That's a jump from \$17 million for 22 deals in 2013.

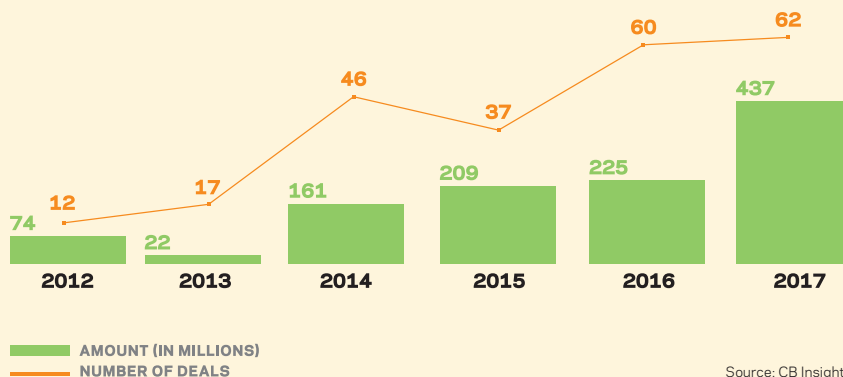
In addition, more of these startups are getting snapped up by big farming conglomerates, which are building out their own agtech divisions. Farming equipment giant Deere & Co. has an intelligent solutions group focused on precision agriculture that employs over 300 software developers, engineers, and testers. Just last year, it bought precision agriculture startup Blue River Technology for \$305 million. Monsanto completed one of the largest

Haim Mendelson is the Kleiner Perkins Caufield & Byers Professor of Electronic Business and Commerce, and Management at Stanford GSB. Hau Lee is the Thoma Professor of Operations, Information and Technology at Stanford GSB.

## BY THE NUMBERS Investment Surge

Although agriculture investments might still be a rounding error for venture capitalists, the industry is noticing this field. In 2017, Plenty, a vertical farm startup, landed \$200 million. Deere & Co. bought precision farming

company Blue River Technology for \$305 million, and DuPont picked up farm management software maker Granular for \$300 million. Here's how venture dollars and deals are stacking up in this space.







Courtesy of Plenty

**VERTICAL HARVEST** A worker inspects a wall of rainbow chard at one of Plenty's indoor farms.



acquisitions in the space when it bought big data company Climate Corp. for \$1.1 billion in 2013.

## **BIGGEST OPPORTUNITIES**

For startups, the low-hanging fruit is analytics, Mendelson says. These include monitoring technologies and data analytics that can make sense of satellite monitoring or weather simulations. A major area is precision agriculture, which involves collecting and analyzing data at the individual plant level. According to the Stanford GSB team's research, a survey of American farmers who used precision technology reported average cost reductions of 15% and a 13% increase in yields.

Beyond precision farming, analytics can be used in more general monitoring tools and centralized digital platforms. Ceres Imaging, launched by Stanford graduates, helps farmers collect field irrigation and fertilizer data through sensors and cameras



**WHO NEEDS SOIL?** Pure Harvest (page 14) plans to make smart greenhouses that can grow produce in barren deserts.



**GRASSLAND MANAGEMENT** PastureMap's app (page 16) helps cattle ranchers graze their herds in sustainable ways.



attached to small planes. Startups in this category have raised about \$825 million from investors, Mendelson says.

Automation technology will continue to vastly change farming. Just as self-driving cars begin to dot freeways, automated tractors will enable farmers to work several fields simultaneously with the same number of workers — or fewer — and operate equipment day and night. Automated irrigation systems that collect information about soil and water levels will allow farmers to use water more efficiently. Startups in this category have raised \$400 million.

Other opportunities Mendelson and Lee identified include the following:

**Product innovations (\$4.36 billion in investment):**

New technologies such as gene editing or cellular agriculture are designing entirely new kinds of foods. Impossible Foods and Memphis Meat are bringing lab-grown meat to the local burger joint.

**Digital marketplaces (\$682 million in investment):**

These allow farmers to lease equipment, pool together for better insurance, or connect to local customers. Full Harvest helps farmers sell imperfect but edible produce that wouldn't find a market at the local supermarket, while Ricult helps rural farmers find loans.

**Operations software (\$129 million in investment):**

It helps farmers make better operations decisions, track resources or productivity, and save money.

**Skills-building tools (minor investment):**

These include videos, hotline voice services, and mobile apps that help farmers share experiences. AgriFind in France is a social networking platform for farmers to ask questions and offer advice.

**Resources (\$755 million in investment):**

New irrigation systems deploy highly targeted water and fertilizer, using less of each, while vertical and urban farms need less land and reduce pesticides.

In the long run, one single technology won't have the most impact, Mendelson says. "It's really the combination that will create the real value."

## BY THE NUMBERS Conflating Trends

Several trends are pushing agtech forward. By 2050, the world will have 50% more people to feed, and nearly two-thirds of the population will live in cities. At the same time, the number of people employed in the agricultural

industry will continue its steady decline. Advances in technology — and the creation of smarter, more productive farms closer to urban settings — will be key to meeting the global demand for fresh food.

66%

of people will live in cities by 2050  
Compared to 54% in 2014

50%

increase in food demand  
by 2050



3 Billion  
more mouths to feed  
by 2050

31.8%  
drop in agricultural workers in  
developed countries since 1950

32.8%  
drop in agricultural workers in  
developing countries

Source: CB Insights

## Bountiful Deserts Pure Harvest looks to build high-tech greenhouses in inhospitable climates. First stop: Dubai.



When Stanford GSB alumnus **Sky Kurtz** first moved to Dubai, he was taken aback by the high prices of fresh produce. “I started buying frozen vegetables, like frozen peas,” he says. “Who knew frozen vegetables would become a staple in my diet because it’s too expensive to buy fresh every day?”

Kurtz, who earned his MBA in 2011, was running into the United Arab Emirates’ supply side issue: The punishingly hot climate means a short growing season, so the country imports nearly 80% of its food, according to the country’s minister of economy, Sultan bin Saeed Al Mansouri. That racks up prices, lowers freshness, and limits variety.

Middle Eastern countries like the UAE are hitting a triple threat: Populations are increasing, climate change is making the area even less hospitable to agriculture, and the world’s dependence on UAE oil is shrinking.

“Most of the region’s strawberries are flown in from California,” Kurtz says. “I can’t think of anything less environmentally friendly, and obviously from a supply chain, quality, and freshness perspective, it’s not ideal.”

That combination led Kurtz and his team to create Pure Harvest and a smarter greenhouse.

“We’re using a next-gen, high-tech greenhouse that allows us to manage the very

challenging arid climate of the Middle East and to locally grow fresh fruits and vegetables year-round, then sell at a lower cost than comparable quality imports,” Kurtz says.

This greenhouse goes far beyond the traditional glass walls that protect plants from the surrounding environment. It will have a climate chamber that removes heat and humidity from the brutally hot air. That humidity will become water for the strawberries and tomatoes, grown hydroponically in a nutrient-rich bath, without soil, and monitored by sensors to measure nutrients, temperature, and other factors related to plant health. Triple-paned smart windows will deflect heat and temper light levels, while over-pressurized airflow will manage temperatures to within 1 degree Celsius and dose carbon dioxide to the hungry plants to optimize growth.

Kurtz says that over time the company will grow “everything on a vine — tomato, capsicum, cucumber, strawberry, aubergine,” and through partnerships with other tech companies in the industry it will also bring leafy greens, microgreens, and herbs and spices to the region. “We can grow all of these water-dense, transportation-sensitive crops locally, as opposed to ‘shipping water’ by flying lettuce from California.”

### **BUILDING OUT**

Pure Harvest was launched in 2016 by Kurtz, Mahmoud Adi (MBA ’15), and Robert Kupstas, who received an MA from Stanford in international policy studies in 2013. The three met in the United Arab Emirates through the Stanford University network.

Pure Harvest has raised \$5.6 million in venture funding, hired a design firm, and built the leadership and operations teams. It began construction on a commercial-scale proof-of-concept greenhouse this past December. The company hopes to start planting and producing fresh fruits and

**“Strawberries are flown in from California. I can’t think of anything less environmentally friendly.”**





A SMARTER GREENHOUSE Pure Harvest's Majed Halawi, Sky Kurtz, and Jan Prins promise to grow "everything on a vine."

vegetables this year. Customers who've contractually or verbally committed to Pure Harvest include major retailers and airline caterers.

Compared with lower-tech greenhouses, Pure Harvest's prototype is expected to yield six to eight times more food per meter using just one-seventh the water, says Kurtz. And compared with traditional field farming, it produces 17 to 23 times more food per area and is 32 times more water efficient.

"The technology that we are using has been demonstrated around the world in extreme climates, including Arizona, Texas, Northern Mexico, and Australia, and then in freezing climates as well, like Russia, Finland, and Norway," Kurtz says. "But nobody's made the investments to adapt the technology to deliver it to this uniquely challenging region."

## **BIG CHALLENGES**

Of course, high-tech farming isn't cheap, and Kurtz declined to disclose what Pure

Harvest is spending per meter. "I will say it's significant," he says. But when the greenhouse begins to produce at scale at about 30,000 square meters, he says his produce will be 20 to 40% cheaper than imported fresh foods. Kurtz notes that comparable greenhouses have been built and are operational around the world at well over 220,000 square meters.

The company faces other challenges as well. The government subsidizes water and power to low-tech farms, which Kurtz says makes them more cost-competitive with Pure Harvest than they might otherwise be. Also, marketing issues have historically deterred customers at the shelf, where they perceive local produce as lower quality than air-freighted imports. Further, hydroponically grown food isn't permitted to be labeled as "organic," which Kurtz calls an "unworthy debate" stemming from protectionism by European and other soil producers.

Finally, wooing investors has proved difficult, particularly in the Middle East and away from Silicon Valley's

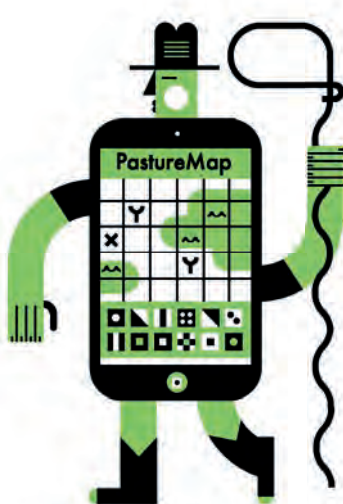
venture capital world. "Investors wrote a \$200 million check to a vertical farming player with an impressive prototype in South San Francisco," Kurtz notes, "and here in the Middle East, where the need is highly evident and we're deploying large-scale, proven technology, it took us eight months of ground-pounding to raise just \$4.5 million."

His message to investors: "We are delivering a true and tangible food security solution to the region, improving sustainability, and have the potential to deliver a large social impact, and we would welcome a large pile of smart money over here because the opportunity is massive."—SHANA LYNCH

**Sky Kurtz earned his MBA from Stanford GSB in 2011, and Mahmoud Adi earned his in 2015. Robert Kupstas earned an MA in international policy studies from Stanford University in 2013.**

## Sustainable Steaks

### PastureMap helps ranchers manage their land and raise climate-friendly beef.



Americans like their burgers. In 2016, they ate an average of 55.6 pounds of beef per person, according to the U.S. Department of Agriculture, up from 54 pounds the year before.

But beef producers face criticism for their product's impact on the environment — from land degradation to greenhouse gas emissions caused by manure storage, feed production, and even the way cattle digest food. Through her startup, PastureMap, entrepreneur **Christine Su** hopes to improve those practices while helping ranchers increase their bottom line.

PastureMap's software helps ranchers manage their land and graze their herds in a sustainable way. "If you let your cattle run all over the place and continuously graze, they'll overgraze," Su says. But strategic grazing can prevent soil erosion, improve soil nutrients, and even reverse greenhouse emissions by sinking carbon into the soil, she says. This is called regenerative

agriculture. "It raises food in a way that heals the land rather than further extracting from and eroding it," she says.

Using PastureMap on their phones, ranchers manage grazing history and planning, keep track of herd information like weight and health issues, document grass and soil conditions, and keep their whole ranching team informed. The information is stored in one place and is easy to analyze, both for short-term decisions, like where to graze the herd that day, and for long-term decisions, like planning out future pastures or placing water tanks and fencing.

Su started PastureMap in 2014, and cofounder George Lee joined in 2016. Today, it employs 11 people and is used by over 9,000 farmers and ranchers in 40 countries. Financial investors and social impact funders have pumped \$3.2 million into the company.

### THE START-UP PATH

Su's interest in the food chain evolved from her own food allergies, which developed when she was an undergraduate at Stanford University. She sought out farmers markets to find produce and dairy products that wouldn't give her hives. There, she began meeting local farmers, and her interest in food production was piqued.

After she graduated, Su worked at consulting firm McKinsey & Co., where she worked with large food brands. Later, she worked at private equity giant KKR & Co. as an operations executive. She built supply-chain improvement processes and operations software in portfolio companies that were earning

\$500 million to \$2 billion in revenue. She realized that she wanted to use her skills to help farmers boost their productivity and profits.

### IN THE FIELDS

Su started her MBA at Stanford Graduate School of Business in 2012 and spent her summer breaks working on farms. At an internship on a 60-cow dairy farm in Hokkaido, Japan, she milked cows, shoveled manure, baled hay, and helped birth calves. In her spare moments, she conducted a study measuring how fast the farmhands could milk and drew a diagram of where to place the milking tools to speed up those times. "I couldn't help myself," she says of her passion for improving on-farm processes.

Her in-the-field learning did not end there. She spent a summer working at organics giant Earthbound Farm in California's Salinas Valley, known as the "Salad Bowl of the World" for its prolific lettuce production. At Mountain Hazelnuts in Bhutan, she learned the challenges of subsistence farming and built a data tracking system for 150 field agents in the Himalayas to monitor tree health using mobile phones. And at the New Zealand Merino Co., she spent a summer interviewing merino wool shepherds about their grazing practices and measuring pasture quality data with field scientists.

"I kept noticing as I worked on more and more farms that these farmers keep all their records on paper," Su says. "I would go into barns and see a charts on the walls. They run their whole lives on paper." The record-keeping was cumbersome and often ignored, she says, and the data wasn't digitized in a way that could help the farmers derive the full value of their records.

"Here is something I can do," she recalls thinking. "I can't bale hay as well as a farmer. I can't pull a calf as well. I can't doctor an animal as well. But I do know metrics. I do know how to make the core value drivers of their operation run better."

She talked to 3,000 farmers and ranchers in person and designed her own additional MS degree on sustainable grazing systems in the Stanford School of Earth, Energy & Environmental Sciences to teach herself more about grassland management. During this time, she put into practice Steve Blank's well-known lean startup method — find a problem, develop a minimally viable solution, and immediately get customer feedback — to mock up some wireframes on the image of a phone. She printed out flyers and went to





OPTIMIZED GRAZING “I can’t bale hay as well as a farmer,” says PastureMap cofounder Christine Su. “But I do know metrics.”

Columbia, Missouri, to a grazing conference and showed her prototype to ranchers.

The MBA graduate stood out among the ranchers.

“A kindly older gentleman with a big belt asked me, ‘Ma’am, are you lost?’” she says. “Whenever I go to ranching conferences, I stick out.”

But her biggest challenge was learning the nuances of agriculture: the various types of farmers and their varied needs. “There are a million farmers in the United States, and they’re incredibly diverse,” she says. Some are tech curious. Some just want to save time. Some might never use a tablet computer but are interested in handing down a sustainable operation to the next generation.

Their knowledge has helped her continue to refine her product. Since those wireframes, the company has overhauled the platform three times based on conversations with customers, refocusing from graphs and charts to displaying more visual interfaces, such as offline maps that ranchers can carry with them into the field.

Finding investors also took a precise focus. While more investors are becoming interested in agriculture, she specifically looks for those who understand agriculture and food systems on a deeper level. “Whenever I meet an investor who has some agriculture and soil health expertise, I’m much more interested in talking to them. Otherwise we spend a lot of time doing education.” What’s trendy in Silicon Valley often has little relevance to the Salinas Valley, she says. “VCs are often very interested in the tech part of agtech. I would encourage VCs in agtech to get more interested in ag.”

### **GOING VERTICAL**

As it grows, PastureMap is focusing more on helping ranchers make money off their regenerative practices. “We are working with ranching cooperatives and beef brands now to help them monetize some of the data, not just for them getting more efficient on their own land base, but also being able to communicate that to the

customer,” Su says. For consumers, it could mean new labels indicating which cuts of beef were raised using environmentally friendly practices. The company is also building an online map for consumers to find regenerative, climate-friendly ranchers — and for those ranchers to find each other.

“What we’re learning is that you can optimize everything on land, but if we don’t help individual ranchers make more money marketing that beef, then they’re up against some pretty big industry barriers on commodity pricing. The regenerative beef sector is still small compared with commodity beef, but it’s the brightest light in beef right now and growing 25 to 30% every year. We are empowering these ranchers to find each other and build the future of the industry together.”—SHANA LYNCH

**Christine Su earned her MBA from Stanford GSB in 2015.**

## Towers of Kale

### Plenty, a vertical-farming startup, plans to grow produce in cities worldwide.



Sitting down to dinner in America? The produce on your plate tonight traveled an average of 1,500 miles to get there. And while those fruits and vegetables were being transported on trucks or sitting in distribution centers, they were losing much of the freshness that makes them nutritious and tasty.

This is a problem Plenty is trying to solve.

The indoor farming company has an ambitious goal of opening facilities in

500 major metropolitan areas worldwide to grow fresh, nutritious, and — most important — local food.

“We are working to reimagine what farming is, from the ground up,” says **Nate Mazonson**, Plenty cofounder. “We are a replacement for the entire agriculture supply chain that frankly is serving consumers less and less.”

They will not be your average farm. Each enclosure, approximately the size of a big-box retail store, will grow varieties of greens and fruits along vertical towers that rise 20 feet in the air. Sensors will monitor the plants and measure the crop’s vital signs: humidity, temperature, air pressure, carbon dioxide, nutrient levels, water temperature, and water pH. The data will be analyzed to adjust the growing conditions for each plant. “Vertical farming allows us to deliver to the plant exactly what it wants at any given time,” Mazonson says.

A Plenty farm will average about 100,000 square feet and can grow up to 350 times more produce than a traditional field farm of similar size. It will use 1% as much water, no pesticides, and seeds developed for flavor rather than durability to travel long distances.

## BIG INVESTORS

Plenty was launched in 2014 by Mazonson and CEO **Matt Barnard**, both Stanford GSB alumni. Along with CSO Nate Storey, they tested their concept at the Silicon Valley campus of a major technology company, where they grew fresh produce for the cafeterias. Then they opened a small R&D facility in Laramie, Wyoming, and a 50,000-square-foot warehouse in South San Francisco. In fall 2017, they announced plans for a 100,000-square-foot facility in Kent, Washington, outside of Seattle, which plans to start delivering food to the city this year.

Plenty’s big-name investors include Jeff Bezos’ Bezos Expeditions (Bezos’ Amazon recently acquired Whole Foods) and Alphabet’s Eric Schmidt’s Innovation Endeavors. It recently landed \$200 million in funding led by the SoftBank Vision Fund, one of the largest-ever investments in agriculture technology, bringing total funding to date to \$238 million.

With that capital investment, the startup hopes to build 500 farms around the world, one in each major city, to supply restaurants, retailers, and caterers with up to 25% of each metro area’s food requirements.

## SOCIAL IMPACT

You could give Al Gore some credit for the company’s focus on overhauling the food chain. After watching Gore’s documentary *An Inconvenient Truth*, Mazonson says he recognized a harrowing fact: “We are not on a sustainable trajectory as a species.” At Dartmouth at the time, he studied environmental science and engineering, with an emphasis on climate change, then joined the venture capital world focusing on cleantech companies.

“I spent five years in which my main goal was finding a company that I felt could truly transform how we use and think about water, food, and energy resources,” he says. “And I was feeling frustrated that I was not seeing those truly transformational companies coming out. So I decided I wanted to build that company.”

To build a company, he needed more skills than his engineering degree provided, so he applied to Stanford GSB, where he worked with faculty like Scott Brady, who teaches *Formation of New Ventures* and is now an investor in Plenty, and classmates — including his cofounder — who he says both inspired and humbled him.





FUTURE FARMER Plenty cofounder Nate Mazonson wants to “transform how we use and think about water, food, and energy.”

## **TECHNOLOGICALLY ENABLED**

Without recent technological efficiencies, Mazonson admits, Plenty’s goals wouldn’t have been feasible. The costs of energy, lighting, and sensors were too high.

“To have attempted this five years ago, the numbers would have looked laughable,” Mazonson says. “Two years

ago, it would not have been possible.” But as costs have dropped, the vertical farm has turned from a novelty idea into one with real potential.

Population trends are also pushing farmers to think local. More people are moving into urban environments, says economist Josef Schmidhuber of the U.N. Food and Agriculture Organization, and vertical farms and urban agriculture are a solution to feeding these populations.

Smart farms “only fit where you have a lot of capital, a lot of know-how, but not necessarily a lot of labor,” Schmidhuber says. “That limits it to urban settings.”

At the same time, he says, urban dwellers have a unique nutrition issue — they eat too many processed convenience foods and are more likely to suffer from obesity than malnourishment. “Urban agriculture offers the perfect solution to this because it makes available fresh, safe, and affordable food.”

One major challenge for these high-tech farms is hiring. To open 500 farms, Plenty

will need a lot of specialized help. “This is an interdisciplinary problem, so it requires expertise in plant science, mechanical engineering, computer science, marketing, and business savvy,” Mazonson says. “We are looking for a variety of backgrounds. We have many, many open positions on our website.”

The company has about 150 employees already, and finding people attracted to their mission has not been hard, Mazonson says.

“What Plenty is doing is growing consistent, safe, reliable, tasty, nutritious products that can be harvested in our farm and then delivered to the shelf within hours or minutes,” Mazonson says. “And that is just a fundamental paradigm shift relative to what we have in the industry today.”

—SHANA LYNCH ▲

**Nate Mazonson earned his MBA from Stanford GSB in 2016. Matt Barnard received his MSM from Stanford GSB in 2003.**

**“It requires expertise in plant science, mechanical engineering, computer science, marketing, and business savvy.”**

**PSYCHOMETRICS**

# The Science Behind Cambridge Analytica

**A new study shows that psychological profiling on social media not only works for advertisers — it works very well.**

**BY EDMUND L. ANDREWS**

Silicon Valley and Washington are both in an uproar about revelations that Cambridge Analytica, a pro-Trump “psychographic” consulting firm, got ahold of detailed personal data on 87 million Facebook users.

But while much of the furor has been over privacy and ethics, a practical question remains: Is psychological targeting an effective tool of digital propaganda?

The answer, according to a Stanford researcher who pioneered many of the original techniques, is “yes.”

“I’ve been warning about these risks for years,” says Michal Kosinski, a psychologist and assistant professor of organizational behavior at Stanford GSB. “Our latest research confirms that this kind of psychological targeting is not only possible but effective as a tool of digital mass persuasion.”

(Note: Kosinski never worked for Cambridge Analytica and never acquired Facebook data without users’ permission.)

## **TAKING ADVANTAGE OF FACEBOOK “LIKES”**

As a doctoral student and deputy director at Cambridge University Psychometrics Center from 2008 to 2014, Kosinski worked with a colleague to investigate whether it was possible to identify people’s psychological traits from their Facebook “likes.”

People who liked *Battlestar Galactica* were likely to be introverts, for example, while people who liked Lady Gaga were likely to be extroverts. Kosinski and his Cambridge colleague, David Stillwell, were able to correlate likes with other basic personality traits: openness, conscientiousness, agreeableness, and neuroticism. Armed with

only 10 likes, they could evaluate a person’s traits more accurately than that person’s coworkers. With 70 likes, they could do better than a person’s close friends.

And now, in a new study, Kosinski and his colleagues — including Stillwell, Sandra Matz of Columbia Business School, and Gideon Nave of Wharton School of Business — confirm the next logical step: Ads are indeed more persuasive when they are tailored to those psychological traits.

## **RESEARCH MEANT TO WARN**

Kosinski isn’t boasting about this.

“Most of my studies have been intended as warnings,” he says. “You can imagine applications that are for the good, but it’s much easier to think of applications that manipulate people into decisions that are against their own interests.”

He and his colleagues created a Facebook app that allowed people to fill out a personality questionnaire that measures five basic personality traits. They then asked users for access to their likes, eventually amassing a database with 3 million profiles.

By correlating people’s likes with their scores on the personality questionnaire, Kosinski and Stillwell developed algorithms to accurately infer a host of personality traits from a person’s Facebook activity.

The founders of Cambridge Analytica adopted similar techniques and applied them to politics. They also went a big step further, using their own app to secretly collect the Facebook activity on tens of millions of users who had simply been friends of people who had taken the app’s quiz.

## **MEASURING THE EFFECT OF TARGETED ADS**

In their new study, Kosinski and his colleagues wanted to see if psychological targeting actually delivered better results in advertising. The researchers ran three experimental ad campaigns over Facebook.

In promoting a line of cosmetics, for example, they ran dueling ads aimed at introverts and extroverts. All told, the ads reached 3 million people.

The ad for extroverts featured a woman dancing and the slogan “Dance like no one’s watching (but they totally are).” By contrast, the ad for introverts featured a woman contemplating herself in a mirror and a quiet slogan: “Beauty doesn’t have to shout.”

Sure enough, people were 50% more likely to buy the cosmetics if they saw the ad aimed at their particular type.

The results were similar when the researchers promoted a crossword puzzle app for smartphones with ads that targeted users based on their openness to new things.

People who had been identified as very open were urged to “unleash your creativity” on “an unlimited number” of puzzles. People identified as likely to cling to the familiar were told to “settle in with an all-time favorite.”

Those who saw the ad aimed at their particular level of openness were 30% more likely to download the game than those who didn’t.

In a third test, Kosinski and his colleagues tested rival ads for a video game that they already knew appealed heavily to introverts. The first ad featured a standard action-packed pitch: “Ready? Fire! ...” The second ad was tailored to introverts: “Phew! Hard day? How about a puzzle to wind down with?” Here, the ads for introverts generated 30% more clicks and 20% more downloads.

Kosinski says it’s probably impossible to prohibit psychological targeting as a tool of political propaganda, but he says people can defend themselves by becoming aware of how it works. They may also be able to enact policies that prevent abuses.

“It’s a bit like fire,” he says. “You can use fire to both warm your house and burn it down. You can’t ban fire, and you can’t stop some people from committing arson. What you need are firefighters and fire-safety equipment.” ▲

**Michal Kosinski is an assistant professor of organizational behavior at Stanford GSB.**







## PHILANTHROPY

# From the Inside Out

**A former marketing executive is loving his unlikely third act as a prison-education reformer.**

BY MARTIN J. SMITH

**Jim Farrin** has been saying since at least 2001 that he flunked retirement, and it's hard to argue the claim. After leaving a warp-speed career in international sales and marketing in 1996, he soon began a post-career career as a business consultant, including a stint as CEO of a startup that made and distributed solar-powered water systems in developing countries.

During that same period, while battling colon cancer, he even embarked on a brief and not-especially-successful stint as an amateur stand-up comic, tried skydiving, and ran the New York City Marathon.

But Farrin's most successful post-career "failure" may be his work as executive director of the Princeton, N.J.-based Petey Greene Program, which supplements education in correctional institutions by preparing volunteers — primarily college students — to provide free, quality tutoring and related programming to support the academic growth of the incarcerated. The program is named after Ralph Waldo "Petey" Greene Jr., a TV and radio talk show host and community activist who overcame drug addiction and a prison sentence to become a notable Washington, D.C.-area media personality.

A 2013 study by the New Jersey Department of Corrections concluded that inmates who participated in the program achieved "statistically significant improvements" in their math and reading levels compared with those who did not. The student inmates also had higher GED passing rates and improved self-esteem.

In 2017, AARP awarded Farrin its Purpose Prize for "outstanding work by people age 50 and over that is focused on advancing social good." Now 82, Farrin earned his MBA from Stanford GSB in 1960.

The Petey Greene Program now includes 900 student volunteers from 27 colleges tutoring 3,000 individuals in 44 facilities.

**How did you get involved with a program so different from your professional career?**

I got a call from one of my undergrad classmates from Princeton. He asked me to run a program that sent college students into prisons for education. I told him it sounded really interesting but that I was too busy with my consulting business to get involved. But I became more and more convinced that God was calling me to do this. And once I saw the classroom jammed with people who wanted more information about the program, I realized it was a group in need. I think this is the number one civil rights issue for this century.

**You've said providing education to the incarcerated is as critical as providing food, water, and air. Why do you believe that?**

Because I've seen with my eyes the power of education. It can literally transform the people inside. If you went with me to one of our graduations, you couldn't keep your eyes dry. When someone points to their mom in the audience and says, "I did it! I got a degree!" you can see how it transforms lives. A Rand study in 2014 showed that taking classes in prison drops the recidivism rate by 43 percent. That's an amazing statistic, and I've seen so many cases of that.

**Explain the "school-to-prison pipeline," about which you've spoken in the past.**

People who are in tough circumstances, particularly if they're people of color, probably come from a household with only one parent. All the people they know around them are on the streets hustling and trying

to make money. Drugs. Robbery. If they get caught doing that while they're in a school somewhere, they go straight from school to prison. And once they're in, two out of three of them recidivate. When they come out, they get dropped somewhere with a couple hundred dollars, but they have no job or skills, their family situation has changed, and they find themselves in a pipeline that goes right back in.

**You've mentioned that some incarcerated students' self-esteem is so damaged that they don't believe someone would volunteer to help them. Tell us more about that.**

The system is designed to keep them inside until it's time for them to get out. When they start with a tutor, they often ask right away how much the tutor is being paid to help them. When they find out they're volunteers, they're just blown away. "You're taking time to help me?" When we tell them we want to see them grow and learn so they'll have a successful reentry, it bolsters them tremendously. Once they realize their course can be changed, then gradually they become more and more convinced they can be successful.

**You hope that volunteering will inspire the program's tutors to take on leadership roles in reimagining the criminal justice system. Do you have any specific examples of how the college volunteers are doing that?**

Two of our four original volunteers got full scholarships at New York University in the criminal justice department. They're planning to stay in the criminal justice space. Another is now with an organization working to expedite the cases of people charged with misdemeanors. So many of them, once they have the Petey Greene experience, want to stay in it because the need for change is so great. They can see the injustice of what should be a just system.

**Did you learn anything about service at Stanford GSB that eventually pushed you toward the Petey Greene Program?**

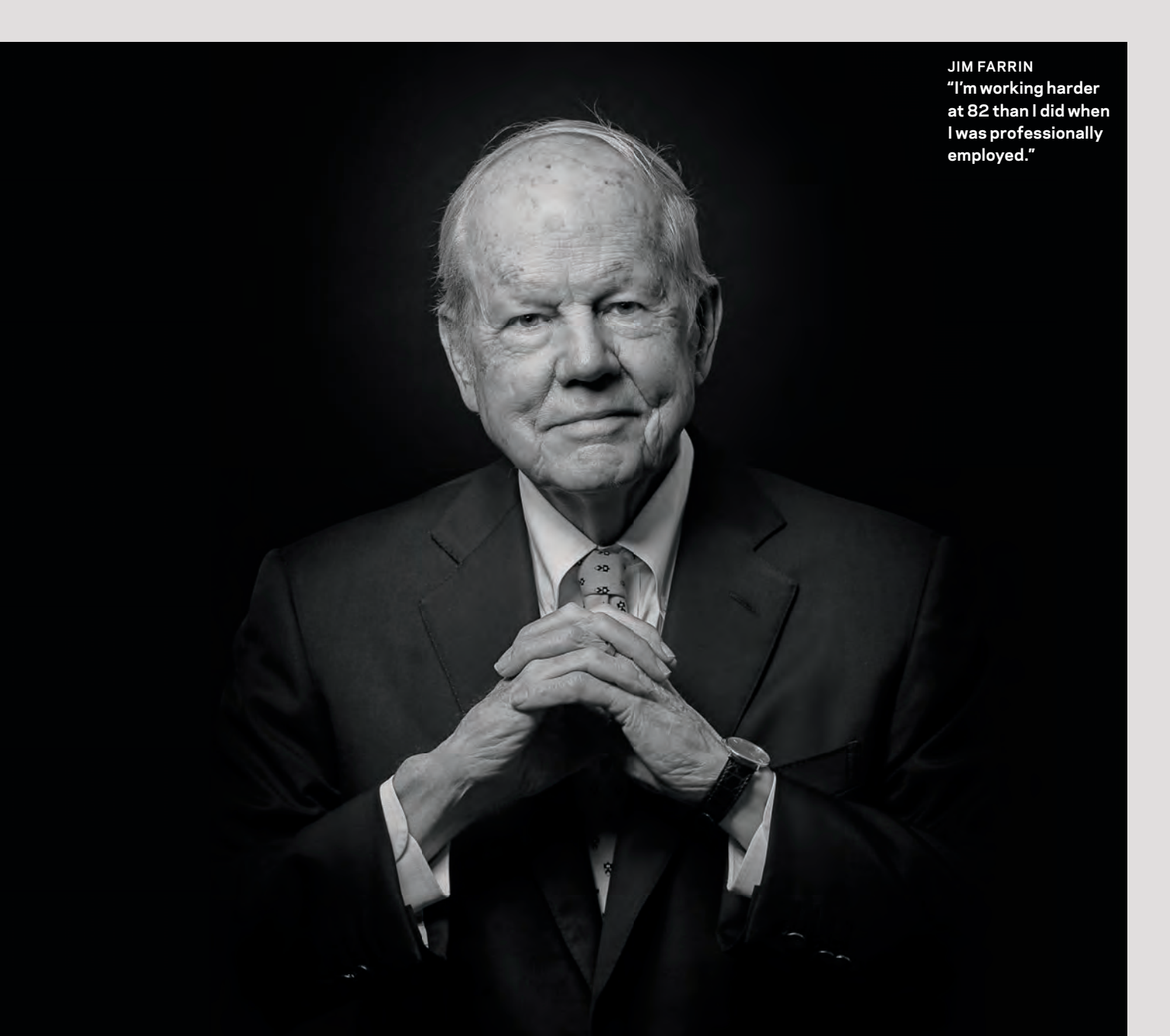
I can't really say so, other than finding my wife there. She found God before me.

**Did you incorporate this kind of service work into your professional career, or is this something you decided to pursue after retirement?**

I wasn't focused on giving during my business career, but now I see how powerful it can be. It's also extremely humbling, and makes me think how lucky I was to go to Princeton and

*Photograph by Sean Pressley*





JIM FARRIN  
"I'm working harder  
at 82 than I did when  
I was professionally  
employed."

Stanford. It could have been me on the inside instead of them. I also always thought life should be in three chapters. The first chapter is education, the second is achievement, and the third is giving back. I was slow to get into giving back, but I'm in it now. I always tell people that if I live to 118, I'll be able to finish the third chapter.

**Does that kind of service have its own satisfactions?** Enormous ones. For example, at Princeton I had to hire a van to transport volunteers to and from the prisons. The driver who started with me has not missed a pickup in 10 years, either at a prison or the university. That's the sort of dedication this cause inspires. My wife says she has the most unusual husband in the

world because I'm working harder at 82 than I did when I was professionally employed. But it's a labor of love, and I love this part of my career.

**Is there a common denominator among people you know who also have been catalysts for social change?** A tremendous sense of purpose in what you're doing. Once you get into something, you're blown away by how great you feel about it. I recommend it to everyone I meet.

**Any particular books or classes you recall from your Stanford GSB days that proved particularly influential in your business career?** I loved the sales management and marketing classes. They were instrumental

for me in terms of commitment to the customer. That was certainly influential in getting me into marketing and sales.

**What do you wish you'd known during your Stanford days that you know now?** I guess I would have slowed myself down a little bit. I didn't need to go to nine countries in 17 years chasing my career while also raising five children. I could have gone at a slower pace. There are a lot of advantages to stability. It was a great run, but, yeah, I think I'd tell myself to slow down. ▲

Jim Farrin earned his MBA from Stanford GSB in 1960.

**MARKETING**

# Does Streaming Music Change Your Tastes?

**Music subscribers using digital platforms are more daring in seeking out new artists.**

**BY PATRICK J. KIGER**

If you've signed up recently for Spotify, Apple Music, Tidal, or one of the other streaming audio services that now account for more than half of all music consumption, you may have noticed that your listening habits have changed. Now that you don't have to pay for each CD or digital download, it could be that you're venturing away from your longtime favorites and checking out the likes of Trombone Shorty, rockabilly chanteuse Wanda Jackson, or some obscure punk band from Finland whose name you aren't even sure how to pronounce.

If that's the case, it wouldn't surprise Bart J. Bronnenberg, a Stanford Graduate School of Business marketing professor who's been researching consumer demand for musical variety and how it influences their choices.

**Bart J. Bronnenberg is a professor of marketing at Stanford GSB.**

*Illustration by Ping Zhu*





“The thing with CDs and iTunes is that when you bought a title, more variety would cost you more money,” explains Bronnenberg, whose own eclectic musical tastes range from blues to classical. “With streaming, that’s not the case. Once you buy a subscription, the incremental variety to you is free. We were interested in figuring out the consequence of this cost shock on consumers.”

In a study recently published in the journal *Marketing Science*, Bronnenberg and coauthors Hannes Datta and George Knox, both of the Netherlands’ Tilburg University, found a way to discern the effect on consumers when they switched from purchasing individual songs or albums to subscription streaming. They analyzed more than two years’ worth of data from a popular online service that tracks members’ listening history across a wide variety of platforms, ranging from iTunes and Windows Media Player to streaming services like Spotify. The tracking app, which the researchers promised to keep anonymous, then makes music recommendations to its members based on their consumption across multiple platforms.

The researchers could identify when users switched from purchasing music by the song or album to streaming, and then could track what happened to their music consumption — including the total number of songs, unique artists, and distinct genres they listened to.

While it may seem intuitive that subscribers freed of economic limits on consumption would consume more, the sheer magnitude of the shift was startling. In the first week, the number of songs played by new converts to streaming increased by 132%, while the number of unique artists heard jumped by 62%.

What’s even more surprising is that those trends persisted, even after the novelty wore off. Six months after the switch to streaming, users’ music consumption on digital platforms was still 49% higher than it previously had been. The number of unique artists that they listened to was 32% higher, according to Bronnenberg.

“All these effects are very sizable, and they actually seem to represent a long-run behavioral shift,” Bronnenberg explains. “You end up listening to more music and, on balance, the variety expansion is quite large — you tend to listen to the same thing less often.”

At the same time, users’ consumption of music by superstar artists actually declined slightly, by 7%. Instead, the researchers observed users trying many new artists and songs. “There’s a lot more discovery going on,” Bronnenberg says.

**“Our results point to a more fragmented market, potentially more amenable to smaller artists and labels.”**

Most of the additional music was listened to only once, since “when you get more venturesome, you also end up trying things you don’t like.” But because those choices didn’t cost anything except users’ time, they continued to explore. And in the process they also discovered new songs and artists that they did like, which they continued to listen to repeatedly.

Bronnenberg emphasized that the research looked at streaming music from the demand rather than the supply side. But he suspects that the changes in consumer behavior that he and his colleagues observed could have important implications for an industry that is already being transformed by streaming services.

Spotify, the largest of the streaming providers, now has 40 million paying subscribers worldwide. For \$10 a month, the customers have access to a library of more than 30 million songs. The company has another 60 million members who can listen for free but have less control over what they can listen to. The musicians and their labels get paid based on the number of times a song gets streamed.

“The shift from ownership to streaming potentially levels the playing field to the benefit of smaller producers,” the researchers write. “Our results point to a more fragmented market, potentially more amenable to smaller artists and labels.”

Bronnenberg also thinks that the advent of curated lists on streaming services — a phenomenon that the study didn’t examine — could create value for consumers by guiding their musical exploration. “For a company like Spotify, which has a catalog of millions of songs, consumers are also appreciating and probably willing to pay for good curated lists,” he says.



# Organizations



“Entrepreneurship in general is really important. But companies that are funded by VCs have much more potential to

**impact the entire economy and millions of lives.”**

— Ilya Strebulaev PAGE 28

**INVESTING**

# Pulling Back the Curtain on VCs

**The Stanford Venture Capital Initiative is quietly assembling a massive database from people who prefer to stay mum.**

**BY STEVE HAWK**

If you think talking a venture capital firm into funding your startup is hard, try getting one to share its secrets with you.

That's the challenge Stanford Graduate School of Business finance professor Ilya Strebulaev took on when he founded the Stanford Venture Capital Initiative, which has been steadily amassing a deep and unprecedented database designed to figure out how the VC world really works.

Strebulaev and his co-researchers have already mined two high-profile papers out of the data. The first, "How Do Venture Capitalists Make Decisions?" was almost anthropological in nature, based on surveys answered by some 900 professionals at more than 650 different VC firms. It found that the most important factor driving VC investment decisions was not the potential of the product being pitched but the quality of the team behind it.

The second study raised eyebrows when Strebulaev's team discovered that VC-backed startups with valuations over \$1 billion — so-called "unicorns" — were uniformly reporting valuations well above their true market value. The paper, "Squaring Venture Capital Valuations with Reality," analyzed 135 unicorns founded after 1994 and concluded that every one of them was overvalued, some by more than 100%.

Although gathering the data for such research has been a challenge, Strebulaev

says VCs are becoming increasingly willing to help the project, and he and his team hope to produce more groundbreaking studies soon. "This is just a start," he says.

*Stanford Business* recently sat down with Strebulaev to find out what he's already learned and what he hopes to learn about an investment sector that continues to have a disproportionate impact on innovation worldwide.

**Why study venture capital firms?** The VC world is interesting because the truth is that it's very small in terms of available funding. One large pension fund or sovereign fund is bigger than the whole VC industry, but its relative impact, of course, is huge. Even though it is such a small industry, of the 1,300 or so companies that became public in the U.S. over the past four decades, 40% were backed by venture capital and they accounted for 82% of the research and development expenditures by all those 1,300 firms. Of the 10 that went on to become the biggest, as measured by market capitalization, eight began with VC funding.

And yet we know very little about how VCs make decisions, or how the economics of their funds really works. What are the best contracts to incentivize entrepreneurs? What's the best way to add value to these fledgling firms? We have a huge list of unanswered questions.

**Is that because VCs are notoriously secretive?** There are a lot of secrets, yes, but that's a generic problem of private enterprise, not just VCs. They're not required to file many documents and make them available in a way that public companies have to do, so there's just not enough data.

**How did the effort begin?** It started about three or four years ago. I was teaching the *Venture Capital* class, which turned out to be very popular, and I was actively engaged in researching venture capital. I talked to the Stanford GSB dean at the time, Garth Saloner, and we created the Stanford Venture Capital Data Initiative [recently renamed the Stanford Venture Capital Initiative]. We began by approaching the National Venture Capital Association, some alumni, and other people in the VC industry. We got a lot of support, and the data actually started coming through.

**What kind of data?** One of the most important data sets we have is thousands of contracts between VC firms and the companies they invest in. It's the paperwork that basically carves out the relationship between shareholders. Some of it is publicly available via the articles of incorporation that every company has to file, but for the most part it's very difficult to get ahold of this stuff.

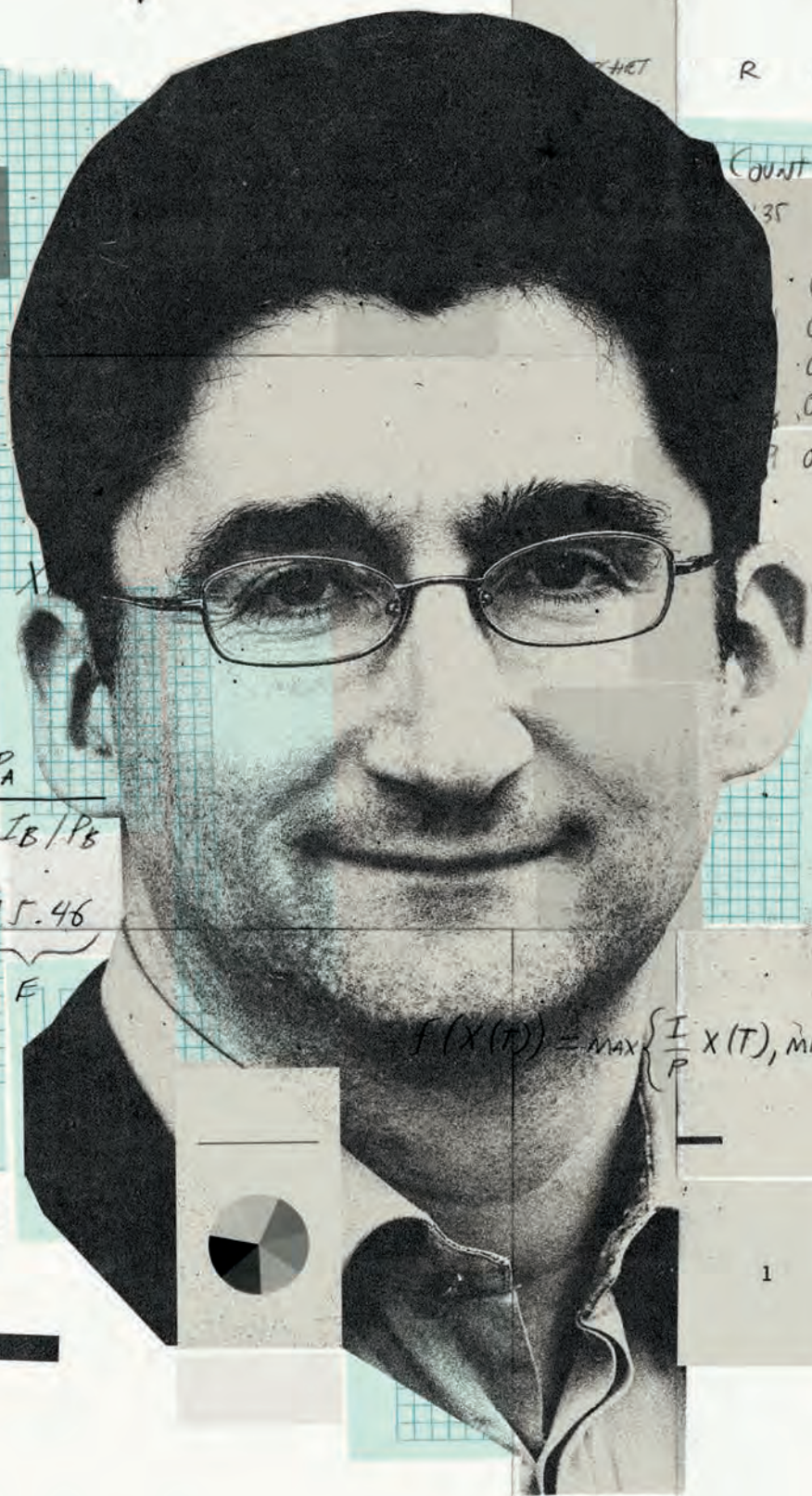
Once you get the contracts, that's when the real work begins, because they're hard to read. Each contract might have hundreds of variables that have never been collected in a consistent manner.

**How many have you collected?** The total number is in the tens of thousands, but so far we've analyzed a little less than 1,000 contracts. We had to build a whole infrastructure with lawyers, data scientists, and dozens of research assistants who help us read them.

**Is it hard to create apples-to-apples comparisons?** It's very, very difficult. There is no standardized legal language, because each one is basically the result of much negotiation and bargaining between the contractual parties. You see a lot of stuff that's unique to a specific contract. But once you're able to link the contracts through various data sets, it begins to get interesting. An important

**Ilya Strebulaev is the David S. Lobel Professor of Private Equity at Stanford GSB and director of the Stanford Venture Capital Initiative.**





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0.30		
0.07		
0.12		

1.00

0.56

$$\$1006 \leq X$$

$$X_A > I_B + \frac{P_A}{1 - I_B/P_B}$$

75.46

Std Dev

1.9

$$f(x) = \begin{cases} 0 & \text{if } x < 0 \\ 1 & \text{if } x \geq 0 \end{cases}$$

$$f(x(t)) = \max \left\{ \frac{I}{P} x(t), \min \{ I, x(t) \} \right\}$$



1

+

example is that we were able to use it to determine values of existing companies that had been backed by venture capital.

**This is the unicorn study.** Yes. It consisted of two parts. The first was the framework that we developed to value these private companies. But the second part was getting dirty in the data, reading every single contract very carefully and understanding the implications for cash-flow rights and preferences of various shareholders — basically, who is going to get what in any eventual outcome, whether it's liquidation or a sale or an IPO. And that took a lot of effort. A lot of effort.

**I imagine some people weren't happy with your conclusions.** Absolutely. If I say that Company X is overvalued by 100%, people at that company are not pleased. I heard from some of their general counsels.

**Was that worrisome?** No. I'm very confident in the framework we developed, and I'm confident that what we did was right. I replied to every communication and welcomed them to give us all the data about their company, because there could be some private documents that we haven't seen that might affect our estimate of value.

**If we're inaccurate, help us become accurate.** Exactly.

**Did that work?** One company provided some further information that elucidated their contract. In all the other cases, we haven't received any follow-up information, which suggests that they agreed with the way we read and interpreted their contracts.

**What audience do you have in mind when you're deciding what kind research to perform on the data?** We have four audiences in mind. The first one, obviously, is students — our students here at Stanford GSB and students around the world — who are just learning how to become VCs, how to become entrepreneurs, and how to become investors in innovation more generally. The contracts that founders and VCs sign with each other are very important, and it is truly critical for everybody to understand the economics of what is going on there. Similarly, the contracts that investors

sign with the fund managers drives the economics and returns of those funds. The second audience is academics who are trying to understand this world of innovation and venture capital. The third audience is practitioners — those who are already VCs, already limited partners, already investors in VC funds, already corporate executives. There's a lot of value in showing them best practices and how to improve.

And then the fourth audience is policymakers. There's a lot of misconception among policymakers, both here and around the world, about what VCs do and what innovation really is. People in Washington need to understand the difference between an entrepreneur who opens a laundry shop in Missouri and an entrepreneur who launches a tech startup in Silicon Valley. They face very different kinds of risks and have very different potential impacts. I don't mean in any way to demean the entrepreneurs opening laundry shops. Entrepreneurship in general is really important. But companies that are funded by VCs have much more potential to impact the entire economy and millions of lives, and I think it's important for policymakers to understand that and also to appreciate that these startups and the entire innovation ecosystem require a different approach.

**Is there any data out there that you wish you had access to that you haven't been able to get?** [Laughs] Yes. A lot. If any of your readers have access and are ready to share data, we will be very happy to receive it. We already have access to a lot of confidential information that we get under NDAs, so we're very well positioned to work with anonymized data. It shouldn't be a problem. The good thing about being an academic is that people understand that we're doing this for the benefit of the community and that, at the end of the day, science is about finding the truth.

**“There's no question that this industry has had an outsized impact on the economy and on humanity.”**

**Where are the specific data gaps?** For one, we don't have good data on the employment contracts of people who work for firms funded by venture capital. What are the vesting agreements and how are they structured for various stages and various firms? How are the employment agreements structured and what is their economics? We don't really have a good grasp on that yet. That would be number one.

Second, we would love to work more with limited partners — the funders of these funds, essentially — to understand better how they choose which VC funds to invest in.

**So you want information from people at the opposite sides of the spectrum.** Exactly. We actually are starting to have a good grasp of what goes on in between, but less so of those two ends.

**It seems that the measurements used to determine success in the venture capital world all have to do with generating wealth. Are there other metrics that you think might be more important?** This is just another economic industry, so the measures of success are really the same as in any human endeavor. From the finance point of view, it's about generating value and wealth, but it's also about fostering innovation and generating employment. Do VCs care that much about employment per se? Probably not, because above all they have fiduciary duties to their investors. But as a byproduct, they are generating innovation and employment. And at the end of the day, their products can make life easier and better for consumers — or at least different.

Most people don't realize that without venture capital, we would have never had iPhones, because Apple was backed by VCs. We would have never had computers, because the semiconductor industry was backed by VCs. We would have never had search engines, and so on and so forth. At the very least, one can reasonably claim that it would not have happened in such a short period of time.

Some of us might not like all of the innovations, but there's no question that this industry has had an outsized and underappreciated impact on the economy and on humanity. That's why I'm so excited to study it. ▲



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## ENGAGEMENT

# The Power of a Free Popsicle

**A new book shows the value of memorable defining moments for customer and employee experiences.**

**BY THEODORE KINNI**

Los Angeles boasts plenty of terrific hotels. At this writing, the top three on TripAdvisor are the Beverly Hills Hotel, Hotel Bel-Air, and the Peninsula Beverly Hills. If you can get a room at any of them for under \$700 per night, TripAdvisor says you're getting a "great value."

The fourth name on the list is the Magic Castle Hotel. You can snag a room there for \$199, but TripAdvisor doesn't call that out as a great rate. The Magic Castle Hotel, as Chip Heath, the Thrive Foundation for Youth Professor of Organizational Behavior at Stanford Graduate School of Business, describes it, "is actually a converted two-story apartment complex from the 1950s, painted canary yellow ... [with] a pool that might qualify as Olympic size, if the Olympics were being held in your backyard."

How does the Magic Castle Hotel maintain such an enviable TripAdvisor ranking among the 355 hostels it lists in Los Angeles? In their new book, *The Power of Moments*, Heath and his brother, Dan Heath, a senior fellow at Duke University's CASE Center, trace it to the hotel's ability to create "defining moments." These moments, they say, are ones that bring meaning to our lives and provide fond memories.

One of those defining moments is the Popsicle Hotline. Visitors at the hotel's pool can pick up a red phone on a poolside wall to hear, "Hello, Popsicle Hotline." They request an ice-pop in their favorite flavor and, a few minutes later, an employee wearing white gloves delivers it on a silver platter, no charge. It's a small defining moment that doesn't cost much to produce, but has paid off for the Magic Castle Hotel.

In *The Power of Moments*, the Heath brothers identify four metatypical defining moments. Elevation moments transcend ordinary experience, like the arrival of an ice-pop on a silver platter. Insight moments rewire our understanding of the world, like George de Mestral pulling burrs from his clothes after a hike and getting the idea for a new kind of fastener that he named Velcro. Moments of pride accompany achievement, which is why employee recognition is such a powerful tool. And moments of connection — like weddings, graduations, and retirements — strengthen relationships.

## TRANSITIONS, PEAKS, AND PITS

The problem with defining moments is that leaders and organizations often don't recognize them and thus miss the opportunities they harbor. To solve that problem, Heath says, companies should start "thinking in moments" by looking for the transitions, peaks, and pits in their customer and employee experiences.

Transitions are the most undervalued and underexplored moments. "Most companies don't have a great first-day experience planned for their new employees, even though that's a really key transition," Heath says. "When a customer calls her insurer because she's had a kid and bought an SUV, there's an opportunity to create a moment of connection. And what if a homeowner paid off his mortgage and a bank manager came to his home to present the deed and shake his hand, instead of charging an additional fee for the deed transfer? Nobody's doing that."

Peaks are obvious opportunities for creating defining moments, but often companies don't take full advantage of them. "Retirement dinners are typically about elevation — there's a special dinner — and connection, by bringing together people that the retiree has worked with over the years," explains Heath. "But none of the ones I've been to include giving retirees a chance to hold the floor and talk about insights they've gained over the years. It seems so obvious. Why wouldn't we add insight to that moment? And why wouldn't we add pride to that moment by celebrating all the projects

**Chip Heath is the Thrive Foundation for Youth Professor of Organizational Behavior at Stanford GSB.**





**SIGNATURE MEMORIES** One fun takeaway can forge lasting goodwill.

that we've worked on with this person and the progress that we've made?"

Pits — like negative performance reviews and corporate downturns — are

less obvious opportunities to create defining moments. But, Heath says, "A moment of pain can be a tremendously important human experience. There are a range of negative emotions in customer experiences and employee experiences that nobody's really tackling." Pits also can be invaluable sources of insight. When Sara Blakely was growing up, her father asked the same question of her and her brothers once a week, "What did you guys fail at this week?" It normalized failure for Blakely and taught her not to fear it. That insight paid off in spades when money men who just didn't get her idea for footless pantyhose rejected it over and over. Twelve years later, Spanx made Blakely the youngest self-made female billionaire in history.

**"You don't have to excel at everything. You only have to excel at a few things that are going to be memorable."**

Courtesy of Magic Castle Hotel

## **ATTENTION TO (ONE) DETAIL**

One of Heath's goals in writing *The Power of Moments* is to expand our understanding of experiences. "The whole literature on customer experience and employee experience is essentially focused around delight," he says. "There's a lot of journey mapping of the entire customer experience aimed at identifying low points and trying to buck them up."

But you don't need to perfect every moment in the customer's experience.

"Jan Carlzon [former CEO of Scandinavian Airlines] coined the phrase 'moments of truth' and talked about getting right the thousands of touchpoints with customers that happen daily," continues Heath. "I don't think you have to fix thousands of touchpoints. Maybe you want to have one defining moment at the gate and one moment at the luggage reclaim area. Maybe you want to invest in an entertaining flight safety video that people actually enjoy watching, like Virgin America."

In other words, Heath thinks companies should think a bit more like the Magic Castle Hotel. "Magic Castle isn't worried about changing the awful yellow color of the building or upgrading the bathrooms. Its managers are thinking about doing a couple of things during a stay that will really stand out in guests' minds," he says. "I think that's an advantage, because then you don't have to excel at everything. You only have to excel at a few things that are going to be memorable. Those defining moments can become powerful signature moments." ▲

**INNOVATION**

# Big Data Settles a Debate About Innovation

**Which revolution is more historic: industrial or tech?**

**BY EDMUND L. ANDREWS**

It's an article of faith that technological innovation is crucial to prosperity and is currently changing our lives at an unprecedented rate, but how do we know if the pace of pioneering breakthroughs is any faster today than it was during Thomas Edison's era? In fact, some economists argue that today's information revolution has had much less impact on our lives than the big inventions of the late 19th century had on people living then.

The problem is that it's very difficult to isolate the truly epic inventions from those that are incremental or trivial and thus to compare historic innovation trends. That in turn makes it hard to identify the policies or conditions that are likely to spur more breakthroughs.

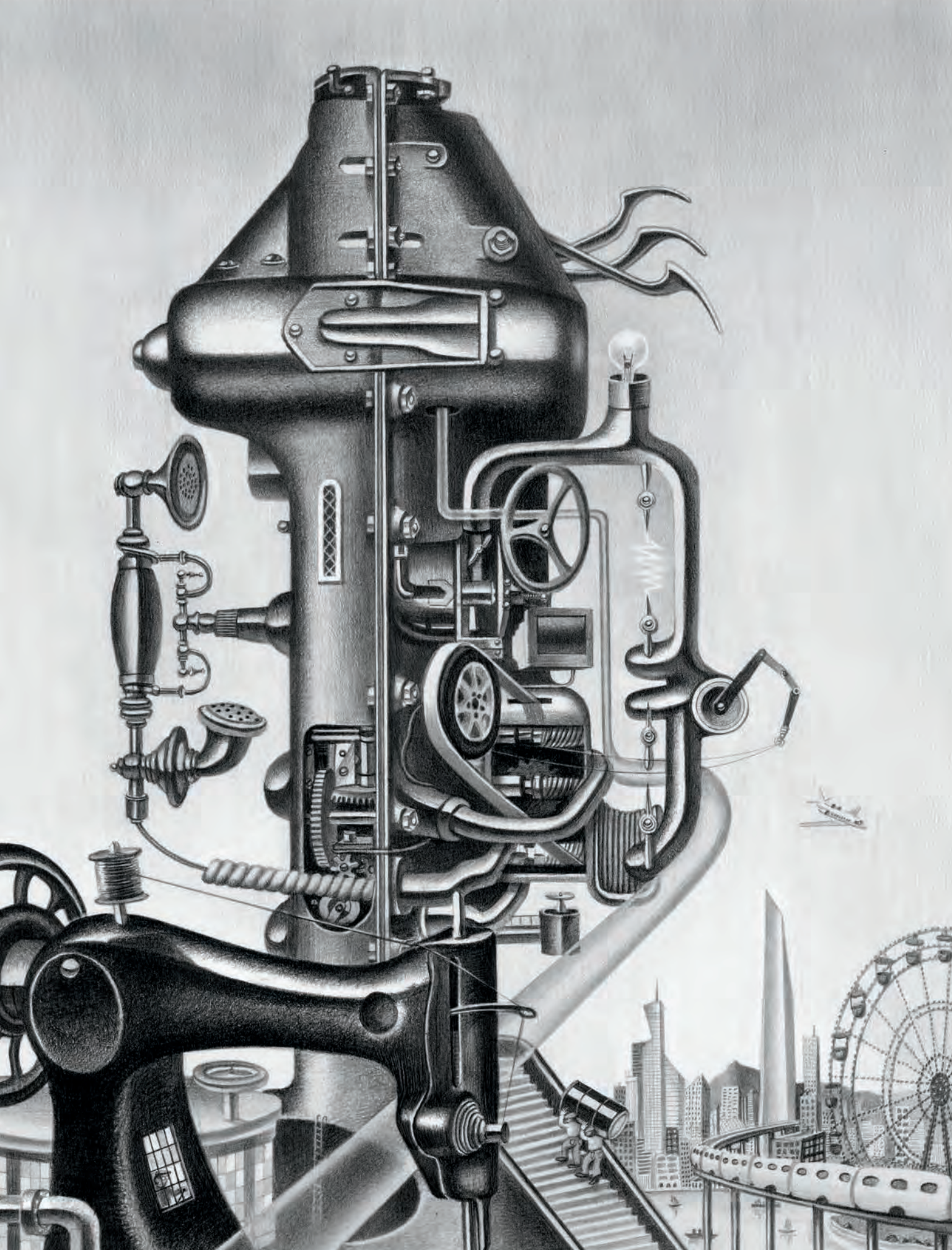
Now, a team of researchers that includes Stanford Graduate School of Business professor Amit Seru has developed a novel strategy that applies big data computing to several million patent text documents to rank the innovative importance of almost every U.S. patent over the past 200 years — and to identify historical spikes of epic inventing.

For Silicon Valley fans, the good news is that one of those spikes has indeed been during the past two decades, and it's been dominated by electronics and communications.

**Amit Seru is the Steven and Roberta Denning Professor of Finance at Stanford GSB.**

*Illustration by Armando Veve*







## ELEVATORS, SEWING MACHINES, AND COMBUSTION ENGINES

But the biggest surge, at least as measured by this new yardstick, came in the early to mid-1800s and featured inventions that revolutionized transportation, manufacturing, and the nature of big cities. Among the most important: vulcanized rubber, invented by Charles Goodyear, which became crucial in tires but also improved a vast range of industrial products; the elevator, invented by Elisha Otis, which made it practical to build skyscrapers and set the stage for modern cities; and the sewing machine, invented by Elias Howe, which transformed the garment industry.

A second big wave began in the late 1800s. The big breakthroughs in that era included the telephone in 1876; the internal combustion engine in 1877; the incandescent light bulb in 1880; the mechanical calculator and the first electric motor to run on alternating current, both in 1888. Orville Wright's patent for the airplane, a blockbuster as measured in this study, came in 1906.

The real importance of the new paper, says Seru, is that it provides a powerful new metric to identify trends in innovation, which in turn opens doors toward understanding economic forces and policies that might foster more of it.

"Economists agree on the importance of technological progress when it comes to fostering economic activity, but we don't really have many good ways of measuring it, especially over a long horizon," Seru says. "It's important to have robust ways of measuring technological innovation to understand how large changes in innovative activity move with policy changes. Is the right amount of innovation taking place? Is it shifting from large firms to small ones or vice versa? Is it coming from public firms or private firms? Is there a shift toward or away from universities or government agencies? These are all first-order questions and our metric opens avenues to study them."

## SEARCHING PATENTS FOR RECURRING TERMS

The basic idea behind the new approach is fairly simple: An important invention is one that both differs greatly from what came before and greatly influences what comes later. To find those kinds of inventions, the researchers looked for patents with terms and phrases that appeared rarely in previous patents but showed up frequently in subsequent ones.

The computing challenge was immense. The researchers had to identify important terms in 9 million patents, each of which contains thousands of words. Then they had to analyze how frequently those terms showed up in each of the patents during previous and subsequent years. This large "correlation matrix" is what made the task computationally intensive. In the end, the ratio between those two measures became the gauge of a patent's importance.

## WHY GO TO ALL THAT TROUBLE?

Seru says the new approach has several advantages over existing strategies to measure innovation. The most popular of those strategies has been to count the number of times a patent is cited as "prior art" in patents that come later. The problem with that process is that patents didn't consistently include such citations until the 1940s, which limits their usefulness in analyzing longer historical trends and answering those "first-order" questions.

A more recent approach, which Seru himself developed, is based on calculating the importance of an innovation based on the jump in a company's stock price when it

gets a new patent. His research shows that this metric of technological progress is a good indicator of real-world value, but with one significant caveat: It assesses the value of innovation only for publicly traded firms, since there are no stock prices available for an individual, a privately held company, a university, or a government agency.

## ALIGNED WITH HISTORIANS

As it happened, the researchers found that their measures of patent quality based on textual analysis correlated quite well with the other measures — strong evidence that their phrase-based approach is reliable.

They also found that their top-ranked patents synced up well with the assessments of historians. Looking at a much-cited list of the 110 most important American patents up through the early 1960s, the researchers found that 40% ranked in the top 10% by their own measure of importance.

Many of the most legendary American inventions ranked in the top 1% of the new measure. These included some obvious ones, such as Thomas Edison's electric light, Alexander Graham Bell's telephone, and Wright's airplane. But they also included less-remembered breakthroughs, such as the safety pin and Gail Borden's invention of condensed milk.

Just slightly lower down the list, but still within the top 10%: Philo T. Farnsworth's patent for the television, Edwin Armstrong's FM radio, and Robert Noyce's semiconductor.

The researchers also found evidence that technology innovation spurs economic productivity in a way that makes quantitative sense. That may sound obvious, but previous studies found it difficult to predict productivity using different metrics of technological innovation. The reason, says Seru, is that, unlike earlier studies, the textual based metric potentially enables researchers to filter out a cleaner measure of technological innovation — especially breakthrough innovations.

The big news, says Seru, is that the new way of ranking important inventions appears to be accurate and sets the stage for deeper understanding of the conditions in which real innovation can thrive. **A**

**"It's important to have robust ways of measuring how large changes in innovative activity move with policy change."**



“Uber is an example of a company that started small with a good idea, grew rapidly, became disruptive, and grew into a monolith.”

PROFESSOR DAVID LARCKER,  
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**PUBLIC POLICY**

# Can “Opportunity Zones” Pull Declining Neighborhoods Out of Poverty?

**Stanford researchers investigate whether a new program will help low-income residents or merely profit investors.**

**BY EDMUND L. ANDREWS**

The \$1.6 trillion tax cut that became law last December contained a sleeper provision that’s beginning to generate excitement across party lines, a rarity in today’s politics.

The obscure provision, which has bipartisan support, allows investors to reap big tax savings by reinvesting cash from previous capital gains into low-income “Opportunity Zones.”

It’s not the first time that Congress has created tax incentives to attract investors to neighborhoods with high poverty, but Rebecca Lester at Stanford GSB says this program could lure much more money than earlier efforts.

“One of the really distinctive features of this program is that it is so broad,” says Lester, an assistant professor of accounting who specializes in the impact of accounting and tax policies on investment and employment. “There’s no cap on the number of investors and few restrictions on what kinds of equity investments are eligible.”

The big question, Lester says, is whether the program actually helps low-income residents or simply enhances the profits of investors.

To that end, Lester and two graduate students — Hanna Tian and Cody Evans — have begun analyzing how the incentives work and mapping the demographic and economic characteristics of tracts now being designated as Opportunity Zones.

Under the law, states designated up to 25% of their low-income neighborhoods for the special incentives.

The Treasury Department will approve nearly 9,000 zones nationwide. California alone has nearly 800, and New York state has more than 500.

The basic idea is to attract investors who have big unrealized capital gains from stocks, real estate, or other investments.

Normally, investors have to pay a capital gains tax of up to 23.8% when they cash out.

Under the new law, however, those investors can defer paying capital gains taxes for years if they reinvest their profits in an Opportunity Zone. If they hold that investment for seven years, they get a 15% reduction on the original capital gains tax. If they hold it for 10 years, moreover, they won’t have to pay any tax at all on the profits generated from the Opportunity Zone. For a successful investment, that would add up to a major tax saving.

## **SELLING POINTS**

Lester and her students say the incentives have several striking features.

The first is that Congress did not limit the size of the program or how much money people can invest using this incentive. That makes this quite different from an earlier program, the New Markets Tax Credit, which had a limited budget. In 2014, the Treasury Department approved only around 30% of applications for New Markets projects.

The second big feature is that investors can put their money into virtually any kind of equity investment they like, from startup companies and existing local businesses to new homes or factories. The main requirement is that the investment be inside one of the designated zones.

A third potential advantage is the minimal amount of red tape. In previous programs, projects had to go through lengthy processes of certification and approval. With Opportunity Zones, it’s widely expected that the Internal Revenue Service will let investors simply declare their in-zone investments on a form they file with their annual tax returns.

“Given the uncapped size of the program and the wide scope of investments, this incentive has the potential to be more successful than other more restrictive place-based policies,” says Tian, who’s scheduled to graduate from Stanford GSB in 2019.

## **ZONES’ SHORTFALLS**

If the new zones do attract capital, one question is whether that money actually helps lift local residents out of poverty by improving their areas.

One risk, highlighted in previous academic research, is that the local area improvements could gentrify an area and drive out low-income residents. Indeed, a recent paper by the Brookings Institution suggests that some of the designated zones were already in the process of gentrifying. That means that investors may not even need any special incentives, but also that people in poverty could be squeezed out by new upscale housing.

Another risk is that investors put money into businesses that do little or nothing for low-income residents. One zone, for example, is just 3 miles from Palo Alto and well within Silicon Valley. If Google decided to build a new office annex there, it might only employ tech workers from outside the area and do little for existing residents who struggle to pay rent.

For Lester, that makes Opportunity Zones a fascinating real-life experiment that could provide valuable insights on poverty-reduction strategies for years to come.

“The extent to which these projects actually help low-income residents will in some ways be a function of how local governments participate in directing the investment,” Lester says. “It will be up to the local governments to step up and say, ‘This is where you can have a real impact.’”

In the meantime, Evans and Tian are working to connect the dots between investment opportunities in distressed areas and people with capital to deploy.

To that end, the three are trying to build public awareness about the program, both by developing research on particular aspects and by building interactive maps of Opportunity Zones and additional tools for investors, policymakers, and other interested parties.

“People may find investment opportunities in their own backyards,” says Evans, also in the Stanford GSB class of 2019. “This can give an investor a chance to take some investment profits from Apple or Google and reinvest them in local area businesses.” ▲

**Rebecca Lester is an assistant professor of accounting at Stanford GSB.**



REBECCA LESTER  
"It's up to local  
governments to say,  
'This is where you can  
have impact.'"





## ENTREPRENEURSHIP

# What's Fueling Latino Entrepreneurship — and What's Holding It Back

Latinos are starting businesses “at an incredible rate,” but most ventures remain small.

BY KERRY A. DOLAN

Despite such challenges as inadequate access to capital, the number of Latino-owned businesses in the U.S. is growing at a rate that outpaces just about every other ethnic group, according to a new study from the Stanford Latino Entrepreneurship Initiative.

The study — titled “State of Latino Entrepreneurship 2017” and coauthored by Stanford GSB professor emeritus Jerry Porras, GSB economics professor Paul Oyer, and SLEI research analyst Marlene Orozco — analyzed data from more than 5,000 Latino businesses to get insights on the entrepreneurs, their successes, and the barriers they face.

The Latino population has grown at a steady clip and now accounts for 18% of the U.S. population. However, the rate at which new Latino firms are being created outpaces Latino population growth. “Latinos have been starting businesses at an incredible rate over the past decade — a million net new businesses every five years,” says Porras, who is also the cofounder of the Latino Business Action Network. He notes, however, that most Latino-owned businesses remain small: 98% report less than \$1 million in annual revenue.

Paul Oyer is the Mary and Rankine Van Anda Entrepreneurial Professor of Economics, and Jerry Porras is the Lane Professor of Organizational Behavior and Change, Emeritus, at Stanford GSB. Marlene Orozco is a research analyst with the Stanford Latino Entrepreneurship Initiative.



# Inside the Latino Business Survey

Stanford Latino Entrepreneurship Initiative is a research collaboration between Stanford Graduate School of Business and the Latino Business Action Network.

## Demographics

Since 2007, Latino-owned businesses grew in number by **46%**. This nearly outpaces the growth among all other demographic groups combined.

### MILLENNIALS

**40%** of Latino business owners are millennials

Among immigrant-owned firms, DACA-comparables make up

**86%** & **39%**  
of scaled firms (Scaled firms (\$1M+)) & of unscaled firms (Unscaled firms (<\$1M))

### LATINAS

Between 2007 and 2012, Latina-owned firms grew in number by **87%**



Latinas make up **44%** of all Latino-owned firms

Non-Latina white-women-owned firms make up **37%** of non-Latino white-owned firms

Black females make up **59%** of all black-owned firms

### IMMIGRATION



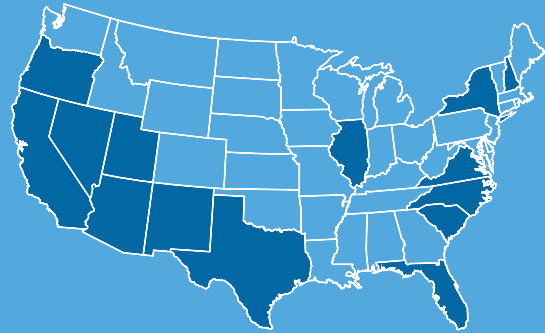
**27%** first generation

**26%** second generation

**46%** third-plus generation

## Geography

### TOP STATES FUNDING LATINO BUSINESSES



**52%** of Latino-owned businesses serve the local community

**37%** of Latino-owned businesses serve customers statewide

**28%** of Latino-owned businesses have customers across the U.S.

**9%** of Latino-owned businesses have international customers

## Industries

**62%** of Latino-owned firms report profit growth in the last 12 months.

### Top 5 industries among scaled firms

- 39% Construction
- 23% Professional & Business Services
- 14% Education & Health Services
- 9% Other Services
- 5% Financial Activities

In 2015, the GDP produced by Latinos in the U.S. was **\$2.13 trillion**, larger than the GDPs of India, Italy, or Canada

Between 2007 and 2015, Latino employer firms have grown in number by

**↑ 26%**

Between 2007 and 2015, non-Hispanic white-owned firms decreased by

**↓ 4%**

## THE FUNDING GAP

One factor hampering expansion of these businesses is limited access to capital. “It’s all about the financing,” Oyer says. “There’s a real funding gap for this group.”

In particular, national banks are a smaller source of funding to Latino businesses than to entrepreneurs from other ethnic groups. Only 12% of Latino firms employing more than one person received bank loans, compared with 18% of white-owned firms, 15% of Asian-owned firms, and 14% of black-owned firms.

“A lot of it has to do with the size of the company,” says Orozco. “National banks are not willing to take on the risk of these smaller firms.”

In addition, many of the Latino business owners surveyed as part of the study reported that they feel unqualified to apply for a bank loan at a national bank. As a result, some may not be submitting requests for a loan.

The study also found that loans guaranteed by the U.S. government’s Small Business Administration are accessed by Latino entrepreneurs at even lower rates than borrowing from national banks. So how do Latinos fund their businesses? By tapping friends and family, finding angel investors and venture capital, and using their credit cards, Orozco says.

## MILLENNIALS RISING

Another key finding in the study:

A surprising 86% of immigrant-owned firms with at least \$1 million in annual revenues are owned by millennials (under age 34) who came to the U.S. as children. The authors refer to this group as “DACA comparable” — those who are likely to be eligible for the Deferred Action for Childhood Arrivals immigration program, which delays deportation for undocumented immigrants who came to the U.S. as children and grants them the right to study or work. (Survey participants were not asked about their immigration status, so there is no way to know what percentage of respondents are actually DACA eligible.)

Why might this group of young immigrants be overrepresented among successful immigrant Latino business

owners? The authors point out that they are more likely to speak English fluently and to have higher education degrees and strong social networks, all of which can play a role in building a successful business.

Also, for many young immigrants, starting their own business may make more sense than working for someone else, due to employment paperwork requirements. “Although employers may not knowingly hire an undocumented immigrant without work authorization,” the study notes, “federal and state laws do not require proof of immigration status for an individual to start a business.”

Latina entrepreneurs play an important role in creating companies, the study found. Latinas now own 44% of Latino businesses. From 2007 to 2015, nearly half of the growth in new Latino businesses came from firms started by women. That compares with much lower growth rates for female white (13%) and black (20%) entrepreneurs. While the growth is impressive, the firms started by Latinas tend to be small. Only 30% of the Latino firms with \$1 million or more in annual revenue are owned by women.

Demographics bode well for continued entrepreneurship among Latinos, who make up the youngest racial or ethnic group in the U.S. One in three are under the age of 18 and 25% are millennials. “The bottom line,” says Oyer, “is that there’s a lot of potential activity in the Latino business community.” ▲

**“A lot of it has to do with the size of the company. National banks are not willing to take on the risk of these smaller firms.”**





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**BANKING**

# Credit Perseverance

**Marla Blow knew creating a credit card company for high-risk customers would be an uphill climb. She did it anyway.**

**BY MARTIN J. SMITH**

**Marla Blow's** career at the newly formed federal Consumer Financial Protection Bureau was rocking along just fine in 2014 when she decided to try something she knew would be extraordinarily difficult.

"I still get people doing the double-take thing, saying, 'I didn't know you could just go out and start a credit card company. How does that happen?'" says Blow, CEO of FS Card and a member of the company's board of directors.

It happened, she says, after a "Herculean" 18-month effort to convince investors to buy into the idea of offering unsecured credit cards to high-risk people long exiled out of the mainstream credit world.

But from her seat at the government agency, Blow saw a need waiting to be met. "At the CFPB, part of our charge was looking at all parts of the population, not just the big middle," says Blow, who studied finance at the University of Pennsylvania's Wharton School before earning her MBA at Stanford Graduate School of Business in 1999. "I saw mainstream credit card providers pulling away from this customer base and leaving them on the sidelines."

After seven years in various roles at Capital One and a stint as assistant director of card and payment markets at CFPB, she partnered with Republic Bank & Trust to launch FS Card and its inaugural product, the Build Card. Launched in late 2015, the card offers a credit line of about \$500 at interest rates about 10 points higher than the 18% average for a mainstream credit card.

"But it's a tenth of a price of a payday loan," Blow says. "That's a game changer for the customers we serve."

She says FS Card ended 2016 with about \$8 million in credit outstanding across 15,000 accounts and now has about 105,000 accounts and \$50 million in outstanding credit.

**Describe the typical customer for this card.** The typical user profile is consistent with the distribution of credit scores in this country. People with lower credit scores tend to be renters rather than homeowners, tend to have incomes below \$40,000 a year, and tend to be people of color. We offer traditional credit — an unsecured revolving MasterCard — to this group of underserved customers.

**Why go after this group?** These are people who might otherwise seek out a payday or auto-title loan or use a pawn shop. We offer them a path back into the financial mainstream with a structure consistent with that of a traditional credit card customer.

**When did you realize there was an opportunity in fostering this kind of financial inclusion?** This came about when I was at the CFPB. I believe it's important for people to have a fair chance. I wondered if technology can now make it possible to take the tools that work for a broad swath of the population and make them work for even more people, to meet their borrowing and liquidity needs in a convenient and flexible way. I was deeply concerned that was not happening and wanted to create a vehicle that allows this customer to meet everyday expenses such as gas and groceries, as well as transact digitally and online, in a way that I would feel good using myself or feel good having my mother use. I wanted to create parity for this population.

**You've said you're "creating an on-ramp" for those customers. How so?** The alternative products — payday and auto-title loans, that sort of thing — have not historically been reported to the traditional credit bureaus. Whereas if you get our card, use it wisely, and make your payments on time, that gets reported every month and

demonstrates creditworthiness. It puts our customers in a position to receive offers of other kinds of credit to follow behind this one.

**Starting a credit card company sounds daunting. What was the biggest challenge?**

There's a ton of infrastructure and service capability that has to be in place before you can issue a credit card, and you have to partner with a bank to access the Visa and MasterCard rails. So it required us to spend about a year and a half building infrastructure, contracting with a bank, finding a servicing agreement, and setting up procedures to field phone calls, send out statements, and accept payments. All of that had to be in place, at a cost of millions of dollars, before card number one could ever be issued. In a world where entrepreneurs learn about minimum viable products and iterating quickly, we had to set the stage for this in very solid detail before we could figure out if it was even going to work.

**Seems like a hard sell to convince seed investors to sign on.** (Laughs) That's the understatement of all time. It was extremely difficult. The first dollars in the door were from investors entirely betting on me. This is not something venture capitalists get excited about. It requires a big initial investment and then huge investment after that before getting to scale. It was just pure pushing that boulder uphill and talking and talking to people. I spoke to more than 200 different investors trying to convince them to get involved.

But that said, if you can get it done and get into the business, there are opportunities to innovate in delivering the product, in communicating with the customer, in using artificial intelligence and machine learning in our underwriting engines. So there's a lot of fun and interesting ways to be a part of this space. We've blazed this trail despite the challenges.

**With your AI tools, what data are you looking for?**

I'm excited about bringing in data from alternative credit bureaus that capture factors such as rental history and cell phone usage to help us predict why things might be different in the future. For example, someone might have seen an uptick in their work hours, which can show up first by them increasing the payments on their pre-paid cell phone. Those things don't make their way into the mainstream credit bureaus, but we trained our engine to evaluate what has changed. Then we can change the direction of the customer's credit life.

**You're also using a "chatbot" to communicate with users. How do you walk the line between helping and nagging?** It's incredibly tricky,

*Photograph by Jared Soares*



MARLA BLOW  
"The importance of  
persistence."



but our incentives are aligned with our customers' incentives. We apply behavioral economics principles to frame when, what, and how to message our customers. We try to create messages that drive the behavior that's most important to us — making payments on time, ideally in excess of the minimum payment, and urging people not to max out the card every month. We try to keep the messages positive, in a way that's measured and spaced out, getting them the information they need at the moments that matter.

**For example?** "Thank you for your payment, you are on your way to credit success!" That's the kind of thing chatbots enable us to do. It works better than, "Hey, your payment was due three days ago." You congratulate them

and celebrate their wins on things that are consistent with managing their credit well. That turns out to be incredibly powerful.

**Any other ways you offset the higher risk?**

We start with a small amount of credit. The mainstream average credit line is \$3,000 to \$5,000. We offer a \$500 credit line. That's enough to get someone through the end of the month, order some pizza for their family, and fill up their gas tank. We can't take large risks. For our customers who use the card well, we grow with them and grow the credit line to \$750, then to \$1,000. We eventually hope to graduate those people into better products. We're introducing a new card that has more of those features, but right now we're a single-product company.

**What do you wish you'd known back at Stanford GSB that you know now?**

The importance of persistence. That has been the difference maker for me. That willingness to have 200 conversations just to get the capital to start the business, to spend a year and a half listening to the naysayers, knowing that it's going to be hard and that you're going to have to push against a lot of resistance. I believe in what we are doing here at FS Card, and I would have talked to another 200 people if that was what it took to build the business. [▲](#)

**Marla Blow earned her MBA from Stanford GSB in 1999.**

**AUTHENTICITY**

# Speaking Out Against “Don’t Ask, Don’t Tell”

**Zoe Dunning challenged the military’s policy and ignited a memorable chapter in civil rights history.**

**BY MARTIN J. SMITH**

Sean Harold Rosenberg still remembers a rush of admiration as he listened to a guest speaker during his first year at Stanford GSB.

The speaker was retired Navy Commander Zoe Dunning, a U.S. Naval Academy graduate who in 1993 openly defied the ban on gays in the military, which became known during the Bill Clinton administration as the “Don’t Ask, Don’t Tell” policy. While studying at Stanford GSB, Dunning appeared at a public rally and proclaimed, “I am both a naval officer and a lesbian, and I refuse to live a lie anymore.”

“I was just awestruck by all she’d done,” says Rosenberg, a third-year Stanford student pursuing both a law degree and an MBA who helped choose Dunning for the Military Service Appreciation Award from the school’s Veterans Club. The award was presented to her at a gala in May. “It’s hard to hear Zoe speak about the things she has done without feeling that you’ve never accomplished anything yourself. She saw something was wrong and wanted to be part of the solution. That willingness to say, ‘This isn’t right and needs to be fixed,’ is super inspiring.”

Dunning, now a management consultant for Oakland-based Future State, won subsequent legal proceedings and ended up serving for more than 13 years as one of the military’s only openly gay service members. In December 2010, President Barack Obama invited her to stand beside him as he signed the bill repealing Don’t Ask, Don’t Tell, ending decades of institutionalized discrimination against gay military service members.

**Looking back, do you think the military’s Don’t Ask, Don’t Tell policy was a flawed but necessary step?** I believe Bill Clinton tried to deliver something that would provide relief for gays and lesbians in the military. Unfortunately, one of the unintended consequences was that it created tremendous focus and attention on gays in the military and resulted in discharges increasing rather than decreasing. Over 13,000 service members were discharged during the Don’t Ask, Don’t Tell era. There was a lot of enforcement of Don’t Tell, but not a lot of enforcement of Don’t Ask.

**Is requiring that kind of secrecy in the military compatible with organizational integrity?** Absolutely not. That became the basis for the demise of the policy. It was compromising both individual integrity as well as organizational integrity, so that was part of my motivation for

Zoe Dunning earned an MBA from Stanford GSB in 1993.

*Photograph by Alanna Hale*





ZOE DUNNING  
"Be true to your word  
and stand up  
for what's right."

coming out and challenging the policy. It was counter to the values of my education at the Naval Academy, which was all about honor, courage, and commitment.

**Why was coming out publicly at that 1993 Stanford GSB rally such a critical moment for you?**

I had transitioned to the reserves because I wasn't quite ready to say goodbye to the military yet. When the organizer of the rally asked me to speak, my gut reaction was "No, why would I create turmoil at this point?" But I kept thinking, "What would I say if I *did* say something?" In many ways, the leadership training I received in the military and at Stanford made me question the ethics of that. It made me think twice about whether I could make a difference.

**You called your sisters beforehand and warned them what might be coming, right?**

My one sister, Amy Dunning, was a Marine Corps JAG officer and a lesbian herself. She gave me great legal advice as I went into this. During those 13 years I was openly gay in the Navy, she was closeted in the Marine Corps Reserve.

**What kind of conversations did you have with her?**

She was proud of me, but she didn't feel like she was willing to step forward herself at that point. Her contribution was to just do a good job. At my first discharge hearing, she testified about my moral character and upbringing, about our mother having served in the military, and about how she hoped they would allow me to continue my career. At the hearing, one of the officers on the administrative discharge board asked my sister point blank whether she, too, was a lesbian, under oath. My attorney objected, the objection was sustained, he withdrew the question, and she never responded. But there was this incredibly long, painful silence before our attorney objected. And my sister has told me since that she sometimes reflects back and wonders how her life would have been different if she'd answered the question.

**Does she regret that?** She often talks about how I had this big retirement ceremony on the flight deck of the USS *Hornet*, and there were media there, and it was a big deal. I was piped over the side with my wife on my arm — the first time that had ever been done with a same-sex couple. My sister actually outranked me. She reached the rank of colonel and had a much more prestigious

career than I did. But when it was time for her retirement, she didn't have a ceremony of any sort — this was before Don't Ask, Don't Tell was repealed — because she couldn't invite the people she wanted to attend, and she couldn't say what she wanted to say.

**What does that tell us about that policy?**

It shows the arbitrariness of it, because I was allowed to be out and continue to serve, and she wasn't. When I won my case, it was bittersweet because I won it for myself, but I wasn't able to go to court and challenge the constitutionality. So I was unable to help others who were impacted by the policy.

**What drove you during those years?**

The chance to meet service members who had been impacted, to hear their stories about how much they mourned the loss of their careers or how painful and devastating the investigations were into their lives. Just hearing their stories kept me going.

**You once advised high school students to "be your authentic self." Why is that important?**

It takes tremendous time, energy, and emotional toil to pretend you're something you're not. Being in the military and keeping a secret, pretending I was straight, it takes a daily toll. It's death by a thousand tiny cuts. Frankly, my experience at Stanford GSB was the first time I could start to be my authentic self. I joined the LGBTQ business student group and ended up co-leading it my second year. I credit the business school for creating a safe space for me to be out about my sexual orientation and start my activism.

**Was it still hard to be gay at Stanford in 1991?**

In 1991, the gay group on campus would meet off campus. They would announce the times and dates of the meetings and staple the notice shut and put it in your mailbox so others couldn't see it and so you wouldn't be outed. The membership was kept secret. It just didn't feel safe. But the Class of 1994 that came up behind me was this amazing group of very out and proud students. They changed the dynamic of the school by being their authentic selves. We held the first LGBTQ student-sponsored social event, in 1993. I was proud of that.

**You once quoted someone as saying, "If you don't have a seat at the table, you're probably on the menu." Do you feel that all Americans in the military have a seat at the table?** I think transgender service members were given a seat, and now that chair has

**"It takes tremendous time, energy, and emotional toil to pretend you're something you're not."**

been pulled out from under them. The military has changed so much in the 37 years since I took my oath at Annapolis. Women serve in submarines. Women can go through infantry training. Women can fly combat missions. But it's still evolving in terms of integration of women. There's still sexual harassment, and sexual assault is a big problem that the military still needs to address. But we've gotten greater visibility to it and are getting support to change the culture around that.

**What leadership qualities do you look for in others?**

The ability to listen and empathize. The ability to overcome obstacles and resilience in doing so. Authenticity and transparency. And basic integrity — being true to your word and standing up for what's right.

**Any unforgivable sins when it comes to leadership?**

Hypocrisy. Asking folks to do what you won't do yourself. And creating a culture or an atmosphere of bullying or harassment. A leader can either contribute to a culture of harassment, turn a blind eye to it, or actively seek to eradicate it.

**Do you have any specific or general advice for incoming Stanford GSB students?**

Take the course on interpersonal dynamics. That was probably the most important course I took and it has served me well throughout this entire process and in my civilian career as well. That class provides an amazing laboratory to experiment and learn about yourself. Emotional intelligence. Active listening. Influence. Those are critical things to learn. I guess my broader advice to prospective students, current students, and even alums is to follow your heart and passion. What's the school's vision? "Change lives. Change organizations. Change the world." Follow that vision. You never know what will happen. **▲**



# World



“Network information can be super expensive to collect, and finding

**precisely the right people**

to help something go viral is unpredictable.”

— Mohammad Akbarpour PAGE 54





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## REVITALIZATION

# How Communities Recover from Disasters

Scholars explore the hallmarks of resilience.

BY MARTIN J. SMITH

The most critical relief efforts after a disastrous hurricane or earthquake involve getting food, water, and power to those in need. But a study by a Stanford GSB professor suggests that an equally devastating problem often trails in the wake of such disasters.

That “silent killer” is a lack of community cohesiveness, as represented by the number and diversity of its voluntary organizations and their willingness to cooperate. “The real impact of disasters is cushioned by those,” says Hayagreeva “Huggy” Rao. “The better the infrastructure, the better the recovery. A disaster is a shock. Think of those organizations as shock absorbers.”

Hayagreeva “Huggy” Rao is the Atholl McBean Professor of Organizational Behavior and Human Resources at Stanford GSB. Heinrich R. Greve earned a PhD from Stanford GSB in 1994 and teaches at the INSEAD business school in Singapore.



Rao, a professor of organizational behavior at Stanford GSB, coauthored the study with Heinrich R. Greve, who earned a PhD from Stanford GSB in 1994 and now teaches at the INSEAD business school in Singapore. Their paper was published in the February 2018 issue of the *Academy of Management Journal*.

The pair wanted to better understand why some communities are resilient in the face of disasters and why others are less able to recover. They concluded that a community's resilience hinges on two critical factors:

1. **How the disaster is framed by the community and its leaders, including whether it's perceived as an unavoidable accident or as the fault of some person or group of people**
2. **How cooperative the community is in dealing with challenges**

**“You can inject resources, but if the organizational infrastructure is destroyed, it’s a bigger problem.”**

## **ANALYZING A 100-YEAR-OLD EPIDEMIC**

They arrived at those conclusions by studying an outbreak of the highly contagious Spanish flu in Norway in 1918 and 1919, choosing that epidemic in part because Norwegian doctors were required to report cases of the disease. That created a rich vein of data about how the contagion spread in crowded areas and coastal towns, along ship and rail routes, as well as in minority communities.

The circumstances of the outbreak framed the story in a way that made people suspicious of one another. According to one woman at the time, “Everyone was afraid of everyone else,” which made it hard for the community to work together to recover.

The researchers then compared that response to the spring frosts that occasionally created havoc among Norway’s many farming families. Those communities had a more unified sense of purpose, as measured by risk-sharing cooperatives such as mutual insurance organizations, savings banks, and retail food production and distribution. That kind of social and economic cooperation is a good measure of a community’s ability to “engage in civic action, which in turn depends on trust and social integration.”

In the flu outbreak, Rao says, “the Norwegian government was saying, ‘Stay indoors! Don’t congregate and hang out! Those are things that could help prevent spread of disease!’ Think about that. The message was ‘Beware of people!’”

## **RUMOR AND SPECULATION**

Such framing often has a double impact: “One is what the government says explicitly [by urging people to avoid each other to prevent spreading the disease], but it also triggers conversation and leads to rumor and speculation.” By creating an “us vs. them” mentality, officials ultimately hinder community cooperation.

Rao says recent history supports that conclusion. The suffering caused by the *hantavirus* outbreak in 1993 in the Four Corners area of the American Southwest, for example, was exacerbated by those who

called it the “Navajo flu” (due to the fact that the outbreak affected many in the area’s Native American populations).

“Medical practitioners began calling the Centers for Disease Control, asking if it was OK for Navajos to go into restaurants and so forth,” Rao says.

The study concludes that the most resilient communities appear to be those with a wide variety of deeply rooted cooperative organizations, often made up of such volunteers as doctors, educators, and religious leaders. “Those build resilience into the social system,” Rao says. “When people build organizations and those organizations are diverse, the community has the capacity to solve long-term problems.”

## **PUERTO RICO’S STRAINED ORGANIZATIONAL MUSCLE**

Rao says Puerto Rico’s resilience is being tested during rebuilding efforts after Hurricane Maria struck in September 2017. “There was justified complaint about the speed of response, but what we’ve yet to know is who exactly are the casualties? What’s happening to the organizational muscle in the community? Are churches folding up? Are people leaving there for Miami or Houston? You can inject resources, but if the organizational infrastructure is destroyed, it’s a bigger problem, because then communities can’t help themselves.”

Rao cites the work of public policy professor Robert Putnam of Harvard University, whose 2000 book *Bowling Alone: The Collapse and Revival of American Community* compares social diversity and cooperation to the lubricant WD-40. “First, you need glue to bind a community together,” says Rao. “But you also need WD-40 to reduce friction.” Generally, says Rao, the U.S. today “needs more WD-40.” ▲



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## NETWORKS

# Are Influencers Overrated?

**A new study questions the effectiveness of targeting “hubs” at the center of social networks.**

BY DYLAN WALSH

How does information spread? How do you encourage its spread?

These are fundamental business questions. If you introduce a new product or service, how will customer word-of-mouth travel? And they are questions of equal importance for policymakers and nongovernmental organizations. How do you get entrepreneurs in small villages of developing countries involved with microfinance? Or how do you best spread HIV awareness among homeless youth?

Convention and intuition point to one solution: Find people who hold the most influence, typically those who sit at the center of a social network — the hub in a wheel — and “seed” them with the new information. From there, the idea will efficiently reach new ears through word-of-mouth.

Unfortunately, finding these hubs can be a lengthy and expensive process. Picking the five best seeds in a 200-person network requires checking 2.5 billion variations. Consider, then, a network of 1,000 people, or 1 million people.

Does a simpler approach to spreading information exist?

While tackling this question, a team of Stanford researchers found a remarkable result: Simply seeding a few more people *at random* avoids the challenge of mapping a network’s contours and can spread information in a way that is essentially indistinguishable from cases involving careful analysis; seeding seven people randomly may result in roughly the same reach as seeding five people optimally.

“Network information can be super expensive to collect, and finding precisely the right people to help something go viral is unpredictable,” says Mohammad Akbarpour, an assistant professor of economics at Stanford GSB and one of the paper’s authors. “You might be better just ignoring the network and seeding a few more people.”

When they set out on this project, Akbarpour, along with Suraj Malladi,

a graduate student in economics at Stanford GSB, and Amin Saberi, an associate professor of management science and engineering at Stanford, knew from random graph theory that random seeding might perform well in getting a piece of information to go viral. Curious about how it compared with targeted seeding, they built a model and ran it alongside three past experiments from development economics that used deliberate seeding methods.

“These earlier studies describe how, from a statistical perspective, central individuals in a network help diffuse information, but they don’t necessarily tell you whether this is *economically* meaningful,” Akbarpour says. “They also often assume that you can perfectly observe the social network of who talks to whom about some particular piece of information. But suppose you have some noise in the data, which is always the case.”

## **RANDOM VS. TARGETED SEEDING**

When the authors compared the results of their model, which used random seeding, with results that relied on careful network analysis, they found that random seeding with one to three additional seeds performed nearly as well as targeted seeding, both in terms of speed and extent of diffusion. In some cases, their results proved even better.

Deliberate seeding efforts rely on the degree to which somebody sits at the center of a network. They look for the people who are most highly connected and thus best positioned to spread information. But this approach can create redundancy that leads to rapidly diminishing returns.

“The interesting thing is that if you use an algorithm that targets people with the most friends, then you are going to pick people who are likely connected to the core of the network,” Saberi says. “And once you’ve talked to a few of these people, the next one

will not be as valuable, since you’ve already saturated the core.”

In the meantime, you’ve ignored a bunch of so-called “small communities” — satellite networks on the periphery that are loosely connected to the main network. “This is not to recommend random seeding as a universal policy,” Saberi says, “but to show that central individuals do not always maximize diffusion.”

The effectiveness of random seeding with a few more seeds depends on the nature of the network. And how information spreads depends on what is being talked about. For instance, how farmers decide whom to speak with about new corn-growing techniques may be different from how they decide whom to gossip with.

“Careful seeding may matter for reasons not captured in our models,” Malladi says. “If, for instance, farmers adopt a new technology only after a sufficient number of their friends adopt it, then you are probably better off being strategic with whom you seed.”

## **WHAT ABOUT FAKE NEWS?**

Or consider the problem of stanching, rather than encouraging, information flow. For this “vaccination” problem, understanding the a network’s most influential components — who is infected and who is likeliest to spread the infection — is essential for effective intervention.

“If someone attacks a network with a virus or a piece of fake news, random vaccination is unlikely to stop the spread, and vaccinating central individuals — or informing them about the truth in the case of misinformation — is absolutely necessary,” Akbarpour says. “In some sense, this is troubling, because the attacker does not need the network data, but the defender does.”

Finally, if the process of seeding is expensive — for example, seeding requires extensive training in how to use a new technology with the hope that the trainees subsequently teach their friends — then it makes sense to find the most influential people within a social network.

“In the end, the main trade-off that you face is in costs — whether it is more expensive to seed a few more random people or to collect and analyze the network data,” Akbarpour says. But when uncovering the structure of a network is expensive, as it very often is, “then you may as well just forget network theory and pick more people based on common wisdom — go talk to the village shopkeeper, the teacher, or a random person in the street.” ▲

**Mohammad Akbarpour is an assistant professor of economics at Stanford GSB.**





**WORKFORCE**

# When Workplace Training Needs to Get Personal

**First-time employees often need help with “unwritten skills,” such as overcoming shyness or just getting to work on time.**

BY EDMUND L. ANDREWS

The bustling garment factory near Bangalore had a curious problem: Even though it offered above-market wages, almost half the women it hired were quitting within three months.

The owners were baffled. The women who dropped out (90% of the workers were female) were just as productive as those who stayed on, but they were much less happy. By contrast, those who stayed past three months appeared to thrive and exuded new confidence.

What accounted for the difference?

Aruna Ranganathan, an assistant professor of organizational behavior at Stanford GSB, spent nearly two years studying the workers and the factory to find out.

It turned out that most of those who stayed and thrived had one thing in common: They had been trained by veteran supervisors who had taught them more than just sewing and stitching.

The highly experienced trainers had also coached the new hires on the unwritten skills of workplace readiness: how to balance work and home; how to overcome timidity and communicate with co-workers; how to make sure they arrived on time at work; even how to find the restroom or take an adequate lunch break.

“These were women who had never had a formal job before and often never been outside their villages,” says Ranganathan, who is publishing a new paper on her findings. “For many of them, the idea that

they had to be at work promptly at 9 a.m. was entirely new. They were used to doing household chores before leaving and then catching a bus whenever it might come. They had to learn how to carefully plan their schedules.”

It turned out that the less-experienced trainers, though sincere, tended to focus only on specific job skills and left the new workers to figure out the rest on their own.

“I noticed a pattern where the experienced trainers talked about a lot of different topics, not just the specific job,” Ranganathan says. “They would talk about what it had been like for them when they first started. They focused on broader skills to survive in the work force: how to show up on time, what to wear, how to speak to strangers — even questions like ‘Where is the bathroom?’”

The experienced trainers had gradually gleaned the importance of those issues as they noticed the emotional struggles that many of the new hires were suffering.

Many of the women, for example, were extremely unsure about taking enough time for eating or work breaks. Some women went all day without going to the bathroom, simply because no one had told them where it was. Meanwhile, many new workers were agonizing about their responsibilities back at home.

In shadowing some 510 first-time workers and recording more than 200 pages of field observations, Ranganathan noticed that some women went through a dramatic transformation during their first few weeks on the job.

Almost all of the women started out painfully shy, reluctant to make eye contact or to talk to anyone. If they did speak, Ranganathan noted, their voices were often so quiet that she could barely hear them.

Over the next several weeks, however, some of the women would display a new self-confidence. They would become talkative and cheerful, even making jokes in a way that had seemed unimaginable weeks earlier.





TRAINING THE TRAINERS Aruna Ranganathan (second from left) interviews workers in Bangalore, India.

Not every woman went through that kind of evolution, but those who did were much more likely to stay for the long term. They were also more likely to have had the most-experienced trainers.

Only about 5% of the women with experienced trainers dropped out in the

**“For people from underrepresented groups, learning to be a worker is more complex than it may seem.”**

first month, compared with 15% of those with less-experienced trainers. Only about half of those with less-experienced trainers made it past the three-month mark, versus about 75% of those with more experienced trainers.

The three-month mark was a key threshold. The new hires who made it that far generally became long-term employees. In general, Ranganathan adds, the women who became long-term employees were happy about their work and proud of their new earning power.

Ranganathan says the findings have implications beyond training and retaining garment workers in India. High dropout rates are also common among first-time employees from historically underrepresented groups in the United States, such as inner-city black youths and single mothers.

And while experts have long focused on the need for better workplace training, many well-intentioned programs have had mixed or even poor results.

“What this tells us is that we need to better understand the challenges of transitioning to formal employment for people from historically underrepresented groups,” says Ranganathan. “Learning to be a worker is more complex than it may seem, and workplace training that goes beyond job-related skills to also include ‘work-readiness’ skills is likely to be more effective in retaining first-time workers in the formal labor force.” ▲

**Aruna Ranganathan is an assistant professor of organizational behavior at Stanford GSB.**

## SCALING

# The Seamstress

## How a Ghanaian entrepreneur stitched together a clothing company that employs and houses homeless women.

BY MARTIN J. SMITH

Ghanaian fashion designer **Linda Ampah** took a double leap of faith when she decided to expand her custom clothing company into mass production in 2012.

She not only created a much bigger business, but also wanted to make her KAD Manufacturing a place so welcoming that she could retain skilled workers while operating in a way that honored workplace rights, worker dignity, and livable wages — things she knew might put her at a disadvantage against competitors.

“I went into mass production without knowing what to expect,” says Ampah, the CEO of the Accra-based company. “I was quite unprepared for the challenges — how to manage people, how to manage time, line balancing, things like that. It was bigger than what I was used to, so the problems were bigger.”

Then a friend told her about Stanford GSB’s Seed Transformation Program, a year-long program that offers leadership advice and training to entrepreneurs in Africa and India. Today, Ampah, who completed Seed in 2014, employs 130 workers, many of them recruited from Accra’s streets and trained in-house. She has plans to build housing for her female staffers, a canteen where they can eat, and a nursery for their children. She also is building a new production facility that should enable KAD to grow its workforce to 450 within two years. She hopes to generate more than \$1 million in sales this year, up from last year’s \$700,000.

**How did you hear about the Seed program, and what attracted you to it?** I was sharing my challenges with a friend, an American lady who was running an NGO here in Ghana. When she heard about Stanford Seed, she knew she wasn’t qualified because she was running an NGO. So she called me and said, “You’re qualified, and you need it more than I do.” I thought, anything that would allow me to be better at this gig — why not?

### Were you trying to learn specific skills?

I was hoping to become a better manager. What I didn’t expect was that it was an eye-opening moment for me to see the potential I had with KAD Manufacturing. It made me aware that it was a business that could transform many lives, including my own. I hadn’t looked at it that way before. I always thought I’d have to be the manager, the finance person, the accounts person, the everything. Going to Seed made me realize I needed to let these roles fall into other people’s hands who are better equipped to handle them.

Before Seed, I was doing everything on my own. And as Americans say, I was burnt out. My business coach, Corinne Augustine (MBA ’91), literally put an ad in the paper to advertise for these positions, then she sat through interviewing people to occupy them. It was beautiful. She told me to give up those roles and concentrate on strategic planning. She was so right.

### It’s amazing that you did all that for as long as you did. I don’t know how! But it showed me I could have done better if I’d had those skills earlier. Corinne was with me for six months, and she’s still with me. Even though she’s not in Ghana, I still talk to her and ask her for direction. We’ve become family.

It was beautiful. She told me to give up those roles and concentrate on strategic planning. She was so right.

### Can you walk us through the steps you took to capitalize the business in its early years?

I’d done odd jobs to save up some money, so I started with my own money and money from friends and family. People chipped in here and there. We were originally maybe about 12 staff, and then we scaled gradually.

### What unique challenges does KAD face, and how have you tried to address those?

Because we take people off the streets and train them, it’s expensive. To venture capital people, it doesn’t look as good

because we have this big social component. Anyone who invests in KAD has to be willing to walk that journey with us. And it makes our products a little more expensive. You pay maybe a few cents more for our garments, but that’s a small investment in the lives of our staff. It keeps them off the streets and makes a big change in their lives and the lives of their families.

### Why is the social component so important to you?

With the kinds of things we do, details and quality are key. We realized that when the workers feel part of the business and have ownership, they give it their all. And we also realized that people who come in already trained sometimes have bad habits, and it was more difficult to get them to learn another style of sewing. It was easier to just pick people and train them from scratch. A lot of them come from the villages, and a lot of them were sleeping outside. We went out in the middle of the night and talked to them, and they were very willing and appreciative. The kind of joy and personal satisfaction I got from doing that I still can’t explain. After that we decided to open our doors and let these people come in because they appreciate it so much. It’s such a joy to see the transformation.

### But how did you get from there to the idea of building them housing?

We realized as we were training them that many of them had no place to stay. Their children were not well taken care of. That’s when we decided to have a place to house them. Right now we’re renting, but going forward we’re hoping we can build a hostel and also provide day care for the children. At the end of the day, the workers are happy. You are happy. It’s just beautiful.

The thing with these young women is that one person often takes care of about 10 people in their family. So you touch the lives of many people — their children, their mothers, their cousins, their brothers. It’s unbelievable.

### You’ve said you plan to expand from 50 employees to 450 within the next five years. Expanding that fast seems like a real challenge.

Right now, we’re at maybe 60 or 70% of capacity in a leased government building. We intend to maximize it up to around 250, do double shifts, before we move to our own property. We’re halfway through [construction]. Because we don’t have any funding from anywhere, we use our own money, so it’s very gradual. When we get a little extra, we work on it a bit. Once we finish it, in about two years, we’ll start with about 250 people but have equipment that will let us scale up to 450.

Photograph by Gabriela Hasbun



LINDA AMPAH  
"Take the challenge."



**What's your most pressing current challenge?** There are two. One is consistent orders from buyers who know our social side and are willing to walk with us. And then also funding from investors. We're not looking for people to just invest money and wait for returns. We're looking for investors who will work with us — who believe in this goal and want to join us.

**Are there specific competitive strategies that set KAD apart from competitors?**

We work with our clients from beginning to end, from the design stage to the sourcing of fabrics. Everything we do — our patterns, our embroidery facility, our rhinestone facility — we keep in-house. It's a one-stop shop, and that's our competitive advantage.

**Is that something you learned at Stanford?** The *Design Thinking* class was a lightbulb for me. Basically, it means working with your clients to achieve what they want, not you tailoring it and forcing it down their throats. That really stuck with me.

**How does your design thinking strategy manifest itself on a day-to-day basis?**

Here's an example. It used to be that I would design school uniforms and tell the clients, "We think this will suit the children in your school." Now we go to the school first and do a town hall meeting with parents and students so they can tell us what they'd like. We do prototypes, come back to them, work with them, make

changes. By time the final product comes out, they're part of the design, and it's exactly what they want. We started doing that immediately after the class.

**If you had one piece of advice to pass along to any entrepreneurs currently participating in the Seed program, what would it be?** Take the challenge. That program challenges you to move out of your comfort zone. It can be scary and daunting. But take it. It's worth it. **Δ**

Linda Ampah completed Stanford GSB's Seed Transformation Program in 2014.

**TRANSACTIONS**

# Taking Blockchain Beyond Bitcoin

**Does the technology behind cryptocurrency have a place in solving social ills?**

**BY DREW CALVERT**

In recent years, the buzz around blockchain — the distributed ledger technology behind cryptocurrencies like bitcoin — has inspired a wave of investment, entrepreneurship, and marketing schemes. Proponents say the platform could disrupt every industry and create a more secure, transparent, and just global economy, while skeptics tend to balk at such inflated expectations.

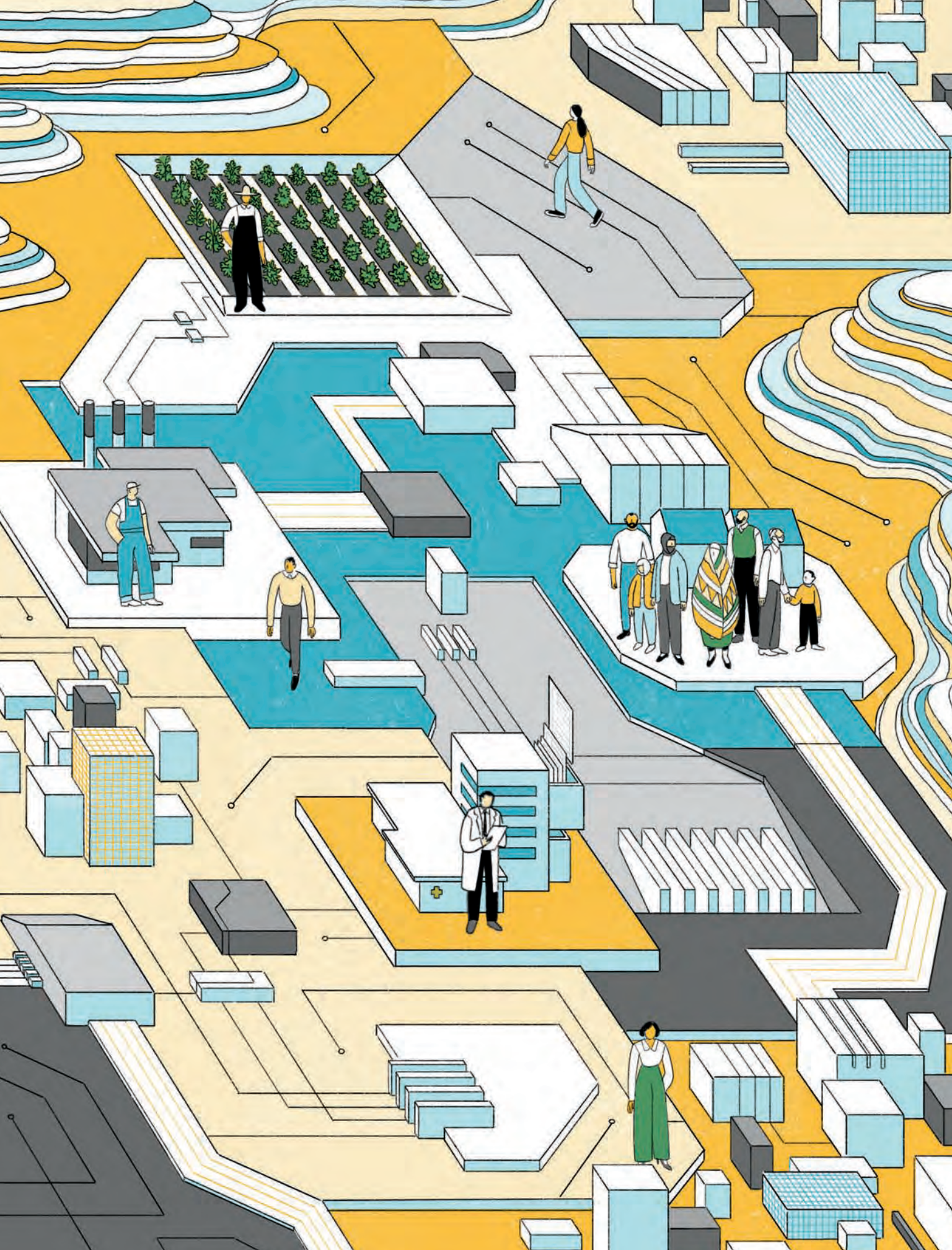
Missing from the discussion has been a rigorous study of blockchain's current real-world applications. Is it actually a force for good, or is it mostly hype?

That's the question taken up in a new study sponsored by the Center for Social Innovation at Stanford Graduate School of Business and conducted by lecturer Doug Galen and a team of eight current and former Stanford students. The group analyzed 193 organizations, initiatives, and projects that are seeking to use blockchain to benefit the public. Their goal was to map the field and see which efforts were the most promising.

**Doug Galen is a lecturer in management at Stanford GSB.**

*Illustration by Jun Cen*







## BENEATH THE ICEBERG'S TIP

That potential extends well beyond the world of digital currencies, which is where blockchain remains in the popular imagination — for now.

“People still think ‘bitcoin’ when they hear the word cryptocurrency,” Galen says, “but that’s just the tip of the iceberg. Beneath the surface is the much more robust blockchain platform that goes well beyond bitcoin and cryptocurrencies.”

A blockchain is essentially a shared digital ledger that records transactions and stores data in a transparent, decentralized way, making it a powerful tool for a range of social enterprises, from tracking coffee through a supply chain to building a credit system for the 2 billion “unbanked” people worldwide who still lack basic financial services. The study looked at applications in every major sector and found that health care, financial inclusion, aid, and democracy and governance were the areas with the most existing “blockchain for good” initiatives.

Galen points to four key potential benefits: transparency, immutability, lower costs, and digital identity. For example, a transparent record of donations could help an aid industry in which 30% of all disaster relief money is lost. And the “immutable” feature of blockchain might help guard against election fraud, since every transaction is permanent and cannot be altered after the fact. In health care, which accounts for 25% of the study’s cataloged initiatives, the focus has been on using blockchain to store medical records and monitor supply chains, including medicine temperatures during shipment.

Encouragingly, the study found that 86% of initiatives were making material progress toward solving a genuine problem, while only 14% belonged in the “hype” category. And things are moving fast: 55% of the programs expect to make an impact within one year.

“It’s still early days,” says Galen, cofounder and CEO of RippleWorks, a foundation connecting startup and technology experts with social ventures. “But I was pleasantly surprised by the status of the initiatives and the range of applications. Blockchain has more near-term potential for social impact than originally thought.”

In addition to making supply chains more trackable and secure, blockchain is likely to have a large, immediate impact on the way people transfer money. Foreign workers worldwide send an estimated \$500 billion worth of remittances back to their home countries each year. By eliminating transactional middlemen, blockchain systems can help workers transfer a higher percentage of their savings directly to family members. This easy movement of funds applies to aid and development as well. The U.N. World Food Programme used a version of blockchain in Jordan to facilitate cash transfers to more than 10,000 Syrian refugees.

“The fact that you could put money directly into people’s hands, bypassing intermediaries and avoiding large-scale graft, is a huge opportunity for hundreds of millions of people around the world,” Galen says. “Bringing these costs down — and in the case of farmers, increasing their share — could mean the difference between living below and living above the poverty line.”



**55%**

of blockchain initiatives expect to have a positive social impact within one year.



## **CHALLENGES TO ADOPTION**

As with any new technology, there are challenges to adoption. Implementing blockchain requires extensive coordination and trust in the network, the authors of the report found. When it comes to supply chains, for example, everyone from the producer to the distributor to the packager has to be willing to employ the new system. That buy-in requirement could present a substantial obstacle for aid and philanthropy, since nonprofits and governments tend to be risk averse and slow to adopt innovative solutions.

Blockchain also doesn't solve every privacy issue, of course. Some patients might be uncomfortable with a blockchain-based medical record, and anyone with a bank account might still have cause to worry about the theft of their digital information.

"The ultimate goal is to protect people's identity while also allowing them to control and monitor how it's used," Galen says. "But people might have concerns if safeguards are not properly in place."

Another potential damper on blockchain's spread is that initiatives looking to deploy the technology will have to navigate a range of government regulations, depending on the countries and sectors in which they operate. Galen, however, sees this as a step toward helping the technology mature. "Regulation can bring trust and security so that blockchain can hopefully reach its fullest potential," he says.

Some of the most pressing questions have to do with initiatives in democracy and government. Estonia uses blockchain to offer a range of public services, and there is a growing crop of programs worldwide to help with crowdfunding, legal support, press freedom, and voting.

**“Regulation can bring trust and security so that blockchain can hopefully reach its fullest potential.”**

During the 2016 U.S. elections, the Montana state government worked with Votem, a Cleveland-based mobile voting platform, to use distributed ledger technology for absentee voters. A post-election survey determined that 99% percent of voters who used the Montana system found it convenient and would use it again.

"The potential for positive social impact in the U.S. is great," the Stanford researchers write, noting that more than 2.6 million U.S. citizens living overseas were eligible to vote back home in 2014, but only 93,000 of them did — a turnout of 4%.

## **PUTTING PEOPLE FIRST**

The study also cautions against using blockchain arbitrarily.

"It's important to understand blockchain's place," Galen says. While the technology has enormous potential to ensure transparency, reduce costs, and offer better security, there's no value in using it just for the sake of being innovative.

"These initiatives should be people-first. They should focus on solving a real problem, then figure out how blockchain might be able to help achieve that goal. The human impact part comes first. The technology will follow." ▲

# **Blockchain for Social Impact**

The study "Blockchain for Social Impact" was overseen by Stanford Graduate School of Business lecturer Doug Galen under the auspices of the school's Center for Social Innovation. The researchers and coauthors were all current or former Stanford students:

**Nikki Brand, MA '19,**  
International Policy Studies,  
Stanford School of  
Humanities & Sciences

**Lyndsey Boucherle, MSx '18,**  
Stanford GSB

**Rose Davis, MA '19,**  
International Policy Studies,  
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Humanities & Sciences

**Natalie Do, MBA '18,**  
Stanford GSB

**Ben El-Baz, MSx '18,**  
Stanford GSB

**Isadora Kimura, MBA/MA '18**  
Stanford GSB and Graduate  
School of Education

**Jay Lee, MA '15,**  
Communication,  
Stanford School of  
Humanities & Sciences

**Kate Wharton, MBA '19,**  
Stanford GSB



Anat Admati

## Rethinking Corporations and Capitalism

### With the Corporations and Society Initiative, Anat Admati hopes to make Stanford GSB a better citizen of the world.

Anat Admati often shares a particular *New Yorker* cartoon when she talks to people about the Corporations and Society Initiative that she recently launched at Stanford Graduate School of Business. In the cartoon, a man and three children are sitting around a campfire. The man's business suit is tattered, and in the distance behind them a smoking city lies in rubble.

"Yes, the planet got destroyed," the man says to the kids, "but for a beautiful moment in time we created a lot of value for shareholders."

"That cartoon just about covers it," says Admati, the George G.C. Parker Professor of Finance and Economics. She has spent much of the past two years trying to persuade faculty and students at Stanford GSB to examine how their work affects not just the business world but also society at large.

"By teaching what we teach and through our research and other activities, we may tolerate or enable, maybe even subtly encourage, harmful actions," Admati says. "We may do it inadvertently or not be aware of it, but that's what we're sometimes doing."

The initiative grew out of a pilot visitors program that over the last two years has brought more than a dozen scholars, policymakers, and authors to Stanford for up to two weeks. The visitors engage with students and faculty at the business school and beyond in the hope of breaking silos and engaging in a discussion of broader issues that cut across disciplines.

Admati hopes to work with students, faculty, and staff to evolve and expand the set of activities. She also hopes to engage with alumni and has already met multiple times with Stanford GSB alumni in the Washington, D.C., area — a group that she describes as "very, very engaged" — to discuss the challenge of ensuring that leaders in the private and public sector take actions that work better for society.

"These topics are top-of-mind for a lot of us here in Washington," says Amita Shukla, MBA '03, president of the Stanford GSB Alumni Washington, D.C./Baltimore Chapter. "And there's no doubt they're much more a part of conversation today than they were before the last presidential election."

Amit Seru, the Steven and Roberta Denning Professor of Finance at Stanford GSB, hopes that the initiative helps encourage and support more research as well as engagement on how better governance and sensible policy can enable corporations to serve society. "There is a vast set of complex issues in this area that we do not yet understand and that we should explore more deeply if we want to remain a leader and have the best impact we can have on the world," Seru says.

In a recent interview, Admati shared some of her thoughts about the Corporations and Society Initiative — where it's been and where it's going.

**You spent many years studying the details of financial markets and contracts, portfolio management, asset pricing, and the like.**

**Was there a moment of epiphany for you when you decided you needed to move beyond those topics?** During the financial crisis, I started looking into banking, and that's when I saw a disconnect. Because financial firms can do all the things that we tell them to do to maximize shareholder value and yet still mess up everything.

**Mess everything up in what way?** Make reckless mortgage loans, bundle and sell them around the world, and create a fragile system that takes down the global economy when homeowners start defaulting, for one thing. How can that be? How is that tolerated? It turns out the rules were bad, and our assumptions about



**“We show students how to use debt to create a tax shield, but we never really stop to ask if the tax rules are good and justified.”**

markets were wrong. Worse, as I looked more closely I encountered false or misleading claims that seemed to support and enable the system. Our teachings and research assume or suggest that if corporations maximize “shareholder value” or stock price, that’s good for society. But it turns out you can do considerable harm as you chase these targets.

**What caused you to start looking beyond the fields of financial economics?** As I engaged on the issues around financial regulations, I realized that I couldn’t understand what was going on without turning to research in other fields such as political science, psychology, sociology, and law, which took me completely out of my silo. I became familiar with concepts in these other fields; for example, about how people make sense of reality in their own mind and how narratives help us rationalize and justify our own actions and the status quo. I started getting a better understanding and insight in ways that I would not get from the standard models in economics and finance. And I began to question a lot of our basic assumptions.

**Does that idea of questioning assumptions and crossing disciplines play a part in deciding which visitors to invite as part of the Corporations and Society Initiative?** Yes. The visitors we invite communicate across different disciplines and often bring into the discussion expertise in areas that we don’t have here. For example, we don’t have legal experts, but a lot of issues we should be talking about concern the rules of the game and their

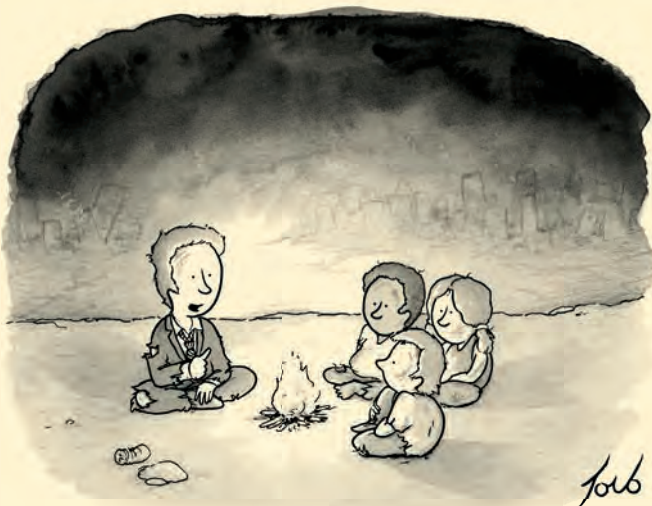
enforcement, which are fundamentally in the law. U.S. District Judge Jed Rakoff, for example, who visited Stanford for a week last year, spoke to my *Finance and Society* class this year, and his first line was “I met a lot of very brilliant people in my visit to the GSB. But they were clueless about the law.” We look for people who are connected to what’s really going on in the world and can enrich our teaching, research, engagement, and impact.

**What’s the elevator-pitch summary of the message you’re trying to get out?** That it is critical for all of us to look at a bigger picture regularly, as a habit. And that what we do here — what our students and our faculty do — can make a more positive difference than it currently does. I’m trying to change people’s mindset in terms of their awareness of the broader issues and work with students, faculty, and alums to find specific ways to make that positive difference.

**Are you running up against resistance?** I’m running up against inertia, against status quo, against beliefs that are hard or inconvenient to change. People often have a certain way of viewing the world, which involves implicit, maybe even subconscious, assumptions. I’m hoping to create more recognition of such assumptions so people can examine them more critically.

**How would that work? New courses?** A new course is a possibility and, indeed, I hope that the initiative is useful for developing materials and tools for covering these topics in a sort of “Capitalism 3.0” type of course. Meanwhile, beyond one course, I want big-picture thinking to infiltrate everything we do. For instance, in finance we teach students how to avoid paying taxes. We show them, in particular, how to use debt to create a tax shield. It’s in the textbooks and on the exams. But we never really stop to ask whether the tax rules are good and justified. We don’t ask, “Why do we have this tax code? Why does it have so many loopholes? Who ultimately benefits and who loses?” I want us to teach students how to get in the habit of asking those questions, instead of just showing them how to avoid the taxes.

**You’ve talked a lot about increasing the school’s engagement with and impact on public policy. Can you give more details about that?** It goes back to Arjay Miller [Stanford GSB dean from 1969 to 1979, who died in November]. I consider him the intellectual father of this initiative. I had a two-hour conversation with him after he was more than 100 years old, which was amazing in and of itself. He was very aware of the importance of good public policy since his experiences back in the 1960s, and in coming to lead Stanford GSB he insisted that the school should have a public management program. He thought business schools should focus not only on teaching private-sector leaders how to increase profits, but also educate professionals who could move fluidly between industry and government — who could read a balance sheet as well as grasp societal issues such as education, poverty, and public safety. I think we need to go back to his original mission. Stanford GSB should be a better citizen of the world and use its resources and expertise to that end. We have a unique opportunity to shape the future of capitalism. —STEVE HAWK



*“Yes, the planet got destroyed, but for a beautiful moment in time we created a lot of value for shareholders.”*

## EXCHANGE

### SOME FINAL THOUGHTS ON CATALYST

EDITED BY DEBORAH PETERSEN

“First, find your  
**mentor**

and get advice on how to  
guide your particular manager to be  
a better ally for you.”

— **Rebecca Weidler**, MBA '18,  
Stanford GSB YouTube  
<https://stanford.io/2MQHnfC>

“You can't major in  
**inventing.**

It's really a belief system in  
yourself, and the willingness to look  
stupid or to have people laugh at you.  
It takes a lot of confidence.”

— **Sara Blakely**, founder and  
CEO of Spanx, from  
the View From the Top speaker series  
[stanford.io/SaraBlakelyVFTT](https://stanford.io/SaraBlakelyVFTT)

## “Big ideas

don't usually hit you on the head like Newton's apple,  
fully formed. You tend to get hit on the head by a seed of a big idea.”

— **David Petraeus**, retired U.S. Army general,  
from the View From the Top speaker series  
<https://stanford.io/2KFFKPU>

“New business opportunities do not  
start as large businesses;  
**new opportunities**

need to be tested in small spaces with the belief that they have  
the potential of gaining scale if successful.”

— **Robert Siegel**, Stanford GSB lecturer, on Medium  
<https://stanford.io/2shVPo2>

“Intuit has identified a small team of

## **innovation catalysts**

— they go on ‘innovation safaris’  
with customers to do observation and  
prototyping and testing.”

— **Stefanos Zenios**, the Investment Group  
of Santa Barbara  
Professor of Entrepreneurship  
and professor of operations,  
information & technology, for *Insights*  
<https://stanford.io/2cXt8D1>

“Research shows that  
athletes are more

## **motivated**

by positive coaches than hostile coaches.

When your team is getting  
blown out at halftime, you don't  
get ahead by screaming, ‘You suck!’”

— **Magdalena Kala**, MBA '18, on  
Stanford GSB YouTube  
<https://stanford.io/2Ii3W9r>





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(two-module program)

### **The Emerging CFO: Strategic Financial Leadership Program**

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(two-module program)

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

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# The Takeaway

## THE ESSENTIALS

**FIVE LESSONS FROM  
OUR STORIES  
ON CATALYST  
EDITED BY  
JENNY LUNA**

### You Can't Ban Fire

We may not be able to stop the use of psychological targeting and digital propaganda, but people can defend themselves by becoming aware of how these tools work.

— **Michal Kosinski**



### An Opportunity Within “Opportunity Zones”

A new tax bill could provide valuable insight on poverty-reduction strategies.

— **Rebecca Lester**



### Teach More Than the Work

Training that goes beyond job-related skills leads to higher retention of first-time workers in a formal labor force.

— **Aruna Ranganathan**



### Seek Transitions, Peaks, and Pits

“Defining Moments” within customer and employee experiences can create fond memories.

— **Chip Heath**



### Community Cohesion Is Crucial

Strong infrastructure acts as a “shock absorber” in the wake of a disaster.

— **Hayagreeva “Huggy” Rao**

## THE RECOMMENDED LIST

### MORE IDEAS ON CATALYST AND RELATED TOPICS EDITED BY JENNY LUNA

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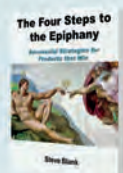
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